Digital Technologies in the Development of Socio-Economic Systems

Blended Learning Tools for Foreign Language Teaching

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Abstract

The article is devoted to the issues of blended learning primarily supported by digital technologies. It is the blended format that contributes to the transformation of the traditional learning environment towards active, productive activity. The authors of the article offer tools for the use of electronic applications in the educational process when teaching language literacy in combination with traditional forms of education; namely, they give recommendations on the use of Akelius, the online application for learning foreign languages. A fragment of the lesson plan to teach Russian as a foreign language with the inclusion of the Akelius application has been proposed. The research is based on the practical experience of the authors of the article with the Akelius electronic application.

Keywords

Blended learning, electronic application, teaching a foreign language, communicative approach

1. Introduction

Today, there are different models of blended learning. Considering changes in the field of education, educators call the situation caused by the 2020–2021 pandemic "forced blended learning" [1], as well as "the fact of a general transition to a blended learning format" [2]. Thus, it is emphasized that blended learning is an objective reality of the modern educational environment.

Blended learning researchers note that the growing interest in this area is due to several reasons related not only to high pedagogical efficiency and effectiveness, but also to solving issues related to health protection, economic, political and migration realities. Children who do not speak Russian or Kazakh are taught in traditional classes. At the same time, teachers face the question of providing students with electronic resources and the appropriate organization of educational activities. The Akelius application is an interactive and, importantly, accessible tool for learning a foreign language, which allows the teacher to make the traditional lesson relevant, to organize not only joint, but also productive independent work of students.

The purpose of this article is to review the blended learning tools for the process of learning a foreign language through the free-access Akelius application.

2. Literature Review

Today, there are different models of blended learning. The issues of blended learning, as well as its various models, have been studied by many scientists and there are many opinions on this issue. Blinov [3] and some other researchers believe that the term "blended learning" includes such forms of learning as: 1) "online + face-to-face" learning and 2) "online + independent" learning, where "independent" means "learning using a computer without connection to the information and telecommunications network". The second meaning is close to the concept of "distance learning". Despite the significant difference between blended learning and distance learning in the organizational and didactic component, the ways of interaction and alternation of face-to-face and electronic components of the educational process, on the one hand, and the special nature of the teacher's activity, who plans and organizes the educational process, on the other, "distance learning is one of blended learning options" [1]. Most importantly, blended education allows you to combine traditional methods with relevant modern technologies.

According to S. Timkin, blended learning is understood as learning using distributed information and educational resources in face-to-face education using elements of asynchronous and synchronous distance learning. It is interesting here that the process of combining technologies can occur both at the level of a separate course, discipline, and at the level of the educational program as a whole, i.e. "blended years" [4].

In blended learning, from 30% to 80% of the academic learning process is transferred from the classrooms of educational institutions to the virtual space of the Internet, where students can choose the way, time and pace of acquiring knowledge [5].

Both online learning and teacher-assisted learning are equally important in blended learning. Researchers at the Clayton Christensen Institute have identified the parameters of blended learning that improve the quality of education:
• personalization,
• mastery based learning,
• creation of an environment of high achievements,
• personal responsibility of students for their own learning outcomes [6].

The researchers pay attention to the flexibility of the educational environment in conditions of blended learning, the impact on the speed of assimilation of the studied material [7]. Various aspects of the use of blended learning in language teaching can be demonstrated with several examples. Prosvirkina I.I. and her colleagues in teaching Russian as a foreign language use a rotational submodel of blended learning "Change of work areas" adapted to their goals and objectives, as well as the features of the discipline [8].

According to the authors, this technique "will make the learning process exciting, first, because it relies on the students' interests and needs; second, it will involve the student in language practice, which is regulated by his individual abilities and his volume of lexical and grammatical minimum; third, it will help to form the students' communicative and informational competence; and fourth, it will allow you to rationally allocate time in the classroom, because part of the material has already been mastered" [6].

As part of the study, it is important to understand the principles of organizing educational activities in Akelius. All lessons in the application are developed considering the communicative approach to teaching a foreign language, which involves:
• maximum consideration of individual, age, ethnical characteristics of students, their interests;
• creating and maintaining the need for communication among students in the classroom;
• use of different ways of communication: interactive, informative;
• formation and development of communicative competence [9].

The communicative approach to learning is interpreted as learning in cooperation (teacher- children, children of different ages and different language levels).

Lilia Vokhmina, the teacher of the State Institute of the Russian Language named after Pushkin notes that with the communicative approach, unlike the traditional methodology, grammar doesn't play the role of a "queen", but a "servant", an intelligent servant. "Since the main goal is communication, the solution of communicative problems, grammar is designed to serve, to ensure this communication." [10].

3. Methodology

The following general scientific methods have been used in the study:
1. Theoretical analysis of psychological and pedagogical literature on the issues of the communicative approach in teaching a foreign language;
2. Analysis of the methodological foundations of the professional activities of teachers in the context of blended learning;
3. Observation of the educational process, necessary for a systematic, purposeful perception of the process of formation of competencies in the course of applied research;
3. Generalization of pedagogical experience in using the modern online application Akelius as a means of increasing professional efficiency.

The study also included the use of various other empirical and scientific methods. To obtain the required result, interactive methods, including communicative and reflective discussions have been applied, the joint reflection in which made it possible to ensure the active involvement of respondents in the processing and analysis of the results.

4. Results

An important organizational feature of blended learning is the restructuring of the learning space: the allocation or change of work areas, and in some cases even a complete rejection of the rigid class-lesson organization of academic time and space. This also corresponds to the concept of the Akelius application – there is a free trajectory of the lessons. Changing work areas may depend on the level of students, which is the best solutions for groups of different levels. A group with a low level of knowledge can start working with the teacher at a certain stage of the lesson, then go to the online zone (Akelius application), and continue working with ready-made materials (cards, picture dialogues, exercises, games, songs, etc.), while training the listening, speaking and reading skills. The next step is the transition to the next zone – the traditional class, where the acquired skills are practiced and consolidated with the help of reinforcing exercises. A group with a sufficient level of skills can start working in cooperation with each other or help the group with the largest number of students with a low level of preparation.

The Akelius application is accessible to teachers with different levels of information technology skills, which was made possible thanks to an intuitive interface and simple functionality. Each language level consists of ten chapters, which has sections such as lectures, grammar exercises, games, songs, quizzes. There are tasks for interdisciplinary connections: mathematical tasks; additional materials with cultural content. Working with the application meets the needs of modern students: these are interactive puzzles, quizzes, songs, didactic games, etc. The Akelius application involves both independent learning and an individual approach to learning.

To understand the concept of the application, it is necessary to consider the principles of the communicative approach, which is currently the most effective in learning a foreign language. Learning a language with the help of the Akelius application helps to solve imaginary or real tasks on the topics like getting acquainted, telling about yourself, making purchases, going on a trip, cooking food, going in for sports, etc. This approach gives students an understanding of the "need" of the material being studied, allows them to quickly adapt to a new learning environment and everyday communication. Grammar exercises are not main, but auxiliary, especially at the initial stage of learning.

Therefore, when planning a lesson, it is necessary to focus on the lexical topic, and only "imply" the grammatical one. The means of this activity is spontaneous communication based on role-playing games, problem situations. The use of simple statements in the lesson, accompanied by multiple repetitions and demonstrations, using a tablet, contextual remarks make it easier for the child to build his own speech, understand communicative situations and independently use what he has mastered.

Mastering a new language through the lens of everyday learning is also effective when self-learning with the Akelius app. This principle of organization, i.e. active vocabulary, conversational format, games perfectly complements traditional lessons both in form and content.

Practical experience of working with the application made it possible to outline organizational issues for the introduction of application into the structure of the lesson. The motivation of students' learning activity turns into an unobtrusive message of the topic, which is revealed through the repetition and systematization of the knowledge gained by students.

It is important that the teacher, having previously analyzed and identified the gaps in the knowledge of his students, correlates the goal and objectives of his classroom lesson with the topic, tasks and exercises in the application when planning the further educational process.

We offer a sample of a lesson in a blended format for multi-level groups using the Akelius application. Lesson 14 "People around me"; level A1. The duration of the lesson is 45 minutes.

Topics from Akelius:

Me and self description;

Description of people who are around me; man, woman, person, people; age; Communication; forms of polite communication; I am friendly;

Learning to compose a story based on a picture (in Akelius this is one topic; we will offer our own).

Goals and objectives: :

1. Develop speech activity in the process of mastering new vocabulary and grammatical rules (Russian cases, frequent verbs);

2. To teach to ask and answer questions about objects, phenomena of the surrounding reality. Lesson type: combined with elements of developmental learning technology.

The topic of the grammatical part of the lesson: gender of nouns; cases; adjectives to describe yourself and those around you: old, young; antonyms: same, different, long, short, etc.; verbs, pronouns.

According to the methodology of teaching a foreign language, it is recommended to start the lesson with a phonetic warm-up: articulation gymnastics (5 minutes); repetition of tongue twisters (3 minutes). The lesson includes two main stages, which are aimed at mastering new vocabulary and grammar on the proposed topic, consolidating the material covered. It is proposed to conduct a speech exercise, in which new materials will be used for implicit evaluation by descriptors.

While working with the materials of the "Lectures": "man, woman"; "eyes, hair"; "teacher, neighbor", students need to listen and repeat new words after the speaker. Thus, the students form the perceptual and articulatory base of the language being studied. (Fig.1, Fig.2).
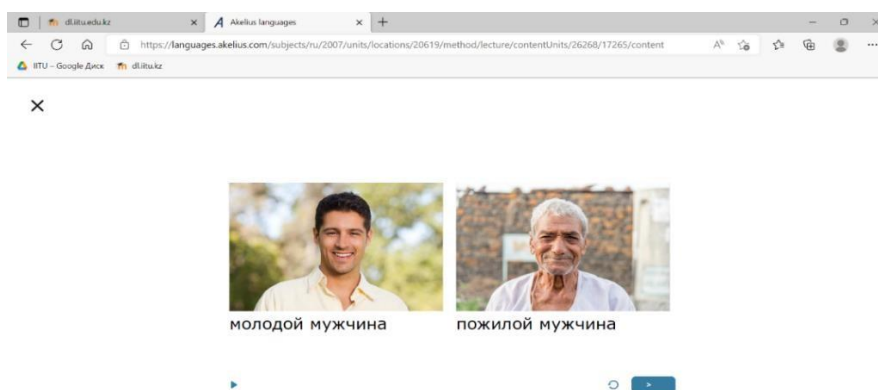

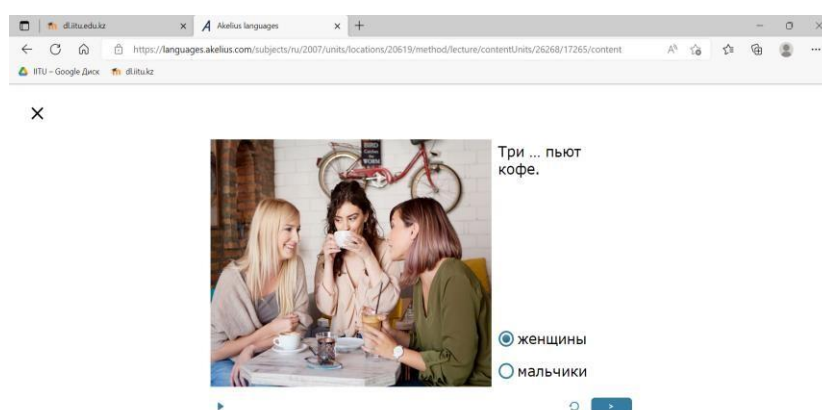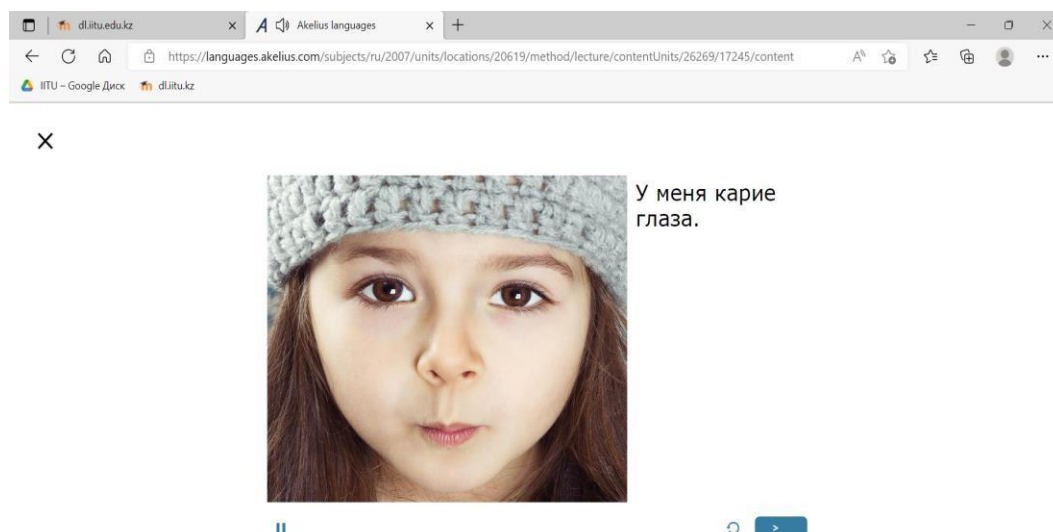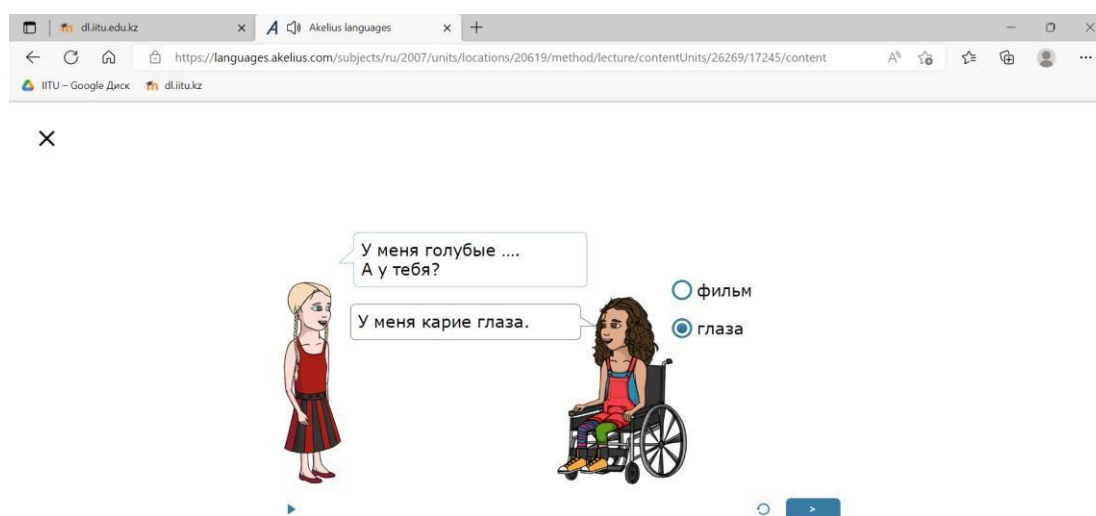**Figure 1:** A screenshot of the application

Figure 2: A screenshot of the application

Active vocabulary includes descriptions of people: eyes, hair color, hair length, etc. (Fig. 3).

Figure 3: A screenshot of the application

To teach the skills of independent productive speech, new material is used in the lesson to describe themselves, family members, classmates in the form of a dialogue following the example of Akelius exercises (Fig. 4):

Figure 4: A screenshot of the application

A direct description of the appearance is used as in Fig. 5.

The main role in educational activities is played by the communication between students, the student and the teacher, the speech activity of the students themselves in each lesson. The development of these skills is aimed at improving the ability to convey one's own thoughts, feelings, experiences orally and in writing in Russian.

The Akelius application uses feminitives that are quite active in the colloquial speech of native speakers: учительница (female teacher), художница (female artist). We shall note that for foreign students it is important to recognize nouns denoting gender in jobs with the suffixes тель/ниц(а), etc.
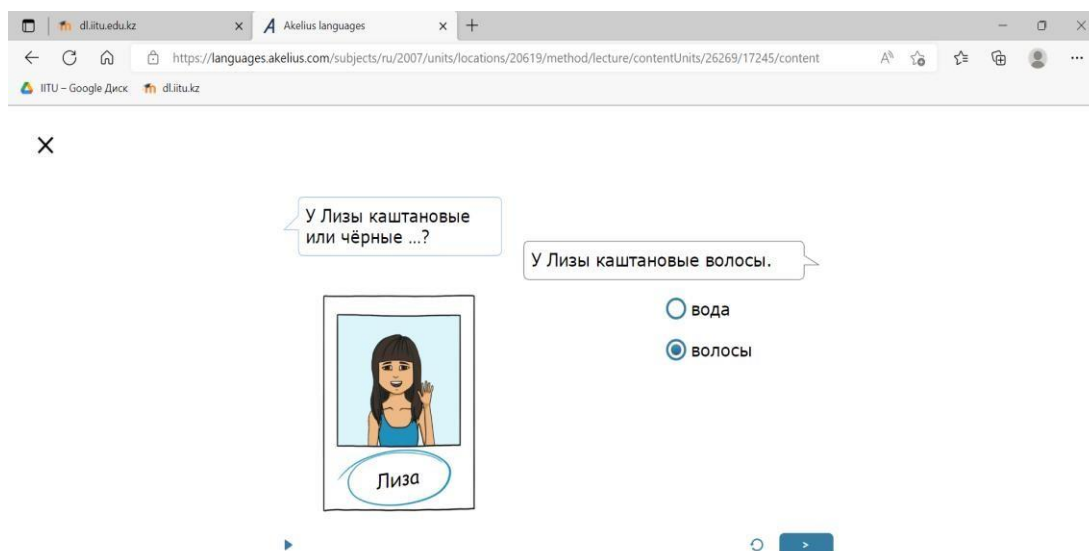
Figure 5: A screenshot of the application

The task of compiling a story according to the proposed model is traditionally offered for the development of dialogic speech. In group work, students develop the soft skills necessary for socialization in a new language environment: the ability to listen to the partner, empathizing, working in a team, respecting classmates. Group support creates a favorable atmosphere of security, removes the fear of public speaking in a foreign language.

Tasks on Akelius are applicable at the stage of knowledge actualization. At the first stages of mastering any foreign language, it is important to form communicative competence. Language and communicative competencies contribute to the formation of skills and abilities of verbal communication. "Teach communication by communication." New words are introduced into the vocabulary and the material covered is repeated and consolidated.

For example, the task "Friendly, I smile" in the "Lectures" section of the Akelius application (see Fig. 6, Fig. 7).
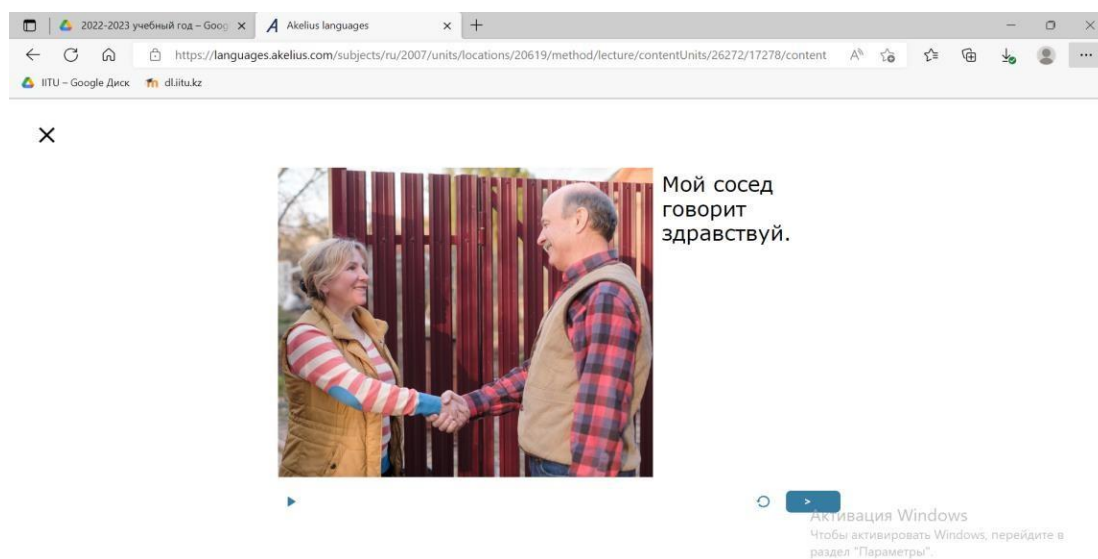

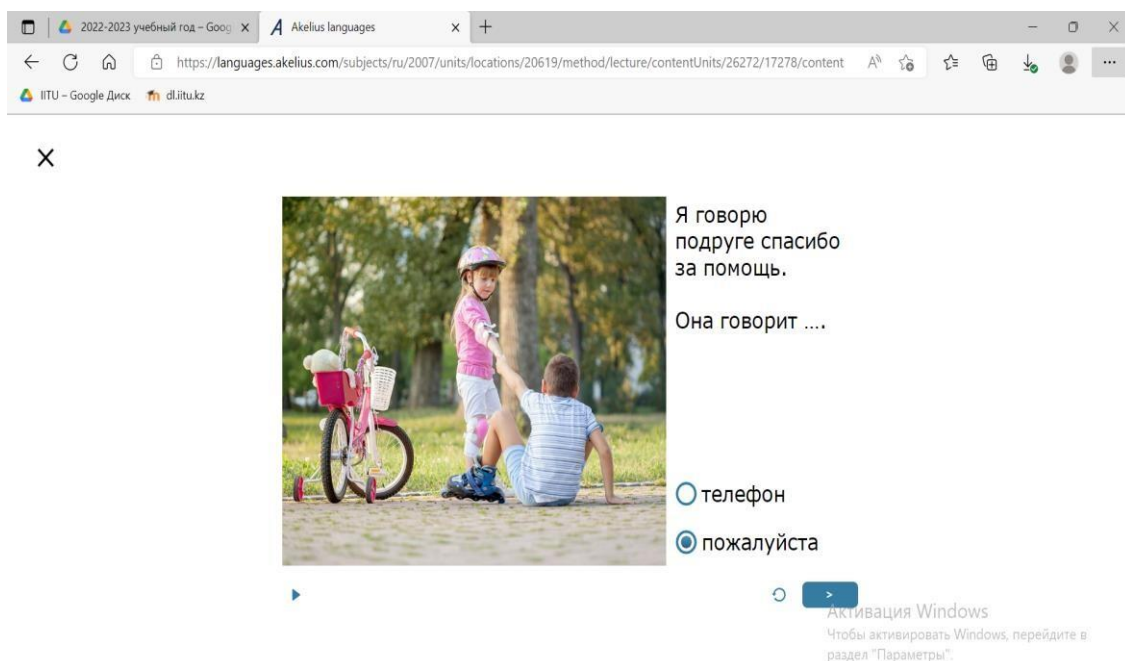**Figure 6:** A screenshot of the application

Figure 7: A screenshot of the application

The implementation of the communicative goal of learning assumes that speech activity is formed in all its forms: reading, speaking, writing, and listening. Despite the predominantly oral format of tasks, the Akelius application has tasks for composing words, as in Fig. 8. Such tasks form the visual memorization of new words, the ability to differentiate them in the speech stream.
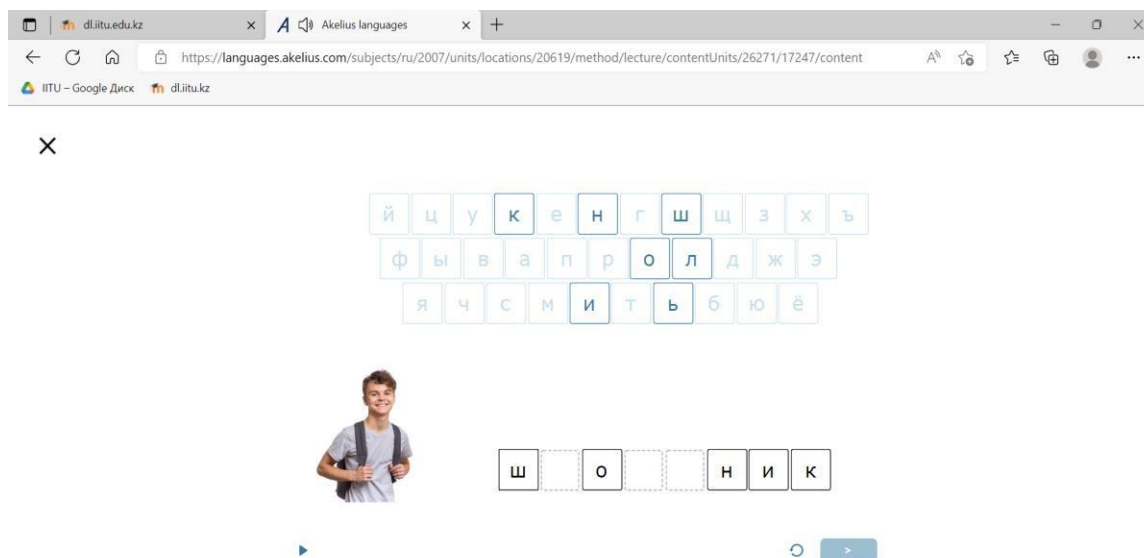
Figure 8: A screenshot of the application

The tasks in the application require classroom consolidation using various methodological techniques that are available to a modern teacher.

The traditional completion of the lesson is homework, it is performed in the application in the sections "Grammar", "Exercise" and "Quiz". The Akelius application has its own assessment system, i.e. bonuses or coins that the teacher can use in combination with traditional assessment or for

reflection and self-assessment.

Evaluation in blended learning in case multi-level groups has certain specifics. We have developeddescriptors that allow us to determine the dynamics of students' achievements in four types of activities: reading, writing, listening, speaking. (Tab. 1)

We assume that the systematic application of criteria-based assessment through descriptorsallows to monitor the dynamics of achievements, as well as to outline a learning strategy in general, and a particular lesson, in particular.

Table 1
Criteria and descriptors for RFL, levels A0, A1, A2

#	Descriptors	Interpretation	Points
1	Distinguishing sounds,words, simplesentences in oral andwritten communication.	1. Pronounces sounds clearly and correctly. 2. Distinguishes between a word and a phrase in oral and written communication. 3. Clearly pronounces words and phrases in oral and written communication. 4. Recognizes words, and phrases in an unfamiliar text. Makes simple phrases according to the model, using the learned vocabulary (according to Akelius).	
2	Oral communication. Making simple sentences.	1. Uses the learned rules for composing an oral message. 2. Selects and correlates a simple sentence with an illustration. 3. Uses courtesy formulas appropriate to the situation.	
3	Making a simple and short dialogue on the proposed topic.	1. Reproduces simple politeness formulas in specific communication situations. 2. Makes simple sentences according to the model (Akelius). 3. Uses rules for starting, continuing, and ending dialogue.	
4	Reproduction of simple answers and questions corresponding to thesituation, text, image,anddialogue	1. Makes simple questions on the proposed topic. 2. Makes short questions based on informative text or dialogue. 3. Answers questions like: Who? What? How? What is he doing? When? Where? 4. Correctly uses the structure of the interrogative sentence.	
5	Reading familiar textaloud	1. Reads all words correctly. 2. Reads expressively with the right intonation. 3. Understands the meaning of each sentence.	
6	Conversation	1. Correctly builds simple sentences. 2. Formulates short answers. 3. Uses vocabulary appropriate to the topic of conversation.	
7	Writing / writing offsimple sentences	1. Correctly writes down familiar words. 2. Writes neatly. 3. Writes down the icons with the letter, punctuation marks.	
8	Following the Instructions / instructions of the teacher	1. Understands instructions correctly. 2. Follows the instructions in the order given (open notebook, pass the book, open the book at page, etc.).	
9	Group Collaboration	1. Demonstrates willingness to communicate in a group. 2. Accepts the ideas of classmates. 3. Knows how to listen and hear the partner (tolerance to a different opinion).	

5. Discussion

Blended learning has undoubted advantages in teaching a foreign language. It creates a comfortable learning environment, allows to set an individual trajectory, use and alternate different methods to master a new language. The experience of working with the Akelius application determined the key points for teaching a foreign language: the possibility of inclusion in the structure of a traditional lesson, the time limit for using the application, assessment through descriptors that consider the achievements of students, motivating them to further results.

There is a similar experience with the Akelius application for learning Greek, mainly for an adult audience [12]. The work is a theoretical description of the key points in the study of foreign languages, including approaches to language learning, the creation of a learning environment, features of lesson planning. The Greek educators note the importance of creating special "workstations" for language learning; and also determine the scaffolding as the main strategy when working with the application, which includes modeling various situations, working with clusters.

The authors' study takes into account the realities of education, the language situation in Kazakhstan, and considers ways of learning Russian as a foreign language, mainly for children of primary school age. The authors of the article have developed a series of blended learning lesson plans for levels A0-A2.

6. Conclusion

The Akelius application is a complementary tool to the existing traditional teaching materials for educators. An important advantage in using the platform is its flexibility, the ability to vary topics, chapters, exercises, assignments, embedding them into the lesson plan. The blended learning format using the application provides teachers with the opportunity to improvise, creatively use the opportunities that the tablet provides. Moreover, the Akelius application helps to organize extracurricular lessons. It becomes possible to plan various models of lessons, i.e. various in organization, content, and structure; the teacher has the choice and freedom of his own methodological decisions.

7. Acknowledgements

8. References

[1]   Malova, N.V. Express Survey in a Blended Learning Model: Tasks, Methods and Means of Conducting. Azimut nauchnykh issledovanii: pedagogika i psikhologiya = Azimuth of Scientific Research: Pedagogy and Psychology. Vol. 9, No. 4 (33), 2020, pp. 174-176, doi: https://doi.org/10.26140/anip-2020-0904-0036 (In Russian).

[2]   Glotova, A.V. Blended Learning Models in the Higher Education System: Theory and Practice. Vestnik NTsBZHD [Bulletin of the Scientific Center for Life Safety]. Vol. 3 (45), 2020, pp. 38-48. (In Russian).

[3]   Blinov V.I., Yessenina Ye.Yu., Sergeyev I.S. Models of blended learning: organizational diagnostic typology. Vysshee obrazovanie v Rossii [Higher Education in Russia]. Vol. 30, No.5, 2021, pp. 44-64. DOI: 10.31992/0869-3617-2021-30-5-44-64. (In Russian).

[4]   Timkin S. Student motivation in blended learning model. Vysshee obrazovanie v Rossii

[Higher Education in Russia]. Vol. 9, 2008, pp. 116-119. (In Russian).

[5]   DreamBox Learning Marketing Team. 6 Models of Blended Learning, 2013. URL: http://www.dreambox.com/blog/6%models%blended%learning.

[6]   Loginova A.V. Blended learning: advantages, limitations, and threats. Molodoy uchenyi [Young researcher]. Vol. 7, 2015, pp. 809-811. URL: https://moluch.ru/archive/87/16877. (In Russian).

[7]   Abramova S.V., Boyarov Ye.N., Stankevich P.V. Implementation of blended learning in modern education. Sovremennye problem nauki i obrazovaniya [Current problems of science and education]. Vol. 5, 2020. URL: https://science-education.ru/ru/article/view?id=30113 (in Russian).

[8]   Prosvirkina I.I., Sadretdinova T.A., Yakhno M.D., Frolova A.M. Using the blended learning models for teaching speaking. Philologicheskie nauki. Voprosy teorii I praktiki [Philology Sciences. Theory andpractice issues]. P.4, Vol.12 (78), Tambov, 2017, 202-205. (In Russian).

[9]   Balykhina T.M. Methods of teaching Russian as a foreign (new) language: Manual for teachers and students. Moscow, 2007, 185 p. (In Russian).

[10]   Vokhmina   L.   URL: https://docplayer.com/67332329-Trudnosti-formirovaniya-grammaticheskih- navykov-pri-kommunikativno-deyatelnostnom-podhode.htm. (In Russian).

[11]   Akelius Russian Language Course. URL: https://languages.akelius.com/subjects/ru/2034.

[12]   Blended learning using the Akelius digital language learning platform. Teacher guidance manual,   2019.   URL: https://www.teach4integration.gr/wp-content/uploads/2020/03/AkeliusENG-1.pdf.

Rethinking the Role of Digital Resources to Increase Students' Motivation in Terms of COVID-19

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Abstract

The aim of our study is to identify the role of digital resources, mainly web and mobile applications in increasing students' motivation in terms of distance learning caused by COVID-19. Pandemic has brought the great change into the education system nearly of all countries around the world influencing all the aspects of human being life. The countries closed their borders, public places were closed and stopped their activity, people start to communicate only via Internet connection. And it has led to the serious and urgent alterations in the education sector.

Now this time has passed, and we have time to rethink what happened, identify problems and make predictions for the future. The unpredictable variability, environmental and epidemiological instability of the situation around the world has shown that countries should always be ready for full distance learning, analyze what difficulties have arisen with this format of education, and what attempts should be made to prepare the education system for all occasions. The lack of analysis and systematic research into the issues of online learning during the pandemic in Kazakhstan represents the scientific novelty of the topic.

In March 2020, all the schools, colleges and universities in Kazakhstan had to move step by step to the learning process in the online educational environment; education process began to have a distance format. Information technologies became the connecting bridge between the student and school. Online education platforms and format do not suppose mandatory attendance at school. As a result, from the first days teachers started to feel the difficulties in involving students into the learning process, they were "relaxed" to some extent. The motivation of students have been dramatically reduced. Teachers have mentioned that the "decrease in motivation for subjects of natural sciences, and a foreign language in particular, became noticeable already in the first months of coronavirus restrictions". Consequently, one of the most challenging tasks of the teacher during that large-scale online distance learning was to support the motivation of students, to awaken interest in lessons in general and in a foreign language in particular.

So, our research is devoted to the qualitative and micro quantitative study of use of digital resources as web and mobile applications to increase students' motivation during pandemic education in the case of Foreign Philology and Translation Studies department of Al-Farabi Kazakh National University. It is one of the leading universities of the country with the highest number of students. A focus group questionnaire have been held online among English teachers of the department.

1. Introduction

During the pandemic we made sure that distance learning could compete with the normal one. It has become a main form of online learning. Despite the very fact that distance learning was not so relevant until 2020 in our country, current global issues show that this type of education is already in high demand.

Education system of the country faced the first obstacle in the form of human resistance to change (Kurt 1945 [1]; Coch and French 1948 [2]; Folger and Skarlicki 1999 [3]; Oreg 2003; 2006 [4]). Both teachers and students, and their parents were not ready for a complete transition to distance learning. On the part of teachers, a lot of methodological organizational work was required in order to gradually prepare children and parents for new formats of learning, both at the psycho-emotional and

physiological levels. Students quickly lost interest in classes, or could not fully immerse themselves in the lesson at an unconscious level due to the lack of familiar physical and spatial close contact, and sensations. They couldn't "accept and recognize" this format of education. Particular difficulty was felt in the elementary grades, where children could not follow the instructions of the teacher without adults. In high school and universities, where students were well versed in gadgets, the main problem was the rapid loss of interest and motivation in online lessons.

And in this case digital resources, websites, educational mobile applications have become an integral part of online learning. They served as some element of "capturing" the attention of students and a didactic variety of the "unaccustomed" lesson, where the lesson itself, the teacher and the student seemed not so "real", but virtual, and it would be possible in the middle of the lesson not to listen, not to do the task, and even get distracted. And in this article we would like to define the role of digital resources in motivating students with the help of quick micro survey with participation of the representative English teachers of Al-Farabi KazNU.

2. Teaching issues during COVID-2019 in the international context

The situation in education sphere during pandemic all around the world was well described by Fernando Reimers: "The COVID-19 pandemic has caused the most important for the whole history of failure in functioning education systems, which affected nearly one point six billion students in over than one hundred and ninety countries and on all six continents. Closure of schools and other educational institutions were suffering from 94 percents the worldwide student population, and in low-income countries and with a lower middle income the figure is 99 percent" [5]. At the same time, it should be noted that the pandemic forced innovations in education and made us "rethink the crucial role of teachers and what's on governments and other key partner's lays constant duty to worry about educators" [5, p. 2]. A similar statement has been announced by United Nations in Policy Brief: Education during COVID-19 and beyond "On the other hand, this crisis has stimulated innovation within the education sector. We have seen innovative approaches in support of education and training continuity: from radio and television to take-home packages" [6].

In 2020 ECLAC (Economic Commission for Latin America and the Caribbean) and UNESCO released a handbook entitled Education in the time of COVID-19, where they discuss the issues of transforming to distance learning in the case of 33 countries of Latin America and the Caribbean [7]. In 2020 Fernando Reimers (Global Education Innovation Initiative, Harvard University), Andreas Schleicher (Organisation for Economic Co-operation and Development), Jaime Saavedra (The World Bank), Saku Tuominen (HundrED) released a handbook Supporting the continuation of teaching and learning during the COVID-19 Pandemic Annotated resources for online learning and A framework guide an education response to the COVID-2020 stating that "COVID-19 Pandemic is a quintessential adaptive and transformative challenge for educators" and present collection of three types of resources: Curriculum Resources; Professional Development Resources and Tools [8]. In 2021 Kelly Medellin (Midwestern State University, USA), Dittika Gupta (Midwestern State University, USA) and Kym Acuña (Midwestern State University, USA) released a book Teaching Strategies During a Pandemic: Learnings and Reflections, where they also focus on the problem of virtual online pedagogy. They try to answer the question "During a pandemic with school online and students socially distanced in person simultaneously, how could teachers still provide cooperative learning experiences that give students opportunities to collaborate in class while continuing to use best practices like the 4Cs (communication, collaboration, critical thinking, and creativity)?" [9]. Brochure by Andreas Schleicher called The impact of COVID-19 on education - Insights from Education at a Glance 2020 also discusses educational problems in the frame of pandemic, and one of them is teachers' preparedness to support digital learning [10].

On the same problem of engaging students in virtual learning was discussed in a Handbook of Research on Transforming Teachers' Online Pedagogical Reasoning for Engaging K-12 Students in Virtual Learning by Margaret L. Niess (Oregon State University, USA) and Henry Gillow-Wiles (Oregon State University, USA) (2021) [11]. We see that the whole education community focused mostly their attention on the role of a teacher during pandemic and challenges it brings.

3. Teaching during COVID-2019 in Kazakhstan

3.1. Pre-pandemic context of IT use in education system of Kazakhstan

The Law of the Republic of Kazakhstan "On Education" lists the main tasks of the country's education system. One of them: "informatization of the education system, the introduction of new learning technologies, access to international communication networks" [12]. The state began computerization of schools and higher educational institutions, equipping classrooms with interactive whiteboards and the Internet. Teachers and lecturers were organized advanced training courses on mastering digital technologies. This continues to this day. As more and more advanced and new information technologies appear. Although the implementation of this task does not occur at the same level throughout the country (for example, the quality of the Internet and the equipment of classrooms in schools in remote areas). The National Center for Advanced Training of Teachers annually periodically conducts mandatory certified courses, where digital literacy training and the use of modern teaching methods are an obligatory component.

Thus, one of the directions of education missions of the country sounds like "in order to meet the needs of the information society in the 21st century, it is necessary to solve the following tasks in the field of education: to show the quality of education through the effective use of computer technology, the Internet, a telecommunications network, electronic and telecommunication means, multimedia electronic textbooks in the educational process".

3.2. Pandemic teaching context and readiness for digital learning

The head of UNICEF in Kazakhstan Arthur van Diesen thinks that "Kazakhstan is well prepared for digital learning and education. Internet is available for the 78 percents of the population, there are very cheap tariffs for mobile data transmission, most schools are supplied with the Internet connections and there are digital educational platforms across the country. However, the penetration of the web is uneven across regions; the standard of knowledge transmission also causes problems, also because of the quality of distance education. Urgent transition to distance learning was unpredictable both for teachers and students. Consistent with UNICEF, the transition to distance learning may be a big challenge for teachers even in the case of favorable conditions; their work may be stressful and confusing" [13].

Since March 16, 2020 KazNU has introduced distance learning technologies (DOT) in two information and educational systems - "Univer" (univer.kaznu.kz) and distance learning "MOODLE" (dl.kaznu.kz). In the learning process, auxiliary digital services "ZOOM", "Microsoft Teams", "DL", etc. are also used [14]. The developed IT infrastructure of the university allows today to cover all students of 16 faculties with distance learning. The process of distance learning is supervised by three structures of the university. So, in the system "Univer" you can trace the activities of the educational process.

3.3. Use of the Internet and digital resources in an educational process during COVID-2019 in Kazakhstan

As show results, the country universities before the pandemic actively used such platforms as Platonus and Moodle, and during the pandemic, some developed their own platforms while others used well-known ones such as Zoom, Microsoft Teams, Webex Cisco and others. The main state online platform for secondary education was Bilim Land.

Distant learning supposes use of a huge variety of educational software tools that form electronic educational complexes and space. Online or mobile app training programs or platforms give a teacher an opportunity to manage educational activities and exercises, and at the same time to enhance the quality of the material being learned. As a rule the developed training programs or platforms should be based on the curriculum and meet all the requirements for their content. Such kind of programs is used by students to sharpen their minds, point of view and introduce new material.

While interviewing teachers they said that in order to form a positive motivation for students in learning foreign languages they penetrate innovative information and communication technologies into the learning process. For example, "English in Action", "Movie Talk", "LinguaLeo", "Quizlet", "Google Class" and others. "The educational association English in Action which was founded in 1992 is specialized in short and intensive courses in English. With the help of interactive lessons, students have a great opportunity to master their foreign language skills by interacting with native speakers and learning new words and grammar structures [15].

"Movie Talk" is dedicated to practice with language material with the help of films. The program contributes to enhance listening skills and comprehension. All films are provided with subtitles and a very convenient interface that gives the opportunity to quickly switch through the episodes in the film one needs. This course may be used for the purposes of memorizing new vocabulary, together with mastering speaking skills and creating dialogues.

"Lingua Leo" is an online service for English learning, in which grammar, lexical, audio courses and a dictionary are accessible, in which learners can find words on any topic and language learning purposes and learn them.

Quizlet is an online program for learning and mastering new words with the help of flashcards. This program is appropriate for distance learning format, because it gives a chance the teacher to independently make thematic sets of words.

"Google Class" is an innovative online distance learning platform where a teacher can create the whole lessons with attaching links, supporting with audio and video files or podcasts, and creating different kind of test exercises for assessment.

The wordwall.net website is an online service where words games are brought to the digital world, which contributes to modifying and illuminate usual English lessons, as well as fast and easy to do. This site provides learners with exciting activities that enrich and strengthen learners' vocabulary.

The next is web quest technology, which is one of the innovative technologies which meets the basic requirements of teaching of different subjects in a modern school. It brings together modern teaching methods with the benefits of interactive information technologies.

A web quest aimed to be used in a pedagogical sphere is a problem task with the elements of a role-playing game, where the Internet resources are used. They serve as an effective didactic tool in the formation of foreign language communicative competence of students since: firstly, it contributes to the increasing students' motivation by forming a free creative atmosphere in the cases of both group and individual web quests; supplying all information resources that in need, helps to recognize and show the creative potential of students and prompts them to achieve success in the final result; secondly, it hugely modifies the educational content of the subject with a variety of professionally oriented material through the use of the possibilities of Internet resources in accordance with the didactic principles of visibility, accessibility, scientific character, professional orientation, taking into account the individual and age characteristics of students, modernity and novelty of information.

4. Findings and analysis

We have created and conducted an online survey among one hundred English teachers of the department of Foreign Philology and Translation studies on Use and role of web-sites and mobile apps during COVID-19 pandemic.

The first question aims to define what the most difficult barrier was during massive online learning.

Table 1
Answer results to the first question

Options	Answers	Number of respondents
Organizing the lesson	20%	20
Online classroom management	10%	10
Motivating students in the online environment	70%	70
Other (please specify)	0%	0
Total	100%	100

Q1

What was the most challenging during pandemic teaching?

Answered: 100 Missed: 0
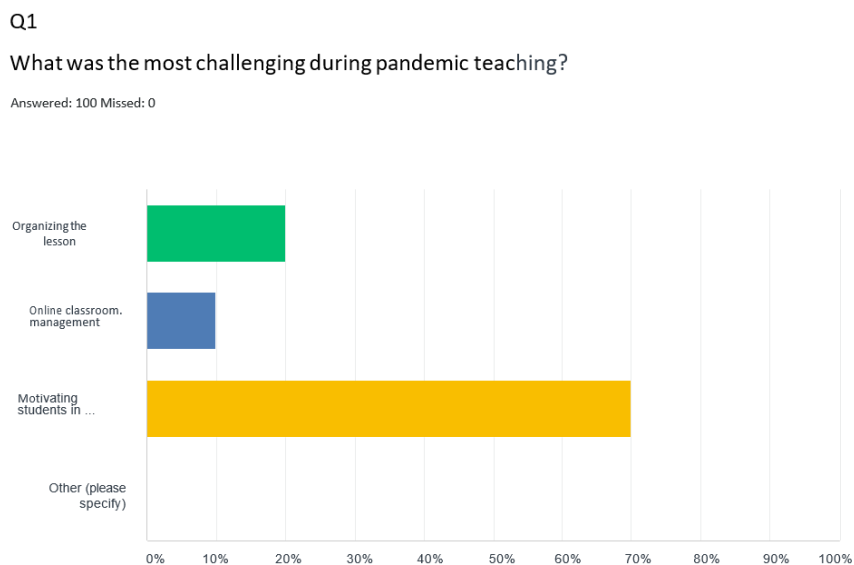
Figure 1: Question 1

We see that 70 percent of participating teachers answered that they mostly faced difficulties in motivating students during "pandemic" learning.

The second graph shows the portion of use of online web-sites and mobile apps.

Q 2 What was the portion of online web-sites and mobile-apps use during your lessons?

Answered: 100 Missed: 0
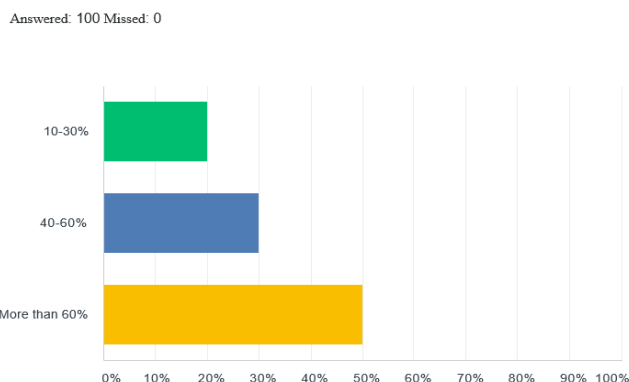
Figure 2: Question 2

Table 2

Results of the answers to the second question

Options	Answers	Number of respondents
10-30%	20%	20
40-60%	30%	30
More than 60%	50%	50
Total	100%	100

It means that most amount of teachers answered that the portion online web-sites and mobile apps use in their lessons was more than 60 percents.

The third question aims to define the frequency of use of IT and digital resources.

Q3

How often did you use IT and digital resources in your lessons?

Answered: 100 Missed: 0
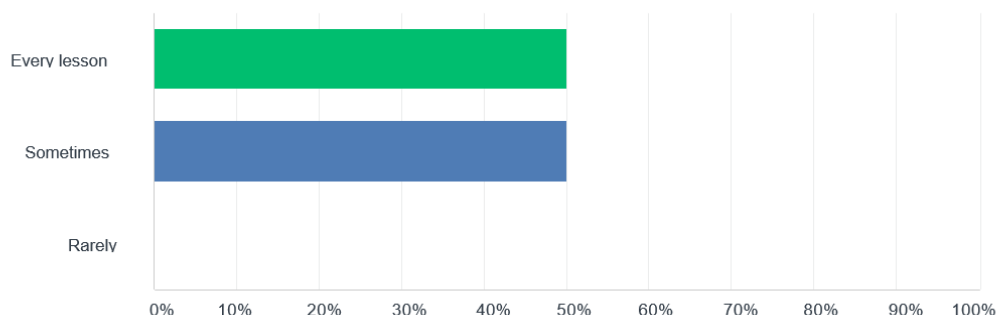
Figure 3: Question 3

Table 3
The results of the answers to the third question

Options	Answers	Number of respondents
Every lesson	50%	50
Sometimes	50%	50
Rarely	0%	00
Total	100%	100

From the graph we see high rate of use IT and digital resources.

The next question helps us to clarify what kinds of sources have been mostly used: educational, checking understanding or learning through games.

Q4

What kind of mobile apps did you mostly use?

Answered: 100 Missed: 0
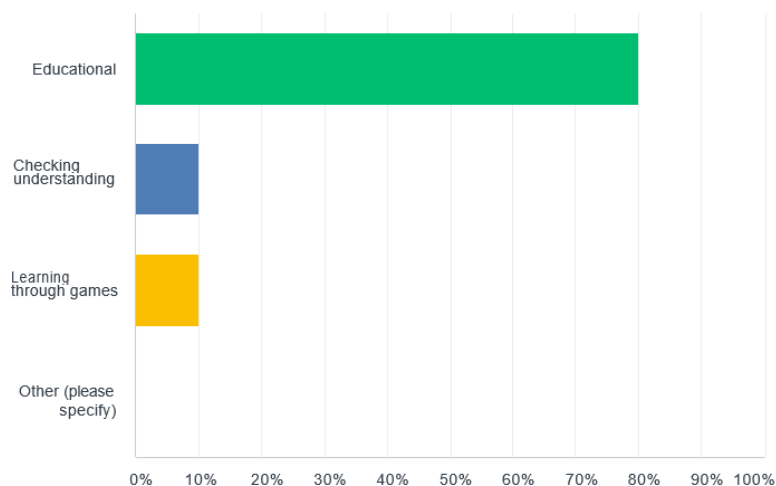
Figure 4: Question 4

Table 4
The results of the answers to the fourth question

Options	Answers	Number of respondents
Education	80%	80
Entertainment	10%	10
Checking understanding	10%	10
Other (please specify)	0%	0
Total	100%	100

The fourth question and answers of teachers reveal the fact that teachers mostly use educational web-sites and mobile apps rather than entertainment or gaming ones. And the next question is:

Q5 Did online-websites and mobile apps help you to raise the interest of students?
Answered: 100 Missed: 0
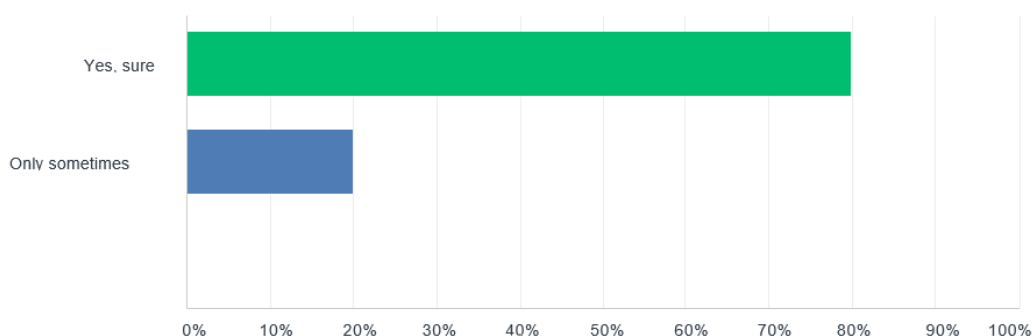
Figure 5: Question 5

Table 5
The results of the answers to the fifth question

Options	Answers	Number of respondents
Yes, sure	80%	80
Only sometimes	20%	20
No	0%	0
Total	100%	100

To the question 80 percent of teachers answered: 'Yes, sure". It means that use of online web-sites and mobile apps played a great role in raising students' interest during pandemic education. And there is a last question:

Q6 Do you still continue use IT and digital resources during offline learning?

Answered: 100   Missed: 0
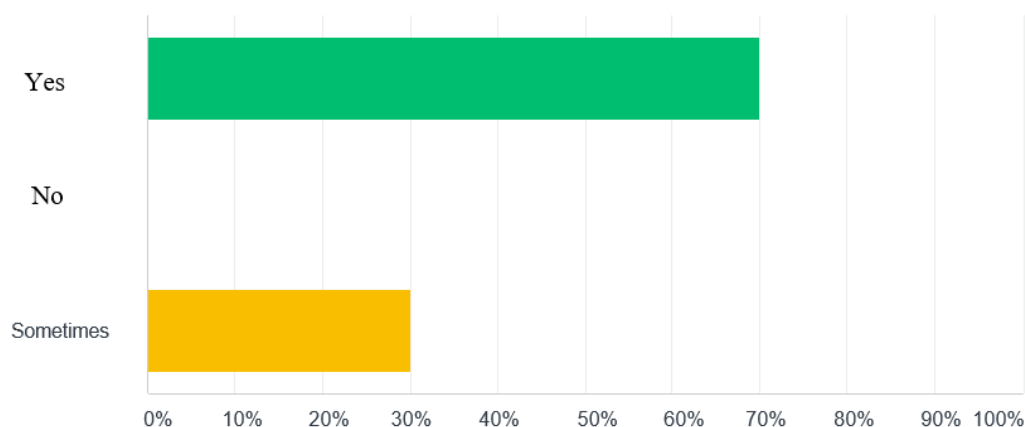
Figure 6: Question 6

Table 6
The results of the answers to the sixth question

Options	Answers	Number of respondents
Yes	70%	70
No	0%	0
Sometimes	30%	30
Total	100%	100

In short, this survey shows that motivating students during online learning was one of the difficult tasks of teachers. And IT and digital resources have become an integral part of the lessons assisting in raising or keeping their interest on in the case of 'new' type of lesson. The proportion of such resources and frequency rate was high and teachers still use them for different kind of teaching operations.

5. Conclusion

Finally, we can surely say that IT and digital resources played a huge role during pandemic learning in case of increasing students' motivation and still remain as one of the essential parts of organizing learning process. They enlarge the field activities for the teacher, and help to involve the students into learning process effectively, to interest them and to attract their attention with a great diversity of tasks that provide new educational technologies.

On the other hand, use of IT and digital technologies, online resources and different kind of educational platforms for distance education needs more planning and preparation work from the both teachers and students rather than all other forms of education. Developing (organizing, content and design) of materials and programs using online web-sites and mobile apps requires teachers to be smart and digitally literate.

In the part of an article 'Teaching issues during COVID-2019 in the international context' we see so many problems defining and teaching assisting publications in abroad, but no one in Kazakhstan. We should develop such kind of discourse and improve methodological and technical basis of online study since distant learning may be in need any time. Thus we hope that survey and analysis to find out weak

and strong sides of education system of the country in the case of any kind of pandemic or urgent situations will take place in other educational institutions and get more large scales.

6. Acknowledgements

7. References

[1]   L. Kurt, The research center for group dynamics at Massachusetts institute of technology, Sociometry. 8 (1945) 126-136.

[2]   L. Coch, J.R.P. French, Overcoming resistance to change, Human Relations. 1.4 (1948) 512-32.

[3]   R. Folger, D.P. Skarlicki, Unfairness and resistance to change: hardship as mistreatment, Journal of Organizational Change Management. 12.1 (1999) 35-50.

[4]   S. Oreg, Resistance to change: Developing an individual differences measure, Journal of Applied Psycholog. 88 (2003) 680–693. Personality, context, and resistance to organizational change. European Journal of Work and Organizational Psychology. 15.1 (2006) 73–101. DOI:10.1080/13594320500451247.

[5]   F. M. Reimers, Primary and Secondary Education During Covid-19, Harvard Graduate School of Education, Harvard University Cambridge, MA, USA, 2022.

[6]   United Nations. Policy Brief: Education during COVID-19 and beyond, Teaching & Learning in COVID-19 times study. URL: https://omeka.cloud.unimelb.edu.au/teaching-and-learning-in-a-pandemic/items/show/92.

[7]   United Nations, ECLAC. Education in the time of COVID-19, 2020. URL: https://repositorio.cepal.org/bitstream/handle/11362/45905/1/S2000509_en.pdf.

[8]   F. Reimers, A. Schleicher, J. Saavedra, S. Tuominen, Supporting the continuation of teaching and learning during the COVID-19 Pandemic, Annotated resources for online learning and A framework guide an education response to the COVID-2019, 2020. URL: https://www.oecd.org/education/Supporting-the-continuation-of-teaching-and-learning-during-the-COVID-19-pandemic.pdf.

[9]   K. Medellin, D. Gupta and K. Acuña, Teaching Strategies During a Pandemic: Learnings and Reflections, 2021. DOI: 10.4018/978-1-7998-7222-1.ch010.

[10]   A. Schleicher, The impact of COVID-19 on education - Insights from Education at a Glance 2020, 2020. URL: https://www.oecd.org/education/the-impact-of-covid-19-on-education-insights-education-at-a-glance-2020.pdf.

[11]   M. L. Niess, H. Gillow-Wiles, Handbook of Research on Transforming Teachers' Online Pedagogical Reasoning for Engaging K-12 Students in Virtual Learning, 2021. DOI: 10.4018/978-1-7998-7222-1.

[12]   Law of the Republic of Kazakhstan dated July 27, 2007 No. 319-III "On Education".

[13]   A. Izimova, Challenging times for Education in Kazakhstan due to the pandemic, 26 April 2021. URL: https://blogs.worldbank.org/europeandcentralasia/post-covid-education-kazakhstan-heavy-losses-and-deepening-inequality.

[14]   KazNU News. Study online, 14 March, 2020. URL: https://www.kaznu.kz/ru/3/news/one/19423/.

[15]   D.A. Zanozin, Principles of developing a training program for distance learning in the course "Pedagogical technologies" using HTML language, Neofit 4 (2019) 42-43.

Competency-Based and Technologically Enhanced Teaching and Learning: Data Science Courses and Tuning Methodology

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Abstract

The article considers the problems of competency-based and technologically enhanced teaching and learning in Higher Education and as an example, Data Science teaching at International Information Technology University (IITU) is taken. The problem of a competency-based approach in education, the essence of the concepts of "competency" and "competence" is devoted to many scientific and educational fields. The study is based on Data Science Subject area, the development of competencies for educational programs, based on the use of technologically enhanced learning (TEL). At the same time, there is a need of Tuning the development of similar specific competencies and learning outcomes throughout the program. So, the architecture of a collaborative virtual environment (CVE) is based on the pedagogical requirements of Tuning methodology and also includes distinct types of virtual space and TEL.

The combination of both approaches involves the development of students' skills that allow them to act in new, technologically enhanced environment, uncertain, problematic situations for which it is impossible to develop the appropriate means in advance. Such methodologies as generalization, observation, comparative analysis in the study of educational documentary sources, methods of interviews and questionnaires, the use of indirect indicators of the involvement of not only participants in the educational process, but also other interested parties, including employers, consultations with the stakeholders and analysis necessary to classify the features of the studied object allowed the authors to present the results of their researches, an analysis of the experience of modernizing the courses of the educational program for the bachelor's degree "Data Science". An algorithm for reforming the Data Science subject area curricula in accordance with the TUNING methodology was developed and some recommendations for the preparation of educational programs are also given.

Keywords

TEL, generic, subject-specific, competence, Tuning methodology, Data Science, assessment, courses, curricula, program

1. Introduction

Information technology (IT) is one of the leading and rapidly developing sectors of the economy, so global changes are taking place in it in various areas, for example, in human resource management, education and marketing, design and medicine, and digital data analytics. The constant acceleration of data growth is an integral element of today's realities.

Social networks, mobile devices, data from measuring devices, business information are just a few of the types of sources that can generate huge amounts of data. Currently, the term Big Data has become quite common. Far from everyone is still aware of how quickly and deeply technologies for processing large amounts of data are changing the most diverse aspects of society.

Changes are taking place in various areas, giving rise to new problems and challenges, including in the field of information security, where such important aspects as confidentiality, integrity, availability, etc. should be in the foreground.

Organizations have accumulated huge amounts of data, many of which are poorly structured. Their processing and analysis are becoming more relevant as business processes accelerate, competition intensifies, and the price of a timely and correct decision rises. In recent years, personal data posted on the Internet, especially in the form of "social networks", have also become more accessible for analysis.

The digital industry of the country will evolve thanks to specialists capable of working in the field of analysis of multidimensional data of a complex structure. The functional responsibilities of such

specialists include the following: a systematic approach to solving problems related specifically to the methodology for processing data of various types and types, streamlining access to data storages, restructuring storage structures, the efficiency of processing procedures, and analyzing big data. The classical scheme for training analysts does not meet these challenges, since along with the rapid development of the digital industry, educational criteria for the training of such specialists are changing, and professional and general competencies are also expanding.

2. Related work

A competency-based education (CBE) is a topic of discussion in many areas of education. Information technologies (IT) is a field where competency-based learning plays a significant role.

In 2017, a considerable curricular [1] report on information technology was published. This document provides comprehensive and detailed guidelines for building high-quality undergraduate educational programs for the IT domain based on CBE. The cornerstone idea of the document is a triplet that composes the term "competency". According to the authors, competency comprises three dimensions: knowledge, skills, and dispositions. Where "knowledge" is a collection of fundamental theoretical education with awareness of its possible practical application; "skills" is a set of capabilities accumulating over time, practice, and interaction with the surrounding world; and "dispositions" are a number of characteristics which can also be referred as soft skills.

The aforementioned triplet is also applicable to the sub-domain of IT - Data Science. Shirani [2] highlights the problem of a growing gap between the industry needs and supply from the higher education system. According to Shirani, the main aim of CBE is to equip students with knowledge and skills sufficient for solving practical tasks and problems. This also refers to the so-called problem-based learning (PBL). Furthermore, the author presents a deep survey of the job market and the collection of requirements that potential employers post for future candidates. It is worth noticing, that other than hard skills, a decent list of soft skills are also presented.

In [3], [4], and [5] Danyluk et al. present an extensive document describing the best approaches and practices for Data Science curricula creation. The document starts with describing the current view of the Data Science domain, where authors, in particular, present their survey of both, academic and industry representatives. The following chapters consist of the recommendations for curricula building, Data Science graduates' characteristics, and the challenges list that institutions may face with. The final part of the document - the Appendix, consists of a tremendous volume of competencies lists among 11 knowledge areas (i.g. Analysis and Presentation, Big Data Systems, Data Mining, Machine Learning, etc.).

3. ELBA Project

ELBA [6] stands for - "Establishment of training and research centers and Courses development on Intelligent BigData Analysis (IBDA) in Central Asia". Respectively, the two main aims of the project are - a) development of the Data Science courses; b) the establishment of research and training centers capable of solving high-performance computing tasks in Central Asian universities. The project is funded by the Erasmus+ program. It consists of seven work packages (WP), among them "Competence building" WP2 is one of the core packages, with the aim to enhance the academic capacity of CA partner staff in the field of Data Science. Below, are the key steps taken toward achieving the goals of the project:

- Survey and analysis of an academic and industrial sphere where IBDA is mostly demanded in CA countries;
- Analysis of the present programs in CA universities (IITU in particular), and EU programs on IBDA;
- Mobility of pedagogical staff to EU partner universities for training purposes;
- Development of the new, and enhancement of the present courses in Data Science.

As the result of the steps mentioned above, in IITU:

- Surveys and meetings with industry representatives (financial, telecom, software companies) were held. The list of requirements for graduates' competencies have been formed;
- The present courses were deeply analyzed. The courses which repeat the content of each other have been detected and optimized;
- The new courses with an emphasis on industrial needs and real-world problem-solving were established;
- The training lab fully equipped with modern high-performance hardware has been opened.

4. Results

Any sphere of the digital society needs such a model of a modern specialist who will possess "soft skills", as well as general cultural and general professional competencies. To date, the number of vacancies for specialists with interdisciplinary knowledge is in great demand in the Kazakhstani labor market, while there is an obvious shortage of specialists with an equal degree of formation of the necessary competencies. "The scarcity is getting worse with the development of related technologies: 3D printing, augmented reality, cloud computing, smart environment, etc."

A data analyst is a specialist who must have the following competencies in the course of mastering this educational program:
- Generic competencies;
- Ability to develop general knowledge;
- Knowledge of the professional field;
- Ability to apply knowledge in practice;
- Ability to manage information;
- Commitment to quality results;
- Ability to model, design and forecast;
- Ability to carry out research applying appropriate methods;
- Ability to use information and communication technologies;
- Ability to make a trend of sustainable development, taking into account the profiling activities;
- Ability to formulate and solve scientific problems, conduct research to obtain new scientific and practical results [7].

The Data Science educational program at International information technology University (IITU) provides for the formation of such subject - specific competencies as:

1. Knowledge of research methodology in the field of data science (setting research objectives, data collection, data processing and transformation, data survey, model building and method selection, presentation and visualization of results), methods and approaches to standardization and data transformation, machine learning methods (basic methods of classification and clustering), ways of organizing data storage.

2. Ability to solve applied problems of data processing and analysis in order to identify hidden dependencies in them, apply the elements of probability theory and mathematical statistics that underlie the models and methods of data science, correctly select machine learning methods for solving practical problems, organize the researcher's working environment in data science (Jupyter), use packages and libraries for machine learning (Matplotlib, SciPy/NumPy, Pandas, Scikit-learn).

3. Ability to master the skills of working with tools for organizing data storage, the skills of software implementation in R and Python of data processing and analysis tools, the skills of data preprocessing and visualization;

4. Ability to master the skills of complex analysis and analytical generalization of the results of scientific research using modern achievements in science and technology, the skills of independent data collection, study, analysis and generalization of scientific and technical information on the research topic, the ability to create theoretical models that allow predicting the properties of the objects under study, and develop proposals for the implementation of the results [8].

Since the university is a project partner of the European Erasmus + program "Establishment of training and research centers and courses development on intelligent big data analysis in Central Asia-

ELBA», some specific professional competencies for data science specialists were also developed by the project members.

They are:

1. Knowledge of time series analysis concepts and applications;
2. Designing and building complex neural networks;
3. Implement and apply different neural network models using Tensorflow;
4. Develop and apply various predictive models using methods such as decision tree, support vector machine, Naive Bayes, etc.;
5. Visualize modeling results using data visualization tools;
6. Machine Learning Engineer (BSc) competencies:

- possess fundamental knowledge in Math for ML;
- perform a data analysis using statistical methods;
- prepare data for ML models training;
- possess theoretical knowledge about conventional supervised and unsupervised ML models (linear, instance-based, tree-based, etc);
- possess fundamental knowledge about ML metrics;
- train, validate, and test ML models;
- possess fundamental knowledge in Deep Learning basics;
- work (process) with different data types (images, audio, text);
- launch ML models into production;
- possess in-depth knowledge of ML metrics;
- possess in-depth knowledge in Deep Learning;
- perform scientific research in the Data Science field.

The problem for several IITU educational programs was the mismatch of expected competencies in courses that have the same content. The curricula of several educational programs of the university have in their list courses of the aspect of Data Science, which, having different names, have the same content (Table 1).

The need to unify the expected competencies within courses with the same content justified the use of the Tuning methodology, i.e. the harmonization of professional competencies. Thus, within the framework of the Machine Learning course, competencies were proposed that correspond to the content of all courses in this area.

Machine Learning Engineer (BSc) competencies:

- possess fundamental knowledge in Math for ML;
- perform a data analysis using statistical methods;
- prepare data for ML models training;
- possess theoretical knowledge about conventional supervised and unsupervised ML models (linear, instance-based, tree-based, etc.);
- possess fundamental knowledge about ML metrics;
- train, validate, and test ML models;
- possess fundamental knowledge in Deep Learning basics;
- work (process) with different data types (images, audio, text);
- launch ML models into production;
- possess in-depth knowledge of ML metrics;
- possess in-depth knowledge in Deep Learning;
- perform scientific research in the Data Science field.

Table 1
Courses of the aspect of Data Science

BioComputing	ECTS	DataScience	ECTS	Engineering Mathematics	ECTS	Computer Science	ECTS	Financial mathematics	ECTS	Big Data Analytics	ECTS	CSSE	ECTS	Cyberphysical systems	ECTS	Software Engineering	ECTS
Programming in Python	3	Programming in Python	3	Programming in Python	3	Programming in Python	5	Programming in Python	3	Introduction to Python and Libraries to DA and processing	5	Programming in Python language	4	Programming in Python language	4	Programming in Python language	4
Machine learning 1	5	Machine learning 1	6	Machine learning 1	4	DataScience 1	5	Machine learning	5	Introduction to ML	5	Introduction to DS	6	Introduction to DS	6	Introduction to DS	6
Machine learning 2	6	Machine learning 2	5	Machine learning 2	5	DataScience 2	5			Big data ingestion/storage	5	Exploratory data analysis	4				
Data analysis and visualization in Power BI	3	Data analysis and visualization in Power BI	3			Data analysis and visualization in Power BI	4			Data visualization	5	NoSQL Databases	6				
Database theory	5	Python for DataAnalysis	5			Database theory	5			Data modeling		Machine learning 1	4				
		Dynamic programming	6	Dynamic programming	6	Advanced Python	5	Dynamic programming	4	Big data processing	5	Machine learning 2	7				
		Research operation	6			Research operation	6	Research operation	6			Big data processing	7				
		Neural networks	6			Data Science and ML	4										
		Deep learning of inverse problems	6			Deep learning in compute	5										
		Advanced mathematics for ML	6														
		Deep learning for applied mathematics	5														
		Exploratory data analysis	6														

The need to harmonize competencies also caused the need to build a logical chain of all courses to achieve all the competencies of educational programs. Thus, the final trajectory of the formation of competencies is as follows (Table 2).

Table 2
The final trajectory of the formation of competencies

Financial mathematics	ECTS	DataScience	ECTS	Business analytics	ECTS	Information systems	ECTS	CSSE	ECTS	Software Engineering	ECTS
Machine learning	5	Machine learning 1	5	Applied Machine Learning	5	Analysis methods and big data processing	4	Machine learning and computer statistics	5	Machine learning and computer statistics	5
		Machine learning 2	5	Probability and statistics for DS	4			Advanced databases	4		
		Advanced database		Software design for DS	5			Operations research and optimization tehniques	5		
		Optimization methods for DS applications	5	Applied ML for image analysis	5						
		Numerical simulation using Python fo DS	5	Exploratory data analysis and visualization	5						
		Introduction to HPC with Mpi for DS	5								
		Deep learning in computer vision	5								
		Python\R for analysing data	5								
		Applied multivariate statistical analysis	5								
		Advanced data analysis	5								

In order to make sure that the competencies were formulated correctly, as well as to meet the requirements of the market, consultations were held with employers, representatives of several companies, alumni, as well as teachers, using the example of consultations conducted within the Tempus project TuCAHEA. The results of the analysis are presented in Figure 1.

In addition, the team members of the ELBA project conducted an Expectation survey for current students asking about the expectations they want to meet in the new course. The results were analyzed and presented at the project's academic Board meeting (Figure 2).
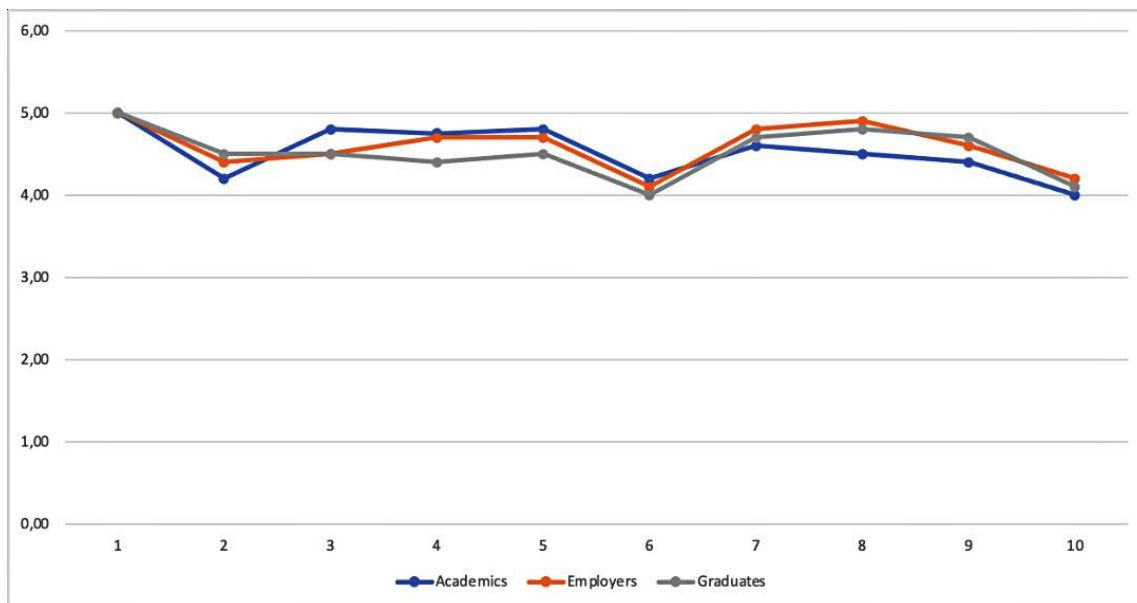
Figure 1: The competencies
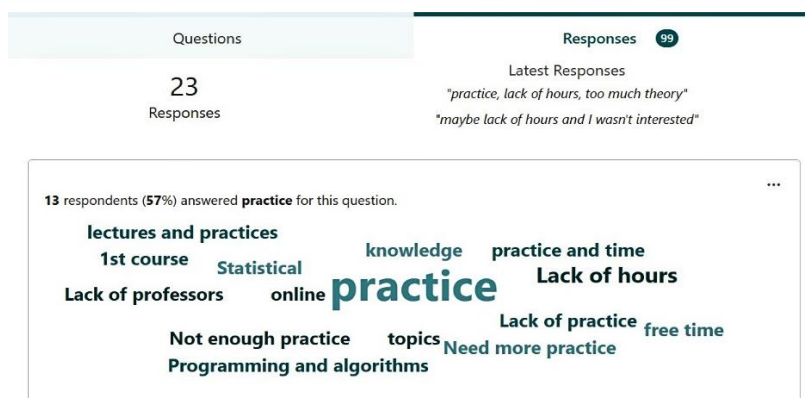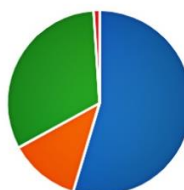
Figure 2: Expectation survey

An analysis of several different surveys results, as well as discussions on the correctness of the formulation of Generic and Subject-specific competencies of specialists in the field of Data Science, give reason to assert that in the modern digital world, an integrated approach to training specialists are needed.

5. Conclusion

Advances in technology over the past several years have taken data mining to staggering heights. Due to the digitalization of social life, the data scientist profession is in demand in almost all sectors of the economy. "Graduates can engage in analytics in private companies and government agencies, provide methodological and technological support for the activities of teams that work with big data." [9] A data scientist is often a member of an interdisciplinary team that includes a data architect, data engineers, domain analysts, and other professionals. A data scientist can find application of his skills in research activities. The need for data scientists is very high and will only grow in the near future. However, training such competent specialists is also a difficult task for educational institutions, since the acquired skills and knowledge quickly become obsolete. Hopefully, the formation of basic Generic and Subject-specific competencies is currently the foundation on which it is possible to develop subsequent competencies that will meet market requirements.

6. Acknowledgements

7. References

[1]   Task Group on Information Technology Curricula, "Information technology curricula 2017: Curriculum guidelines for baccalaureate degree programs," ACM, New York, NY, USA, 2017, Pages:165. ISBN:978-1-4503-6416-4.

[2]   Shirani, A. (2016). IDENTIFYING DATA SCIENCE AND ANALYTICS COMPETENCIES BASED ON INDUSTRY DEMAND. Issues in Information Systems, 17(4).

[3]   Danyluk, A., Leidig, P., McGettrick, A., Cassel, L., Doyle, M., Servin, C., ... & Stefik, A. (2021, March). Computing competencies for undergraduate data science programs: an acm task force final report. In Proceedings of the 52nd ACM Technical Symposium on Computer Science Education (pp. 1119-1120).

[4]   ACM Data Science Task Force. 2021. Computing competencies for undergraduate data science curricula. Association for Computing Machinery, New York, NY, USA.

[5]   Leidig, P. M., & Cassel, L. (2020, June). ACM Taskforce efforts on computing competencies for undergraduate data science curricula. In Proceedings of the 2020 ACM Conference on Innovation and Technology in Computer Science Education (pp. 519-520).

[6]   ELBA project official website, https://elba-project.eu/.

[7]   K. Isaacs, A. Najimitdinov. A. Tasbolat, TuCAHEA Tuning Central Asia Towards a Central Asian Higher Education Area, 2nd. ed., Dedizioni, Pisa, Italy, 2016. URL: http://www.tucahea.org/doc/TuCAHEA_GUIDELINESandREF_POINTS.pdf.

[8]   Big data analytics, 2021, URL: https://iitu.edu.kz/kk/articles/6b06103-analitika-bol_sih-dannyh-kk/.

[9]   Data scientist, URL: https://www.hse.ru/25professions/data_scientist.

Research and Application of Modern Teaching Methods to Attract Young People to the Field of IT

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Abstract

This article provides a comprehensive analysis of teaching methods to attract young people tothe IT sphere based on training in programming schools, learning technologies and the right approaches in the management of the organization. Effective methods of teaching children andadolescents aged 5 to 18 years, proper management of the organization for further mutually beneficial and fruitful work with higher educational institutions, the introduction of project, competitive and game elements in teaching children in programming schools, which will pavethe way for the main technical specialties in the future, are revealed in detail. As a result of the study, methods of attracting IT specialists at an early age at the expense of programming schools for the further development of the career of a young specialist in the IT industry were derived.

Keywords

Methods of attraction, programming schools, modern learning technologies, management of organizations, ways of organizing training.

1. Introduction

The sooner a child begins to learn IT, the faster he acquires those qualities and skills that not many adults have. The development of critical, logical and creative thinking, the ability to work in a team and solve social problems are only part of the advantages in teaching a child from an early age. In programming schools, the emphasis is primarily on the development of structural and sequential thinking.

This allows the child to move from easy to complex. True, only one structural thinking can notdo here, for this reason in programming schools special attention is paid to the creative development of the child, which will have a positive impact when creating games, sites and applications. In the modern IT industry, it is not enough to be a full-fledged unit and a cool specialist, the so-called soft skills are highly valued here, which includes the ability to work in a team and play the role of a cog in a complexsystem.

IT is a very broad and fast-growing sphere. We can say that everyone can find a direction and apply their strengths. In addition, the shortage of IT specialists in the market will remain for a long time, and the demand is growing every year.

This proof will be an article published on the official information resource of the Prime Ministerof the Republic of Kazakhstan dated May 20, 2022, within the framework of the National Project on Digitalization, the Head of State set the task of training at least 100 thousand highly qualified IT specialists by 2025.

For this reason, it is necessary to take a very responsible approach to the training of specialists from an early age and give programming schools a new breath, applying modern teaching methods and technologies.

Relevance of the research topic:

In Kazakhstan, there is a fairly high shortage of personnel in the IT sector. This was stated by the Minister of Digital Development, Innovation and Aerospace Industry Bagdat Musin. According to him, "IT vouchers will be issued annually for training in private IT schools. Thus, we support the market of private IT schools, and by 2025 20 thousand IT vouchers will be issued. This measure will allow everyone to retrain as IT specialists in first-class IT schools" [1].

According to a survey by one of the Big Four companies, KPMG, the main problem in the implementation of digital projects is an acute shortage of specialists. Employers noted that such

qualities as versatility, the ability to learn quickly and quickly switch from one technology to another are highly valued in specialists. Most digital projects are aimed at solving business processes and automating it, which will help eliminate duplication, inefficient costs and bureaucracy. This means that a specialist in the future will have to be able and understand the management of business processes.

As statistics in FORBES KAZAKHSTAN show, 65% of young professionals faced the problem of outdated programs, which, as it turned out, do not meet the needs of the modern IT market. To produce high-quality domestic IT specialists, we need to start with the basics and training programs of personnel from an early age [1].

1.1. Purpose of work:

The purpose of this study is to identify new methods of attracting talented youth to the IT industry of Kazakhstan and active application in action. Teaching children from an early age and giving career guidance, understanding of the IT industry to produce high-quality and consciously chosen personnel.

2. Literature review

As shown in article [2], students are introduced to programming with the Lego Mindstorms robotic system. The main factor is the use of virtual robotic environments, where developed programs are created and tested and subsequently implemented into a real model. This solves the problem of the insufficient number of LEGO systems available, which is a limiting factor for the learning process. In the study, a project-based learning environment was applied to primary school students between the ages of 10 and 15. To support complex academic disciplines, the program of the natural sciences course was organized a robotics design course. In project-based learning (PBL), students are given tasks and working in a team apply the principles of critical thinking. The use of visual programming and control technologies supports students' ability to learn discretely at the primary school level. Teaching robotics not only provides students with information about the creation of robots, but also helps to improve their knowledge and skills in the world of science [3].

Article [4] highlights the very rapid development of IT and where the problem of training qualified specialists comes from. One of the obvious problems of teaching programming within the school curriculum is the lack of a systematic approach. The idea of cooperation in software development is founded on project organization principles, which include the roles and duties of each team member (manager, designer, programmer, etc.), as well as the phases of a project and its life cycle. Each of the responsibilities played by team members has a foundation that should be established during the training process at school and university. Therefore, at present, employers require from specialists not only impeccable programming skills, but also the ability to take part in the team in the development of complex software systems, respectively, the teaching staff is faced with the task of forming the necessary skills in students. in addition to the area of technical skills, in social and professional settings. Since the majority of professors and lecturers actively employ visual multimedia materials when delivering new subject, visualization is no longer a novel idea in the educational process. The successful and effective teaching of programming in higher education institutions still faces several challenges. The programming learning system resembles the one from fifty years ago in several aspects.

The creation of a problem-semiotic technique, a form of successful synthesis of the aforementioned inventions in the article, could be the answer to this issue. It would combine problem and semiotic approaches, including their beneficial parts but without their particular drawbacks.

3. Analysis of innovative methods of teaching programming in programming schools

Training in technical specialties, unlike basic education, requires a separate approach, a set of knowledge in the field of mathematics and programming. Old programs and training models are becoming irrelevant every year and require a modern, modernized approach. If we look at the world

leaders, we can see how the leading countries of the IT industry apply new methods and format of training for successful training, then we have something to learn. The leading areas are STEM education, Robotics, Gamification and Project-based learning technology, where the activity of the student himself is primarily at the center. We will explore and compare trend forms of education that bear fruit in the field of education. Let's apply the data in the example.

3.1. STEM-education

The abbreviation STEM was coined in the early 2000s at the National Science Foundation. An advanced curriculum combining science, technology and mathematics. The STEM areas are shown in Figure 1.
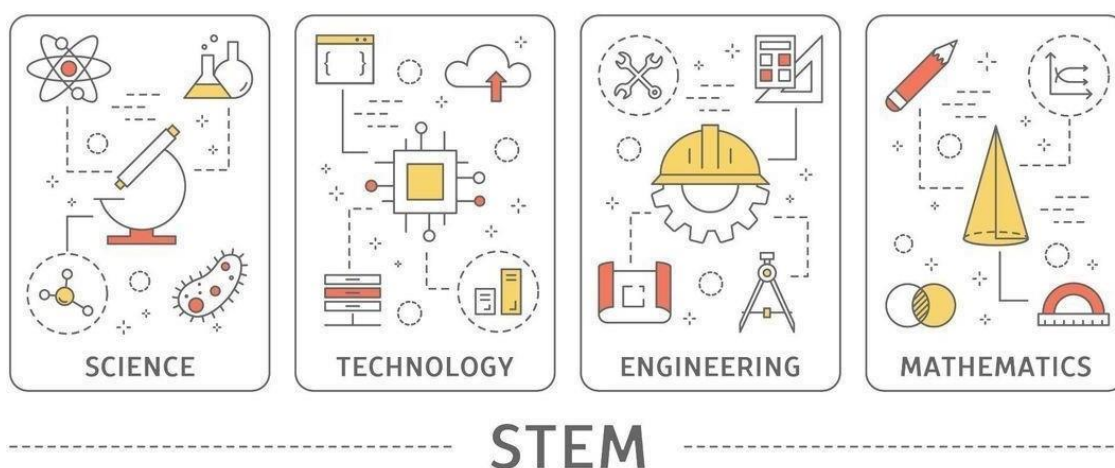
Figure 1: STEM areas [5]

As we noted, in the modern labor market, simple engineers are losing relevance for employers. They need engineers with a project vision who know how to work in a team and manage a team.

The main advantages of STEM education [6]:

1.　An integrated approach to solving modern problems, based on the interpenetration of various fields of natural sciences, engineering creativity, mathematics, digital technologies, etc. This integration is based on a project method based on cognitive and artistic search and having a specific real product as a result of activity.

2.　Adaptation of children, starting from preschool age, to the modern educational environment of all levels of education.

3.　Development of intellectual abilities in the process of cognitive and research activities.

4.　Development of critical thinking

5.　Formation of teamwork skills.

The main focus of many large companies is digital technologies and innovations. They seek to apply the achievements of BigData, artificial intelligence, machine learning in other areas - education, healthcare, banking. Specialists who not only understand technologies, but also understand how they can be applied to solve specific problems in various fields are the undisputed leaders in the labor market.

Employers highly value the skills that students gain in STEM majors. According to the World Economic Forum, the most important skills for modern business are the skill of complex problem solving, critical and creative thinking.

The growing demand for STEM specialists from companies from various fields has led to a personnel crisis. For example, in Russia, the share of IT specialists is 2.4%, by 2024 the need for personnel will be 300 thousand people. The National Science Foundation suggests that 80% of the professions that will be available in the next decade will require applicants to have mathematical skills and technological knowledge.

STEM education is the first step in the model of learning in programming schools, when the child

learns the basic concepts of science and can continue to improve his knowledge. After completing the basic STEM program, the child receives additional tools in the form of educational sets LEGO Mindstorms, SPIKE Prime, Spike Essentials. This direction is called robotics.

3.2. Robotics – the first step in programming

The second stage of student training is Robotics. It is at this stage of learning that the child becomes familiar with programming and coding software. For the first time, a child launches his robot and controls it using program code written by the student himself. At first, children learn to write basic robot control commands, discovering a new level with each lesson. Such a transition is not painful for the child and will not cause a loss of motivation in further education.

Next, students must assemble models of robots, improving their engineering skills with the help of LEGO sets according to the lesson program and run it using the software. In the robotics module, the child improves teamwork skills by performing the required tasks together. The main task of robotics is to solve problems with the help of robots. By integrating multiple training models into a single training program, you can get the perfect product at the output.

Children can currently study the fundamentals of robotics in school and other settings for continuing education. Why do kids need robotics is a question that many parents are now asking. These courses foster a student's creative potential. Pay attention to robotics if your child shows an interest in technology.

Robotics may help students learn physics practically, see the results of written programs right away, demonstrate their engineering skills, and come up with their own idea.

Children may be encouraged by sports robotics to pursue careers in programming, high technology, or robots. The design circle is no longer an amateur one. Maximum productivity, knowledge of related fields, ongoing practice, and correction of errors are required in classes.

Limiting himself only to his own imagination, the child can assemble a robot in the form of a machine, a person, an animal or other objects. The created mechanism can perform various functions, but for this you need to write a program. This can be done on the computer using proprietary application software, as well as using the keys of the microcomputer [7].

3.3. PBL – project-based learning

In one sentence, project-based learning (PBL) is the process of learning through projects. PBL doesn't complete projects, otherwise it would be called "Learning-Based Projects" – or simply "Projects". In quality PBL, the goal is learning, and projects help facilitate that learning. That is, projects act as a means. Advantages of project-based learning [8]:

1.   Critical thinking (e.g., designing, evaluating, analyzing, judging, prioritizing, etc.) is required.

This is in contrast to other forms of learning that hope to "advance" critical thinking, but can be achieved without it;

2.   Driven by request;
3.   Combines knowledge and competencies/skills;
4.   Considers learning as iterative and recursive (as opposed to "learn-> learn-> evaluate-> move on");
5.   Flexible;
6.   Student-oriented;
7.   Combines other disparate skills.

PBL depends on basic knowledge, student choices, technological tools, support from others, and dozens of other factors that lead to a learning process that produces very different results. The main elements of the PBL are shown in Figure 2.
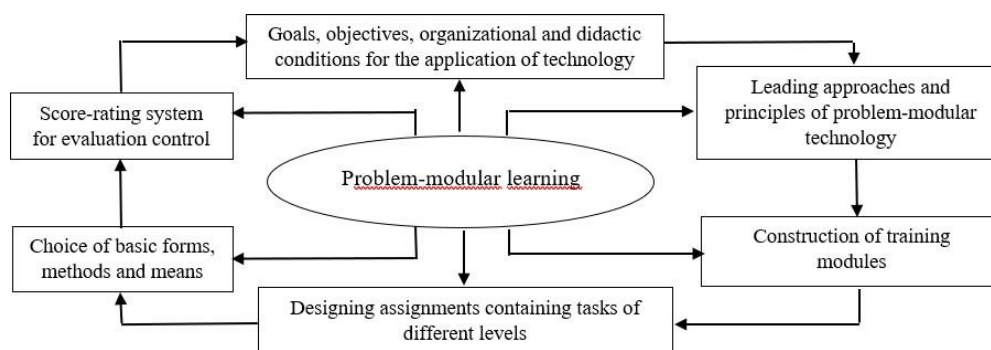
Figure 2: Elements of problem-based modular learning

Students research the central query by engaging in authentic situational inquiry—processes of problem-solving that are crucial to expert performance in the subject. As they research the drivingissue, they learn about the field and put it to use.

Students who participate in project-based learning are frequently required to work together, create, revise, and present their thoughts and experiences to real audiences and encouraging peer groups in the classroom, as well as to real and virtual communities that they are a part of and contribute to. Thisgoes beyond only instructing pupils to gather materials, plan projects, and handle ongoing tasks.

4. Method

The appropriate execution of the investigation depends on the selection of effective scientific knowledge-based methodologies. Depending on the direction science is heading in, the means of reaching the goal may change. Research methods can be divided into several areas, including analysis, assessment, experimentation, measurement, and abstraction [9, 10]:

- Observation: The senses are used in this process to acquire knowledge. Most often, it is incorporated with other techniques.
- Comparison: Comparison allows for the identification of similarities and differences with another phenomenon or item. It is important to compare important indicators that will aid in resolving the core issues of the cognitive task. Finding the shared characteristic betweentwo objects is the key to understanding patterns.
- Experiment: This approach entails a thorough examination of the object under specific circumstances. The experiment enables the study of the phenomenon under harsh or isolating environmental circumstances. A scientist can always get involved and alter the trajectory of a phenomenon. The experiment is conducted using both the actual thing and amodel that was made artificially.
- Abstraction: The goal of this technique is to fix phenomena of interest to the researcher while diverting attention away from the object's uninteresting attributes. Through abstraction, the scientist learns details about some characteristics of the thing.
- Measurement: The process is carried out to arrive at a particular value using commonly usedunits of measurement. This style of cognition provides precise data that enables you to learn more about the object that is being studied. The measuring tools used have an impact on how well measurements work.

All of them have a connection to one another, naturally complement one another, and must complete the responsibilities given. They ought to be employed keeping in mind the particulars, advantages, and disadvantages of each. The comparative-historical analysis deserves special attention since it enables you to establish a logical chain and uncover cause-and-effect correlations. Own judgments might be derived independently using scientific, generally accepted methods or based upon the foundation of objective data. Knowing the topic's past provides extra information and may inspire you to evaluate the subject from a different perspective [9, 10].

5. Experiment of new methods in programming schools in Almaty

Together with the school of programming and robotics CITE conducted training, introducing new teaching methods that were studied. Lessons were held for children aged 6 years and older. To begin with, we divided the students into 2 groups. In one group, the so-called group - A there were 20 students as in all schools, and in the second group, group - B made only 8 students. Our experiment lasted exactly 30 calendar days. If in the group - B, where there were only 8 students, they conducted lessons on a new method and introduced all the innovations of STEM - education, robotics and gamification, then in the group - A was carried out the complete opposite. The old format of training, in a group of 20 students and a boring training program.

On the first day of classes, we introduced the children to the world of modern technology, engineering and science. They showed how the learning process will take place and the tools they will use. They explained the importance of the skills they would acquire in the course of training.

The first 5 days of training were spent with STEM kits and did design work, in the form of bridges and buildings. Collected STEM kits and defended their projects (Fig. 3).

We gave children different projects ranging from the simplest to complex projects that could solve social problems in our environment. Students worked in a team of 2 to 4 people, as the main task was teamwork. The teams were given some time to study the topic, research and solve the problem. After analyzing the ways to solve its problem, each team began to implement it. In the STEM learning block, we paid special attention to teamwork, project-based learning and the development of critical thinking.

Figure 3: Fragment of the lesson

Then we continued training on LEGO Mindstorms equipment and taught programming.

Performed tasks laid out on the map. This is illustrated in Fig. 4 and 5.

Students get acquainted with the robotics training block and its equipment. In this block, each student was given equipment and their own tasks. Each student had to solve the problem at his own level after the teacher's training. On the first day, the children began launching their little robots in the form of a machine after the teacher introduced them to the software. For many, the model building phase was easy and quickly moved into the programming phase. However, the most difficult thing for them began in this block. The students of group A were given old kits and only a few computers for the whole group to write code, and for group B we made quite the opposite conditions. Each student had his own equipment and a computer. The child without any difficulty managed to experiment with the assembled robot and gained more experience. In this block, we saw how students solve problems at their level of programming proficiency and ability to assemble a robot model.
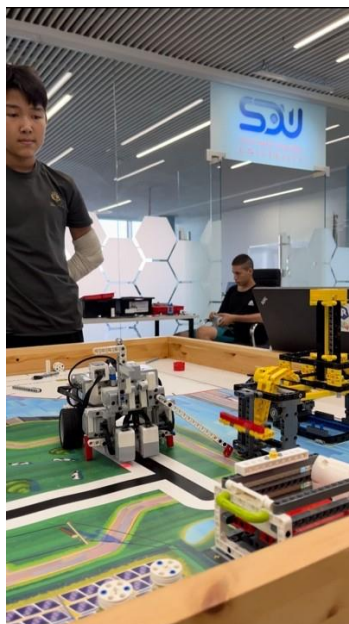
Figure 4: Fragment of the lesson

Figure 5: Fragment of the lesson

The result was not long in coming, from the group - And after 10 days 5 students left and were dissatisfied with the result, while the students of the group - B were burning with new ideas and wanted to continue their studies.

After 10 days of training, we set different training times so that the students of the first group could see how the lessons in the second group were held. After the first day, the children had the question "Why do they have so few students in the group?", "Why is the lesson different for them?", etc. Already on the second day, the children wanted to transfer and study with another group according to the new methodology. At the end of the experiment, it was revealed that 5 students left, 10 immediately enrolled in another group and continued training in the new format.

5.1. Separation of students and use of the classification method

One of the most crucial approaches to understanding and describing the laws of the world around us, as well as one of the foundations of empirical knowledge, is the categorization method.

It is impossible to do research in any discipline of science without generalization, organizing, and

classifying the items under study by specific characteristics.

Currently, a cognition technique called classification is employed to accomplish a variety of objectives, both merely practical and scientific.

Speaking of categorization as one of the lines of employed scientific research methodologies, it is legitimate to point out three key stages of scientific study in fields like technical sciences, economics, and education [10]:

1. Observation and description of data;
2. Systematization of knowledge;
3. Explanation and generalization of explanations.

After the 10th day of training, we divided the students into categories, based on the result that we received with the help of a survey among students.

There were categories by age, class, whether the child had previously engaged in this type of training and took the data of the parents. To conduct the survey, we used the Google Site Forms with questions as shown in Figure 6.

Figure 6: Survey Form

This site was convenient because the data is saved immediately and recorded from the online storage. As the data was used, we uploaded the retrieved data to Excel tables as shown in Figure 7 and formed new groups to continue learning.
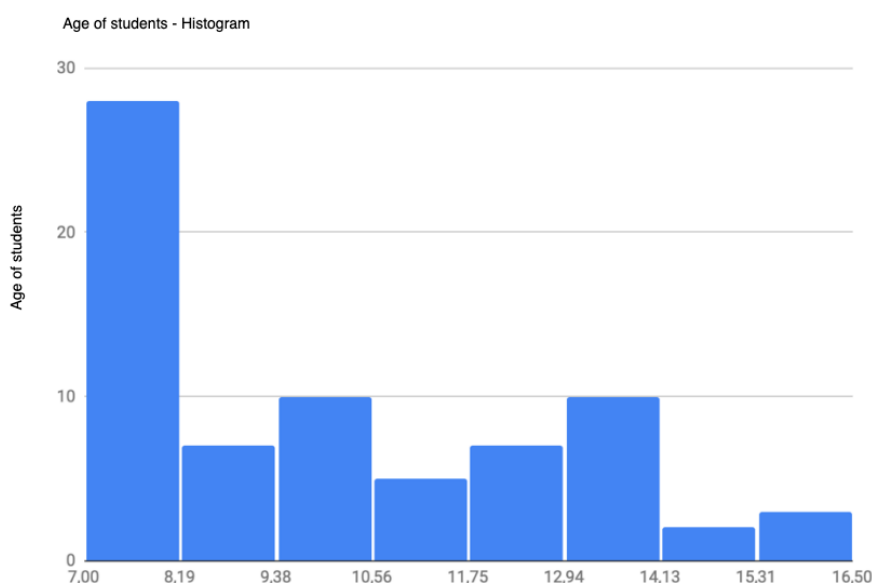
Figure 7: Children's data by age

The remaining 3 days we devoted to scientific research. We gave the children themes and gave them all the resources to search. We divided the children into 3 people in a group and gave each team separate topics so that they did not overlap and could not repeat each other. The task was that the team had to find information on the topic, draw posters and defend this topic in front of everyone. Some children overcame their fears and performed in front of the public, and some showed their strengths in teamwork.

During the period of experimental training, children get acquainted with engineering projects, robotics and programming. After graduation, a survey was conducted among children who would like to continue to stay and continue their education. The results of the survey are shown in Table 1.

Table 1
The final result of the experiment

	Group A	Group B	Percentage
Quantity originally	20	8	250% / 100%
Teaching Method	The old format of training od training	Introduction of newmethods	
Number at the end	2	21	10% / 262,2%
Children involved	0	13	0 / 162,2%

According to the results of the experimental course of the old method against modern teaching approaches, 162% signed up for the new method. The correct choice of methodology and the introduction of innovations in education, especially in the school of programming is one of the most effective methods of attracting to the IT sphere.

It is important to introduce these techniques into all programming schools in Kazakhstan to educate domestic personnel in the field of IT.

The most basic and important moments of learning in a person's life take place in childhood, when you do not force the child to learn, the child himself is eager to learn something new. Also during the courses, it was revealed that the project work very well reveals the potential of children who are squeezed and afraid to show their abilities. Each child was able to understand his importance and the importance of his birth in the team.

6. Conclusion

Programming schools are the main foundation in the training of highly qualified specialists, as here begins acquaintance with the world of technology and digitalization. It is important to adapt to the requirements of the modern labor market and always teach children new and relevant knowledge.

To become a programmer in the future, youngsters do not necessarily need to learn programming. The goal of programming is to help kids develop computational thinking, which will enable them to successfully deal with complicated challenges from the twenty-first century that lack a single solution. Children will be able to use "computational" methods in a variety of settings and fields. A youngster will be able to solve issues in any subject if they have learnt how to break complex tasks down into smaller pieces, look for similarities between various aspects, identify and eliminate unnecessary details, and combine pieces into a single algorithm to get a result.

As our month-long experiment after analyzing and researching all teaching methods showed, robotics and STEM education, gamification and project training program are highly effective and efficient not only in attracting young people to the IT sector, but also as an educational program for training personnel.

Since a virtual learning environment (VLE) dispenses with the requirement for a physical classroom and allows students to study from anywhere in the globe, it can attract more students. The VLE also makes it simpler to access instructional resources, which improves student-teacher interaction and makes it simpler to monitor teachers' behavior. As a result, the online setting can assess the factors that either positively or negatively affect students' academic progress. Machine learning algorithms are applied in virtual learning to evaluate students' academic achievement and cognitive ability. There has

not yet been a choice made on the standards to be applied for the evaluation of online instruction because each student may submit the same type of assignment and the same Practical Exam [9, 10].

7. References

[1]   Official information resource of the Prime Minister of the Republic of Kazakhstan. Grants in IT and de—bureaucratization - how digitalization is developing in Kazakhstan. 20 May 2022. URL:https://primeminister.kz/ru/news/reviews/granty-v-it-i-debyurokratizaciya-kak-razvivaetsya-cifrovizaciya-v-kazahstane-2344022.

[2]   J. Majherová, V. Králík. "Innovative methods of teaching programming." European Journal of Contemporary Education (2017) 391-394. doi:10.13187/ejced.2017.3.390 URL: https://www.researchgate.net/publication/319913789_Innovative_Methods_in_Teaching_Programming_for_Future_Informatics_Teachers.

[3]   D. Karahoca, A. Karahoca, H. Uzunboylub. "Robotics teaching in primary school education by project based learning for supporting science and technology courses." Procedia Computer Science Volume 3 (2011) 1425-1431, URL: https://doi.org/10.1016/j.procs.2011.01.025, https://www.sciencedirect.com/science/article/pii/S1877050911000263?via%3Dihub.

[4]   H.A. Gubasheva, D.M. Magamedova, Z.A. Magazieva. "Innovative methods of teaching programming." International Research Journal. Issue № 5 (119), 2022, https://doi.org/10.23670/IRJ.2022.119.5.084. URL: https://research-journal.org/archive/7-7-2022-may/innovacionnye-metody-obucheniya-programmirovaniyu-i-it-v-rossijskix-vuzax   STEM Areas URL:https://www.shutterstock.com/ru/image-vector/stem-word-icon-set-concept-sciencetechnologyengineering-764762698.

[5]   T. V. Volosovets, V. A. Markova, S. A. Averin. STEM - education of children of preschool andprimary school age. URL: https://firo.ranepa.ru/files/docs/do/navigator_obraz_programm/STEM_obrazovanie.pdf.

[6]   Methodologist of the children's educational center POLYCENT, URL: https://polycent.ru/blog/chto-takoe-robototexnika-i-chem-ona-polezna-dlya-detej/.

[7]   T. Heick. What is the Project-Based Learning? URL:https://www.teachthought.com/learning/what-is-project-based-learning/.

[8]   C. Nurzhanov, V. Pidlisnyuk, L. Naizabayeva, M. Satymbekov. "Research and trends in computer science and educational technology during 2016-2020: Results of a content analysis." World Journal on Educational Technology: Current Issues, 13(1), p.p.115–128. (2021), https://doi.org/10.18844/wjet.v13i1.5421.

[10]   R. Khajuria, A. Sharma, A. Sharma, P. Singh. "A Survey on Various Approaches to Examine Cognitive Behavior and Academic Performance of Learner in Virtual Learning." International Conference on Innovative Computing and Communications p.p. 707–725. (2022), https://doi.org/10.1007/978-981-19-2821-5_60.

Fahrenheit 2021. Freedom of Information in the Age of Artificial Intelligence. A Socio-Dynamic Essay

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Abstract

In this essay, we try to show the implications of the technological revolution promoted by artificial intelligence (hereinafter AI) both at an intimate and interpersonal level. Without a doubt, it is worrying how our intimacy, previously located in the family coordinates, anchored in the reality of things and the interaction with the other, is now subordinated to the virtual.

This has rapid consequences at the level of how each one perceives oneself (self-image, self-identity), and the anguish it drags when we do not reach the established ideal, nor a new conception of normality. Frustration, alienation, depression due to cell phone addiction, ultimately represent the loss of contact with everyday reality, leading to what Zuckerberg dreams of: living in "Meta", the virtual reality in which we are everything, we want to be. With the concepts of "exo-intimacy" and "I-narcotic", we wanted to get closer to this phenomenon.

On the social side, the alienation of the subjects is driven by what we have called Universationals of intimacy, that is, 4 or 5 companies that are responsible for offering an incredible range of stimuli, sensations and experiences through the algorithm, and even information. The problem is that "information" is often far from the objective truth, and not only that, but "the show" constantly promotes confrontation and leads to escalations of hatred and aggression, as witnessed by the QAnon movement and the assault on the Capitol.

In this context, journalistic and independent intellectual work is undermined, and in general, the foundations of liberal democracy, since the information offered by the channels controlled by those Universals does not imply a commitment to the truth, but is pure commodification- through emotional impacts. If the journalist and the intellectual before represented the fourth power, now the Universationals, which increasingly begin to position themselves as a fifth power, as the fifth power.

Keywords

Universationals of intimacy, freedom of expression, freedom of information, AI, exointimacy, QAnon, capitol assault, infotainment, I-narcotic, fifth power, recreational information, entertainment information

1. Introduction

In this essay, we have attempted broadly situate some issues with respect to the technological revolution of our time. Its drawbacks affect people's intimacy, leading them to alienate themselves in social networks, for which we have proposed the concept of exo-intimacy. This, which carries a series of psychopathological dangers such as depression and mobile phone addiction -we have called it I-narcotic-, can also be approached from a social point of view.

In this regard, information or, rather, disinformation in post-truth times paints a difficult picture for liberal democracy, and especially for the journalist as the fourth estate. We have proposed that there are some "universal information companies", which promote not only the commodification of information to governments, or public authorities, but also promote "news entertainment" ('infotainment'). All of this is causing poverty in information and a circumvented attack on the ability to think and professional.

In that document, we try to understand how it is possible that in such a computerized and interconnected society freedom of expression is in danger, and therefore one of the pillars of modern democracies, as well as the work of the journalist as a fourth power.

First, we will briefly discuss how at the dawn of the industrial revolution in the 19th century there were high hopes for the benefits that all scientific and technological inventions would bring. These, in

current times, have evolved bringing with them a digital evolution that involves artificial intelligence and the entire context of the Internet, and, however, this has its setbacks.

We try to explain the paradox, taking into perspective that, although it has always been maintained that " The truth will make you free", the "information" that promotes and supports artificial intelligence in its different facets, modalities and programs is not oriented towards freedom, but a new alienation through the culture of entertainment and information for entertainment. Finally, we try to show that the revolution that artificial intelligence represents is at the service of specific powers that have nothing to do with democratic bases. Subject, which is not minor, in terms of the work of the journalist in current times.

The series of issues outlined above can lead to a fact, namely that in January 2021 a large crowd stormed the United States Capitol. This event, which inspires the title of this document, is an unusual and worrying event that proves the incidence of fake news and false information that social networks and the Internet have as a platform.

2. From the industrial revolution to the digital revolution

Frankenstein or the modern Prometheus by Mary Shelley (1818), is a hymn to modernity and to the promises of science and the industrial revolution. Electricity and power constituted unprecedented revolutions that encouraged visions of a life without suffering and almost without death. Thoreau in the book *Walden* (1854) raised an idyllic, paradisiacal life, returning to a time without violence, living in a small community; its purpose was to show an alternative to the "progress" of the industrial revolution.

A few years later, the experimental psychologist Skinner, inspired by Thoreau, wrote *Walden Two* (1948), positing with great optimism the possibility of an ideal community separated from the propaganda of the surrounding environment, balanced and almost self-sufficient within the paradigm of social behaviorism. His science of human behavior engineering led him to predict the construction of a happier and more organized society (independent of moral values and individual freedom).

Science-based utopian hopes have been present in the literature with not-so-hopeful visions. *In Brave New World* (1932), Aldous Huxley proposes a social dystopia situated in a futuristic world state, in which he anticipates scientific advances in reproductive technology and psychological manipulation. In this book, the gears of the futuristic system go against the individual.

In this sense, in the works science-based utopian hopes have been present in the literature with not-so-hopeful visions. In the works *Animal Farm* (1945) and *Nineteen Eighty-Four* (1947) by George Orwell, he poses a dystopian society based on absolute control. Along these lines, we should place the novel *Fahrenheit 451* (1953) by Ray Bradbury, which recounts a society geared perfectly around the censorship of knowledge and the destruction of books.

Orwell in his essay *Homage to Catalonia* (1938) warned: "no newspaper ever faithfully tells how things happen, but in Spain I saw for the first time press news that had no relation to the facts, not even the relation that is assumed in an ordinary lie. (...) I actually saw that history was being written not from the point of view of what had happened, but from the point of view of what should have happened. (...) These things seem terrifying to me, because they make me believe that even the idea of objective truth is disappearing from the world." (pp.38-39).

With this brief exposition, we want to point out that not a few authors feared mass control and on the other hand, some scientists have dreamed that science would provide that quality of life that humanity longed for. And it is that far from being this dystopian, with Orwell's last quote, we can realize that it already had very concrete real roots, information at the service of the party.

In recent decades, this promise of collective happiness was deposited in technological advances and computing. We find in the 21st century that the artificial intelligence paradigm has risen as a new ally, but also as a new master. Artificial intelligence (AI) through mobile, "wearable technology" and everything that constitutes the Internet of things have made possible the extraction and commodification of privacy, a new industrial revolution called the digital revolution exploiting personal privacy and undermining the foundations of democracies.

3. The setbacks of the promise of happiness in the digital revolution

In May 1997, the "deep blue" computer beat Kasparov, the best chess player in the world. From that moment, we can say that the kingdom of the intelligent machine surpassed the human, which did not stop projecting great and auspicious dreams. In that sense, Internet technology and the associated hyperconnectivity supported by artificial intelligence (AI) were expected to project a universe of happy completeness, little work and a lot of well-being.

But just around the corner we have found that hyper connectivity, together with the widespread use of mobile phones, has raised the new empires of the **Universationals**[1] of our daily lives. We talk about Universal because they are "ubiquitous" that can be accessed in any corner, in any solitude, just the Internet is enough: Twitter, Instagram, Facebook, WhatsApp, Snapchat, Google Amazon, etc.

The attempts to predict individual and collective behavior that sociology, behaviorism, social research and surveys have always sought have been surpassed by the ability to both predict and induce responses by the algorithm that supports the various applications: artificial intelligence learn to learn and learn our likes and learn our anxieties and learn how to satisfy them or how to induce them.

We cannot forget that the dream of the first experimental psychologist was that of a German professor who left medicine to know and measure sensations, we refer to Wundt. In 1879, he established the first psychology laboratory in the world. His poor progress in predicting human behavior had to come to the aid of statistics and the equations of "normality" with the Gaussian curve.

But now, with the "algorithm" we can simulate people's faces without distinction from the real ones, hyperreal fictitious videos. If this "algorithm" can write emotional and credible "news", it can also "simulate" the truth, the alternative, parallel truth or the one that fits "our" desires; so that we are moving towards an illiterate society, without books, driven by social networks, which are controlled by four or five Universationals of intimacy.

Under its standardizing logic, the small, the local, the artisan business, the different, the old, the traditional, that which is not represented in the great logos of the Internet has ceased to have representation in the social imaginary. There are no longer ideologies, nor political parties, but social networks, distributors of a homogenizing "truth": the new normality.

The witness of the social event, the journalist, the sociologist, can be evacuated by the use of the drone; the cameras distributed in all parts of the world, the books can be replaced by summaries that the algorithm is in charge of offering. In the idea in Islam and Judaism of prohibiting images is the desire to curb the imaginary, also called hypostasis or polytheism, but naively Christians, atheists, Jews, Muslims are falling into the libertarian ideal of Instagram, and Tik Tok.

Our privacy information is now as important as it was to control fire, control alloys, or control nuclear energy; the information provided by the Internet from users around the world represents the new energy, the new strategic paradigm of geopolitical and geo-economics tensions in the future 50 years.

In the book *The Age of Surveillance Capitalism* (2019), Shoshana Zuboff makes a detailed analysis of the unprecedented power of surveillance capitalism and the pursuit by powerful companies of tastes and habits to predict and control our behavior. Zuboff comments on Google's goals for its CFO, Varian: The desire to personalize and tailor the services offered and the use of technological infrastructure to carry out continuous experiments on its users and consumers.

As an example of surveillance capitalism is that of **Cambridge Analytica** (but there are other similar examples less widespread on the media): It was started in 2013 as a subsidiary of the private intelligence company of "global election management agency" SCL Group (formerly "Strategic Communication Laboratories" a private British behavioural research and strategic communication company founded in 1990 by Nigel Oakes). The founders had contact with the Conservative Party (UK), the British royal family and the British military. From 2010 they processed the data of up to 87 million Facebook profiles and used the data to provide "assistance" to the 2016 presidential campaigns of Ted Cruz and Donald Trump.

Now we don't need spies, journalists, or sociologists... we need people in front of screens to see what the algorithm spews out. It is known that NSA (National Security Agency) has shares in google; what's

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[1] Concept coined by us that refers to something broader and more ubiquitous than the transnationals or multinationals known in the 20th century.

more, it was one of the first financiers when it was just a small startup. Therefore, it is not unreasonable to believe that Internet operators have a back door for intelligence services.

In the book *No cosas: Quiebras del mundo de hoy[2]* (2021), Byung-Chul Han focuses on the fact that our society has turned into a cult towards information based on the calculations and elaborations of the algorithm.

What Mary Shelley dreamed of with her *Frankenstein or the modern Prometheus* (1818), what Thoreau, Wundt, Skinner, among others, dreamed of...has failed, and many of us wonder why, because behind the fascination of the new we see echoes of a return to ages and times where freedom of expression is curtailed.

4. "Exo-intimacy": our new identity determined by artificial intelligence

We reinforce our doors, we bar windows, we put high fences to our chalets, we protect ourselves against emigrants and on the other hand we turn to social networks and leave our identity in the murky waters of Internet mirrors. We defend private property when we put it on the Internet market to the highest bidder for free.

A new dynamic is appearing and a new redefinition of the concept of intimacy that we can call exo-intimacy[3]. The concept of exo intimacy is defined as intimacy projected on the exterior of the screen. The artificial intelligence proposed by the Silicon Valley multinationals (and also in China by the national Internet operators and Chinese social network applications) typify and universalize standards, so that deviation is attacked by proposing new unattainable ideals generating the most basic anguish of the human being: the tension against the rejection of not feeling normal.

Especially sensitive is childhood and youth, as they have become the object of a commercial target. The school and the family have been replaced by social networks and the same friendly faces are operated by an invisible hand, it could be said that the fearsome character of Joker has been dressed in the friendly face of Disney's Mickey Mouse.

The depressions suffered by countless adolescents due to criticism on social networks and new standards of beauty and normality is an example of exo-intimacy. The social relations of the group to which they belong are excluded by something distant and at the same time very close: virtual reality. The consequence is an alienation, where all the I and all the pride of the self is deposited in the magic mirror of "Snow White on the net.

This has its repercussions at the social level, since it is a step forward in the progress of the satisfaction of the masses and a step in their control, something similar to what totalitarian regimes in another era tried to do without much success.

It is proven that the countries where Facebook enters to operate social revolts appear from the second year. That is to say, that social network are a factor of mobilization, but especially of mobilization to extreme proposals, casting great doubts on the goodness of mutual respect and democracy as a basis for coexistence, which has echoes with respect to the QAnon movement.

5. Conquering minds: "Kino-Meme" (icon-meme)

Ethology has known for years that the triggering of sexual behaviors from courtship to copulation are determined by visual and kinesthetic patterns, at least in birds and mammals. When it has always been said that the image is worth more than 1000 words, they refer to the motivational capacity of the images for being more charged with libidinal elements, that is, sexuality. Freud already highlighted this in *The Interpretation of Dreams* (1900) and Lacan later he developed it through the concept of the imaginary, for example, in the conference *The Symbolic, the Imaginary and the Real* (1953)

In this regard, advertising has always sought to stimulate consumption by linking it with the imaginary, that is, with the desire trapped in images clothed in reality. Zuckenberg recently launched

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[2] Byung-Chul Han .Undinge: Umbrüche der Lebenswelt (2021)(Spanish edition: No cosas: Quiebras del mundo de hoy. Edit Taurus).
[3] Lacan uses the concept "extimacy" (The ethics of psychoanalysis. 1958) with certain similarities to ours.

Facebook Meta, where the goal is to make visible an imaginary reality, namely virtual. In it, one is what he wants to be, one is the image of his avatar, capable of freeing himself from the shackles of reality.

On an emotional level, the image has been above the word in the same way that the basic emotions are above the rational. One way to approach these results not only from advertising, but also with respect to the concept of "meme". The word "meme" is a neologism coined by Richard Dawkins (The Selfish Gene. 1976). A meme is an idea, behavior, or style that spreads by means of imitation from person to person within a culture and often carries symbolic meaning representing a particular phenomenon or theme. Supporters of the concept regard memes as cultural analogues to genes in that they self-replicate, mutate, and respond to selective pressures.

When the emotional prevails, social contagion phenomena appear that are close to the idea of social hysteria or social hypnosis because they resist any rational analysis, it is for this reason that we have brought here the concept of Kino-meme or Icon-meme.

We are talking about a phenomenon of social contagion, not just an individual psychopathology. To this phenomenon of manipulation through artificial intelligence and virtual reality we can add four socio-psychopathological concepts defined with the terms dispossession, suppression, repression and depression -concepts due to lack of space in this document we cannot develop.

The ability of artificial intelligence to anticipate our "functional" demands, such as modeling or inducing them, proposes an unprecedented challenge: machines can become apparently human. We are facing a phase of human evolution that is have been called "trans-humanization" or "trans-humanism" (Ettinger, R. 1972).

In this context of the blurring of identities overturned in social networks, as well as the phenomenon of concomitant social contagion, three social movements can be understood:
1.   Neo-sexualities (Queer movement, etc.)
2.   The new identity social movements in general oriented towards the right in some concession also towards the radical left (the tradition, "ours")
3.   Alternative truths, fake news, the QAnon movement, etc.

In a special way, in relation to point 2. and 3., more and more we are heading in Europe and in the United States to a democracy of the void, we are inaugurating a new era of happy melancholy, where there will inevitably be more and more social movements dissatisfied in so much virtual satisfaction.

Our current challenge is to understand, control and legislate the possibility that algorithms promote even more social narcosis or better said "social psycho narcosis" (remember the addiction of young people to Instagram and the depressions linked to networks.

6. The return to the dark ages: I-Narcotic and fake news

The expression "Dark Age" or "Obscure Ages" is used by historiography, to designate any period considered fatal or negative for the history of a people. The concept characterizes a time of intellectual darkness in opposition to the golden age or Age of Enlightenment.

Our argument is that access to information, in the modern times, is degrading because the machines that generate that information obey very particular interests where there is no room for respect for the truth. Along these lines, artificial intelligence has become a very powerful tool for social manipulation.

The truth will set you free; it is a phrase from the Christian gospel… to which must be added: but the information biased by the AI It will enslave you like an e-narcotic or "I-narcotic". In addition, it is on average in the first world we spend more than two hours looking at the mobile and in young people it can reach four hours. The Korean philosopher Byung-Chul Han refers to "datasexuality"[4] as an addiction for the dates and information without support on the real things.

The phrase of the philosopher McLuhan "The medium is the message"[5] has never before carried so much weight. The source ceased to be the primary source to give rise to the medium as a medium, that is, the form of transmission: what I have seen on the Internet and what I have read on the Internet. The appearance of thousands of alternative information channels on the Internet does not take into account

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[4] https://elpais.com/ideas/2021-10-10/byung-chul-han-el-movil-es-un-instrumento-dominacion-actua-como-un-rosario.html.
[5] Understanding Media: The Extensions of Man (1964). Routledge, London.

the message, and its possible ramifications based on the truth, but it is about spectacularization, confrontation, entertaining disclosure.

The latter is linked to the post-truth or emotional lie is a neologism that implies the deliberate distortion of a reality in which emotions and beliefs take precedence over objective facts, in order to create and shape public opinion and influence social attitudes (dictionary of the Royal Spanish Academy of the Spanish Language).

In political culture, post-truth politics is called that in which the debate is no longer framed in emotions and convictions, disconnecting from the details of the facts and by their repeated denial. The idea according to which "what appears to be true is more important than the truth itself" (Coughlan, 2017). A lie repeated many times becomes the truth. For other authors (Sanchez Hernandez, 2021), post-truth is simply covert propaganda today in the face of the widespread use of social networks as an instrument of media manipulation.

According to the historian Steven Forti (2021), «if today there is no doubt that post-truth is a feature of our time... there is also no doubt that it is the extreme right that uses it most frequently until it becomes one of the essential characteristics in order to define and understand it", the author proposes to call the extreme right of the 21st century "extreme right 2.0" (pp.146-147), and in some cases we also have to add the extreme left.

Ralph Keyes used the concept "post-truth era" in his book The post-truth era: dishonesty and deception in contemporary life (2004). Also in 2004, the American journalist Eric Alterman introduced the term «post-truth presidency» in his analysis of the misleading statements of President George W. Bush after the attacks of September 11, 2001 and the reasons for the war in Iraq.

Colin Crouch used the concept «post-democracy» (2004) to account for a model of politics where «the public electoral debate is a tightly controlled spectacle, managed by experts in persuasion techniques» directly attributing to the «advertising industry model» of the political communication the crisis of confidence and accusations of dishonesty that are associated with post-truth politics.

Post-truth uses microtargeting for its operation, a technique based on algorithms that analyze, separate and bring people together according to their way of thinking and their interests, subsequently offering services and products that satisfy specific ones in order to have people divided by ideologies and beliefs and this induces polarizations where the different is an enemy (left or right, feminist or anti-feminist, etc).

The fact that Trump arrived at the White House in November 2016 confirms that microtargeting techniques, mixed with data analytics, behavioral and post-truth reports, are capable of changing and influencing the political, economic and social course of a country.

This creates the ideal conditions for "mass polarization", or popular polarization generate by AI, …At the extreme, each camp questions the moral legitimacy of the other, viewing the opposing camp and its policies as an existential threat to their way of life or the nation as a whole. Affective polarization refers to the extent to which the electorate "dislikes" or "distrusts" those from other parties.

In the context of post-truth, the algorithm and the workers of the troll factory support the phenomenon of "Trending Topics" in many cases. Even bad manners, rudeness and insult, used in social forums have a huge expansion capacity, which polarize and provoke debate. Generated the controversy, the news flies like wildfire and is forwarded: the more scandalous and noisy the phenomenon, the greater the success achieved.

7. The "true patriots" storming the Capitol 2021

On January 6, 2021, a mob around 2,500 supporters of U.S. President Donald Trump attacked the Capitol Building in Washington, D.C. Called to action by Trump, thousands of his supporters gathered in Washington, D.C., his false claim that the 2020 election had been "stolen by emboldened radical-left Democrats".

On January 6, in a "Save America," Trump repeated false claims about electoral irregularities, saying, "If you don't fight like hell, you're not going to have a country anymore." Moreover, days earlier in a podcast, Steve Bannon, who served as White House chief strategist in the US president's administration, as well as a former Cambridge Analytica fellow, said, "Hell will break loose tomorrow."

His speech contained many falsehoods and misrepresentations that inflamed the crowd. Trump did not overtly call on his supporters to use violence or enter the Capitol, his speech was filled with violent imagery and Trump suggested that his supporters had the power to prevent Biden from taking office.

QAnon supporters were among the participants in the attempt to seize the Capitol. The QAnon movement lost many supporters with the loss of Donald Trump in the 2020 election, the most stubborn of them continued to believe that Trump would somehow be restored to the presidency somehow.

For most of the sociologists who investigate the QAnon phenomenon, we describe it as a paranoid phenomenon of the lower middle classes, scared by change and very distrustful of official power and who are sustained by links through social networks. In this network it is speculated that the truth is more terrible than the mass media present.

The hypothesis that we support is that the QAnon phenomenon would not have had the transcendence without social networks and that it is the threat of globalization and polarization caused by the algorithm that is generating these extreme phenomena. The assault on the capitol has been the sign, using the expression of the followers of QAnon, where the real attack was against verified information, which for this movement is represented by the "official press" which they place on the side of the establishment.

8. The fourth power threatened. "The algorithm informs about everything": people no longer need journalists

In liberal democracies, the three powers stand out: Legislative, Executive, Judicial. The term Fourth Estate or fourth power refers to the press and news. Thomas Carlyle attributed to Edmund Burke, who used it in a parliamentary debate in 1787.

The press is one of the elements that creates public opinion, and historically the objective and transparent traditional media have welcomed journalists who, as witnesses, make the power in power uncomfortable, whatever it may be. However, in today's world, fast information – here and now prevails – and "click-bait", information fluctuates on the fine line between verified information and fake news. In this sense, the rise of the internet poses a threat to the media since there are constantly new avenues for information and disinformation.

This not only affects the traditional media that are disappearing, but also the freelance journalist is in a vacuum since even having the ability to investigate and access to classified information relevant to public opinion, without the support of a traditional media, the exclusive is nothing.

The profession of the journalist is rejected because public opinion has conceived a tarnished and banal idea of journalism; biased information, the battle between the media itself, more concerned with controversy and confrontation, the struggle to obtain exclusives, have discredited what 50 years ago was conceived as a social worker who monitors the political and economic power whose function is to account to the public opinion of what happened.

Even globalization has meant that the ways of dealing with information have completely changed. This new globalization poses the world domination of a new industrial and financial oligarchy, a preferential economic relationship between developed countries, a new social exclusion of large sectors of the poor and unemployed, the submission of the world to the political, financial and military power of a few countries (Margarit, 2003)

9. The fifth power: the Universationals created with AI

A new communicative model has been born, which is called 'infotainment', which combines information with entertainment, which highlights the emergence of fictional media and the spectacularization of current affairs in the journalistic field. In the digital age, the press is just another business activity.

In the heat of the current news, there is great concern in the European Union regarding the operation of algorithms, all of them belonging to North American companies; the latest news of the purchase of Twitter by Elon Musk has raised all the alarms[6].

In short, we would define this fifth power as a transnational "macro-power" that is much stronger than any other, and that comes to demolish the structure of the four powers of liberal democracy.

10. Conclusion

THE DIGITAL REVOLUTION made by "AI" is making deep and dramatic changes in human relationships and in the access to accurate information from reliable sources.

The mobile phone is under control of the powerful and not transparent "Universationals of Intimacy" which are subject to the logic of capital, the logic of power, that is, non-democratic interests.

Because the increasingly evidence that citizens are more and more affected by internet based "social networks" we should think if that is a new form of alienation against personal dignity and the right to truthful and unbiased information.

11. References

[1]   Åkerlund, M. (2022) *Far right, far here. Interconnections of discourse, platforms, and users in the digital mainstream* https://www.divaportal.org/smash/get/diva2:1632831/FULLTEXT01.pdf.

[2]   Anderson, M. R. (2017, May 11). *Twenty years on from Deep Blue vs Kasparov: how a chess match started the big data revolution*. The Conversation. Retrieved April 29, 2022, from https://theconversation.com/twenty-years-on-from-deep-blue-vs-kasparov-how-a-chess-match-started-the-big-data-revolution-76882.

[3]   BBC News World. (2018b, 7 May*). Emerdata: the suspicions raised by the new company from the founders of Cambridge Analytica, the firm embroiled in Facebook's biggest scandal.* BBC News World. Retrieved on April 27, 2022, from https://www.bbc.com/mundo/noticias-44029491.

[4]   Bloom, H. (2011). *Brave New World.* Bloom's Literary Criticism.

[5]   Bostrom, N. (2005). *"A history of transhumanist thought"* (PDF). Journal of Evolution and Technology. https://www.nickbostrom.com/papers/history.pdf.

[6]   Bradbury, R. (1953) *Fahrenheit 451.*Ballantine Books.

[7]   Byung-Chul, H.(2021) *Undinge: Umbrüche der Lebenswelt.*Ed. Ullstein-Verlag (Spanish edition: *No cosas: Quiebras del mundo de hoy*.2021. Edit Taurus).

[8]   Cadwalladr, C. (2021, 13 July*). Britain's great Brexit robbery: how our democracy was hijacked.* The Guardian. https://www.theguardian.com/technology/2017/may/07/the-great-british-brexit-robbery-hijacked-democracy.

[9]   Calvin, M. (2014) *Religion and Transhumanism: The Unknown Future of Human Enhancement*. Praeger.

[10]   Carvalko, J. (2012). *The Techno-human Shell-A Jump in the Evolutionary Gap*. Sunbury Press.

[11]   Crouch , C(2004).*. Post-democracy .*Wiley.

[12]   Coughlan, S. 12 Jan.2017). *What does post-truth mean for a philosopher?* (https://www.bbc.com/news/education-38557838.

[13]   Davies, H. (2019, 2 September). Ted Cruz using the firm that harvested data from millions of unwitting Facebook users. The Guardian. Retrieved April 11, 2022, from https://www.theguardian.com/us-news/2015/dec/11/senator-ted-cruz-president-campaign-facebook-user-data.

[14]   Dawkins, R. (1976)*The Selfish Gene.*Oxford University Press.

[15]   Ettinger, R. (1972) *Man Into Superman* .Later editions.

[16]   Forti, S. (2021). Extrema derecha 2.0. Madrid: Siglo XXI. ISBN 978-84-323-2030-9.

[17]   Freud, S. (1900) The Interpretation of Dreams . The Macmillan Company.

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[6] https://elpais.com/opinion/2022-04-29/la-libertad-y-las-redes.html.

[18]   GOV.UK. (n. d.). *Overview of EMERDATA LIMITED - Find and update company information* - GOV.UK. UK Companies House. Retrieved 19 April 2022, from https://find-and-update.company-information.service.gov.uk/company/10911848.

[19]   Graham-Harrison, E., & Cadwalladr, C. (2021, 29 September). Revealed: 50 million Facebook profiles harvested for Cambridge Analytica in huge data breach. The Guardian. Retrieved 13 April 2022, from https://www.theguardian.com/news/2018/mar/17/cambridge-analytica-facebook-influence-us-election.

[20]   Hern, A. (2020, 3 February). *Cambridge Analytica worked for Leave. EU, emails confirmed.* The Guardian. https://www.theguardian.com/uk-news/2019/jul/30/cambridge-analytica-did-work-for-leave-eu-emails-confirm.

[21]   Huxley, A.(1932) *Brave New World.* Chatto & Windus.

[22]   Khavin, D., Willis, H., Hill, E., Reneau, N., Jordan, D., Engelbrecht, C., Triebert, C., Cooper, S., Browne , M., & Botti, D. (2021, June 30*). Day of Rage: How Trump Supporters Took the U.S. Capitol*. https://www.nytimes.com/video/us/politics/100000007606996/capitol-riot-trump-supporters.html.

[23]   Lacan, J. The ethics of psychoanalysis. 1958. Tavistock/Routledge.

[24]   Lacan, J. (1977). *The Function and Field of Speech and Language* in Psychoanalysis: A Selection, W.W. Norton & Co., New York.

[25]   Lacan, J. (1955). *Seminar 3: psychoses*. : Routledge.

[26]   Margarit, R. M. (Enero-junio 2003). «Los medios de comunicación en la era de la globalización, en América Latina». Bibliotecas XXI (1): 18-38.).

[27]   McLuhan, M. Understanding Media: The Extensions of Man (1964). Routledge, London.

[28]   Murdock, J. (2018, 3 may). *What Is Emerdata? As Cambridge Analytica Shuts, Directors Surface in New Firm.* Newsweek. https://www.newsweek.com/what-emerdata-scl-group-executives-flee-new-firm-and-its-registered-office-909334.

[29]   Orwell, G. (1945). *Animal Farm.* Secker and Warburg.

[30]   Orwell, G. (1949). *Nineteen Eighty-Four.* Secker & Warburg.

[31]   Orwell, G.(1938). *Homage to Catalonia.* Secker and Warburg.

[32]   Ralph Keyes, R. The post-truth era: dishonesty and deception in contemporary life (2004). St. Martin's Press.

[33]   Rosenberg, M., Confessore, N., & Cadwalladr, C. (2019, 19 mach). How Trump Consultants Exploited the Facebook Data of Millions. The New York Times. https://www.nytimes.com/2018/03/17/us/politics/cambridge-analytica-trump-campaign.html.

[34]   Sanchez Hernandez, A. B. (November 22, 2021.) *«Postverdad y política, ¿alguna relación?».* https://empresason.com//art/7395/postverdad-y-politica-alguna-relacion.

[35]   Shelley, M. (1818). *Frankenstein or The Modern Prometheus*. Lackington, Hughes, Harding, Mavor & Jones.

[36]   Skinner, B. F. (1965). *Walden Two*. Macmillan.

[37]   Thoreau, H. D. (1854). *Walden*.Ticknor and Fields: Boston.

[38]   Waleed Aly (5 Nov. 2020) Trump, a post-truth man for a post-truth world https://www.smh.com.au/world/north-america/trump-a-post-truth-man-for-a-post-truth-world-20201105-p56brp.html.

[39]   Zuboff, S. (2020). *The age of surveillance capitalism: The fight for a human future at the New Frontier of Power*. Public Affairs.

Artificial Intelligence and Journalism: Review of Kazakhstan's Experience and Evaluation of Media Risks

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Abstract

This article discusses the prospects of using artificial intelligence in modern media in the context of the modern information society. Parallels are drawn between the modern presence of robotic journalism in the information segment, including its capabilities in social networks, and its ability to become an essential participant with impact in an active communication process Attention is paid to the functioning of automated tools that can replace a journalist, and conclusions are drawn regarding the future of artificial intelligence in journalism, considering possible media risks and positive aspects of this trend.

Keywords

Information space, artificial intelligence, robotic journalism, media risk, information technology

1. Introduction

The modern information space requires a more thorough and systematic study of the changing functions, capacities, and possibilities of the media and the emerging new mass information and communication technologies. The Internet has won its audience 6 times faster than radio and 2 times faster than television, and the Internet space as a concept that is significant for civil society and overall rounded development should help overcome the "communication gap" between civil society and the state [1]. At the same time, digitalization today is not only trends, but also media risks, as well as new challenges. The transformation and modernization of social processes and institutions, one of which is undoubtedly the media and mass communication, always requires a comprehensive and fundamental study and understanding of the theoretical and methodological foundations of their development in the format of a changing media market, adapting to the rapid growth of new technologies, which in turn change both the very specifics of information and the perception of information by the mass audience. Digitalization trends has brought myriad of transformations into how information could be utilized as a tool to influence and create new perceptions and different ways of processes for audience. With the advent of information technology, the functions and role of journalists have been transformed: journalists, who quickly mastered the territory of dynamic and progressive interchange and dissemination of information fluidly merged into the global trends in information system. Having firmly established itself in the functional activities of the media segment, the Internet has entered the structure of the Quality Management System (QMS) and is now the largest field for the media (mass media), giving rise to the virtual world of information spaces. This interaction has a very flexible form, and fundamental approaches to its study make it possible to reveal the boundaries of the participation of states in the global information space and information trends in new conditions that have undoubted possibilities for influencing economic growth and the social sphere.

The very process of transforming the information market, subject to the development of information technologies, also needs a comprehensive study in terms of increasing its role in the context of global changes, in studying its impact on the formation of an information civilization, updating energy and information resources, conceptual development of modern society in the context of media exposure, social and economic processes.

Researchers define modern journalism as one of the promising creative sectors of the economy in which use of augmented reality, in particular, the gradual introduction of artificial intelligence in the production of journalistic content has been actively implemented. A prediction for journalism compiled by Nieman Lab is based on the statements of influential people in the media environment emphasizes the future of artificial intelligence. In the future, "there should have been more achievable projects using

artificial intelligence, such as providing reporters with story tips, automatic data tracking to detect fraud, and scripts to update published stories, reports, etc." [2]. All this, according to influential scientists and experts, facilitates the work of journalists. But questions about the interaction of artificial intelligence with journalism, both technical and ethical, and social, still require further study and considerations.

In Kazakhstan's case, the problems that many researchers and journalists pose for themselves are the following: how exactly artificial intelligence can affect the field of journalism; what changes will occur in this regard in this area; what possible risks are, along with a positive effect; impact of the new information trend, especially since today robotization is quite actively used in foreign media. In ther words, the issue of transforming journalism in the era of information technologies for Kazakhstan is quite relevant and interesting for study.

2. Study

In 2014, Swedish researcher Christer Clearwall conducted an analysis to determine the audience's perception of news. He showed two versions of an article about playing American football to media and communications students. Participants in the experiment had to determine whether the material was prepared by journalists or a robot. The publication was written in English, there were no pictures, and two texts occupied the same volume. As a result of the study, not all participants were able to distinguish who wrote the article. Of the 27 respondents, 10 participants made the mistake that the material created by the robot journalist was written by human hands [3].

The question arises whether technological changes are taking place in the digital media environment, considering the models of editorial responsibility for the material published by such methods. To do this, it is necessary to conceptualize the concept of mechanized journalism, considering the peculiarities of its modern development in the context of the requirements of fact-checking, analysis of the reliability of information, and maintaining the social responsibility of a journalist when using artificial intelligence in the work of modern editorial offices.

Artificial intelligence was founded as an academic discipline in 1956, and has since gone through several waves of optimization, followed by disappointment and loss of funding, known as the "AI winter", followed by new approaches, success, and renewed funding. AI research has tried and rejected many different approaches since its inception, including brain simulation, human problem- solving simulation, formal logic, large knowledge databases, and animal behavior simulation. In the first decades of the 21st century, this field was dominated by highly mathematical statistical machine learning, and this method has proven to be very successful in helping to solve many complex problems in industry and academia, gradually implementing a cognitive approach to media content. Considered the dawn of a new science, "social physics" that uses artificial intelligence algorithms, the era of big data has become the era of the content of the billions of micro-social interactions that are continuously being made using our mobile devices and other online platforms. The structure of these interactions migrated to the reflected reality, creating a kind of virtual world in which the laws of information perception begin to act differently. Digital, electronic, online publications, multimedia media, in comparison with other traditional media, have almost completely captured all the attention of society. And it is not surprising, because pictures, video, audio materials are much easier for a person to digest than text. However, like everything else, the Internet, despite its information overload, has the other side of the coin, several negative aspects [4]. We can list a number of problems and disadvantages of online publications not only in the Republic of Kazakhstan, but also in all countries in general:

- "The effect of an exploding bomb";
- Unprofessional approach to problematic information;
- Yellow press information;
- No positive impact;
- A clear lack of evidence and facts in the information;
- Lack of or weak analytics;
- Lack of debriefing.

With such media risks caused by technological changes in the communicative space, is it worth it to rush to introduce artificial intelligence into the activities of the media? Let us consider the boundaries

that may separate media approaches to working with information and its subsequent transfer to a mass audience.

The ability of modern media products to have a stimulating effect on the audience is the starting point for using its influence in the act of communications aimed at various areas of social life. This is especially important for the Internet audience, which in the modern world receives the largest part of social knowledge and skills through the information space, in which they can spend a significant part of their time.

Online media products are able to form an oriented opinion among their audience, which can exist in this space and be created through the preferences of its carriers. At the same time, it is very important to consider that in this case a mobile information model of reality is created, which is capable of creating a virtual model of reality that adjusts the real existing reality [5].

In this regard, artificial intelligence can show a dual nature. Parallel to the emergence of the new field of "social physics", a scientific direction for scientists has become the ability to teach a robot the ability to tell stories - to tell stories using artificial intelligence algorithms. Storytelling is now emerging as a new area of research for AI software developers, drawing on a vast body of knowledge in linguistics and natural language learning. Artificial intelligence algorithms are being developed that can transform facts and new insights obtained from data warehouses using data analysis into readable stories in a fraction of a second. This is called: "Robotic Journalism". This new field of robotic journalism is based on two factors: computer software that automatically extracts new knowledge from huge data warehouses using the new concept of "Social Physics", and algorithms that automatically convert this knowledge and these ideas into readable stories without human intervention. There are already commercial companies that have developed artificial intelligence algorithms that write a huge number of journalistic stories without human intervention. These algorithms can adjust the tone and structure of storytelling according to their audience profiles. Here lies a certain pitfall just in the form of audience expectations. The ability of the communicative environment to manage its audience allows you to create for it a virtual picture of the world that can be long-term. This, rather, will be considered an understanding of the world, rather than its current vision, inherent in the information picture. The virtual picture of the world is not just of a value nature, it contains the causes and consequences of events that are recorded by the information picture of the world. Then a narrative arises in the head, from which it becomes clear why this happened and what the consequences may be. [6]. The algorithm is able to take this basis and force the audience to believe in the virtual picture it has created, often while mixing lies with the truth when the main information was true and the conclusions from it are outright false. Now it is difficult to say that neural networks are too big a danger in this direction, but there are undoubtedly prerequisites.

This is explained by the fact that the relationship between human nature and the phenomenon of information has played an important role in the conditions of the technological revolution and the rapid development of the Internet. Due to the endless possibilities of the Internet, the principle of the reliability of information has been seriously shaken. Fake news is all over the place. There are two main reasons for the widespread use of fake news: quantitative: there is a huge amount of information on the Internet that cannot be verified; qualitative or technological: new technologies have led to an increase in the means of collecting and storing data, as well as the number of news producers and channels for their transmission. In the context of the information society, the Internet has become the most important source of knowledge. In addition, no effort is required to access this huge repository. This is confirmed by the fact that today about 97% of users consider the Internet as a source of information. Social networks have become the main source of news for 47% of people. Eventually, the Internet, especially social media, has become a convenient and safe place to spread fake news. And considering how good a robot can be at writing text, it can also be good at creating unverified information, however, there will undoubtedly have to be a person behind this.

On the other hand, the use of artificial intelligence is more positively perceived by researchers as an opportunity to counter false information, which, indeed, is becoming an increasingly widespread problem in a digitalized society today. In Kazakhstan, social networks and instant messengers have become the main source of fake news and rumors as one of the types of creation of virtual reality. There are several reasons for this. Access to the information market and content creation through social networks has been greatly facilitated in recent years thanks to various applications, new technologies

and programs such as Adobe Premiere Pro, Adobe Photoshop, Canva.com and others. Social networks are one of the needs of a modern person, through social networks it is convenient to follow the news on the phone or computer screen, when anything becomes an informational occasion, but it can be difficult to discuss the reliability of information. The number of social media users is growing rapidly, while the popularity of traditional media is declining. As a result, trusted sources of information are increasingly used in social networks, opening the way for the development of unverified and low-quality information, and the flow of a huge amount of information through the Internet and, in particular, social networks reduces interest in traditional media.

What concerns the official media of Kazakhstan, whether they are public or private, in this regard, the media market of Kazakhstan, although it experiences difficulties with the implementation of news content, which sometimes manifests itself in incomplete coverage of events or the assumption of stylistic errors and not fully verified facts, still tries to adhere to the principle's media ethics and fact-checking. The main problem is the formation of the Internet audience, prone to the perception of rumors and unverified information. The danger of such an attitude to information lies in the fact that the result of the presence of unreliable information in the information market is the possibility of manipulating public opinion, which, in turn, can lead to a tense social situation. Kazakhstan at the legislative level introduced several articles into the Criminal Code of the Republic, providing for liability for the dissemination of false information, but to a greater extent this does not concern the fight against fakes directly, but the possible consequences of violating social and economic stability in the republic. The latest amendments to the Law on the Mass Media of the Republic of Kazakhstan caused a wide resonance among journalists and the public and served as an occasion for active discussion on the pages of Kazakhstani publications. One of the areas under discussion was Articles of the Law No. 2 and No. 13 concerning taboo topics. The main claim was a vague interpretation of the concepts that fall under this category [7]. But apart from this, it is necessary to consider the possibility of adopting a separate law on disinformation and the fight against fake news, including not only the media, but also social networks, since it was with the growth of social networks that traditional media began to compete with activists and bloggers. For a modern audience, the fact of a blogger is just as important as information from traditional media. At the same time, bloggers do not follow the ethical standards of a journalist and are in a hurry to publish news faster than professional editorial offices. To maintain competition, the media can gradually reduce the level of verification of information. As a result, information falls to the level of competitors. But the Alliance of Bloggers of Kazakhstan opposes the legislative introduction of such liability.

The organizations responsible for checking the facts, with the help of their services, should solve this problem, returning journalism to its original level. Today, given the undoubted importance of combating disinformation, there are two fact-checking websites in Kazakhstan, FactCheck.kz and StopFake.kz, which, while setting themselves similar tasks, differ in their approach to solving them. The main point is that true information cannot be as fast as false information, if only because it needs to be verified, while for false information this is not necessary. And readers, viewers, users of social networks want news to arrive as quickly as possible, since the entire news distribution system today is geared towards speed. Therefore, high-quality journalism loses to fake. Lies are spreading at a tremendous speed. Moreover, modern technologies allow you to simulate any image and sound, fake videos, photos, or documents. Using the capabilities of artificial intelligence, it is possible not only to reduce the time for submitting information, which, as we see, is appreciated by the modern audience, but also to avoid the number of errors that have become increasingly common in the media when processing information quickly, as well as reduce the time for its verification.

In addition to great potential savings in labor costs, robotic journalists never miss facts, never get tired, and, most importantly, are free from subjectivity and bias. But let's make a reservation, in the event that they are programmed objectively. Therefore, it is too early to talk about the independent existence of artificial intelligence in journalism, in our opinion. Its implementation is technological. The Japanese have created a 3D humanized journalist robot that can mingle with crowds of people, conduct interviews, take pictures, and write a story. Some journalists view such "colleagues" as simply another tool that will free them from the need to conduct costly and sometimes dangerous investigations, including in order to verify information. Robot journalists will provide what the optimists hope will be an automated draft of the story, which they will edit and enrich with their deep analysis, their views,

and their storytelling talents. More pessimistic journalists see the new robot journalists as a real threat to their livelihood, work style and life. In the coming age, characterized by the introduction of microdata collection sensors embedded everywhere – even the clothes and gadgets that surround us – it is believed that human journalists will find it difficult to compete in this ecosystem of automated end-to-end data collection and writing.

In recent years, the robot, which appeared earlier in the field of print and the Internet, began its activities in the field of television. In China, a robot announcer has appeared that broadcasts daily news [8]. According to the Xinhua news agency, there are two such speakers. One of them broadcasts in English and the other in Chinese. Representatives of the TV channels on which the robot works keep complete information about this technology a secret. It is known that the robot is able to perform its work 24 hours continuously. According to some sources in China, the appearance of the robot announcer was similar to the popular Chinese TV presenter Qiu Hao. In Kazakhstan, a robot-announcer was created in the likeness of the face of the famous actor Sanjar Madi [9]. A moot point, really, but being a 'cyberjournalist' has brought some economic benefits to the station. He does not need to make up before the broadcast, he does not need to pay a salary, although the cost of such an employee is probably considerable. In the future, most major TV channels are planning the work of robot operators. This suggests that smart technology can replace the leading TV experts. Although, in our opinion, robots cannot replace real journalists. We agree with the statement that AI can create a huge number of articles, or a news review, but the machine cannot analyze and delve into a serious topic. On the other hand, we cannot completely rule out the idea that in the near future AI will be able to replace journalists quite actively.

Now these are already modern realities, a practice that is used all over the world. According to scientists from the Massachusetts Institute of Technology, "the loss of traditional media models is inevitable." There are many companies that are trying to experiment with ways to increase the number of potential readers. The algorithm fills in structured information, so every story about a sporting event in a college or an entire country with organized information is basically the same. From this it is worth concluding that you will receive the same structure for presenting information. For example: a title, a sentence describing the entire article, numbers and results, a conclusion, that is, an algorithm that characterizes the genre specifics of the material. Artificial intelligence is now implemented in such well-known publications as Los Angeles Times, Associated Press, Washington Post, Forbes, Mittmedia, Yandex for Media, TASS, Sports.ru. The Associated Press, an international news agency, publishes more than 3,700 automated news reports quarterly. The list of topics selected by robots includes sports, finance, weather, or traffic conditions - information that is widely available in monitoring and relatively easy to further analyze and at the same time saves resources, since examples of robotic journalism primarily include stories that can be understood by numbers, and the very implementation of neural networks in the media industry has been focused on increasing productivity and efficiency. For example, the Associated Press (AP) uses Automated Insights software to create quarterly earnings reports for more than 3,000 companies because they would not otherwise have the resources to cover those companies. The Washington Post, also the most famous news agency in the field of journalism, uses the Heliograph system, which can calculate and verify any information, even covers elections. According to press estimates, such smart technology saves up to 20% of journalists' time. [ten]. In addition, bot input allows editors to spot spelling errors. Financial and sports reporting has gained a great helper in the form of neural networks and has opened up new opportunities for the data journalist who is associated with big data.

At the same time, one of the most difficult things that reporters do is to come up with something new, something that will hook the reader from the very first words. It is difficult to participate in the creative process and come up with something really new, will artificial intelligence in its modern form, aimed at processing and standard news delivery, cope with this. And if a mistake is made in automated history, are we ready to figure out how to sue the algorithms.

There is speculation that a fully automated newsroom is where we're heading, but even here it's doubtful. The assumption that a machine will be better than a human generating news or media is still an assumption, because it really begs the question of whether what computers write would be boring, since the aspect of real human talent and style that journalists work on the fundamental journalistic foundations associated with journalism and the most important journalistic genres, including personal

thoughts and style, and this is very difficult to reproduce. This issue should be considered without forgetting that automation is not really something that we want to reproduce, it is something that has happened again and again in the technological world and what today we call information technology that is changing our world.

As we move towards a networked society, software will continue to complement journalists and help media companies. They will work together to do a better job and make the most of limited resources by automating processes, doing chores, having a multi-location presence, and doing data research—all while reducing costs and increasing profits for media companies.

The powerful combination of artificial intelligence and next-generation networks will create new opportunities for the media industry. Today, AI technology is at the heart of media recommendations based on consumption habits – for example, search engines and aggregators are already tailoring results to individuals, and some web publications are also personalizing landing pages. This trend will continue as we move towards a networked society, delivering more personalized content than ever before. This is because AI needs to get even smarter as the robust networks of the future will enable greater machine-to-machine interaction, supporting broader device-to-device connectivity and connecting cities to cities.

In the media and journalism, this would mean fully adapted articles that provide the individual reader with the information they need – for example, those who are unfamiliar with a topic will need background information to understand, while an expert will only need detailed information. The smart systems that future networks will make possible will guess which parts of the story to show to whom, thanks to a better understanding of consumers.

Let's note the main advantages and positive points. Artificial intelligence can pick up materials and analyze them. He also does it twice as fast as a human. Even by providing materials, the reader will be able to find out their preferences and analyze them. The application of AI in the media can be successful. Nowadays, robots help in the editorial service and interfere with the activities of all kinds of sites.

However, there are some problems with the media space and the use of AI in it. First, we are talking about the media and readers, and people trust journalists and other sources of information. But the fourth power has its own algorithms for how to collect and how to use this data. Obviously, it is categorically impossible to collect any data without legal permission, so the robot journalist will need programmers and employees of the authorities who will actively monitor the work of such artificial intelligence [10].

Secondly, behind any robot there is a person who reprograms it, indicating the vector of its behavior and goals. With these functions attached to the mental system, there is a risk of performing various operations in the brain of its creator. For example, a few years ago there were rumors that the racist idea of a South American inventor was stuck in the memory of his robot. This prompted correspondents to reflect on the responsibility to society.

In addition, AI is still not able to distinguish truth from false information and fight misinformation. Although OpenAI was previously able to create artificial intelligence in order for it to reveal fake news. It turned out that the Algorithms coped with their task, but worse than people. Another disadvantage is the inability to distinguish between emotions in social networks. This shortcoming does not allow working productively with the issue of cyberbullying. Also, from a creative point of view, robots lack creativity. Smart machines can only imitate the style of people, but not create something unique. The media has long used AI to record sports news and crime stories, but the jokes created by robots and the novels they write have not yet attracted active interest. Although experts are confident that in the future, using the full range of opportunities to implement their ideas, the difficulties of artificial intelligence will be resolved.

3. Conclusion

Automated journalism, also known as algorithmic journalism or robotic journalism, is the generation of news articles by computer programs. With artificial intelligence (AI) software, stories are created automatically by computers rather than by human reporters. These programs interpret, organize, and

present data in a human-readable way. Typically, the process involves an algorithm that scans large amounts of provided data, selects from a set of pre-programmed article structures, arranges key points, and inserts details such as names, places, amounts, ratings, statistics, and other figures. The output can also be customized to match a particular voice, tone, or style.

Automated journalism is sometimes seen as an opportunity to free journalists from routine reporting by giving them more time to complete complex tasks. It also improves efficiency and reduces costs, alleviating some of the financial burden many news organizations face. However, automated journalism is also perceived as a threat to the authorship and quality of news, as well as a threat to the livelihoods of human journalists.

Artificial intelligence provides a more efficient way to package and distribute content by creating special algorithms that can filter data more accurately and thoroughly than the average person [11]. It is no longer enough for journalists to simply speak and hold a microphone. However, this does not mean that artificial intelligence will completely replace journalists. Automation cannot replace traditional and new media but complements them. Robotic journalism is often more widely used in sports news than in domestic and foreign policy reporting. Journalists are still not convinced that automated content generation technology is having a significant impact on their profession. Some journalists are interested in algorithmic calculations that allow publishing articles without human intervention, and such authors are ready for change. The latter are those who combine a new wave of their own talent and technology to maximize their potential and create the most effective and sustainable journalism in the future, so artificial intelligence can become a real and successful assistant to the journalistic craft if editorial staff learn to skillfully master new techniques and open up new horizons in their profession and possibly around the world. The future is not with robots, but with people who know how to use them.

4. References

[1]   Патрушев С.В., Филиппова Л.Е. Дуализм массового сознания и типология массовой политики // Политическая наука, 2017. – № 1. С. 13-37.

[2]   Алгоритм пришел на смену журналистам// [Электронный ресурс] https://www.kommersant.ru/doc/3414753   https://www.kommersant.ru/doc/3414753   (дата обращения 18.02.2022).

[3]   Clerwall C. Enter the robot journalist: Users' perceptions of automated content //Journalism Practice. – 2014. – Vol. 8. – №. 5. – Р. 526.

[4]   Кастельс Мануэль., Галактика Интернет: Размышления об Интернете, бизнесе и обществе. Пер. с англ. А. Матвеева под ред. В. Харитонова. – Екатеринбург: У-Фактория, 2004. – 328 с.

[5]   Введение в Интернет «Всемирная паутина»: методическое пособие / Е. К. Балафанов, Б. Б. Бурибаев, Р. М. Дузбаева, Г. Б. Мамырбек; Интернет новых технологий – Алматы: ИНТ, 2004 – С. 4-5.

[6]   Почепцов Г. Пропаганда 2.0 Харьков, Издательство: Фолио, 2018 – 420 с.

[7]   Kursiv.kz Как новые поправки в закон «О СМИ» ограничивают свободу казахстанских журналистов...// https://kursiv.kz/news/obschestvo/2018-01/kak-novye-popravki-v-zakon-o-smi-ogranichivayut-svobodu-kazakhstanskikh.

[8]   В Китае появился робот-телеведущий. Он способен работать круглые сутки без зарплаты и еды [Электронный ресурс] https://esquire.ru/news/science-and-technology/09-11-2018/69352-v-   kitae-poyavilsya-robot-televedushchiy-on-sposoben-rabotat-sutkami-bez-zarplaty-i-edy/ (дата обращения 13.09.2022).

[9]   Виртуальный ведущий впервые вышел в эфир казахстанского телеканала [Электронный ресурс]strategy2050.kz: https://strategy2050.kz/ru/news/virtualnyy-vedushchiy-vpervye-vyshel- v-efir-kazakhstanskogo-telekanala (дата обращения 13.09.2022).

[10]   Интернет - журналистика: учебное пособие / Н. Б. Есхуатова, Г. С. Султанбаева; Казахский национальный университет им. Аль-Фараби – Алматы: Қазақ университеті, 2015– С. 8-10.

[11]   Аянкызы А. Искусственный интеллект и журналистика [Электронный ресурс] URL: https://massaget.kz/blogs/26447/(дата обращения 15.09.2022).

[12]   Боровская Е.В. Основы искусственного интеллекта / Е.В.Боровская, Н.А. Давыдова – Москва: Бином, Лаборатория знаний, – 2018 – 127 с.

The Use of Mobile Applications in Learning English: EFL Students' Attitudes

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Abstract

In recent years, an increasing tendency to the use of mobile application for language learning has been detected. The use of mobile applications in the Foreign Language classroom is highly relevant, since mobile technologies are proving crucial for the educational context worldwide. Assessing mobile apps and online platforms as a perspective approach to enhancing students' foreign language proficiency is found necessary. In line with these trends, the article aims to study learners' attitudes to the use of mobile applications for practicing English and developinglanguage skills. Furthermore, it reviews apps and platforms employed in the process of teaching/learning English as a Foreign Language.

Keywords

Mobile applications, online platforms, distance learning, foreign language

1. Introduction

Rapid development of technologies has predetermined the mass use of smartphones providing accessibility to essential tools for entertainment, work, communication, and information [1]. As stated by Prensky, today's learners have grown up into a digitalized world surrounded by various modern technological tools and devices [2]. The researcher labels the young generation as "digital natives", since they are the product of quite a different culture which has evolved as a result of rapid digital technology development for the last two decades of the 21st century. Technology has changed the learners and the way they synthesize information, construct new knowledge, understand new ideas and concepts. In this regard, Frank Kelly, Ted McCain and Ian Jukes observe "The world we live in has fundamentally changed. Our students have moved into the information Age… The learning styles of today's digital kids are significantly different than those for whom our high schools were originally designed. They work, think, and learn differently … and our schools … and instruction primarily based on teachers talking in classrooms, textbooks, memorization and content-based tests, … are becoming increasingly out of sync with the world around them" [3, p.9].

Technology has become part of English language instruction redefining the student-centered approach, methods of presenting materials and assessing students' outcomes [4, 5]. Numerous apps are used in the foreign language (FL) classroom to develop language skills. Yet, there can be observed a lack of studies considering the effectiveness of these apps on fostering students' language proficiency. Among a variety of mobile apps and online platforms it seems to be hard to determine the efficacy of a certain one for FL students. To help educators with their choice of mobile apps when developing students' vocabulary and speaking skills, we have reviewed apps available in Google Play.

This article reflects peculiarities of teaching English via mobile applications. The introduction of modern technologies in the field of education, despite the digitization of many institutions, remains a complex and controversial process. The traditional pedagogical conservatism of educational institutions and insufficient IT competences of teachers limit the possibility of introducing new technologies into the educational process [6, 7]. Therefore, many students are inclined towards using mobile applications in language learning.

Our two-fold purpose for this study is as follows: 1) to identify the most popular mobile applications and platforms, 2) to indicate promising directions in using mobile technologies in the process of teaching a foreign language to enlarge students' vocabulary and develop their speaking skills.

2. Literature review

Due to digitalization of all spheres of human activity the application of ICT in FL education both in curricular and extra-curricular activities has become a rather commonplace practice and everyday reality of the XXI century. With the evolution of technology, the language teaching has undergone a number of changes in terms of the computer use and a wide range of ICT applications as well as new approaches to FL teaching/learning.

As underscored by Padurean and Margan, the computer which one has been treated as 'a tutor', took on the new status of 'the tool' [8]. The researchers also claim that CALL, or computer assisted language learning, is an important stage in the development of language pedagogy. "The computer as a tool stage" refers to the use of computers and ICT applications as a stimulus for language learning through various communicative tasks based on learner-computer interaction. Furthermore, it provides authentic learning environment combining listening with seeing. Some other advantages of the CALL are self-paced learning, more focus on the content and access to different resources which give additional material on the language use. The application of ICT gives more opportunities for language learners to interact with peers, they can share information with each other via various Internet platforms, get engaged in projects in the online format, search for information, exchange their opinions on a certain problem in real time, etc.

The same opinion is held by Pop and Bocoş who state that "the use of ICT resources can make learning more linked to reality and can bring the world into the classroom" [9;.9]. Undoubtedly, ICT gives both teachers and students more opportunities to get access to information. Furthermore, the researchers observe that a modern educational process is expected to develop skills how to deal with a large amount of information to help students succeed academically and further on professionally. Therefore, ICT resources are considered as tools which leverage traditional teaching resources.

Teaching a foreign language via mobile applications has shown promising results by enhancing students' motivation for learning and their language performance [10]. Among benefits of mobile assisted language learning Miangah & Nezarat distinguish "portability", "social interactivity", "context sensitivity", "connectivity" and "individuality" [11].

A substantial number of mobile apps have been developed for promoting FL learners' language and communication skills. In comparison to traditional approaches to teaching/learning a FL, they seem to be more effective offering students a wide range of learning materials [4,12]. Mindog highlights that apps gained popularity as useful and efficient technological tools which aid language learning and teaching [13]. "They are easily accessible (free/cheap), highly portable for anytime-anywhere learning, customizable and can be accessed via smartphones that many students already own" [14; 17]. According to Hossain, mobile apps for language learning purposes offer learners a number of advantages [15; 2]:

- Students can practice any language item anytime and anywhere;
- The smartphones and their apps are portable;
- The learners are freed from carrying books, pens, and paper;
- They can take tests on the different skills and systems of the L2;
- They can share their proficiency with their peers via the same device;
- They can practice language skills and the systems of L2 on the same device;
- They can have their lessons and tips on various language aspects on the apps;
- They can gain knowledge and, at the same time, have fun together;
- They can be technologically advanced and simultaneously benefit linguistically;
- They can get the apps free of charge;
- Apps can accompany them 24/7.

Over time, an extensive literature has developed on reviewing the use of mobile applications and their perspectives for FL education. A comprehensive description of the use of mobile devices (cell phones, PDAs, and iPods) in the FL classroom can be found in research by Chinnery [1]. A study conducted at the University of Cadiz, Spain (Universidad de Cádiz) in 2015 found that the use of mobile applications with gamification elements makes both the learning and the assessment process more efficient [16]. The results of a 4-week study indicated an increase in the students' vocabulary and an improvement in their writing skills. The students who participated in the survey also mentioned a great

interest in more non-standard learning methods involving gamification elements.

Another study by Wong C.C., Sellan R., Lee L.Y. addressed two questions: whether the idea of using mobile phones in teaching is technically feasible and what are their advantages and disadvantages [17]. The researchers concluded that mobile technology-based assessment has a number of benefits, such as immediate feedback, flexibility in terms of location and time, and greater opportunities for formative assessment. Despite the positive results of using mobile apps in learning a foreign language, many students aged 35 and above noted a desire to learn in a traditional way.

An experiment by Alzu'bi M.A. and Sabha M.R.N. was conducted to introduce mobile applications (mobile email) to develop students' writing and speaking skills [18]. The authors noted that the experimental model of mobile app integration contributed to enhancing students' academic performance. The researchers registered improvements in sentence structure, spelling, punctuation, and grammatical correctness. Significant improvements were observed in sentence structuring and small paragraph writing.

Positive feedback about the integration of Mobile App in teaching and learning process was also evidenced in a research by Mengorio and Dumlao [19]. The research data were collected from the pre-test and post-test results from both the control and experimental groups and Focus Group Discussion conducted in the experimental group on the English course completion. The experimental group was taught via mobile applications in daily classroom discussions and activities.

Zou and Li underlined significantly high motivation among the subjects of their experiment in taking the relevant activities to practice English on the apps [20]. 70 percent of the respondents stated that they regularly did vocabulary activities outside of the classroom. All students reported that they did reading tasks both in and after class. Regarding listening practice, more than 70% of the participant felt apps as beneficial for developing their listening skills. With respect to speaking tasks, 70 percent of the students stated they were useful, particularly for improving pronunciation. Furthermore, students felt more confident to discuss lessons in the class forum on their mobile devices.

3. Materials and methods

The conceptual framework of this study was based on the conceptualization of the effectiveness and the usage of mobile assisted language learning for English language learners and teachers.

The paper presents the results of a questionnaire conducted amongst 67 students who completed the English courses independently using a mobile application. All participants were self-motivated learners and used apps to pursue self-determined goals.

The course duration was different for all the participants. The questionnaire was conducted in English and Russian, contained 11 open-ended and close-ended items and consisted of 2 sections: 1) a section on background overview; 2) section on participants' responses with regards to their experience of using mobile apps.

The questionnaire and its findings are presented in the Results and Discussion section below.

4. Results and discussions

The aim of the questionnaire was to identify respondents' opinions about the use of mobile applications for learning English. It was designed to obtain frequency percentages of students' use of mobile app and the degree of their usefulness for developing language and communication skills.

Questions 1 and 2 asked the gender and the age of the respondents. The majority of course takers were females with 69 %, and 31 % were males. This implies that women are much more interested in language learning and are more flexible in their choices.

The respondents were mostly between the ages of 17 and 35: 14 % from 12-17 years, 49 % 17-25 years, 37 % 25-35 years as presented in Figure 1.
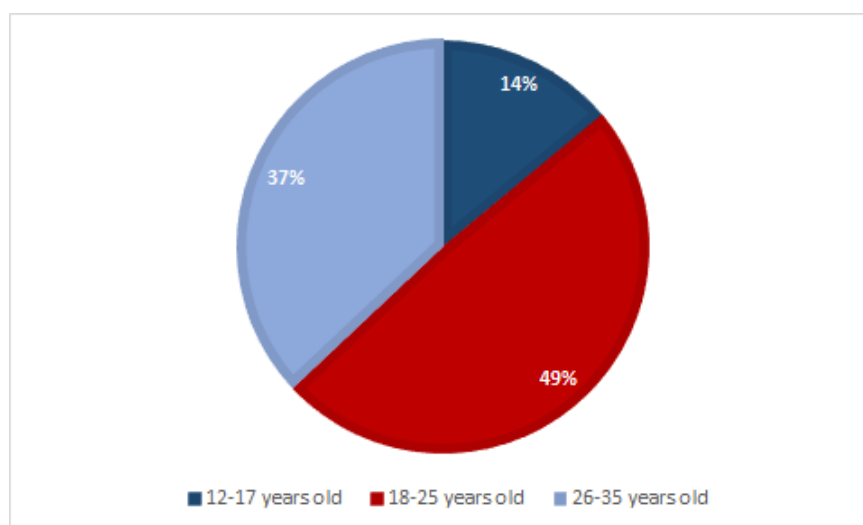
Figure 1: Age of students using mobile applications to learn a language

Question 3 was aimed at finding reasons for learning English via a mobile app. The respondents stated that they wanted to gain good skills at the convenient time and place mentioning lack of time and high prices for the English courses as the main barriers for studies. Other reasons included travelling abroad, career promotion, studies and self-development.

Adolescents (aged 12-17) found it easy and convenient to use the chosen software, underlining the authenticity of learning materials. Young adults (aged 18-25) better understand which type of mobile apps meets their learning needs and offers a more appropriate content for their learning interests and objectives. It can be claimed that this age category has greater potential and ambitions; they are also well aware of importance of language learning for their competitiveness in future professional sphere. Adults (aged 26-35) are mostly motivated to learn English by job requirements rather than by desire to improve language competences. Furthermore, this group highlighted a more budget-friendly option of mobile use in comparison to studying in a group course or individually with an instructor.

Question 4 was to reveal whether free or paid applications were more frequently used. The results, as shown in Figure 2, indicated that 38 % of students preferred fully paid packages, whereas 62 % started the free of charge course, 56 % proceeding on the paid basis and 6 % studying the language only within the unpaid period. Many applications offer 1-12 lessons for free, a well-known marketing ploy.
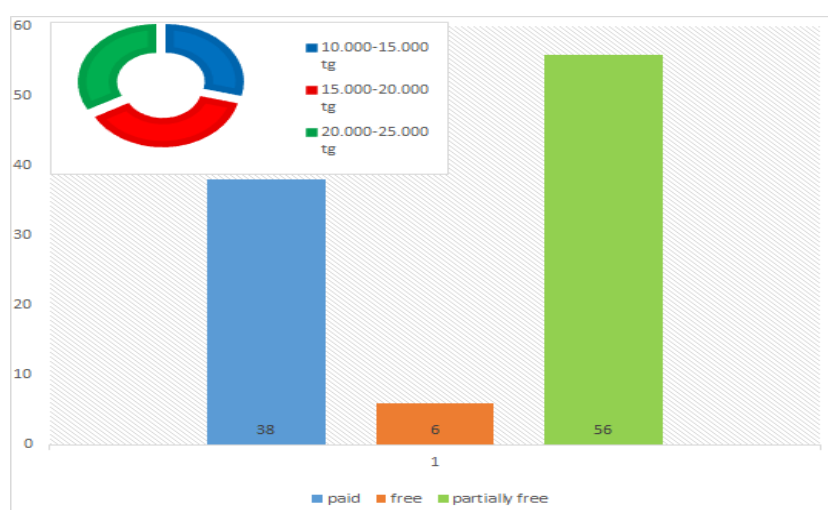
Figure 2: Percentage of users of paid/ free apps and their cost

Question 5 asked about the price of the application (if there was any), and the responses varied as

follows: a monthly course cost 10000-15000 tg to 29 % of respondents, 15000-20000 tg to 38 %, 20000-25000 tg to 33 %. The payment also depended on the subscription type. There were also courses costing 4000-5000tg, however, the course-takers observed that such type of courses offer low-level and low-quality learning materials.

Question 6 provided options for finding out time duration spent on studying one lesson of the course. According to the results, 71% of respondents completed one lesson in less than an hour, 19% spent a day and the remaining 10 % studied the materials for more than one day.

Question 7 required respondents to give information on the types of competences/skills they sought to develop during the course. The Likert scale was used with the five options to demonstrate their level of agreement: 1 = strongly disagree, 2 = disagree, 3 = neutral, 4 = agree, or 5 = strongly agree.

Table 1

Attitudes to the use of mobile apps

Statement	Mean
I use mobile apps to enlarge vocabulary	3,84
I use mobile apps to practice pronunciation	3,66
I use mobile apps to enhance my grammar	3,52
I use mobile apps to develop my reading skills	3,37
I use mobile apps to practice listening skills	3,11
I use mobile apps to practice writing skills	3,07

As can be observed form Table 1, statements with the high level of agreement reveal that the respondents use mobile applications, predominantly, to practice vocabulary, grammar, and reading skills, respectively. The items with a neutral level of agreement report that they use (to a certain extent) their mobile apps to practice pronunciation, writing skills, listening skills, and speaking skills, respectively. The results found that individuals developed and practiced their skills to varying degrees. Practicing vocabulary earned the highest level of agreement, and this finding does not seem to be surprising. The subject of enhancing vocabulary through smartphones and smartphone apps has been investigated in numerous scientific papers, many of them indicating promising results [21, 22].

The results, as shown in Figure 3, indicate that 15 % were interested in improving only grammar, 35 % in only vocabulary, and 50 % tried to develop both. Interestingly, this correlation is related to the type of application the course takers used to learn English. Of the 67 participants who responded to this question, 34 reported an increase in language acquisition due to mastering both grammatical structures and lexical units.
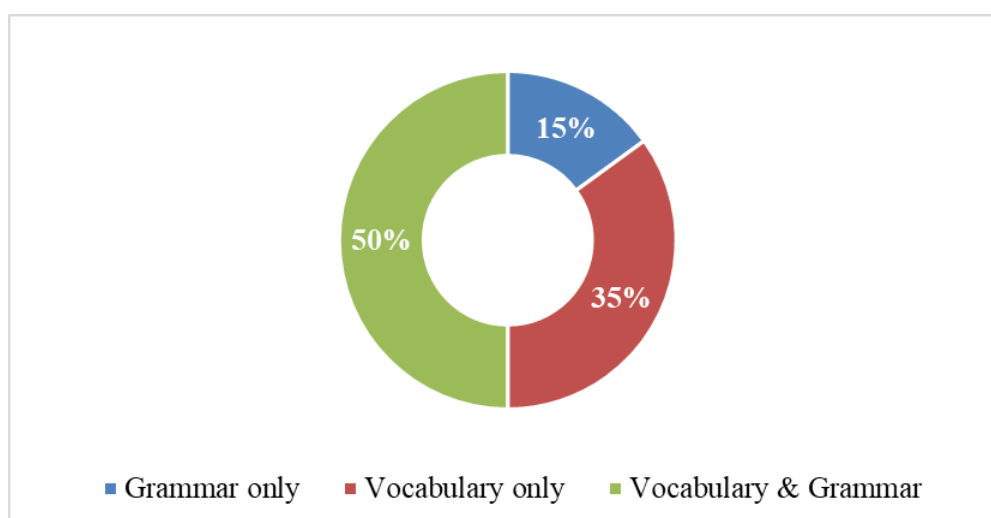
Figure 3: Types of activities by training

Question 8 was about the duration of the course, providing such options as 1 month, 3 months, 6 months, 6 months and more. There was also a possibility of writing a comment. Just over half of those who answered the question (56%) reported that they studied the course for 3 months, over a third (38%) studied the language for six months, others (6%) took the course for one month. Surprisingly, despite the studies duration, none of the participants accomplished the chosen level, the mentioned minority completed only entry level and had no intention to continue their studies.

Question 9 sought to determine the level of satisfaction with the mobile app language learning. From the data in Figure 4, an important finding was that only 28 per cent were fully satisfied with the results they had achieved, 54 per cent reported they were rather satisfied, and although they learnt the material, they felt there still were gaps in their knowledge, and they were not certain in applying the material appropriately in everyday communication. 18 per cent were fairly satisfied with the applications they used and most of them had to quit their studies. However, they also noted that they had access to the course materials and could revise the learning materials or retake the course at any convenient time.
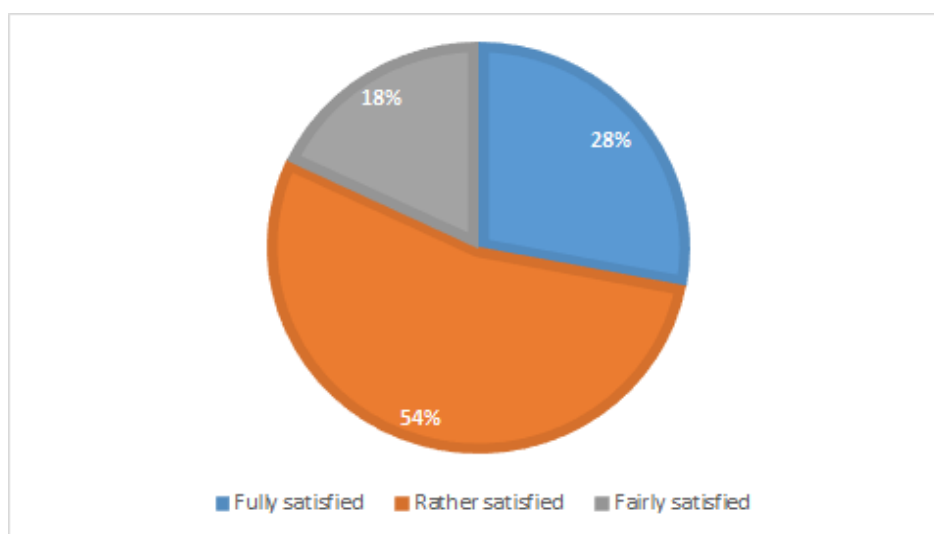
Figure 4: Satisfaction with language learning using mobile applications

Question 10 detected the mobile app used. There were a variety of responses to this question. The majority of respondents indicated using one or more apps as they were free of charge: "Cake: new lessons every day"; "Speak English in 30 days from Russian", "English Courses. Learn English with ED", "Parla", "English A1 for Beginners". Strikingly, some respondents mentioned using BBC while working on their listening skills. Another surprising result is some respondents used several mobile applications simultaneously as they were highly motivated despite having different goals.

Question 11 listed changes or innovations that could upgrade the apps. Responses to this question included: enriching the lesson vocabulary with new words, introducing grammar rules in the lesson theory, adjusting words play speed for different levels, granting offline access to the application, spotting and eliminating spelling mistakes in the apps, removing commercials (in free apps).

The current study found that the most highly motivated and interested in learning languages are young adults and women. The former has wide perspectives for future including work and travelling, the latter learn languages more for self-development and satisfaction. All the participants seek for independence in the learning process, focusing on their own learning needs and styles. Some of them tried several apps simultaneously in search for the best suited to their personal likings and needs. Half of the respondents took the responsibility and paid for their education, whereas the others worked only at starting lessons available without payment and quitted when asked to subscribe and charged a fee. Just over half of the respondents took the course for a three-month period, whereas one third of all the participants were consistent in their studies and learnt English for six months or longer. However, these data need to be interpreted with caution, because neither the app nor the time limits were not set for the participants. The respondents also reported that the apps mostly provided possibilities of practicing mostly grammar and vocabulary, whereas practice of basic skills was insufficient and required to install

other mobile apps such as BBC for listening, Readable for reading. To improve the applications, the course takers suggested to eliminate numerous advertisements and enrich the standard vocabulary with new up-to-date lexical units.

5. Pedagogical implications

These are the most relevant web-resources and mobile applications which can be employed inthe FL classroom for enhancing students' foreign language proficiency at various levels of study.

Resource 1

http://www.intact-comenius.eu/p/overview-contemporary-interactive_14.html

A wide range of collaboration projects on the use of ICT for the development of intercultural communicative competence has been conducted for the last decade. One of them is INTACT Comenius project (Interactive Teaching Materials across Culture and Technology). Although the project was finished in 2015, the platform continues providing interactive teaching materials for various subjects and helps teachers to use the ICT effectively in their classrooms. The platform provides various templates which may be helpful in developing conceptual framework of educational materials and evaluating plans for teaching cultural scenarios.

Resource 2

https://eslflow.com

This online platform can be useful to foster English language skills both in general and business contexts. The resource provides lesson plans, worksheets, games, quizzes aiming at developing the four basic language skills. Apart from this, the platform can be helpful for learning/ teaching about the FL culture and fostering intercultural competence which promotes effective communication and collaboration in various cultural contexts. Cultural lessons concentrate on such topics as intercultural tourism, body language, etiquette, language identity, globalization. Reflection and analysis of quiz questions will help FL learners understand that there are differences across cultures, that people may have different cultural backgrounds which influence their way of thinking as well as their behaviour.

Resource 3

https://www.britishcouncil.org/

The British Council offers a range of mobile applications for learning English: LearnEnglish Grammar, Sounds right, LearnEnglish. Podcasts, audiobooks, quizzes, games and exercises aim at improving pronunciation and grammar, enlarge vocabulary and cultural knowledge. Each application has its own peculiarities and contains materials for different language levels. LearnEnglish Grammar is presented in two versions: British English and American English. To improve pronunciation Sounds right can be employed as this application provides an interactive sound table and audio recordings. Podcasts LearnEnglish contributes to developing listening skills and comprehension, and to extending cultural knowledge and awareness.

The integrated platform "Read UK" provides texts on various aspects of the target language country, such as holidays, traditions, food, music, literature, etc. The section contains descriptions of cultural traditions specific for various ethnicities living on the territory of the UK. The section "Video UK" provides culture-related videos reflecting the way of life, traditions of the British people, their beliefs and attitudes to various aspects of everyday life. Teaching materials from the section "Literaturein UK" can be used both as curricular and extracurricular activities to encourage students to learn the language and culture through the works of famous British poets and writers.

Resource 4

https://ctb.ku.edu/en/table-of-contents/culture/cultural-competence/building- relationships/main

Community Tool Box is a free online resource which is widely used in teaching and training to improve language and intercultural competence. The webpage has two pages Understanding Culture and Diversity in Building Communities and Building Relationships with People from Different Cultures which contain substantial information on how to understand people's cultures, promote engagement with others, and build strong, diverse communities. The materials provided in these sections cover the definition and the importance of culture, considerations to take when studying/ working in diverse communities, as well as issues related to intercultural communication and the concept of critical

consciousness. The materials can be used by teachers in reading classes with the further discussions of the key issues and concepts of interculturalism contained in the material. Furthermore, the Community Tool Box page contains various exercises in the form of various intercultural situations which encourage students to reflect on their behaviour in this or that situation, critically evaluate and analyze it.

Resource 5

https://www.uwb.edu/globalinitiatives/resources/intercultural-competence-tool-kit   Intercultural Competence Toolkit elaborated by University of Washington offers a variety of resources, strategies and activities to foster intercultural competence. For example, Cultural AwarenessActivity can be used in the FL classroom to encourage students to assess their level of cultural awareness through answering a number of questions. Mapping Your Cultural Orientation activity is aimed at encouraging students to consider values and attitudes across cultures and how these vary and relate to each other. This can be done as an individual reflection (written or oral) or can be acted out bystudents in class. Furthermore, the page may be helpful for FL teachers who are eager to improve theirteaching strategies in terms of increasing students' engagement in learning about intercultural aspects of communication.

Resource 6.

This interactive whiteboard is a useful online resource giving infinite possibilities for designing lessons, preparing, generating and displaying all the necessary didactic materials as visual aidsincluding slides, notes, images, videos, active links; assignments and assessment; warm-up and reflection activities. Working with Miro, a teacher also has the opportunity of accepting student responses on the same board, responses can be numerous, in various formats and volumes. These responses can also be seen by other students, allowing for enhanced experience, results and practice. Miro is a versatile tool for creating an interactive and engaging lesson.

Not only numerous applications for language learning were designed but also various applications for testing knowledge, e.g., Kahoot, Socrative, Pollingeverywhere. These applications allow to organise and conduct quizzes, polls, discussions as well as to attach and play videos; they are mostly free but require registration and subscription. Such applications as Quizlet, services as mQlicker, Mentimeter and Google-form are of great help in organizing surveys. Plickers is a good tool for organizing testing and voting. These applications are widely used in the teaching/learning process and contribute to planning and performing accurate continuous assessment.

6. Conclusion

Mobile applications have proven to be valuable sources of language learning. This study attempted to explore the EFL learners' attitudes to the use of mobile applications for language learning purposes. The students' attitudes range between positive and negative. The study showed that the respondents developed language and communication skill to various degrees. More than half of the respondents stated their unsatisfaction with the mobile apps used underlining that after the course completion they still had gaps in the knowledge. Furthermore, the respondents were fairly satisfied with the level and quality of language materials, but this refers mainly to those participants who took the courses on a free basis. The study also revealed that the participants used mobile apps, primarily, to practice vocabulary, grammar, and reading skills.

7. References

[1]   M. Sarwar, T. R. Soomro, Impact of smartphones on society, European journal of scientific research 98. 2 (2013): 216-226.

[2]   M. Prensky, Digital natives digital immigrants part 2: Do they really think differently? On The Horizon 9. 6 (2001): 3 - 16. http://dx.doi.org/10.1108/10748120110424843

[3]   F. S. Kelly, T. McCain, I. Jukes, Teaching the digital generation: No more cookie-cutter high schools. Melbourne, Vic: Hawker Brownlow Education, 2009.

[4]   J. Cheng, H. Kim, Attitudes Towards English Language Learning Apps from Korean and ChineseEFL Students. Engl. Teach, 74, 2019: 205–224.

[5]   R. Metruk, EFL Learners' Perspectives on the use of Smartphones in Higher Education Settings inSlovakia. Electron. J. E-Learn, 18, 2020: 537–549.

[6]   P. Kropachev, M. Imanov, Y. Borisevich, I. Dhomane, Information technologies and the future of education in the republic of Kazakhstan. Scientific Journal of Astana IT University, (2020): 30-38.https://doi.org/10.37943/AITU.2020.1.63639.

[7]   B. Klímová, Mobile phones and/or smartphones and their apps for teaching English as a foreign language. Educ. Inf. Technol, 23, 2018: 1091–1099.

[8]   A. Padurean, M. Margan, Foreign Language Teaching Via ICT. Revista de Informatică Socială, 7. 12 (2009): 97-101.

[9] R. Pop, M. Bocoş, ICT resources. Opportunities for developing students' intercultural communicative competence. In Communication, Context and Interdisciplinarity, Education Sciences, Petru Maior University Press, 2014, pp. 307-311.

[10]   S. Ahmed, D. Parsons, Abductive science inquiry using mobile devices in the classroom. Computers & Education, 63, (2013): 62–72. https://doi.org/10.1016/j.compedu.2012.11.017.

[11]   T. M. Miangah, A. Nezarat, Mobile-assisted language learning. International Journal of Distributedand Parallel Systems, 3(1), (2012).

[12]P.M. I Seraj, B.Klimova, H. Habil, Use of Mobile Phones in Teaching English in Bangladesh: A Systematic Review 13, (2010–2020). Sustainability 2021, 5674.

[13]. E. Mindog, Apps and EFL: A case study on the use of smartphone apps to learn English by four Japanese university students. JALT Call J, 12, 2016, 3–22.

[14]M. Hossain, Exploiting smartphones and apps for language learning: A case study with the EFL learners in a Bangladeshi university. Rev. Public Adm. Manag, 6, 2018, 1–5.

[15]G. M. Chinnery, Going to the MALL: Mobile assisted language learning, Language Learning & Technology 10. 1 (2006): 9-16.

[16]A. Berns, M. Palomo-Duarte, J.M. Dodero, J.M. Ruiz-Ladrón, A. Calderón Márquez Mobile apps to support and assess foreign language learning, in: Proceedings of the 2015 EUROCALL Conference, Critical CALL, Padova, Italy. Dublin, 2015, pp. 51-56.

[17]C.C. Wong, R. Sellan, L.Y. Lee. "Assessment using mobile phone, An exploratory study" International Association for Educational Assessment.
http://www.iaea.info/documents/paper_1162a2913.pdf.

[18]M.A. Alzu'bi, M.R.N. Sabha. "Using mobile-based email for English foreign language learners" TOJET, The Turkish Online Journal of Educational Technology. 12. 1 (2013). http://www.tojet.net/articles/v12i1/12118.pdf.

[19]   T.M. Mengorio, R. Dumlao. "The Effect of Integrating Mobile Application in Language Learning. An Experimental Study" Journal of English Teaching, 5.1 (2019): 50-62.

[20]   B. Zou, J. Li, Exploring mobile apps for English language teaching and learning, in: Proceedings of the 2015 EUROCALL Conference, Padova, Italy. Dublin, 2015.

[21]   O. Sarigöz. "A study on the views of secondary school students toward professional practice" Academic Sight International Refereed. Online J. Soc. Sci. 53, 2016: 210–221.

[22]   S. Ebadi, S. Bashiri. "Investigating EFL Learners' Perspectives on Vocabulary Learning Experiences through Smartphone Applications" Teach. Engl. Technol, 18, 2018: 126–151. https://www.tewtjournal.org/issues/volume-18/volume18-issue-3/.

Smart Technologies in Modern Education

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Abstract

The article is devoted to one of the urgent problems of training future specialists: the use of SMART technologies in higher educational institutions. An analysis has been made regarding current trends and prospects for the development of Smart technologies in higher education, and the expediency of using Smart technologies as a new direction in educational activities has been determined. Attention is focused on their use in the context of a smart environment. The authors note that the main task of the Smart education space is to create conditions for the realization of the creative and intellectual potential of students, since Smart technologies are integrated learning tools for students.

The article also reveals the advantages of using Smart technologies in the practice of educational activities, in particular social networks, which theoretically substantiates the effectiveness of using Smart technologies in the educational process.

Keywords

Distance learning, information and communication technologies, smart technologies, smart education, innovations

1. Introduction

The challenges of the digital age, such as globalization, the increasing variability of the surrounding world, digitalization, and personalization have a significant impact on education, its content, structure, goals, and methods. The nature of the interaction of participants in the educational process is changing. As a result, a new educational ecosystem is being formed, including completely new technological platforms, new teacher roles, new dynamic assessment, a certain educational design, educational content instead of a textbook; a non-linear educational environment is being constructed, which is characterized by a wide range of resources to achieve the best educational results of students, as well as their self-realization. The profile of competencies has changed (digital, personal life skills, and etc.); there was a need as for the flexibility of educational activities so for experiments with curricula, and for the possibility of choosing courses in the world cloud as well. The share of standard classroom studies decreased, the share of independent work increased. There are expanded opportunities for building individual learning paths, offsetting courses of network partners, and there is a need for new interdisciplinary navigation professions in education: digital methodologists of educational platforms, academic program designers, tutors, digital volunteers, and etc.

Higher pedagogical education is also undergoing major changes, which today has a number of unresolved problems. Among them are the old programs (there is no training in the future professions of pedagogy from the atlas of new professions); outdated teaching technologies; lack of links with schools, poor integration between university and school teachers; poor development of online learning, lack of an online learning ecosystem and technical equipment; aging teaching staff, low proportion of young teachers, etc. In this regard, universities, regardless of the chosen strategy, will have to undergo a digital transformation. The need to move is due to several factors. First of all, by providing adequate education to "digital" students, whose way of thinking and style of learning is fundamentally different from the same skills of the previous "paper" generation. The next factor is the discrepancy between the expectations of the digital generation and reality in schools and universities in terms of the information and communication technologies (ICT) and didactic models used there. The digital generation has grown up with these technologies and when they get into an environment where the degree of their use does not meet their expectations, they are demotivated and redirect their attention and energy to other

objects and goals. These expectations are associated with the active and effective use of digital technologies in the educational process.

Digital educational technologies are a way of organizing a modern educational environment. Currently, there are different approaches to the definition of the concept of "digital educational environment". So, the researcher V.G. Lapin believes that "the digital educational environment is a set of resources that provide the educational process and the process of managing a professional educational organization" [1]. According to M.E. Kushnir, "the digital educational environment is "an open set of information systems designed to provide various tasks of the educational process" [2].

The appropriate use of Internet technologies in the educational process is one of the conditions for the formation of students' professional competencies. Under the current conditions, new points of growth are needed in education. In particular, the development of a competency model for a modern digital teacher, the formation of cross-professional skills from the Atlas of new professions; transfer of new learning technologies and teaching methods to education; methodological support not only for university graduates with the use of DOT, but also for existing teachers, the introduction of blended programs, an increase in the share of online education, the introduction of net partner courses. The solution of these problems determined the topic of the study "Smart technologies in modern education".

2. Changing paradigm of education

It should be noted that over the past 30 years, educational technologies have changed a lot. So, the Internet, social media, open online courses, online learning, artificial intelligence, open educational resources have become an integral part of not only the educational, but also the living space of modern man. Thus, smart-education is gradually replacing the usual classroom and e-learning.

The English word "smart" is ambiguous and really reflects the essence of smart technologies. It characterizes them as reasonable and efficient. In the practice of educational activities, this is the use of a variety of complex tools and modern interactive teaching methods, as well as a condition for the further development of education. Traditionally, the smart education space has been designed to support teachers and students with computers connected by a leading network in classrooms adapted for lecturing. Recently, the widespread introduction of mobile computing devices and the availability of wireless networks in the educational space have significantly affected the learning process. The ubiquitous access to information has helped to change the vector of education from the simple transfer of information to the active acquisition of skills and knowledge. Thus, there is an increasing number of programs that facilitate a consistent, collaborative, research-based approach to knowledge generation. There is an assumption that knowledge in a society is formed in the course of reaching a general consensus between its representatives. That is, when students share their experiences and ideas during intellectual conversation, there is an increase in the ability to understand among other participants, which results in active learning.

It should be noted that at present the system of concepts in the field of smart education has a weak structure. In our opinion, systematization is necessary to build a general theory of smart education. The formation of concepts in itself is a methodological technique for conducting research in the field of Smart education. The concepts related to the sphere of smart education are in the process of being systematized, classifications are being created. In order to attribute this or that phenomenon, technology, electronic educational resource to the field of smart education, it should be shown that some resources and technologies are more in line with the field of smart, while others are less so. To do this, it is necessary to understand how certain concepts are related. Considering this or that educational technology, we single out those that are more appropriate for this area. The study is based on a discourse analysis of various sources on the issue of smart, which include journal articles in leading peer-reviewed periodicals, Internet resources, systematization of material, and a general analysis of various software and organizational solutions in the field of smart. The theoretical basis of the study includes the scientific works of researchers T.E. Isaeva [3], Rabinovich P.D. [4], Alisultanova E.D. [5], A. Middleton [6], and etc.

3. The potential of smart-technologies in modern education

We can confidently say that the main task of the space for smart education is to create conditions for the realization of the creative and intellectual potential of students, since smart technologies are integrated tools for teaching students, which include various aspects of all types of information educational technologies that will help the teacher organize the educational process with a variety of activities for students during the lesson and beyond. At the present stage, smart technologies include the following teaching aids, such as: an interactive whiteboard, software, a document camera, a student knowledge control system and a personal computer. However, these tools cannot exist separately from the smart audience. A feature of the smart audience is that at its core lies the modern Ultranet technology, which unites the smart audience with the entire community of the educational institution and ensures the quality of learning and teaching. With the Ultranet, teachers and students can achieve higher levels of innovation and creativity as teaching and learning evolves. They can access a powerful collection of digital education tools, resources and learner information stored in one place, accessible from anywhere at any time. Educators can create and share experiences and resources with each other, as well as with other educational institutions, via the Internet.

It is worth emphasizing the fact that the Ultranet is a secure system for "closed communities" on the Internet. It has a high level of privacy and contains security measures. All gaps in the knowledge of those who study are moderated by teachers. The Ultranet is like a "classroom without walls", a space in which education becomes visible as students move as from one classroom to another, so from one educational institution to the next one.

The learning space is also beginning to change especially intensively, in which a new type of educational tool is used - SMART interactive whiteboards, which are already successfully used not only in such leading universities as Harvard, Oxford, Cambridge, University of Ottawa, etc. but worldwide. A SMART interactive whiteboard is presented as a touch screen connected to a computer. The image on the SMART Board is transmitted using a projector. One of the most important learning principles achieved when using the SMART Board is visibility. An electronic board, interacting with a computer and a media projector, forms a single complex, thanks to which it becomes possible to provide interactive and information and communication interaction in the appropriate environment, as well as the use of both traditional and innovative pedagogical teaching methods. SMART Board software is designed to be touch-enabled, allowing you to control applications and provide a versatile experience with different types of information. This, in turn, allows the teacher to create and effectively apply the author's curricula. Exploring the specifics of using SMART Board as one of the main components of smart technologies during the teaching of disciplines, it should be noted that the use of projection technical devices in combination with audio technologies makes it possible to use any visual information to explain new material in the classroom, as well as diagrams and electronic textbooks for information analysis. This allows you to implement the principle of visibility, accessibility and consistency.

Today, the popular word "smart" joins many words, forming such "modern" concepts as 'smart city', 'smart home', 'smart TV', 'smart watch' and the like. Various electronic environments and technologies used in education are also called "smart", although only some of their aspects really meet the fundamentally new requirements of smart education. A similar situation develops due to the fact that these requirements do not always have an explicit specific form, since the very concept of smart education is currently not sufficiently systematized.

As a result of the intensive development of information technologies, which have become an integral part of the life of a modern person, "classic" e-learning is gradually being replaced by "smart education". In many countries, the concept of "smart education" is already a standard way of learning, while in the domestic education system, such approaches are rare. In modern conditions, there is a need to justify smart education as a new direction in the modern global world. Smart education is a complex that provides for the complete modernization of all educational processes, as well as the methods and technologies used in these processes. The concept of "smart" in education leads to the emergence of new smart technologies. If we analyze various technological solutions for the education sector, which are positioned as smart, we can list the following: smart boards, smart textbooks, smart projectors, software for creating and distributing educational content, which is interactive and communicative in nature. A number of other technologies, primarily various types of Social Media and Data Mining technologies, are used in the smart education segment as well.

Each of these technologies allows you to build a new process of content development, delivery and updating. At the present stage of development of education there are needs that cannot be satisfied not only by classical educational technologies, but also by e-learning technologies. Currently, there is a transition from e-learning to smart learning. It should be noted that the accumulated experience of e-learning is of great importance for smart education. Open educational resources and free massive online courses, which are provided by many universities through distance education systems such as Coursera, edX, Udasity, are currently complementing and expanding the possibilities of university education. Smart education includes accumulated and developed approaches to learning in the traditional sense and using electronic technologies, but it is not limited to them.

The concept of smart education is the presence of a large number of sources, a variety of multimedia, the ability to quickly and easily adjust to the level and needs of the student. It is already becoming the norm to conduct training sessions using multimedia presentations made in software packages such as Microsoft Power Point or Macromedia Flash, which allow you to get away from the presentation in the form of a slide show. On interactive whiteboards, you can write with a special marker, demonstrate educational material, and make written comments on the image on the screen. At the same time, everything written on the interactive whiteboard is transferred to students, stored on magnetic media, printed, sent by e-mail to students absent from classes. As for the teacher's role it is also changing; while using smart technologies he or she must create a new control system. Smart education is a modern educational environment in which the efforts of teachers, specialists and students are brought together to use the World's knowledge and move to active content. Considering the state of research in the field of smart education, it can be noted that a comprehensive study of many of its aspects has not actually been carried out. Moreover, digital learning tools are interactive systems that allow you to simultaneously work with animated computer graphics, sound, video frames, static texts and images. The user is simultaneously affected by various information channels, where he is assigned an active role [7].

There are various resources for smart learning on the Internet:

- Khan Academy: offers a large amount of materials from different subjects such as mathematics, science disciplines; lectures on finance, as well as quizzes for lessons.
- Quora: Used widely for a range of purposes, it can be one of the best technology tools for teachers and educators. It is a convenient environment for students to learn how to discuss educational topics or find answers to questions by posting questions on Quora.
- Capsules: allow you to collect videos, photos, blog posts and documents in one place. Teachers can use it for online projects and classroom teaching.
- Google Docs: effective technology for teachers. Teachers can create feedback forms for projects made by students. Moreover, creating and sharing documents, spreadsheets, presentations between the teacher and students in the classroom is faster with Google Docs.
- Evernote: allows users to be mobile; take and save photos, ideas, notes or anything else and access them anywhere. It is ideal for lesson planning.
- Socrative: available on tablets, computers and mobile devices, this tool allows educators to track student progress and grades. It is possible to track the results of various exercises and participation in games using a student response system.
- YouTube: there are many important learning materials that can be used in the classroom to optimize learning. YouTube also has a dedicated section for education. With certain restrictions, students can make the most of YouTube without distractions.
- Dropbox: one of the best technology resources for educators to store, access and share any data from anywhere. Dropbox is free and easy to use.
- SlideShare: uploading presentations, video projects and any other documents is pretty easy.

The prerequisites for the development of the concept of smart education are: 1) technological factors that provide new tools and teaching technologies in the modern information and telecommunication environment; 2) social factors, including the need of society in a new quality of educational services; 3) economic factors that confirm that education has always made a significant contribution to the development of macroeconomics. And in the conditions of the emerging information society, the relevant education system determines the university's place in the development of this system. The

main task of smart learning is to create conditions for greater efficiency in the learning process. The application of smart learning requires an integrated approach, including organizational, technological and pedagogical approaches.

The characteristics of this type of education are: ensuring the compatibility of programs between different operating systems. This will allow students to study on an equal footing, regardless of the devices used, which will ensure the continuity of the educational process, mobility and speed of access to information. It is necessary that the complexity of access to any information should not slow down the process of education, but be as accessible as possible. Students and teachers will be more autonomous. So, the use of smart technologies makes the learning process more dynamic and productive. There are some difficulties in this process, but many successes have already been achieved. The main success is the interest of students, their readiness for the perception of new material, the need for new knowledge and a sense of independence in this process. Smart technologies allow you to make classes not similar to one another. The feeling of constant novelty and independence contributes to the development of students' interest in obtaining new knowledge.

The 21st century is a century when information technologies become an integral part of a person's living space. Today, we can confidently state the fact of the existence of a new generation of people, the digital generation, for whom a mobile phone, computer and the Internet are the same necessary components of their living space as nature and society. The influence of human capital is no longer enough for the development of modern education. It is necessary to change the educational environment itself, not just to increase the volume of education of labor resources, but to change the very content of education, its methods, tools and environments. Analysis of the works of A. Zubov, L. Kartashov, L. Morsky, Yu. Gapon, V. Nikolaev, V. Laudis, E. Maslin, E. Nosenko, K. Bucher, M. Collins, M. Simonson, A. Thompson and etc., the study of the results of scientific forums and conferences related to informatization testify to the trend of the transition of the information society into a Smart community built on the principles of Smart philosophy, which involves the generation of new ideas, knowledge and intellectual capital by professionally trained specialists.

In this study, we have made an attempt to analyze modern smart technologies as a means of innovation and a factor in the development of the information society. The essence of a systematic approach to the definition of the concept of "smart education" is to see it as a system that provides citizens with the acquisition of the necessary knowledge, skills, abilities and competencies using the Internet, interaction with the environment and the process of education and upbringing [8].

The concept of Smart education provides for the creation of an intellectual environment of continuous development of competencies of participants in the educational process. The technical base for the implementation of such training is a set of devices (ordinary stationary computers, laptops, tablets, smartphones, etc.), which applies to students and educational institutions, as well as access to the Internet. The main goal of Smart education is the development of skills necessary for successful activities in a digital society. The transition to Smart education provides for the creation of a Smart University, the main task of which is to train methodologists, scientists, innovators, true professionals and masters of their craft, Smart teachers. The Smart teacher is a participant in the educational process that constantly uses technological innovations and the Internet to achieve a new quality of professional training that satisfies the requirements of the Smart community. The task of the Smart - teacher is to intensify the use of electronic resources, ensure reasonable and justified use, which requires, in turn, a constant improvement of its qualifications. The teacher's proper designing of software and methodological support allows you to organize SMART training.

Smart technologies in education are technologies based on the combination of technical and pedagogical resources for implementation in an active educational environment with the help of specially designed content. It is Smart-technologies that make it possible to develop revolutionary educational materials, as well as to form individual learning paths for students. Learning becomes possible not only in the classroom or at home but everywhere: in public places such as museums or cafes. The main element that connects the educational process is active educational content, on the basis of which single repositories are created that allow removing time and space boundaries. Thus, the illusion of constant availability of knowledge is created, as a result of which the student does not lose interest in memorization.

However, the use of new technologies with the prefix "Smart" cannot determine the nature of the formation of a new type. If we analyze various technological innovations for the field of education, which are positioned as SMART, then the following can be listed: SMART-boards, SMART-books, Smart projectors, software for creating and spreading educational content, which is interactive and communicative. A number of other technologies, first of all, Web 2.0, namely various types of Social Media and Data Mining technologies are also used in the SMART education segment.

4. The use of smart-technologies in teaching foreign languages

Smart technologies are confidently entering the practice of teaching languages. With their ease of use and portability, they have become a familiar and natural learning tool. We would like to give a few examples of the connection between creative methods of work and smart technologies:

- Gamification. Gamification is the process of incorporating gaming elements into learning. This method allows you to increase the involvement of students, and also helps to learn the material faster and more interesting. When introducing gamification, the educational goal comes to the fore, while the tools can be digital media, computer games, as well as analog devices. As an advantage of gamification over other teaching methods, it should be emphasized that the game helps students get rid of the fear of making mistakes. In the game, you can go through the level again, while doing "work on the bugs", or master a new space. In addition, the task can be complicated, because, as in a regular game, the student moves to the next, higher level [9]. Gamification can be applied at any stage of learning and at different levels of language training. We recommend using gaming technologies at the stage of working out and consolidating lexical and grammatical material. Moreover, on the Internet you can find many ready-made educational games, especially in English: "Funbrain", "Hangman", "The Plular Girls", "Stay Afloat", "Grammar Gorillas", and etc. [10]. In addition, teachers themselves can develop tasks of different levels of complexity for a particular level.

- Online boards for collaboration between teacher and students. Such boards can become a place for planning classes, as well as a tool for explaining and visualizing any material.

The Socrative application is very convenient for conducting test tasks: it prevents cheating and plagiarism, moreover, it saves time in class.

- Mobile applications for memorizing the terms and rules of discipline. These include Quizlet, Kahoot.

Kahoot! is a free service for creating polls, quizzes and tests. It is effectively used for educational purposes. The service has its own application, its own website, with a bright, interesting design and a simple interface for users, where there is all the necessary information on how to work with this service, what features it has. Students can answer the quiz questions using any gadget - smartphone, tablet or laptop with Internet access. To participate in testing, they must open the application or website and enter the game PIN.

Nowadays well-known and widespread mobile technology is QR-code. QR means "Quick Response". Any smartphone can decrypt the code data. All you need is a QR code reader. And after installing it, you just need to bring the camera of your smartphone to the code. The program will decrypt the QR code in a few seconds, and then prompt you to perform a specific action. For the lesson, you will need to create your own Q-R code. It can be created using the QR Code Studio program, as well as using the sites www.qrcoder.ru or www.classtools.net. We use QR code smart technologies in the learning process to follow links to keyword explanations of new topics or to educational videos.

Facebook social service, Google services and tools, Wiki website, podcasts for distributing sound files or videos on the Internet, blogs, Youtube video hosting - all these are Smart technologies that can and should be used in pedagogical practice.

Web 2.0 technologies make it possible to use network communities for the free distribution of educational materials as well as independent creation of educational materials, and participation in new forms of activity without special knowledge and skills in the field of computer science. Teachers can use these technologies to communicate, to exchange professional experience, to enrich the content of classes with new material, to increase students' motivation for training, and for professional development. The teacher and students become equal participants in the educational process: the

necessary information is equally available to everyone and each of them complements the general conclusion of the study with the results of their work.

Social networks (Facebook, Twitter, and Instagram) form a particular communicative space. Their didactic potential is manifested; first of all, in the accessibility for most Internet users, which themselves create the content of this site. What's more, students have the opportunity to practice and introduce new lexical units to their active vocabulary using the video recording feature. For example, when studying certain lexical topics according to the course program, the teacher gives the task to shoot a short informational video and upload it to Youtube. Students from the same group should make comments. Video discussion helps students interact with each other, ask clarifying questions, and express their opinion.

On Twitter or Instagram: use the #hashtag. This technology can become part of the learning trend of communication in the digital age. Also, hashtags can organize and promote discussion of lexical topics in the language. On social networks, it is possible to create virtual training groups in which the teacher makes access to his students and places the necessary educational content for them. Students can discuss, jointly perform tasks and put the results of both individual and group work.

The comprehensibility of the ideology and interface of social networks for the majority of the Internet audience saves time by bypassing the stage of trainees' adaptation to a new communicative space. The multimedia nature of the communicative space makes it extremely easy to download and view video and audio materials, interactive applications in a virtual training group [11]. In the world of social networking, blogs play a special role as a place for allocating educational material and a means of communication between the teacher and students. They are distinguished by the openness and accessibility of information, the linearity of the structure, a limited set of functions in the learning process: the creation of a community group, on the basis of which films and audio recordings can be uploaded by both teachers and students. By working in a team and creating joint projects, students learn to overcome their own fear of making a mistake in publishing, which in many ways increases their self-esteem. This technology is also attracting the attention of a large number of young people through the active blogging of famous people who are the idols of today's youth. Consequently, many pupils and students keep their own blogs after classes.

On the YouTube portal, you can find a huge number of video materials: from full-fledged video lessons created specifically for use in the learning process in a certain language, to vlogs mounted by bloggers, which can also be actively included in the educational process. The video has long been considered an effective tool for teaching and learning. We should not deprive attention of the trend towards the transition of young people to new, alternative platforms as their popularity grows. Mastering the most popular social networks in their environment is perceived as something normal and advanced. So, many representatives of the younger generation are moving from YouTube video hosting to the latest platforms, including Tik-Tok. The service allows you to view and create short videos about yourself using a variety of visual filters or video clips using audio clips from a wide range of musical genres [12].

What cause undoubted interest is Smart textbooks because in the near future they will become the most optimal for learning, leaving far behind not only paper textbooks, but also electronic textbooks.A smart textbook is a comprehensive learning material that is created and updated with the help of technological innovations and online resources. As a rule, Smart textbook consists of a set of blocks, such as learning new material, assimilation of educational material, practical application of the material, discussion and control. Smart textbooks are educational content integrated into an interactive learning environment using the capabilities of the social environment: high-quality professional content, practicality, availability of graphic, video and audio material, individual learning path, interactive means of interaction with the teacher, testing. system, content commenting system, content rating system, self-filling and self-actualization.

The rapid development of digital technologies and the intensive development of applications for them have contributed to the emergence of mobile education technologies when learning is carried out using your own gadget and special software, Smart applications. The Google system will help to install this kind of software, which offers the Play Store application installed in the standard means of the Android mobile operating system of smartphones and tablets. By registering an account in the Google system, users get access to all network applications of the Google system. The application offers the

user a wide range of categories, not only for leisure but also for learning. It is enough to enter the name of the subject in the Google Play Market search engine and you will get a list of mobile applications for any subject, such as: "LearningApps", "Thinglink", "WiseMapping", "Word It Out!", "Kahoot", and etc. So, it is worth mentioning the Plickers application, which allows you to conduct students' frontal surveys in just a few minutes. The basis is a mobile application, a website and printed cards with QR (Quick Response) codes. The use of Plickers makes life easier both for the teacher and students, it is real entertainment, which makes it possible to take a break from routine classes and answer questions in a playful way.

There are applications that help educators in their educational work, in particular the application "ClassDojo", which is a kind of magazine for praise or punishment. "ClassDojo" brings together teachers, parents and students who use it for classroom communication, messaging, photos and videos throughout the day.

The Edmodo or School Facebook app is a meeting place for teachers and students that provide a constant connection between those who teach and those who study, regardless of place and time.

5. Conclusion

The theoretical analysis of the problem showed that smart learning is a new model in global education that can improve the quality of education. Proper use of smart technologies will allow:
1.   To the teacher:
- increase the effectiveness of training;
- to develop the involvement and motivation of students;
- to support independent research of trainees;
- involve students in joint activities;
- improve the assimilation of the studied material;
2.   Students:
- increase motivation, activity;
- develop independent learning skills;
- improve learning outcomes;
- to acquire new skills in working with educational material.

Therefore, the use of Smart technologies diversifies the educational process, increases the cognitive interest and motivation of students due to the visible, real result of their daily professional activities, allows you to significantly expand traditional learning technologies, optimizes the logistics costs of the university, and also provides a new level of quality of educational services, this, in turn, is the basis for studying the use of Smart technologies by teachers-philologists in order to teach the disciplines of the philological cycle.

6. References

[1]   V.G. Lapin, Tsifrovaya obrazovatel'naya sreda kak usloviye obespecheniya kachestva podgotovki studentov v srednem professional'nom obrazovanii, Innovatsionnoye razvitiye professional'nogo obrazovaniya, 2019, № 1 (21), S. 55–59.

[2]   M. Kushnir, Tsifrovaya obrazovatel'naya sreda. URL: https://medium.com/direktoria-online/thedigital-learning-environment-f1255d06942a (data obrashcheniya: 04.11. 2019).

[3]   T.Ye. Isayeva, Ispol'zovaniye informatsionno-kommunikatsionnykh tekhnologiy v protsesse obucheniya inostrannym yazykam v vuze: metodologicheskiy aspekt: Obshchestvo: sotsiologiya, psikhologiya, pedagogika, 2020, №3, S.111-117.

[4]   P.D. Rabinovich, K.Ye. Zavedenskiy i dr.,Tsifrovaya transformatsiya obrazovaniya: ot izmeneniya sredstv k razvitiyu deyatel'nosti// informatika i obrazovaniye, 2020, №5 (314), S. 4-14.

[5]   E.D. Alisultanova, N.A. Moiseyenko, I.R. Usamov, Tsifrovaya obrazovatel'naya sreda kak osnova formirovaniya sovremennogo IT-spetsialista: TSITISE, 2019, №3 (20), S. 27.

[6]   A. Middleton, Smart Learning: Teaching and learning with smartphones and tablets in post compulsory education [Electronic resource]. URL: https://www.academia.edu/12512765/Smart_learning_teaching_and_learning_with_smartphones_and _tablets_in_post_compulsory_education (accessed 08/21/2021).

[7]   M.V. Zakharova, Tsifrovyye instrumenty prepodavaniya angliyskogo yazyka: Mir pedagogiki i psikhologii: mezhdunarodnyy nauchno-prakticheskiy zhurnal, 2020, №06 (47).

[8]   O.YU. ,Rybicheva Perspektivy vnedreniya smart-tekhnologiy v obrazovatel'nyy protsess, Vestnik Vyatskogo gosudarstvennogo universiteta, 2019, №4 (134), S.76-82.

[9]   T.A. Gol'tsova, Ye.A. Protsenko, Geymifikatsiya kak effektivnaya tekhnologiya obucheniya inostrannym yazykam v usloviyakh tsifrovizatsii obrazovatel'nogo protsessa, Otechestvennaya i zarubezhnaya pedagogika, 2020, T.1, №3 (68), S. 65-77.

[10]   https://englex.ru/learning-english-through-games/

[11]   A.A. Masalova, G.A. Aleksanyan, Sotsial'nyye seti v formirovanii samostoyatel'noy deyatel'nosti obuchayushchikhsya: Materialy XII Mezhdunarodnoy studencheskoy konferentsii «Studencheskiy nauchnyy forum» URL:<ahref = "https://scienceforum.ru/2020/article/2018022507">https://scienceforum.ru/2020/article/2018022507 (data obrashcheniya: 15.10.2022).

[12]   Ye.V. Gorobtsov, R.D. Lopatin, P.D. Mitchell, Korotkiye video na platforme «Tik-Tok» kak sredstvo formirovaniya sotsiokul'turnykh navykov u obuchayushchikhsya angliyskomu yazyku, Vestnik tambovskogo universiteta, Seriya: Gumanitarnyye nauki, Tambov, 2021, T.26, №194, S.25-34.

Digital Humanities: Domestic and International Practices of Institutionalization

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Abstract

This article discusses the domestic and international practices of institutionalization of digital humanities (DH).

Digital humanities (DH) has been defined as "a field of study, research, teaching, and invention concerned with the intersection of computing and the disciplines of the humanities" [1].

This is a topical issue for the teaching of humanities at Kazakh universities. Digital technologies provide expanded opportunities for education, and allow for diversified approaches to learning.

This is a topical issue for the domestic humanities, since digital technologies provide ample opportunities for education, expand the horizons for obtaining knowledge and diversify approaches to learning.

The purpose of the article is to identify the theoretical and methodological foundations and best practices for use in domestic sciences and the educational systems through the study of domestic and international experiences in the institutionalization of the DH and current trends in its development.

Historiographic analysis of domestic and world experience in the institutional development of research centers and educational programs DH shows the demand for and competitiveness of social and humanitarian professions in the short and medium term will depend on the quality of training of specialists and the level of their information technologies (IT) competencies.

A further comprehensive study of this topic will, firstly, expand the scope of humanitarian knowledge and research; secondly, help strengthen the humanistic mission of education and science; thirdly, contribute to the development of the most balanced approach in choosing the prospects for the development of Digital Humanities in Kazakhstan.

1. Introduction

The issues of interdisciplinary research in the humanities and the informatization of humanitarian education have become relevant, especially during and after the pandemic. The deep introduction of digital technologies into all spheres of our society shows a qualitatively new level of integration of the humanities and computer sciences. To date, digital humanities have affected the entire spectrum of social sciences - history, economics, cultural studies, linguistics, archeology, sociology, psychology, museum work, and others.

Digital humanities are an objective continuation and expansion of the classical humanities. Therefore, it is considered an integral part of modern humanities.

2. Research methods

This study is based on methodological interdisciplinarity and informatization theory. Informatization is considered a socio-cultural phenomenon.

The large-scale informatization of society causes a qualitatively new synthesis of the humanities and computer sciences, which contributes to the generation of new scientific ideas and educational products. To study and solve the tasks set, the use of the following scientific methods is justified: description, comparative historical analysis, data verification, structural-functional, content analysis, statistical analysis, and axiological approach.

The scientific study of the problem, based on the principles of objectivity and comprehensiveness, should be supplemented, as required by the interdisciplinary nature of this topic, with a general scientific system. Based on the consideration of informatization as a socio-cultural phenomenon, the patterns of development of the digital humanities will be studied.

Among the methods, an important place belongs to the structural-functional approach. This method allows us to present digital humanities with a certain integrity, consisting of a set of interrelated elements that can be isolated and analyzed. Complex and synchronous methods also play an important role in interdisciplinary research.

3. Results

In domestic and foreign historiography, there is a certain experience of scientific analysis in the field of digital humanities. Moreover, in the 20th century, such interdisciplinary areas as quantitative linguistics, quantitative history, mathematical psychology, historical informatics, etc. appeared in the humanities. Most of the work on the use of information technology in the humanities belongs to historical science and linguistics. The founder of historical informatics in Kazakhstan is S. Zhakisheva. Her fundamental works are devoted to theoretical, methodological, and source studies of historical informatics [2].

In addition, a number of dissertations have been defended in Russian historical science on topical issues of using a synergistic approach to the study of social systems, source analysis of electronic sources, and the role of Internet resources in the system of information support for scientific research in history [3]. In the dissertation of K. Alimgazinov, the emergence of a digital form of historical information was studied in the projection of the emergence of new types of historical documents, the principles of their scientific description, source heuristics, representativeness, and the use of qualimetric methods for their analysis were investigated.

The authors of the work "Historical and cultural atlas of the Kazakh people" used geographic information systems (GIS) to visualize a huge layer of the cultural heritage of the Kazakh people. [4]. Since 2012, the Laboratory of Computational Linguistics has been functioning at the Scientific Research Institute "Artificial Intelligence" of L. Gumilyov Eurasian National University. The laboratory carried out effective scientific research on the computerization of the Kazakh language, developed standards for encoding letters of the Kazakh alphabet for computers, telephones, and mobile phone stations and the corresponding programs for drivers and recognizers of Kazakh letters; electronic diversified terminological, explanatory and spelling dictionaries have been created; phonetics was studied, the sounds of the Kazakh language were clarified in order to represent them in the international phonetic alphabet; speech technologies of the Kazakh language (recognition and synthesis of oral Kazakh speech) have been developed; programs for automatic translation (converter) for converting Kazakh texts from Cyrillic to Latin, etc. have been developed [5].

Since 2013, the Al-Farabi Kazakh National University has been operating the Research Center for Computational Linguistics, whose work is to conduct fundamental and applied research on human speech and thinking activity based on various information technologies, as well as to introduce the results of all these studies into the educational process in order to optimize the teaching of native and foreign languages. Today, the vast majority of countries in the world have accepted modern challenges caused by the digital technological revolution and have developed their national development programs in the context of fundamental digitalization. In turn, the leadership of Kazakhstan has made a conceptual turn towards the digitalization of all spheres of society, including education and science. In Kazakhstan, the process of informatization of humanitarian education and science has a positive development trend, but the process is very slow.

The state program "Digital Kazakhstan" was adopted, where the key area is the development of human capital [6]. The opening in 2019 within the framework of the state program "Digital Kazakhstan" Astana IT University is one of the components of the direction of human capital development. Digitalization and the creation of a favorable digital environment in the system of education and science is a priorities in the activities of the Ministry of Higher Education and Science of the Republic of Kazakhstan.

The Ministry initiated the introduction of a number of experimental educational programs in IT areas in universities from the 2019-2020 academic year, including the experimental educational program "Digital Humanities" at the Kazakh National Pedagogical University named after Abay, East Kazakhstan State University named after S. Amanzholov. These educational programs are the first experiments in the field of "Digital Humanities" in Kazakhstan. Of course, this is not enough to address the issues of providing the labor market with trained professionals with high digital literacy.

At the same time, we must state the fact that the development of digital technologies is largely ahead of the development of the domestic system of science and education. The lack of a close connection between science, the education system, and the labor market in the context of the digital revolution can lead to the fact that domestic universities will train unclaimed specialists in the field of humanitarian education and science.

The dynamic development of DH has led to the creation and operation of various educational and research institutions around the world. The most famous international research and educational centers and organizations for DH are Cambridge Digital Humanities, Oxford Digital Humanities, Department of Digital Humanities (King's College London, UK), The European Association for Digital Humanities (EADH), Roy Rosenzweig Center for History and New Media (George Mason University, Virginia, USA), The Alliance of Digital Humanities Organizations (ADHO) and others. In Russia, such large structures operate at leading universities (Moscow State University named after M.V. Lomonosov, Center for Digital Humanities Research NRU Higher School of Economics; Tomsk State Research University; Perm State University; Ural State University, Altai State University, etc.). Since 1992, the International Association "History and Computer" has been functioning in Russia.

It should be noted the Russian scientific project "Humanities in the digital age: from industry informatics to digital humanities" (G.V. Mozhaeva), was implemented in 2014-2016. on the basis of Tomsk Research State University. The key results of the project were the publication of a monograph, which analyzes new areas in the field of Digital Humanities in Russia and the world, and the development of an interactive map "World Centers of Digital Humanities" [7].

According to the authors of this project, research and educational centers related to "Digital Humanities" in the world were geographically distributed as follows: in Europe - 152 structures (only in France 27), in Asia - 16 structures, in North America - 134 structures (US 115 only); in South America, 9 structures; in Australia and Oceania, 12 structures [7].

A valuable work in the field of digital humanities is the book "Defining Digital Humanities. A Reader" edited by Melissa Terrace (Professor Director of the Digital Humanities Center at UCL (London)), Julianne Nyhan (Research Lecturer in Digital Information at UCL's Department of Information Studies (London)), Edward Vanhutt (Director of Research and Publications at the Royal Academy of the Dutch Language and Literature - KANTL (Belgium).

The reader includes materials and a historical overview of the emergence of the term "humanities informatics" and its transformation into the term "digital humanities", various points of view regarding the content and meaning of the term are considered. Also of interest to researchers annotated bibliography of various materials not included in the anthology [8].

The book "Defining Digital Humanities. A Reader" in Russian was published by the publishing house of the Siberian Federal University in 2017 [9].

In the academic environment, the work of Dr. Stuart Dunn, head of the Department of Digital Humanities at King's College London [10], is widely known. S. Dann studied the problems of the interdisciplinary relationship between history and geographic information systems (GIS) in the era of digital technologies, and methodological issues of the influence of GIS and digital mapping on the humanities [11].

Russian scientists are actively studying topical issues and various aspects of the development of the digital humanities: V.N. Vladimirov, L.I. Borodkin, V.F. Nitsevich, A.Yu. Volodin, S.M. Popova, G.V. Mozhaeva and others [12]. Attention should be paid to the "Manifeste des Digital Humanities" prepared by Professor Dacos Marin (Director of the Center for Open Electronic Publishing (Le Center pour l'édition électronique ouverte) (France)). The manifesto was adopted on May 19, 2010, in Paris. The Manifesto notes that the phenomenon of "digital culture" has become an integral part of human culture in the 21st century. and a call was made for the inclusion of courses on Digital Humanities in educational programs in the humanities and social sciences, literature, and art [13].

One of the central topics of the plenary sessions of the XXII International Congress of Historical Sciences (August 23–29, 2015, Jinan, China), which takes place every five years, was the topic "Digital turn in history" [14].

The inclusion of this topic as one of the four key topics of the congress proves that the issues of informatization in historical research in particular, and in the humanities in general, are becoming one of the main focuses of researchers.

A huge amount of materials on digital humanities are concentrated in digital international scientific journals: Journal of "Digital Humanities". URL: http://journalofdigitalhumanities.org; Digital Studies in the Humanities (DSH) URL: https://academic.oup.com/dsh; "Digital Humanities" Quarterly. URL: http://digitalhumanities.org, etc. Published in Russia: Newsletter of the Association "History and Computer", scientific journal "Humanitarian Informatics" (published since 2004, editor-in-chief G.V. Mozhaeva), and others.

These journals highlight topical issues in the theory, methodology, and practice of Digital Humanities. The Digital Humanities Quarterly (DHQ) has published open-access publications since 2007. Also, a wide range of the scientific community knows the opinions of authoritative experts and analysts regarding the "digital" future of mankind.

Klaus Schwab, founder, and president of the World Economic Forum in Davos gave a deep analytical review of the main trends of the fourth industrial revolution in his book. He firmly believes that the digital revolution will "fundamentally change the way we live, work and communicate with each other. In terms of scale, volume and complexity, the fourth industrial revolution has no analogs in all the previous experiences of mankind" [15].

However, he sees these changes more as opportunities than challenges and risks. He calls on the world community to extract the maximum benefit from technological breakthroughs for humanity and use the achievements of breakthrough digital technologies to change the world around us for the better. In his vision of the future, a person and the problem of the coexistence of technology and society occupy a central place. Therefore, K. Schwab focuses on the consolidating role of transnational humanitarian cooperation. In his work on the present and future of the human community in the context of the digital technological revolution, historian Yuval Noah Harari expressed his thoughts. He hypothesizes that thanks to big data algorithms, humanity is entering a phase of "digital dictatorship". He believes that the challenges and crises that await us in the near future will be associated primarily with the digital revolution [16].

Therefore, he convincingly proves that the digital technological revolution requires from each of us a new way of thinking, adapted to new conditions. Harari believes that with the development of artificial intelligence and machine learning by 2050, the modern nature of the labor market and employment will radically change. According to this hypothesis, scientists and experts express different opinions. Some believe that the labor market will be largely determined by the availability of high-quality digital competencies and relevant qualifications among specialists; some are more pessimistic and believe that in a few decades, many people around the world will simply become unemployed.

We believe that in any scenario of the development of the situation, the system of education and science should generate new knowledge and scientific ideas that do not contradict human essence and nature. And in the preservation of fundamental ethical norms in science and education, the key role belongs to social and humanitarian knowledge. In this regard, scientists should be guided by the main theoretical and methodological provisions set out in the Report of the Special Rapporteur on the right to education, Kishore Singh, prepared pursuant to resolution 26/17 of the Human Rights Council of the UN General Assembly in 2016 [17], where the role of the humanistic mission of education is highlighted.

Strengthening the humanistic mission of education is of paramount importance to counteract the trend toward the devaluation of spiritual and moral values. The total use of digital technologies in the education system and science contains the risk of belittling the importance of universal human values in education.

4. Conclusion

A comparative analysis of domestic and international experiences in the field of digital humanities shows that the main constraining factors for development in the digital humanities and education in Kazakhstan are

- insufficient grant funding for social and humanitarian research;
- lack of organizational forms and research infrastructure in the field of humanities informatics;
- insufficiently developed systems of personnel training in the field of digital humanities;
- a certain difficulty in mastering new skills and competencies in the field of computer and digital technologies for humanities students.
- insufficient time frame for development of projects for both researchers and students.

Therefore, a deep scientific analysis of the problem and systematic work with constraining factors will contribute to the development of the most balanced approach in determining the priorities for the further development of the digital humanities in Kazakhstan.

5. References

[1] Cf. Matthew Kirschenbaum, "What Is Digital Humanities and What's It Doing in English Departments?" ADE Bulletin, no. 150 (2010): 55–61. The quotation is part of a larger definition provided in the Wikipedia article on "Digital Humanities," which Kirschenbaum calls "a working definition [that] serves as well as any I've seen."

[2] С. Жакишева, Alter ego Ассоциации «История и компьютер», или Начало эпохи информатизации исторической науки в Республике Казахстан // Информационный бюллетень Ассоциации «История и компьютер». 25 (2000) 85–99. С. Жакишева, Историческая информатика в Казахстане: теория, историография, методики и технологии: монография. Алматы, 2011.

[3] Е. Абиль, Методологические проблемы применения естественно-научных методов в историческом исследовании: история и синергетика: автореф. дис. д-ра ист. наук, Караганда, 2009.

[4] К. Алимгазинов, Электронный исторический источник: теоретико-методологические аспекты и технология источниковедческого анализа: дис. д-ра. ист. наук. Алматы, 2010.

[5] Д. Альмагамбетова, Интернет-ресурсы в системе информационного обеспечения научных исследований по истории Казахстана: автореф. дис. д-ра ист. наук. Караганда, 2010.

[6] Историко-культурный атлас казахского народа / под ред. И. Ерофеевой, Л. Масановой, Б. Жанаева, Алматы, 2011.

[7] A. Sharipbaev, G. Bekmanova, Some questions about the automatic transcription of Kazakh language. The Module of Transcription of Kazakh Speech Recognition System // Proceedings of the II International Scientific and Practical Conference Informatization of Society, ENU named after L.N. Gumilyov, Astana, 2010, pp. 543-551.

[8] A. Barlybayev, A. Sharipbay, An Intelligent System for Learning, Controling and Assessment Knowledge. Information, 18 (5 (A)), Japan, 2015, pp.1817-1828. A. Sharipbay, A. Buribayeva, Kazakh Vowel Recognition at the Beginning of Words. Mediterranean Journal of Social Sciences, Volume 6, Issue 2S4, 2015, pp. 121-128.

[9] A. Sharipbay, L. Zhetkenbay, G. Bekmanova, U. Kamanur, The Ontological Model of A Noun for Kazakh-Turkish Machine Translation System. Proceedings of the International Conference "Turkic Languages Processing", Turklang, Kazan, Tatarstan, Russia, 2015, p. 15.

[10] Отчет о реализации Государственной программы «Цифровой Казахстан». URL: https://www.gov.kz/memleket/entities/mdai?lang=ru.

[11] Гуманитарные науки в эпоху цифровых технологий: от отраслевой информатики к цифровым гуманитарным наукам» (руководитель Г.В. Можаева). URL: http://grant.rfh.ru/sys/a/?colfilter=0&context=_anonymous~&pgoffset=0&ro_filter=_main.enrfh_tasks.syrecordidw%20%3D%202w3dm00JbzZ60E004E2aLb00~&table=main.enrfh_tasks&target=show_template&template=prg_card.htm, Г. Можаева, П. Можаева-Ренья, В. Сербин, Цифровая гуманитаристика: организационные формы и инфраструктура исследований. URL: https://cyberleninka.ru/article/n/tsifrovaya-gumanitaristika-organizatsionnye-formy-i-infrastruktura-issledovaniy-1.

[12] Melissa Terras, Julianne Nyhan, Edward Vanhoutte, Defining Digital Humanities, Routledge, 2013.

[13] Цифровые гуманитарные науки: хрестоматия, Красноярск, 2017.

[14] Stuart Dunn History of Place in the Digital Age 1st Edition, London Imprint Routledge, 2019. doi.org/10.4324/9781315404462, K. Schuster, S. Dunn, Handbook on Research Methods in Digital Humanities, Routledge, 2020.

[15] S. Dunn, Praxes of 'The Human' and 'The Digital': Spatial Humanities and the Digitization of Place, GeoHumanities (2017). doi.org/10.1080/2373566X.2016.1245107.

[16] В. Владимиров, Историческая геоинформатика: геоинформационные системы в исторических исследованиях: монография, Барнаул, 2005. Л. Бородкин "Цифровой поворот" в дискуссиях на XXII Международном конгрессе исторических наук (Китай, 2015 г.). URL: https://: kleio.asu.ru/2015/3-4/hcsj-342015_56-67.pdf, В. Ницевич, Цифровая социология: теоретико-методологические истоки и основания, Digital sociology. Scientific journal, 1 (2018): 18-29.

[17] А. Володин, «Digital Humanities»: междисциплинарность в цифровую эпоху, Информационный бюллетень Ассоциации «История и компьютер», 42, (2014): 14–16.

[18] Попова С.М. Анализ отечественного и зарубежного опыта развития цифровой инфраструктуры социально-гуманитарных исследований, Genesis: исторические исследования, 1 (2015). doi: 0.7256/2409-868X.2015.1.13820.

[19] Можаева Г.В. Digital Humanities: цифровой поворот в гуманитарных науках, Гуманитарная информатика, 9 (2015): 8–23. URL: http://journals.tsu.ru/huminf/&journal_page=archive&id=1259&article_id=24878. Digital Humanities: гуманитарные науки в цифровую эпоху / подред. Г.В. Можаевой, Томск, 2016.

[20] Манифест «Digital Humanities». URL: http://tcp.hypotheses.org/501 XXII-ой Международный конгресс исторических наук (23–29 августа 2015 г. г. Цзинань, Китай).URL:http://www.cish.org/index.php/en/2015/10/26/our-xxiind-congress-jinan-2015/.

[21] К. Шваб, Четвертая промышленная революция, Москва, 2016: 8-9.

[22] Харари Юваль Ной, 21 урок для XXI века, Москва, 2019.

[23] Доклад Специального докладчика по вопросу о праве на образование Кишора Сингха, подготовленном во исполнение резолюции 26/17 Совета по правам человека Генеральной Ассамблеи ООН в 2016 г.
URL: https://www.refworld.org/cgibin/texis/vtx/rwmain/opendocpdf.pdf?reldoc=y&docid57616d424

Multimedia Learning Tools in a Foreign Language Audience

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Abstract

This article is devoted to the issues of synthesis of modern IT technologies and humanitarian knowledge in the process of education and upbringing. Therefore, the paper states the absence or a small number of collaborative projects among representatives of various fields of knowledge, and proposes solutions to the problem. This article presents different options for using multimedia textbooks, digital tools and opportunities in foreign language teaching, discusses possible digital resources for creating educational content to motivate self-learning. As a result, the article demonstrates the possibilities of synthesizing information technologies and humanitarian knowledge — literature, IT technologies in education, best practices in the field of educational psychology by the example of using modern digital technologies and tools in popularizing the creative heritage of the great Kazakh educator Abai Kunanbayev, and in learning a foreign language as well. In addition, the paper studies the problems of creating and implementing a massive open online course. It monitors global and regional providers providing their platforms to implement mass distance learning courses analyzing the Kazakh and foreign experience. The problem of the lack of an established methodological basis for creating online courses using modern digital tools is raised. The authors of the project are developing a model of the MOOC «Abai in the context of world culture» based on modern foreign sources and trends in creating mass courses, they also consider the latest digital tools by foreign colleagues for creating MOOCs. The strategies of pedagogical design in the design of the course for the purpose of emotional involvement and motivation of students in learning a foreign language are noted. Authors focus on the psychological aspect in course creation and summarize the results of evaluation of psychological factors affecting the success of the course by authoritative scientists. The study proposes a theoretical model of the MOOC «Abai in the context of world culture», including a structure, thematic blocks, and some digital tools. The authors come to the conclusion that audiovisual technologies can be used to model visual speech situations to improve the skills and abilities of perception and independent generation of foreign language speech, also to consolidate complex lexical and grammatical material on the basis of audiovisual information by analyzing extensive years of experience on working with multimedia and digital educational content in a foreign language audience, as well as relying on numerous works on the discussed topic. The wide possibilities of information tools of influence contribute to the effective assimilation of the studied material in a foreign language audience at all stages of teaching.

Keywords

Collaboration, digital education, distance learning, IT technologies, pedagogical design, regional MOOC providers

1. Introduction

The rapid development of electronic communication systems requires updating the organization and content of the educational process. Electronic technologies and teaching aids have become an integral part of program development in our university. Modern interactive teaching methods in the field of teaching foreign languages are relevant since foreign-speaking students often experience difficulties when working with texts in the target language. The ability to independently find, extract, reproduce and use pieces of information in the text causes difficulties. A special role belongs to audiovisual teaching aids.

The purpose of the proposed article is to explore and identify the role of multimedia resources in teaching, as well as describe examples of the use of these tools in foreign language teaching process.

A systematic course in digitalization of all spheres of society and education, started in Kazakhstan relatively recently. Both the government and representatives of the education sector conduct intensive work in this area. However, there is still an insufficient level of using digital resources and tools in the educational process. This study states the problem of the lack of practical recommendations on using multimedia tools and digital content in teaching a foreign language in conditions of insufficient digital equipment and digital literacy not only of students, but also of the teaching staff. The scientific and methodological novelty of this study consists in demonstrating a number of digital and multimedia tools, and methodological guidelines by the authors of the article to use in foreign language classes.

Methodology. The authors used methods of analyzing scientific literature devoted to modern digital opportunities in education and upbringing, analyzing international experience in the use of multimedia in the educational process, the method of analysis and synthesis in order to assess the situation with the use of multimedia to analyze the problem of using modern digital resources and multimedia tools in teaching foreign languages. The authors mainly relied on descriptive-analytical and comparative methods while reviewing the literature on the studied topic. Furthermore, in order to analyze the methods of using multimedia textbooks in the practice of teaching a foreign language, the authors mainly relied on general scientific methods, particularly observation, analysis, synthesis, generalization. The method of scientific literature analysis allowed to assess the development degree of the issue, aspects of its consideration in the national and global scientific community, to analyze the experience of Kazakhstani and foreign colleagues in using digital educational content. The paper demonstrates that the results of the scientific research analysis revealed the lack of practical recommendations for the use of multimedia and digital content in teaching a foreign language. The method of analysis and synthesis considered the repertoire of multimedia tools more precisely to create a holistic educational product.

2. The possibilities of multimedia tools in teaching: world experience and prospects

According to Savchenko N.A., multimedia is a complex of hardware and software that allows a user to work in an interactive mode with heterogeneous data (graphics, text, sound, video) [1].

The study of sources on this issue showed that multimedia tools quickly became a popular teaching tool, but their impact on the cognitive functions of students has not been fully studied. A broad overview of research on cognitive load in multimedia learning is presented in the work "Cognitive load in multimedia learning environments: A systematic review" [2]. Scientists analyzed 94 scientific sources on this issue in the period from 2015 to 2019. Multimedia was reviewed in terms of types of cognitive load, principles of multimedia learning, measurements of cognitive load, cognitive processes, types of multimedia learning environments, and demographic characteristics. According to the researchers, the most studied principles of multimedia learning in the studied articles are the principle of modality, the effect of seductive details and the principle of signaling/prompting. In work «Trends and issues in multimedia learning research in 1996–2016: A bibliometric analysis» [3] 411 peer-reviewed articles were analyzed on the studied topic from 1996 to 2016 years. As a result of studying such extensive material, scientists concluded that the most frequently encountered keyword in the field of multimedia learning tools is the word "cognitive load". The authors identified 5 groups of research areas in the field of multimedia learning technologies, they are theoretical foundations of multimedia learning, principles of multimedia learning, learning design, motivation and metacognition, video and hypermedia. The authors refer redundancy, adjacency and consistency to the principles of multimedia resources. Scientists Aurora Occa, Susan E. Morgan investigated the impact of multimedia information on the mental state of students. An analysis of data from 927 patients showed that watching animation leads to greater cognitive absorption of information and its systematic processing. [4]. Azzam Alobaid reveals the role and impact of YouTube's captioning capability in developing student writing accuracy. He hypothesizes that frequent use of these forms of learning can improve students' writing skills. Azzam draws on personal experience in teaching English. As a result of observing for five months the dynamics of improving the writing of his students through the inclusion of YouTube videos with subtitles in the educational process, the author states a significant improvement in writing performance [5]. The article

"Evaluating multimedia learning materials in primary education using eye tracking" is devoted to the development of multimedia learning resources for primary school students. According to researchers, it is necessary to adhere to Mayer's cognitive theory to design multimedia materials correctly. Scientists have found out how the process of visual observation of multimedia resources is carried out as a result of experiments with children aged 7-11 using the gaze tracking technique [6].

Scientists M. D. Abdulrahaman, N. Faruk, A. L. Azeez raise the problem of access to education for students from developed countries. According to researchers, one way to solve this problem is multimedia learning tools. Conducting a systematic review of multimedia technologies, scientists distinguish such components as text forms, audio, video, animation and three-dimensional image [7].

In 'Multimedia in Education: What do the Students Think?' [8] the authors studied the attitude of medical students to textbooks with multimedia applications. data on the mood of students were collected for six months through online questionnaires and 153 students were involved in the experiment. The results of the experiment showed that the majority of students have a positive experience of using multimedia tools via smartphones (88.88%) and laptops (89.19%). Students enjoy learning modules with multimedia applications more than traditional learning. The authors summarize that multimedia plays an important role in the educational process and can significantly improve and complement traditional teaching methods. Scientists from India observed the use of multimedia tools in the process of training engineering personnel. They argue that with the introduction of multimedia tools, the process of teaching engineering has become creative, interesting and impressive [9]. In the work "The effect of multimedia-based education on students' anger management skill", scientists analyzed the influence of multimedia tools on the ability of medical students to manage anger. Within one week, the anger management skills of 88 students from different faculties were observed. The average age of students ranged from 20 to 25 years. As a result of the experiment, the authors concluded that multimedia tools have the ability to restrain anger, so the experimenters suggest including multimedia tools in the learning process [10]. Scientists Xiao-Pang, Vivekananda G.N., Shailesh Khapre note that when learning English, teachers are faced with a wide variety of different information. Teachers should know the basic criteria for selecting information and the principles of working with information carriers. In the study, the author notes disadvantages and advantages of multimedia technologies. She refers to disadvantages of the high cost of special equipment, so she suggests switching to the use of cloud technologies. Based on the results of the work, the author concludes that the use of multimedia technologies in language learning is justified [11].

In the course of the analysis of various sources, we came to the conclusion that multimedia teaching aids in the practice of teaching a foreign language are mainly used to achieve the following goals: 1) combining different ways of presenting information into one object, simultaneously affecting different senses (text, sound, video) ; 2) creating an interactive learning environment; 3) development of critical thinking; 4) creating opportunities for practicing foreign language articulation skills and abilities; 5) implementing individual training; 6) recreating the situational language environment; 7) adaptation to the needs and level of the student.

In teaching foreign languages, different types of computer programs such as training courses, simulators, control, demonstration, simulation, reference and information, multimedia textbooks are widely used depending on the didactic goals and the specifics of the course of subjects. "The ratio of the image and the word depends on the topic of the subject, its audiovisual capabilities, the traditions of presenting information, the goals that we set for ourselves" [12].

Modern electronic resourses provide a wide range of multimedia tools containing necessary data for a foreign language learning process. The most used elements of educational information tools include electronic textbooks and manuals, interactive whiteboards, electronic encyclopedias and reference books, Internet educational resources, interactive maps and others. Usage of electronic resources provides a wide range of opportunities to develop and improve language skills and abilities of foreign students. Learning vocabulary, working out pronunciation and grammatical categories, teaching dialogues and monologue speech is more efficient with the help of multimedia tools.

3. MOOC as a digital teaching tool

Nowadays the most popular digital tools of teaching are massive open online courses — MOOCs.

MOOCs are massive open online courses that have become widespread in connection with the development of distance learning. The MOOC abbreviation is based on the following components: massive - accessible to a wide audience, open - the main parts of the course are provided free of charge, online - the course materials are placed on special electronic resources, course - the content of the material is systematized according to a certain educational trajectory and methodology.

In the global education market, there are a large number of providers that offer massive open courses in various industries: Coursera, Future learn, edX, Canvas Network, Khan Academy.

Based on the scientific research of a team of foreign scientists [13], who presented a large-scale analytical study of the global ecosystem of MOOC providers, it becomes possible to state the fact that along with the main global providers of open distance courses (edX, Coursera and Udacity), there are several little-studied regional platforms, providers in the field of open digital education.

In addition, the researchers actualize the problem associated with the influence of "the language of instruction, cultural characteristics or localized course design on the educational experience of students in various MOOCs" [13]. This suggests a significant step towards understanding how regional context influences distance learning models. Scientists prove that language and cultural differences can become a significant obstacle to mastering a distance course on the platforms of global providers (a list of global providers is given). And in this regard, regional educational platforms are becoming relevant.

According to the analysis of domestic publications, Kazakh scientists and teachers have been actively discussing the problem of creating and introducing MOOCs into the educational process since 2015. The second wave of scientific and methodological interest in this problem was the forced transition to distance learning during the Covid-19 pandemic. In 2016, the National Open Education Platform of Kazakhstan (NPOOC) (http://moocs.kz/), which is a regional provider and includes 12 consortium members and 13 partner universities that provide their sites for MOOC launches, was presented.

In general, these are educational platforms created based on the global edX platform. An example is the regional digital platforms EduPage, LMS Sirius, Platonus, Univer, Moodle, Bilimland, Google Classroom, Univer, Platonus, Canvas, Daryn.online, Coursera, Zoom - used at all levels of the educational process. Such platforms, based on the edX and LMS systems, are formed in the Kazakhstan market of digital educational services.

However, despite the increased attention to distance learning in the Republic of Kazakhstan and to MOOCs, in particular, there is a problem of "lack of developments on methodological, conceptual foundations for organizing distance learning; legal documents are needed regarding the organization of this work in the preparation of demanded and trained specialists" [14].

A topical issue in the creation and implementation of MOOCs is the issue of the pedagogical design of the course and the involvement of students in the educational process. Thus, according to the statistics of foreign researchers, 80% of students do not complete the course, and the maximum rate of complete course completion is on average 40% [15]. A study by scientists from the USA [16] summarizes the problem of "adapting a MOOC in such a way that it meets and satisfies as many student expectations as possible" [16]. The solution to the problem of engaging students in the course and motivating them to complete it, according to the researchers, could be to design the course in accordance with the design solutions of popular social networks (Snapchat, Instagram, Facebook, TikTok, etc.), by "introducing a special scrolling / swiping function for online forums accessed via a smartphone" [16].

A useful digital tool within a MOOC can be "discussion boards where students can respond using audio/video, which can build rapport" [16]. Chinese scientists have created a specialized tool for synchronized commenting DanMOOC, which resulted in a positive dynamic of online interaction both between the tutor and students, and within the group of course students [17].

An equally important point in the creation and implementation of MOOCs is the assessment of psychological factors that motivate the activity of students in the proposed course. Several authoritative studies have been devoted to this issue. Thus, M. V. Klimenskikh et al. conduct an analytical study of psychological predictors of the effectiveness of online learning. The study showed that "the key psychological positions that affect the effectiveness of students in online conditions are ... internal and external motivation, personal qualities, openness to experience, intelligence and academic experience" [18].

Chinese researchers have identified three basic psychological needs, the implementation of which has a positive effect on the course. Scientists have experimentally proven that "fulfillment of three basic psychological needs for autonomy, competence and relatedness have significant positive effects on intrinsic motivation, increasing students' psychological engagement in MOOCs" [19].

The psychological aspect of the student's readiness for the courses becomes the subject of research by the British scientists Terras M. M., Ramsay J. In their study, they rely on the description of the psychological determinants of the behavior of the students of the course and discuss a number of psychological problems and barriers that students may have. An interesting point in the study is the thesis: "the temporal dimension of learning is also addressed: how learners perceive time online, how this influences time spent on tasks and how this may impact on the effective use of MOOCs" [20].

Creating an engaging and motivating MOOC involves applying and balancing diverse technologies through dedicated digital services. "The MOOC concept is based on the key principles of a new theory of learning – connectivism: a variety of approaches, an approach to learning as a process of network formation and decision making, learning and cognition as a dynamic process…" [11]. When working on the content of educational content, it is good to involve the capabilities of electronic presentation preparation programs MS PowerPoint, Prezi, SlideRocet, VoiceThread и others.

4. Audiovisual learning tools

In the open spaces of the boarding school for foreigners of different ages and levels of foreign language proficiency, various audiovisual materials are widely presented that can be successfully used in practical classes. Game multimedia sources with lexical tasks: find a couple of words, sign pictures from the proposed options, restore the correct word order in a sentence, choose the correct answer, etc. will be a good help for students of preparatory groups in mastering new vocabulary. When studying grammatical topics, electronic resources in the native and target languages with detailed explanations and examples, multi-level tasks and interactive tasks have proven themselves well. Such forms of work will allow new students to quickly adapt to a foreign language atmosphere, work out the simplest language skills and abilities. Numerous options for control tests and training tasks will help you prepare yourself for the boundary control. Usually, foreign students spend a lot of time looking up unfamiliar words in the dictionary. Online dictionaries have greatly streamlined this process. The great advantage of such thesauri is the constant updating and replenishment of the list of words. The use of computer technology is effective at all stages of learning: when studying new material, in repetitive and generalizing lessons, final lectures on the course and other types of classes.

The use of an interactive whiteboard makes it possible to make the explanation of theoretical material accessible, logical, and vivid, since the material can be presented using animated diagrams, tables, and illustrations. You can repeatedly return to theoretical material, select working materials, conduct vocabulary work and language training aimed at preventing speech and grammatical errors. «When the instructor supports the course by these multimedia tools, it is seen that, it is more effective on learners, and the level of motivation of students increase» [22, p.795].

New teaching technologies can be applied from the initial course of mastering the phonetic structure of the language of the language being studied, since the formation of new orthoepic skills is one of the most difficult tasks in teaching a foreign language, due to the stability of the pronunciation habits of the native language. Rebuilding the articulation skills of foreign speakers to the acoustic-articulation characteristics of a foreign language requires painstaking work. When teaching phonetics, you can use presentations with audio and video materials, dictionary entries voiced by native speakers. Listening to exemplary speech with repeated repetition forms the skills of correct pronunciation and compliance with speech norms among foreign speakers at the initial stage of learning, because it is the phonetic side of language proficiency that affects the correct perception of language units and the formation of a general culture of speech. The use of an interactive whiteboard in combination with audio tools makes it possible to implement the principles of visibility, accessibility and systematic presentation of the material.

When studying grammar in preparatory groups, Internet resources and training programs are actively involved, which contain rich illustrative grammatical and lexical material for different levels of

students' preparedness. To enrich the vocabulary of first-year students, it is advisable to widely use pictures, drawings, tables, and reference diagrams.

Currently, priority is given to communication, interactivity, authenticity of communication, language learning in a cultural context, independence and humanization of learning. These principles make it possible to develop intercultural competence as a component of communicative ability. The ultimate goal of teaching foreign languages is teaching free orientation in a foreign language environment. Today, new methods using Internet resources are opposed to traditional teaching of foreign languages. To teach communication in a foreign language, you need to create real, real-life situations (i.e., what is called the principle of authenticity of communication), which will stimulate the study of the material and develop adequate behavior. The ability for intercultural interaction is greatly enhanced by the resources of the Internet. Through the global network, students can obtain the necessary information and establish intercultural connections from any country. Foreign students can take part in various cultural and scientific events in the target language, participate in competitions and online projects, webinars, etc. In the conditions of using multimedia, students get the opportunity to present their abilities to a wide audience and test independent scientific projects.

While studying works of literature of a foreign language, many possibilities of multimedia technologies are actively involved: viewing fragments of the film adaptation of classics, recording performances of works by the authors themselves or masters of the artistic word, self-voicing of the passed video fragment, etc. These tools can be applied at different stages of the lesson. When studying works, students may be provided with a text that completely matches the frames on the screen, but with missing words and expressions in some fragments. Students must fill in the blanks on their own and promptly. As practice shows, foreign students need such listening exercises, as many, especially in the initial period of study, say that it is difficult for them to understand native speakers outside the classroom. Large geographic material is often difficult for the perception of a foreign audience. The use of multimedia presentations as a means of visual semantization of new vocabulary allows you to quickly solve these problems.

The effective means of lexical work with an interactive whiteboard include the technique of voicing silent films, when students, also after preparatory work, must independently voice the film, where the accompanying frames must correspond to fragments of the text. This form allows you to present the educational material as a system of bright reference images.

Thanks to the visibility and interactivity, students are involved in active work. Multimedia combines the training of grammar, pronunciation and perception of the studied speech by foreign speakers. Learning vocabulary through pictures and many exercises that can be completed and immediately checked increase the effectiveness of learning. Perception sharpens. Increases concentration, improves understanding and memorization of the material. All the work done during the lesson, with all the notes and notes made on the board, can be saved on a computer for later viewing and analysis.

5. Results and discussion

The authors of the study refer to observations and an intermediate experiment conducted with foreign students to confirm the hypothesis about the role of multimedia tools and the use of MOOCs in consolidating the language material covered in a multinational audience. The authors applied the method of projects using multimedia and digital capabilities as a part of the language material and communicative competence development and consolidation. The project format choice made it possible to use various methods and techniques that improve the acquired speaking skills. Foreign students created video clips based on Abai's works, applying gained theoretical knowledge and using multimedia tools. The students' work procedure consisted of several stages.

The first stage included the project topic discussion, where students used the method of "brainstorming" that allowed to update their knowledge on the topic and create a video script. Commenting, discussions, argumentative statements promoted the development of language and communicative competence of students. The project format also helped to increase motivation and interests of the participants. At this stage, the teacher conducted an ascertaining experiment on the covered material, the results showed 60%.

At the second stage, the students were divided into two groups according to the project topics such as Abai's poem "Kozimnin Karasy", Abai's translation of "Tatyana's Letters to Onegin". At this part, students carefully considered the basic materials to create projects, analytical research of texts was updated, students answered questions about the artistic structure of texts, emotions, experiences of main heroes, worked on active glossary selection and analyzed translations.in addition, the levels of language proficiency, creativity and other personal characteristics of students were taken into consideration.

The third stage included the practical implementation of the project research. The project participants created video clips on the given topic by using multimedia tools. The teacher-controlled students' independent work and corrected shortcomings.

At the final stage, students defended their projects. They presented the choice of the topic, the choice of the genre of the video clip, the selection of material, the use of multimedia tools, the distribution of roles and responsibilities during the implementation of the project. This stage improved communication skills, public speaking skills, and self-reflection. After defending the projects, all videos were posted on the video hosting YouTube [23; 24].
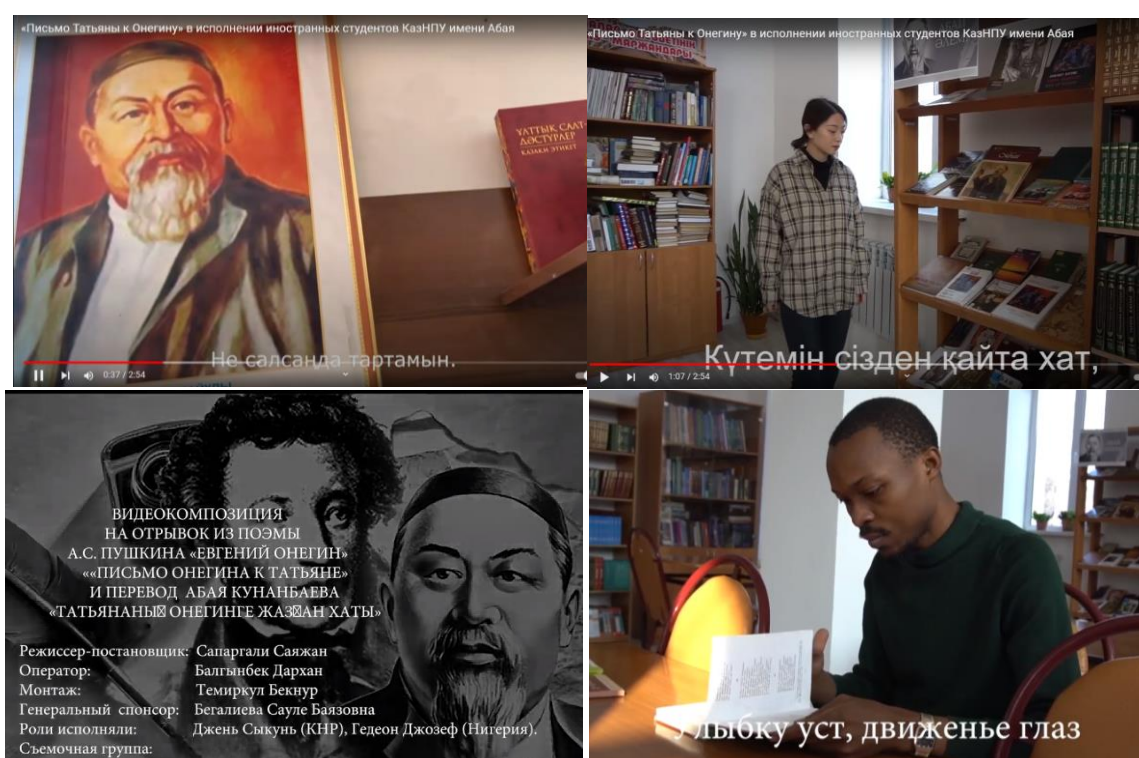
Figure 1: Fragments of student projects on the works of Abai Kunanbayev

The experiment was in Google form as an interactive survey and the questions were supposed to demonstrate the level of foreign language proficiency within the framework of mastering the cycle of literary disciplines. A group of students from Zhejiang University of Foreign Languages (YUEXU, China) took part in the experiment. The group included 43 students who were divided into 2 subgroups – control group (CG) of 21 students and experimental group (EG) of 22 students. The work focused on the thematic block "The life and work of Abai Kunanbayev". The level of language proficiency, analytical and communication skills to master the disciplines of the literary cycle, and the topic mentioned above were evaluated according to certain criteria presented in Table 1,2.

Table 1
The level of language, analytical and communication skills of students

Basic level	Average level	Advanced level
The ability to present their initial ideas about Abai's work	The ability to characterize Abai's creative process	The ability to clearly substantiate the historical period of Abai's belonging to the realistic direction
The ability to identify the main themes and problems of Abai's creative work	The ability to classify the works of Abai in accordance with the subject and problems	The ability to make a holistic analysis of Abai's literary work
The ability to identify the connection of Abai's creativity with world literature (for example, with Chinese literature)	The ability to determine the function of a particular element of a literary text	Ability to analyze the character system and the author's position
The ability to present work analysis at the initial stage	The ability to determine the relationship of Abai's artistic works	The ability to present and justify the conclusions of the analysis

Table 2
The level of students' language, analytical and communication skills in working on the project

| Basic level	Average level	Advanced level
The ability to present their primary ideas about the subject of the project – Abai's works	The ability to present a holistic project plan with paragraphs and sub-paragraphs	The ability to protect the theme and idea of your project, the chosen genre
The ability to outline the theme of the project that is based on theoretical knowledge about Abai's works and practical skills to determine the theme and ideas	The ability to select and use an active vocabulary for the analytical study of Abai's creative work	The ability of public speaking using journalistic and scientific styles vocabulary
The ability to provide arguments in determining the topic and idea, to determine the functions of project participants	The ability to compare the authentic text with its translation, draw conclusions	The ability to answer problematic questions, questions about the project
The ability to link project elements with theoretical materials, to build a system	The ability to systematize the collected theoretical material, combine the content with an interactive form	The ability to build feedback and summarize

The following questions were developed for experimental diagnostics based on the specified criteria to determine the level of students' skills:

1. What do you know about the life and work of Abai?
2. What is The Book of Words?
3. Define the theme and idea of the Seventeenth Word.
4. Name Abai's poems.
5. What do you know about Abai's translation activities?

6. What philosophical themes did Abai raise in his works?

The analysis of the responses of foreign students revealed the following results. Almost 20% of the interviewees from control and experimental groups answered the first question negatively, particularly these students did not know about the personality and creativity of Abai, on the contrary 61% of participants answered that Abai is a Kazakh writer, where 10% of students gave more detailed answers, citing the facts of the biography and listing some of Abai's works, only 9% of interviewees found it difficult to answer the questions. Only 6 (28.5%) students from the control group and 4 (18%) students from the experimental group answered correctly to the second question. The important thing is that the interviewees' answers cannot seem confident and full enough, mostly the answers were superficial. Both CG and EG groups did not answer to the third question. The fourth question seemed difficult to answer for the EG participants, while only 1 student (9.5%) from CG was able to answer the given question. The reverse answer was given to the fifth question, where the students talked about Abai's works translated into Chinese. Thus, this survey demonstrates that 43% of students of CG group have general knowledge of Abai and his works, who translated Abai's works into Chinese. The same information is possessed by 23% of students from EG as well. The average answers were given to the sixth question, probably correlated with the activities of Chinese philosophers and poets.

Thus, as a result of the survey the dynamics of gaining theoretical materials on Abai's work can be demonstrated in the following Graph 1.
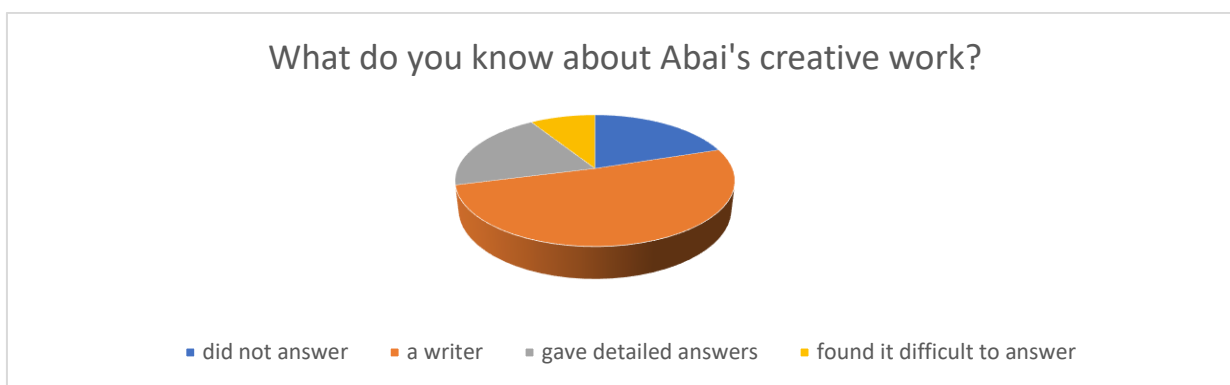
Graph 1: Questionnaire results analysis

The overall performance of all tasks of the ascertaining section at the initial stage in CG made up 21% and 18% in EG. According to the main stage 22% in CG and 20% in EG respectively. At the final stage approximately 24% in CG, and about 22% in EG. As it is seen, the level of knowledge and skills in CG and EG is about the same. The overall results are shown in Graph 2.
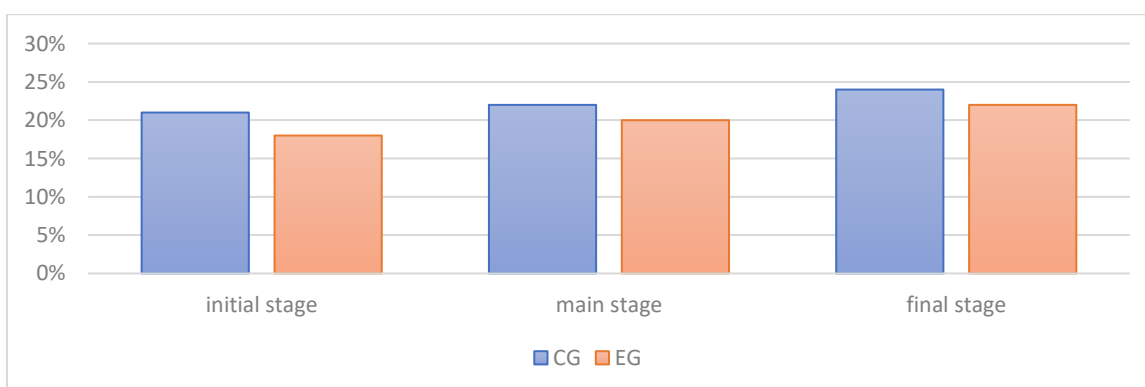
Graph 2: General results of the ascertaining stage of the experiment

At the stage of forming, formative education, based on the synthesis of humanitarian knowledge and IT technologies, is presented. This stage of the experiment took place in the experimental group as a part of the massive open online course "Abay in the context of world culture". At this stage, students

got acquainted with the life and work of Abai in an interactive form. During the experiment students demonstrated an increase in the interest of knowledge in Abai's works. Students have increased motivation to search for information and an increase in the level of respondents' involvement in the educational process. In contrast to the control group, where training was carried out along a traditional system of education. The level of interest and motivation was significantly low.

The control cut was carried out in June 2022, at the end of the formative stage of experimental work. To conduct the final cut, the authors used more complex questions and tasks than for the ascertaining cut, but on the same topics and the same parameters and stages. The students of the control group received the materials of the MOOC "Abai in the context of world culture" in the traditional format four months before the cutoff for self-preparation for the control cut.

The experiment took place in the form of written work with questions and tasks. To identify the level of knowledge about the work of Abai at the initial stage, the students were offered the following system of questions based on Bloom's taxonomy:

1. Do you know the main themes and problems of Abai's works?
2. Name the main idea of the Seventeenth Word by Abai Kunanbayev.
3. Write an essay quoting Abai and the essay should be based on the content of the Seventeenth Word.
4. Analyze Abai's poems, determine which of them ideologically and thematically have something in common with the Seventeenth Word.
5. Compare the "The Book of Words" of Abai with the teachings of Confucius on the "Five Consistencies of a Righteous Man", present the information in the form of an interactive table.
6. Assess your knowledge of Abai's work at the beginning and at the end of the course in the form of a creative report.

The overall indicator of fulfillment of all tasks of the final section at the initial stage in the CG was 30% and 96% in the EG. According to the main stage 42% in the CG and 96% in the EG. At the final stage 37 % in the CG, and 94% in the EG. The data is presented in Graph 3.
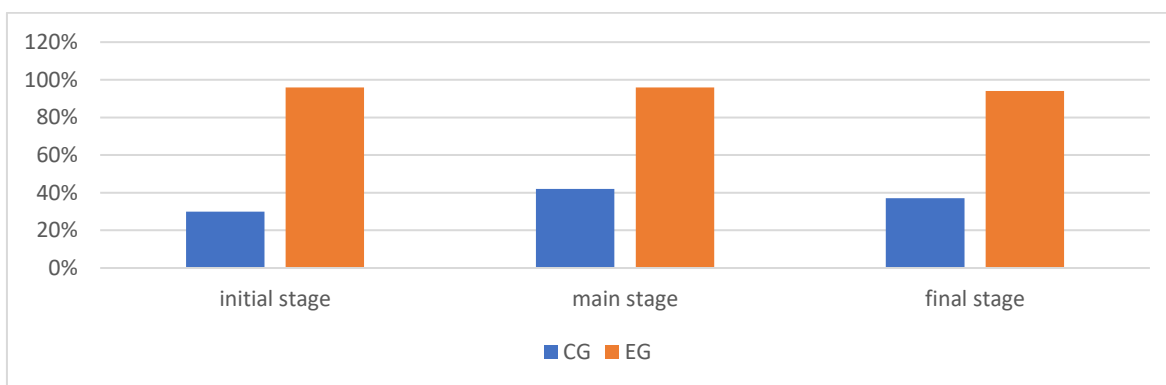
Graph 3: Experiment results

Thus, the results of the initial and final sections, their quantitative and qualitative analysis allow us to state the expediency of using the chosen methods in teaching foreign students.

A comparative examination of the results of the initial and final sections allow to conclude that the main goals of this study have been achieved and its hypothesis has been confirmed. The development and theoretical substantiation of a methodological model for the application of IT technologies and the method of projects in teaching foreign students have shown and confirmed the scientific and methodological feasibility of their use in the practice of modern education.

The developed system of methods and practical tasks has found application in the educational process. This technique is actively used by both the developers themselves and foreign colleagues from partner universities - Gazi University (Turkey), Hanoi Pedagogical University (Republic of Vietnam).

6. Discussion

Currently, communication, interactivity, authenticity of communication, language learning in a cultural context, autonomy and humanization of learning are considered as a priority. These principles develop intercultural competence as a component of communication skill. The goal of teaching foreign languages is to navigate learners in a foreign language environment. Nowadays, new methods of foreign languages using Internet resources are opposed to traditional teaching methods. In order to teach communication skills in a foreign language, we need to create real life situations called authenticity, principle of communication that will stimulate the study of the material and develop adequate behavior, and multimedia technologies are used effectively to solve this problem. The ability to cross-cultural interaction is significantly increased due to Internet resources. Students gain necessary information and establish cross-cultural ties from any countries by using the global network. International students can take part in various cultural and scientific events, participate in competitions and online projects, webinars and so on. Implementation of information technology in education significantly expands the motivational basis of educational activities. Students have opportunities to demonstrate their abilities to a wide audience and to test independent scientific projects in conditions of using multimedia. In May 2022, as a part of a scientific trip, teachers of Abai Kazakh National University held a master class on methods of teaching a foreign language to the representatives of Turkic and Iranian nationalities by presenting an electronic didactic platform "Abai in the context of world culture" at Gazi University (Anakara, Turkey). 2nd year master's student Huseynov Sidik (Tajikistan) made a presentation with our university teachers demonstrating the effectiveness of this methodology for learning a foreign language through multimedia technologies relying on his own examples.

In recent years, project-based multimedia learning technology has become widespread. According to M. E. Breygina, projects can be divided into several types, such as mono-projects, collective, oral, specific, written and Internet projects. It is often necessary to deal with mixed projects that have research, creative, practice-oriented and informational signs.

Thus, students' involvement in project method using multimedia tools showed excellent results in activating their mental activity. As a result, the process of assimilation of theoretical materials contributed to an increase of students' perception and motivation, vocabulary acquisition and activation and its use in communication. The creative approach provided incentive and raised their interests to theoretical materials. The main point is that multimedia and interactive tools showed effectiveness in teaching foreign languages.

In August 2022, students from Zhejiang University of Foreign Languages (YUEXU, China) took part in the online presentation of the massive open online course "Abai in the context of world culture", which was organized by the course's authors. Chinese students demonstrated communication skills in of a studied language, the ability to express their thoughts briefly and easily, express them using multimedia programs, and the ability to work in a team during the project presentation. In general, the implementation of this technology into the educational process has shown that the project method using IT technologies is a multi–level approach in language teaching, where almost all speech transmission (reading, listening, speaking) are actively involved, which develops active independent thinking, organizes research work, develops the ability to search for necessary information and summarise information from various sources.

An analysis of sources on the use of multimedia educational programs shows that these technologies provide ample opportunities for the effective implementation of educational strategies that combine the capabilities of texts, sounds, images, video and animation, greatly facilitate the process of mastering a foreign text, and also contribute to a deeper understanding of the language being studied.

The authors concluded that with a help of multimedia tools, based on the experience of teaching a foreign language, it is possible to solve a number of didactic tasks to improve the written and oral speech of foreign students, widen vocabulary knowledge, form students' motivation to learn the language, create communication conditions depending on goals and objectives of training. Rich explanatory and illustrative materials allow to create effective algorithms for teaching grammatical topics. The introduction of information technologies in training significantly expands the motivational basis of educational activities. Using multimedia tools, the teacher can organize the collective work of students in electronic form. This significantly saves time, stimulates the development of mental and creative activity, and includes all participants in the educational process.

This scientific research is the basis for further research of digital and multimedia tools influence on increasing motivation to study and improving language skills of foreign students. The authors are planning to conduct an experiment reflecting the hypothesis presented in this study within the framework of the grant project.

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8. References

[1] Savchenko N. A. The use of multimedia technologies in general secondary education. Electronic manual for teachers. / N. A. Savchenko. — M.: 2006.

[2] Duygu Mutlu-Bayraktar, Veysel Cosgun, Tugba Altan. Cognitive load in multimedia learning environments: A systematic review //Computers & Education 4 July 2019. Volume 141 (Cover date: November 2019). Article 103618.

[3] Jingwei Li, Pavlo D. Antonenko, Jiahui Wang. Trends and issues in multimedia learning research in 1996–2016: A bibliometric analysis. // Educational Research Review - 8. June 2019. Volume 28 (Cover date: November 2019. Article 100282.

[4] Aurora Occa, Susan E. Morgan. The role of cognitive absorption in the persuasiveness of multimedia messages. // Computers & Education -. 25 October 2021 -Volume 176 (Cover date: January 2022) Article 104363.

[5] Azzam Alobaid. ICT multimedia learning affordances: role and impact on ESL learners' writing accuracy development// Heliyon - 10 July 2021-Volume 7, Issue 7 (Cover date: July 2021). Article e07517.

[6] Ana Isabel Molina, Óscar Navarro, Miguel Lacruz. Evaluating multimedia learning materials in primary education using eye tracking// Computer Standards & Interfaces - 13 February 2018 - Volume 59 (Cover date: August 2018). - Pp. 45-60.

[7] Abdulrahaman M. D., Faruk N., Azeez A. L. Multimedia tools in the teaching and learning processes: A systematic review //Heliyon - 2 November 2020 - Volume 6, Issue 11 (Cover date: November 2020) Article e05312.

[8] Tamara Vagg, Joy Y. Balta, Mutahira Lone Multimedia in Education: What do the Students Think? //Health Professions Education -13 June 2020- Volume 6, Issue 3 (Cover date: September 2020). - Pp. 325-333.

[9] Reetu Malhotra, Neelam Verma, An Impact of Using Multimedia Presentations on Engineering Education //Procedia Computer Science - 16 June 2020 - Volume 172 (Cover date: 2020). - Pp. 71-76.

[10] Hassan Ebrahimpour Sadagheyani, Farin Tatari, Akram Gazerani. The effect of multimedia-based education on students' anger management skill //Educación Médica- 17 December 2020.-Volume 22, Issue 3 (Cover date: May–June 2021). - Pp. 149-155.

[11] Xiao-Pang, Vivekananda G.N., Shailesh Khapre. Multimedia-based English teaching and practical system. //Aggression and Violent BehaviorAvailable online. - 3 December 2021-In press, corrected proof. Article 101706 https://doi.org/10.1016/j.avb.2021.101706.

[12] Mızanbekov S. K., Kýlbaeva A.J. Psychological and methodological factors of the effective use of educational television in teaching the language of a specialty// Pedagogy and psychology, №1 (30), 2017, KazNPÝ named Abaı/.

[13] Ruipérez-Valiente J. A. et al. Large-scale analytics of global and regional MOOC providers: Differences in learners' demographics, preferences, and perceptions. Computers & Education. Volume 180, 2022. ISSN 0360-1315, https://doi.org/10.1016/j.compedu.2021.104426.

[14] Kenzhebaeva Z. S. Sadyrova M. S., Mukhtar E. S. G. Momynkulova. O. The use of digital technologies in the system of distance education: foreign experience and Kazakhstan / // Bulletin of the

Kazakh National University. Pedagogical Sciences series. - 2021. - Vol. 67. - No. 2. - pp. 40-50. – DOI 10.26577/JES. 2021.v67.i2.05.

[15] Klimova E. V. Mass open online courses (MOOCs): pros and cons / E. V. Klimova // Digital tools in education: An electronic collection of articles based on the materials of the All-Russian Scientific and Practical Conference, Surgut, 02-03 April 2021. - Surgut: RIO BU «Surgut State Pedagogical University», 2021. - pp. 77-78.

[16] Akinkuolie B., Shortt M. Applying MOOCocracy learning culture themes to improve digital course design and online learner engagement //Educational Technology Research and Development. – 2021. – T. 69. – №. 1. – C. 369-372. https://doi.org/10.1007/s11423-020-09936-5.

[17] Chen Y. et al. Facilitating students' interaction in MOOCs through timeline-anchored discussion //International Journal of Human–Computer Interaction. – 2019. – T. 35. – №. 19. – C. 1781-1799. https://doi.org/10.1080/10447318.2019.1574056.

[18] Klimenskikh M. V., Lebedeva Yu. V., Maltsev A.V., Savelyev V. V. Psychological factors of effective online learning of students / // Prospects of science and education. – 2019. – № 6(42). – Pp. 312-321. – DOI 10.32744/pse.2019.6.26.

[19] Sun Y. et al. Understanding students' engagement in MOOCs: An integration of self-determination theory and theory of relationship quality //British Journal of Educational Technology. – 2019. – T. 50. – №. 6. – C. 3156-3174. https://doi.org/10.1111/bjet.12724

[20] Terras M. M., Ramsay J. Massive open online courses (MOOCs): Insights and challenges from a psychological perspective //British Journal of Educational Technology. – 2015. – T. 46. – №. 3. – C. 472-487. https://doi.org/10.1111/bjet.12274/.

[21] Dendeva B. Information and communication technologies in education: monograph //Moscow: UNESCO IITE. – 2013.

[22] Fatma Ataklı. The Role of Multi-Media in the Foreign Language // Classroom. Procedia - Social and Behavioral Sciences- 25 January 2013 -Volume 70.- Pp. 795-798.

[23] "Tatyana's Letter to Onegin" performed by foreign students of Abai KazNPU. URL: https://www.youtube.com/watch?v=RKVSJhrMGB4.

[24] Kozimnin karasy words and music by Abai Kunanbayev performed by foreign students of KazNPU named after Abai.URL: https://www.youtube.com/watch?v=fj_8t-LJXR0.

Application of Digital Technologies in Teaching Elements of Statistics in Mathematics at School

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Abstract

The use of digital technologies in the teaching of statistics in comprehensive schools of Kazakhstan is a topical issue in the teaching of mathematics. The article considers the use of digital technologies in the teaching of mathematics. The study involved 26 mathematics teachers and obtained data on the level of use of digital technologies in the teaching of elements of statistics in school mathematics courses.

1. Introduction

Relevance. The use of digital technologies in the process of teaching mathematics in general education schools of the Republic of Kazakhstan is a widespread process [1]. This is especially evident in geometry topics and function graphing topics. However, the role of digital technologies in the teaching of statistics departments has been underestimated. Statistics is now considered important in science and industry, but it is complex to understand and use, so it has a special place in school mathematics.

Statistics is a branch of science related to the collection, organization, analysis, processing and presentation of data characterized by certain common properties [2, p. 118]. Statistics are used in any field of science and industry. It is the basis of currently relevant data science [3]. Therefore, the issue of improving the quality of teaching statistics has a special place in the methodology of teaching mathematics.

Statistical calculations are complex and require many calculations. These reports are used for large amounts of data, as their purpose is to identify various indicators or relationships between data. Production of statistical reports can lead to errors due to the length of calculation and monotony, so information technologies are used to provide high speed and accuracy in its production. Currently, there are software packages such as MS Excel and IBM SPSS Statistics that are widely used in this framework [4].

Statistics have a special place in school mathematics. It is covered in each of the mathematics textbooks of grades 5-11 of the general education school. During grades 5-6, they are given as subtopics as an introduction to statistics, and in grades 7-11 they are considered as a separate section.

2. Research methodology
2.1. Importance of statistics as a research method

There are 3 main factors that contribute to or hinder the successful integration of digital technology in mathematics education: design, the role of the teacher, and the educational context. The design should be as visual and clear as possible, and the main principles of its creation should arise from pedagogical and didactic considerations, and not from the limitations and capabilities of the digital tool. The teacher should organize learning by, for example, synthesizing the results of technology-rich activities,

emphasizing effective tool techniques, and linking experiences in technology environments to paper-and-pencil skills or other math activities. Taking into account the educational context includes paying attention to important aspects such as student motivation and participation [5].

Overall, research evidence over the past 40 years on the impact of computer and digital technologies on learning has consistently shown benefits. Studies linking technology provision and use to academic performance have found consistent but small positive associations with educational outcomes. The presence of technology does not necessarily mean a positive outcome, in this regard it is important to coordinate technology and learning [6].

Digital technologies have created a different approach to understanding school mathematics, allowed to focus on the practical part. That is, students can focus on the experiences and applications of mathematics by visualizing, manipulating, modeling, and applying mathematics to complex situations. With technology, students can use technology to solve equations, find solutions graphically, before having to learn factoring or quadratic formulas by hand [7]. By using mathematics, mathematics is divided between the student and the technology, with the student having the right to decide when and how to use the tool [8, 9]. However, this requires the school student to understand and make decisions about which type of mathematics to use.

One of the major benefits of using technology has been the opportunity for students to work with larger and more complex real data sets. As the size of the data set increases, the complexity of the calculations becomes too tedious [10]. Learners have previously been limited to working with small, carefully selected data sets that limit computational complexity. Finzer has this to say:

"This conscious choice deprives students of the experience of discovering data. ... What we lack are datasets ready for exploration and speculation fueled by students' intrigue, wonder, and desire to discover—especially large and highly multivariate datasets" [11, p. 1].

Students can collect large sets of real-life data for data analysis. They can quickly download, sort, tabulate and store this data using CBL or web technologies, thus avoiding tedious manual compilation of data tables. Students can manipulate data with symbolic expressions, solve equations, analyze data, and perform graphing functions to fit data. They can switch between screens to see different views of the data. They can make predictions, test their hypotheses, and test their estimates. These dynamic technologies allow students to work more flexibly, as the rapid display of different graphical representations gives students more time to explore larger data sets and compare between groups, thus making statistics more meaningful and interesting [12]. Students can experience and appreciate the expertise of statisticians more when they perform statistical tests on real data they have obtained.

However, the resulting opportunities were not without challenges. Rubin reports that graphs are so easy to create with software that students no longer need to think about appropriate axes, scales, and other design issues [13]. The navigation feature of many software packages, such as Fathom [11], can encourage users to wade through random data sets in search of interesting patterns and then interpret the results with inappropriate arguments. In addition, the ease of graphing helps others assess the validity of predictions arising from "interesting" type questions for technology stimulation [14].

2.2. Elements of statistics in the school mathematics course

Objectives of the study is to determine the use of digital technologies in the teaching of statistics elements in a general education school and the extent to which teachers master them. As part of the research, a survey was conducted and its results are discussed in the research results section.
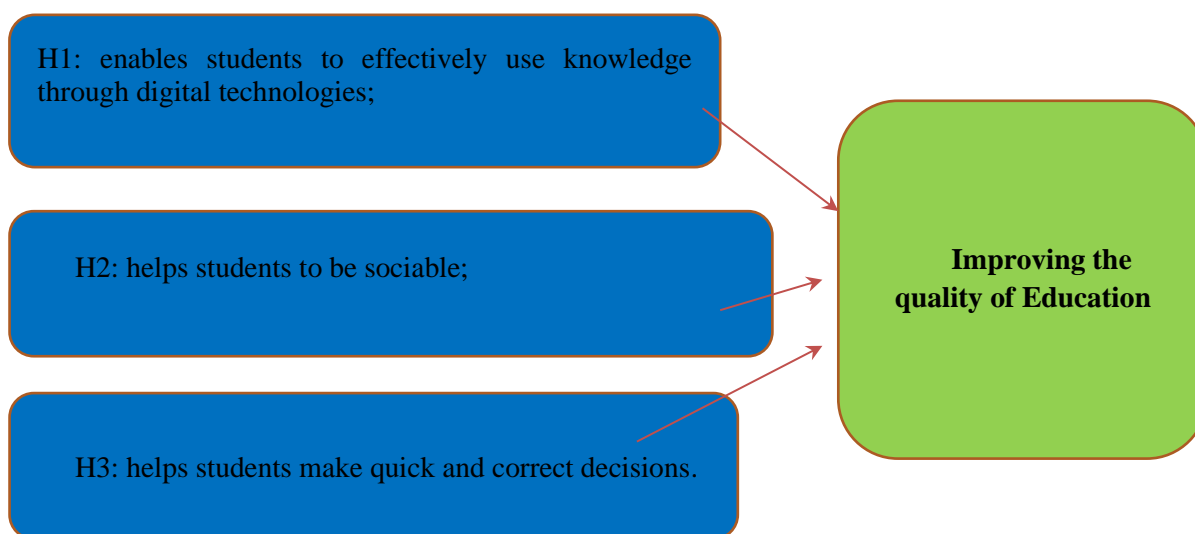
Hypotheses
H1: enables students to effectively use knowledge through digital technologies;
H2: helps students to be sociable;
H3: Helps students make quick and correct decisions [22].

Model

In the school mathematics course, the elements of statistics are taught from the 5th grade. In the 5th grade, students get acquainted with the concepts of statistical data display methods, that is, column, linear, circular and graphic diagrams and tables, and make related problems [15, pp. 165-173]. This means that learning statistics starts with data visualization.

In 6th grade, students learn about basic statistical characteristics, such as the arithmetic mean, mode, median, and variance. In addition, they provide an introduction to the elements of combinatorics, which are often used in statistical problems [16, pp. 127-146].

In the 7th grade, students get acquainted with the concepts of population, sample, frequency and range of relative frequencies [2, pages 118-130]. And in the 8th grade, they expand their knowledge in statistics with topics such as the graphical representation of a random sample, sample variance, and standard deviation [17, pp. 118-136].

Between grades 9-11, elements of statistics and related combinatorics and probability theory are common. Basic elements of combinatorics and elements of probability theory are considered in the 9th grade, and their more complicated types are considered in the 10th grade [18, 19]. In addition, in the 10th grade, subjects of random variables and discrete random variables are covered [19]. In the 11th grade, basic concepts of mathematical statistics are given. More specifically, main and sample sets, discrete and interval frequency tables, basic statistical mean values, histogram, quantitative characteristics of random variables are considered [20].

The issue of digital technologies in teaching statistics is often discussed in textbooks. The digital tool MS Excel is used in mathematics textbooks for the 7th grade [2, p. 125], 8th grade [17, 134] and 11th grade [20, p. 78-101] of general education schools of the Republic of Kazakhstan in making statistical reports. suggestions and tasks are provided for use.

As a result of the literature review, it was found that the use of digital technologies in the teaching of statistics is a valid process. It is important to use it in the right context, at the right time, and where visibility is required. In this process, the main question is not the presence of ICT, but how to use it, that is, it is necessary to start with pedagogical and didactic considerations. Currently, all complex statistics are performed on computers, so teaching them should be done using digital technology. In addition, it has been found that digital technologies can reduce students' motivation to write reports by hand.

Using the data obtained as a result of the literature review, a questionnaire is created. Then, with the help of taking this questionnaire from the teachers of general education schools of the Republic of Kazakhstan, the level of use of digital technologies and the degree of support for their use during the teaching of statistics will be determined.

3. Research methods

The research questionnaire consists of ten questions aimed at determining the level of use of digital technologies in teaching statistics and the degree of support for their use. The questionnaire was taken from 26 secondary and senior mathematics teachers of general education schools of the Republic of Kazakhstan. Participants of the survey are teachers with higher education at the master's level and 1-10 years of experience. Google Forms web application was used in data collection and analysis.

4. Research results

26 mathematics teachers participated in the quantitative study and all of them fully answered the presented questions. The main purpose of the questions was to determine the level of use of digital technologies and the degree of support for their use.

34.6% of the teachers who took part in the survey had difficulty in explaining the educational materials to the child during the teaching of statistics (Figure 1).
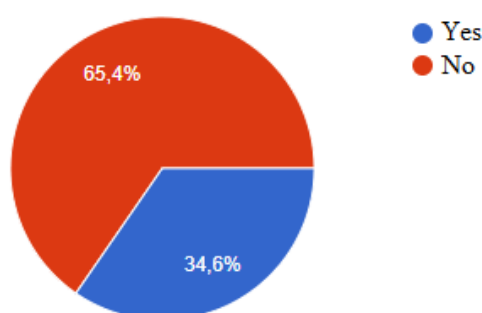
Figure 1: "When teaching statistics, do you have difficulty explaining the material to your child?" answers to the question

61.5% of respondents use digital tools in statistics lessons (Figure 2).
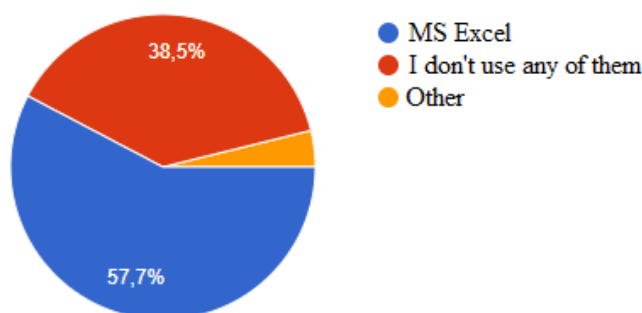
Figure 2: "What digital tool do you use to teach statistics?" answers to the question

100% of the participants prefer to use digital technologies in teaching statistics and recognize its benefits.

However, 38.5% of the participants think that digital technologies reduce the student's motivation to write a report manually (Figure 3).
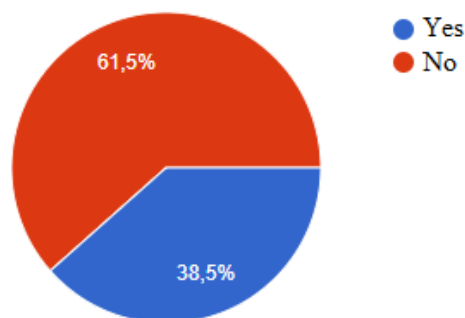
Figure 3: "Do you think digital technologies are making students less motivated to do math by hand?" answers to the question

96.2% of teachers support the presence of problems, tasks and suggestions related to the use of digital technologies in mathematics textbooks (Figure 4).
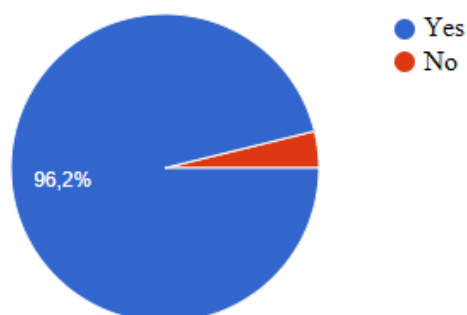
Figure 4: "Do you support the presence of problems, tasks and suggestions related to the use of digital technologies in mathematics textbooks?" answers to the question

57.7% of opinions that digital technologies are not widely used in teaching statistics were connected with low computer literacy of teachers. 61.5% of opinions were explained by the low hardware and software equipment of schools. 30.8% of opinions indicate that teachers are overburdened. 11.5% think that it is not necessary to use a digital tool (Figure 5). This feedback diagram is shown in Figure 5.
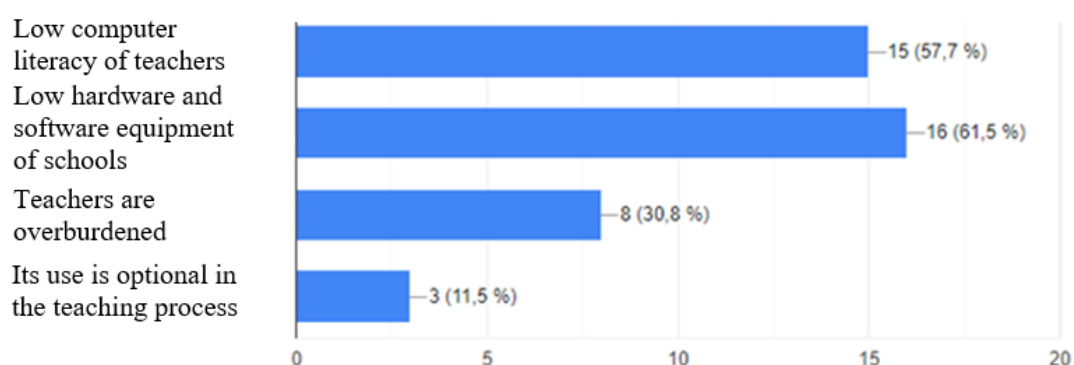
Figure 5: Opinions that digital technologies are not widely used in teaching statistics

5. Discussion

As a result of the literature review, it was found that the use of digital technologies in teaching mathematics, including statistics, has a positive effect. More specifically, the visualization capabilities of digital tools enhance student interest and mastery of learning material, and they can quickly convey

the applied aspects of statistics. It makes it possible to quickly check the predictions made by students during the preparation of reports [5-12]. However, due to the ease with which digital tools provide results, the student's motivation to delve into statistics and make manual reports about it decreases [13, 14].

Basic mathematics textbooks of general education schools of the Republic of Kazakhstan [2, 17, 20] contain practical tasks, reports, recommendations and additional educational materials related to the use of a digital tool (Excel) for statistics. This means that textbook authors support the use of digital tools in teaching statistics.

The results of the survey based on the literature review revealed that mathematics teachers of Kazakhstan support digital tools in teaching statistics. Currently, the majority of them (61.5%) use digital tools in the course of teaching statistics. However, 38.5% of the participants were of the opinion that digital technologies reduce the student's motivation to study.

6. Conclusion

As a result of the research, the majority of participants prefer to use statistics in the teaching process. In addition, they agree on the beneficial and negative effects of factors affecting the learning process. If the respondents fully agreed with the positive effects of this process, only 38.5% agreed with the negative effects. It was found that 61.5% of the participants use digital tools in teaching the elements of statistics. Opinions that digital technologies are not widely used in teaching statistics were associated with low computer literacy of teachers (57.7%), poor hardware and software equipment of schools (61.5%) and excessive workload for teachers (11.5%). It was found that 34.6% of the participants had difficulty in explaining the educational materials to the child during the teaching of statistics. From the obtained data, it is possible to make sure that there is a tendency to use digital technologies in the teaching of statistics in general education schools of the Republic of Kazakhstan. The level of support for this process was found to be very high. Future research related to this topic should be related to the problem of optimization of statistics teaching methodology with the help of digital technologies.

However, the results of the study may not be accurate because the survey was conducted without the participation of teachers from other categories and the number of participants was small. In addition, in the future, work in this direction should be considered to cover the situation in higher educational institutions and should take into account the thoughts of high school teachers. We will continue research, we believe that the current forecast has been confirmed and the goal has been achieved.

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7. References

[1] B. B. Sholpanbaev, Zh. T. Zhumabaeva, (2018) Orta arnauly oku oryndarynda tsiflyk bilim resurstaryn paydalanudyn erekshelikteri/. – Text: direct // Abay atyndagy KazUPU-nin khabarshysy. Physics-mathematics gylymdary seriasy = Bulletin of KazNPU named after Abai. Ser. Physical and mathematical sciences. - N 2 (62). - B.196-199. . - ISSN 1728-7901.

[2] A.N.Shynybekov, D.A.Shynybekov, (2017) Algebra: Zhalpy bilim beretin mekteptin 7-synybyna arnalgan okulyk /. - Almaty: Atamura, - 200 b.

[3] Jalajakshi V, Myna A N. Importance of Statistics to Data Science, Global Transitions Proceedings, 2022, ISSN 2666-285X, https://doi.org/10.1016/j.gltp.2022.03.019.

[4] M. L. Abbott , (2014) Understanding educational statistics using Microsoft Excel and SPSS. – John Wiley & Sons.

[5] P.Drijvers, (2015) Digital technology in mathematics education: Why it works (or doesn't) //Selected regular lectures from the 12th international congress on mathematical education. – Springer, Cham, – C. 135-151.

[6] Higgins S., Xiao Z. M., Katsipataki M., (2012) The Impact of Digital Technology on Learning: A Summary for the Education Endowment Foundation. Full Report //Education Endowment Foundation.

[7] Fey, J., & Heid, K. (1995). Concepts in Algebra: A Technological Approach. Dedham, MA: Janson. Finzer, W. (2007). FathomTM Dynamic DataTM Software (Version 2). Emeryville, CA: Key Curriculum Press.

[8] Heid, K. (2005). Technology in mathematics education: tapping into visions of the future. In W. J. Masalski (Ed.), Technology-Supported Mathematics Learning Environments: NCTM 67th Yearbook. Reston, VA: NCTM.

[9] Geiger, V. (2006). More than tools: mathematically enabled technologies as partner and collaborator. In C. Hoyles, J.-b. Lagrange, L. H. Son, & N. Sinclair (Eds.), Proceedings of the Seventeenth Study Conference of the International Commission on Mathematical Instruction. Hanoi Institute of Technology and Didirem Université Paris 7.

[10] Konold, C., Robinson, A., Khalil, K., Pollatsek, A., Well, A., Wing, R., & Mayr, S. (2002). Students' use of modal clumps to summarize data. Paper presented at the Sixth International Conference on Teaching Statistics: Developing a Statistically Literate Society. Cape Town, South Africa.

[11] Finzer, W. (2007). FathomTM Dynamic DataTM Software (Version 2). Emeryville, CA: Key Curriculum Press.

[12] Kor, L. K. (2004). Students' attitudes and reflections on the effect of graphing technology in the learning of statistics. In W.-C. Yang, S.-C. Chu, T. de Alwis, & K.-C. Ang (Eds.), Proceedings of the 9th Asian Technology Conference in Mathematics (pp. 317–326). NIE, Singapore: ATCM Inc.

[13] Rubin, A. (2007). Much has changed; little has changed: revisiting the role of technology in statistics education 1992–2007. Technology Innovations in Statistics Education 1(1), Article 6, 1–33. http://repositories.cdlib.org/uclastat/cts/tise/vol1/iss1/art6. Accessed December 2007.

[14] Makar, K., & Confrey, J. (2006). Dynamic statistical software: how are learners using it to conduct data-based investigations? In C. Hoyles, J.-b. Lagrange, L. H. Son, & N. Sinclair (Eds.), Proceedings of the Seventeenth Study Conference of the International Commission on Mathematical Instruction. Hanoi Institute of Technology and Didirem Université Paris 7.

[15] T.A.Aldamuratova, K.S.Baisholanov, E. S. Baisholanov, (2017) Mathematics: Zhalpy bilim beretin mekteptin 5-synybyna arnalgan okulyk. Eki bolimdi /. - Almaty: Atamura.

[16] T.A.Aldamuratova, K.S.Baisholanov, E.S. Baisholanov, (2018) Mathematics. Zhalpy bilim beretin mekteptin 6-synybyna arnalgan okulyk. Eki bolimdi /. - 2-bolim. - Almaty: Atamura, - 224 b.

[17] A.N.Shynybekov, D.A.Shynybekov, R. N. Zhumabaev, (2018) Algebra: Zhalpy bilim beretin mekteptin 8-synybyna arnalgan okulyk /. - Almaty: Atamura, - 192 b.

[18] A.N.Shynybekov, D.A.Shynybekov, R. N. Zhumabaev, (2019) Algebra: Zhalpy bilim beretin mekteptin 9-synybyna arnalgan okulyk /. - Almaty: Atamura, - 240 b.

[19] A.N.Shynybekov, D.A.Shynybekov, R. N. Zhumabaev, (2019) Algebra zhəne analysis of bastamalara: Zhalpy bilim beretin mekteptin zharatylystanu-mathematics bagytyndagy 10-synybyna arnalgan okulyk /. - Almaty: Atamura, - 272 b.

[20] A.N.Shynybekov, D.A.Shynybekov, R. N. Zhumabaev, (2020) Algebra zhəne analysis of bastamalara: Zhalpy bilim beretin mekteptin zharatylystanu-mathematics bagytyndagy 11-synybyna arnalgan okulyk /. - Almaty: Atamura, - 192 b.

[21] Iskakova M.T.,(2015) Orta mektepte matematıkany terendetip oqyty maseleleri/"Alemdik aqparattyq bilim beru kenistigi basekege qabiletti ustaz qolynda" atty jas galymdar arasynda respyblıkalyq gylymı-praktıkalyq konferensıa materıaldary. – Almaty, 443-447. https://emirb.org/bibliografiyali.html?page=5.

[22] Iskakova M., Toleugaliyeva S., Karatayev A., Orazbayeva A., Diyarova L.D. (2022) Introduction to Solving Logical Problems in General Education Schools Journal of Positive School Psychology, Vol. 6, No. 3, 7049–7053 http://journalppw.com.

[23] Moshkalov, A.K., Iskakova, M.T., Maikotov, M.N., Salgozha, I.T., Darkhanbaeyeva, G.S. (2014) Ways to improve the information culture of students. Life Science Journal, 11 (SPEC. ISSUE 8), 340–343. https://www.scopus.com/authid/detail.uri?authorId=56184543900.

Digital Tools for the Introduction of Rebranding and Remarketing: Comparison and Comparative Analysis

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Abstract

In modern world of innovations, digitalization and trends, one of the most relevant definitions is the concept of digital marketing. Conducting any kind of commercial promotion depends directly on the use of digital tools. With such a dynamic development of the market, the question appears and growth about the flexibility of the companies themselves – how quickly and correctly they adapt to new conditions and whether they can introduce trending novelties in a timely manner.

The adaptation of companies directly affects the success of commercial promotion, hence the resulting profit. To manage the promotion more effectively, as well as increase the level of profit, companies use various methods of rebranding or remarketing. Despite the similarity in sound, these approaches differ in the method of application, purpose, tools, and end result. In this article, these definitions are disclosed in detail, special cases are analyzed and a comparative characteristic for each of them is derived.

Keywords

Brand, rebranding, marketing, remarketing, targeting

1. Introduction

As we all know, interest in things that used to sympathize with you tends to fade. And this is normal. Change is a necessary and useful thing, although it is difficult for many to tolerate. On the other hand, without changing the situation, there is a lack of "something new" and unusual. Many companies sooner or later face such a problem, and in such cases, it is important to act competently and "not lose yourself". To stay in the trend, it is necessary to carry out both external and internal updates of the company from time to time. Although it seems that the first of them is more striking, it is necessary to start work from the "wrong side".

Recently, you can often hear about the digitalization of everything and everything and about digital technology in marketing in particular. In short, digital, or digital marketing is a way for businesses to maintain interaction with their customers using their personal devices. Of course, the main purpose of digital communications is spending consumers on goods and services provided by the company.

In an overloaded information space, it is very difficult to get the attention of consumers. This leads to the fact that people are ready to accept the proposals of companies only if they correspond to interests and requests. Today, advertising communication should appear before the eyes of the client at the right time and in the right place — at the moment when he is in search of a solution and is most interested in considering the proposals coming to him. In this case, the company has a chance to get the desired reaction in response.

The emergence and development of digital marketing is directly related to the desire of a business to reach its target audience. And not just to make contact, but to make it effective. In this sense, the digital type of promotion is no different from the approach of traditional marketing. It's just that the new technology of interaction with consumers replaces the outdated one, which is no longer able to give the business the expected result.

Collecting information about consumers and using the data obtained at every stage of the customer's journey to purchase to improve conversion rates and promotion effectiveness is the main idea of digital marketing.

There are a lot of tools that help to further promote the brand and the company as a whole. One of them is rebranding and remarketing. Although both are focused on changes and improvements, they

differ in many ways. In this paper, the pros and cons of each of them will be fully covered, and a comparative analysis will be carried out in order to understand what is the difference between each of them.

2. Rebranding

What do we mean by rebranding? If 5 years ago it was only a change of the company name and an adjustment of the logo, now rebranding means making changes to all external and internal structures of the company. For a complete analysis of the definition, you need to understand that a brand is not only a trademark or a company name. The brand is characterized as a complex system of all components, including market positioning, values, and characteristics.

Why do we need rebranding if the brand is initially positioned as a complete structure with a certain set of values? It turns out that rebranding not only corrects the direction of the company under the influence of trend, time, but also changes the attitude of consumers predisposing them to themselves by changing the image of the organization. Rebranding refers to a complete qualitative transformation that affects all the existing constituent aspects of the brand.

It is worth noting that in practice there are examples of unsuccessful implementation of innovations, this is fraught with the fact that companies spend a huge amount of resources (financial, human, time, technological) on implementation, implementation and later on ineffective marketing.

One of the examples of successful rebranding in the domestic market is considered to be JSC "Kaspi Bank". To begin with, the initially privatized Caspian Bank (before the rebranding, in the 90s) was bought by an entrepreneur solely for the purpose of lending to increase sales. However, realizing that the management of the bank is not commensurate with the business, he began to look for an investment partner. Later, by the year 2000, the trend of international companies investing in banks for development began. In order to get into the invested projects, the Caspian Bank begins rebranding the entire internal and external structure, starting with the name - Kaspi Bank. If initially the purpose and mission of the company was to service and lend to commercial enterprises, then the direction was changed = bank for customers, ordinary people. Perhaps the management would have faced a lot of problems at this level, but the resources invested in digitalization in time made it possible to redistribute all the flow in such a way that physical stores and branches with modern information technologies began to function. This investment provided not only fast and efficient customer service, but also carried a competitive advantage in the market.

The next step towards the new image of the "bank for people" was the establishment of relations with the state, which gave not only support from the government, but also further collaboration (described below).

In parallel with the rebranding, Kaspi Bank successfully implemented its services and services, such as deposits, lending, etc. All this smoothly turned into a mobile application with which anyone could transfer money, save, pay utilities, close bills in one click.

At the moment, the mobile application of Kaspi Bank itself includes the following services: marketplace (more than 10,000 partners of small and medium-sized businesses throughout Kazakhstan), payments (payment for education, charity, utilities, fines and taxes, transport services, etc.), transfers (international transfers, to the user of Kaspi), travel (system of booking and purchase of air and rail tickets both within the country and abroad), guide (online guide to the bank's application and products), Kaspi maps (contact numbers and addresses of the bank's partners, bank branches, ATMs and terminals), as well as public services (where you can get PSC and EGOV services using a digital EDS key). Kaspi card machines appeared in the branches, capable of issuing a personalized bank card in one minute. This kind of innovation is unique in its kind, due to the fact that even in the most developed countries, the process of obtaining a bank card takes more than three working days. At the moment, the device has no analogues in the world and Kaspi has officially patented it.

Now Kaspi Bank is a whole ecosystem — an integrated management system, in which various groups of partners and customers are brought together on one digital platform with various services to meet financial and non–financial needs, and both at the same time.

Based on the above, it should be noted that thanks to the timely introduction of innovations and the change of the usual brand, Kaspi has become the largest fintech (financial technology) not only in Kazakhstan, but also in Central Asian countries.

Statistically, the activities of Kaspi Bank after the rebranding not only completely reshaped, but also actively began to float, practically extending to all areas of life. For example, if only after the rebranding Kaspi was just an ordinary bank, at the moment it is a whole community that covers the activities of the holding, e-commerce, banking, insurance, distressed asset management, real estate, payment processing services and an online ticket booking system. Compared to 2020, the use of the bank's mobile application has grown by 59% to 9.1 million users. Weekly transactions per customer increased by 1.9% to 28 times. Thanks to a long-term strategy, the bank manages to maintain profitability even in such difficult times as the COVID-19 pandemic. It follows that, thanks to the structural approach and the timely decision on rebranding, as well as the complex transition of the company, from managers to ordinary employees, gave impetus to a new level of development of the organization. A striking example of which is our Kaspi Bank.

Along with successful examples, there are failed cases of company rebranding, which are not only ineffective, but also bring enormous losses due to implementation costs, advertising costs, etc.

Let's analyze the cases of the company's failed rebranding based on the following examples: GAP, PEPSI, and others. The initial goal of changing the company's image was to give the organization a new breath of creativity, increase awareness and further commercial promotion in a new, more prestigious status.

Why did the world's popular companies lose a huge amount of resources by investing in inefficient rebranding? To answer this question, let's analyze the mistakes of these companies.

Pepsi, the company that produces carbonated drinks, decides to rebrand in 2008 for an amount approximately equal to one billion US dollars. In the initial version, the idea of creating such a logo for the brand, which would comply with the rules of the golden section, used the principles of magnetic field theory with elements of feng shui. This vision was shared by both the company's executives and the compilers of the designers, who assumed that the innovation would get a closer emotional connection with their customers. However, after the launch of the update, consumers perceived the fresh logo as a prototype of a well-fed man with a rounded stomach and began to distribute it as an ironic media object on social networks. The company left the innovation, it did not lead to significant costs and lower sales, but the very view of the company's reputation was revised by consumers.

The largest clothing retailer in the United States, the GAP brand also got into the top of the unsuccessful transition to a new image. The fact is that in pursuit of a more minimalistic, aesthetic, and new image, the company is changing its logo beyond recognition. Instead of the restrained blue square with the inscription of the same name familiar to the buyer, an inscription with a separately located figure appears, which receives a barrage of criticism. Despite attempts to correct the situation and even make a more suitable model, the managers had to return the old version of the logo.

Below is a table with more detailed examples of global rebranding:

Table 1
Examples of global rebranding

	Old Spice	USA Today	Burberry	AOL
The reason for the rebranding of the company	Changing the target market from 40-60 years old to 18-34 years old	Image change	Winning new customers	Increasing the consumer base
Changes	Promotion to a new target audience	Changing the logo	Promotion to a new target audience	Changing the logo from one to six new ones
Tools	Interaction with clients in social networks. networks,	Minimalistic execution style	Advertising with famous personalities.	Creating new six logos with the idea to choose yourself

	creating effective advertising		Emphasis on convenience and quality	
Platform	YouTube	Media	YouTube, TV	Media
Results	Product sales increased by 107%	Criticism from misunderstanding the idea	Found new customers, without losing old ones	A fragmented audience did not increase the success of the company

3. Remarketing

Remarketing is an equally important tool for promoting and improving the company's sales. Now, this tool is still a mystery for aspiring entrepreneurs. If marketing is an event to attract a target audience, then what changes with the addition of the prefix "re"?

For a better understanding, we can consider the following example:

A person studies winter shoes in an online store for himself for some time but does not make a purchase. The reason may be that he did not find a suitable model, size, color, or simply the price turned out to be too expensive. These objections of the client can be easily worked out with the help of remarketing. It will be possible to show on another site a banner for this model of sneakers, but, for example, with a discount or the right size. And you can also offer another option – a large assortment or a high-quality alternative to the model. [7]

According to statistics, 60-70% of visitors to online store customers do not immediately make a purchase immediately. There may be a lot of reasons for this: problems with the Internet, someone distracted or put in the basket because of financial problems. As a result, the buyer can forget about this product and not return. At such moments remarketing comes to the rescue: visitors who have left without buying come back. If the business had not learned to work effectively with such clients, then it would be possible to forget about the high level of sales in the network. [8]

What is remarketing for? Internet marketers have long known that it is much easier to work with "warm" customers than to attract new customers. After all, using remarketing, you can remind a potential customer about the advantages of a product that is already familiar to him, offer a discount or a promotion, and gently encourage him to target action.

If you look at the statistics, then:
• Only 49% of users visit the site 2 to 4 times before making a purchase;
• 56% of companies use remarketing to attract customers;
• The average conversion to a remarketing application is much higher than at the first visit.

The most important point is the third. The reason for the high conversion of remarketing is simple - advertising is aimed at the "hottest" audience that is interested in buying. And besides, these people have already been on the site. This means that subconsciously they already trust him more.

Thus, remarketing is an online marketing tool that was developed by Google AdWords specialists. The technology of the tool allows you to return the missed user. To do this, the visitor is shown ads relevant to his request on the network of partner sites [9].

This type of marketing is good in the following market cases:
• Demand for goods or services is falling;
• Sale of expensive goods or services;
• Cross-sale, pre-sale.

How does remarketing work? The principle of operation is based on the ability of search engines to recognize users visiting the site. The session of a visitor who first visited the site through a browser is recorded in a special cookie file. This text information is stored on the user's computer and serves for comfortable Internet surfing. And is also used by search engines as part of remarketing technology. For example, Google can remember user ID, then to demonstrate their request relevant ads on Google display network of Google or ad networks Yandex. When a "marked" user visits any site on the network,

an advertisement catches up with him, unobtrusively offering to return to buying a previously viewed product or ordering a service.

The technology of working with customer databases will be useful for companies that conduct online trading in highly competitive niches. Remarketing helps to save the advertising budget and increase profits by attracting a more heated target audience.

As an example, VKontakte is further considered. As we know, this social network is one of the giants among users and has a wide audience. With the help of Vkontakte, you can only use the remarketing site (there is no dynamic remarketing). But even in this case, remarketing works, and successfully. To work, select one of the types from:

- Targeting by id;
- Targeting by E-mail;
- Targeting by user's phone.

And then the code is added to the site, if there is a ready-made database. The most important disadvantage is the inability to segment the audience of the site, the code is only capable of collecting all visitors. Next, an ad is created and an audience is added.

Common mistakes may be: not setting a limit of impressions per person and too high a price.

It should also be noted that the effectiveness of marketing largely depends on the chosen strategy. In practice, strategies with segmentation of customers by the degree of interest in the product work best. This strategy can also be applied at the stage of product selection or purchase. But it can also be used to expand the audience. There is a Look-alike technology that works to collect information from similar people to existing buyers. That is, data from CRM systems comes to the rescue here, as well as collecting in the remarketing list of customers who have already made a purchase on the site.

For example, when selecting look-alike, behavioral metrics, geographical and demographic parameters are configured, input devices and other characteristics are specified. This model is used for cross-sales and additional sales in online stores, it helps to increase the conversion rate by an average of 40% [10].

The main remarketing tool is Google Ads, which gives businesses access to the entire Google media network and allows you to launch different advertising remarketing campaigns for different audience segments.

Next, there will be practical recommendations based on the example of the Google AdWords advertising cabinet. After all, he is the highlight of the program. Well, more than 2 million partner sites from Google makes it very interesting. By the way, this means reaching about 90% of the Internet users of our planet.

- Preparation

All this is done in the AdWords advertising cabinet. Through "Configure remarketing", the system issues an adwords remarketing code that will need to be installed on each page of the site.

- Creating an ad

The key to success is not only the correct setup, but also a competent approach to creating ads. And before we study them, we need to familiarize ourselves with each type separately. Not every partner site of the advertising network hosts all these formats. Therefore, you need to use each type of ads to ensure the greatest reach of users.

- Turn off the buyers

It would be presumptuous to advertise a product to a person who bought exactly the same one an hour ago. It is unlikely that he will decide to buy more. To prevent such a situation from happening, you need to immediately exclude existing customers from remarketing lists.

- Writing conversion ads

General recommendations for creating ads for retargeting - more creativity and emotions. Use vivid images, sinking ideas, high-quality creatives and videos. Humor and a little provocation will not hurt [11].

The following remarketing tools may also be useful:

AdRoll. A platform for launching media, social and electronic advertising for the purpose of rapid business development. It has an automation and personalization function, thanks to which it is possible

to synchronize different remarketing channels and launch truly high-quality marketing (or even demarketing).

Mailchimp. A universal platform for email newsletters, which also allows you to launch targeted remarketing campaigns, create landing pages, analyze statistics, etc.

ReTargeter. The platform offers software solutions for displaying high-precision advertising that will fully meet the needs of the audience and business goals. Moreover, the platform makes it possible to attract not only past visitors, but also new ones [12].

When forming a remarketing strategy, analytics is also extremely important.

Remarketing setup offers several actions. The first thing to do is to determine the goals of remarketing. Why exactly do you want to bring users back to the site? What target action should they perform?

Segmentation is used when creating a remarketing list. The remarketing lists for search ads themselves are needed in order to select the people to whom your advertising campaigns will be shown. Therefore, think in advance on what principle to segment the audience. For example, you can segment users by the time spent on the site. What and to which segment will you offer? Each segment also needs its own landing page.

The advantages of the technology include:

- Conversion growth. Targeting a warm audience that is already familiar with the company and its products allows you to save your budget and increase sales.
- A reminder about a brand, product, or service. "To be visible" – this motto can characterize the essence of remarketing. If the client wanted to, but did not make a purchase, then it is necessary to remind him to do it at all sites where he will go after.
- Return on investment in marketing. The response to relevant advertising is a priori higher, therefore it does not require large expenses.

The disadvantages of remarketing include the importunity of advertising, the presence of an ad blocker (AdBlock and others), banner blindness of users.

One of the most successful examples of remarketing from life is the case of Mazda. As you know, this is one of the largest automobile companies. Mazda had a simple goal - to get more people in the seats to test drive their cars. To do this, they turned to Merchenta. Merchenta is a retargeting software development company. Mazda asked to help attract more site visitors to their local dealerships with a few smart PPC ads.

Merchenta worked with Mazda to "achieve" (pun intended) impressive results with their proprietary IntelliAds solution. Here are some brief statistics:

- Visitors who saw IntelliAds converted 53% more often than in the control group.
- The volume of car sales due to their retargeting was 98% higher than the average offline.
- The level of involvement in their advertising was almost 20%.

So how do you reproduce these results?

Firstly, Merchenta has created personalized advertising based on geographical radius to target people who are more likely to contact a specific Mazda dealership. Secondly, they dynamically inserted specific Mazda models that interested the site visitor (from their activity on the site), and compared inventory with local dealerships.

The most interesting thing about this case study is that visitors went to the national Mazda website (and not to the websites of individual dealers), where Merchenta was able to connect to the inventory of local dealers in order to personalize advertising as much as possible.

To implement something like this yourself, you can use Google Ads dynamic remarketing and create campaigns for specific cities in which individual audience groups are combined with specific products or offers on your site. Even if the company is not a car manufacturer and you run your entire business online, you can use the same principle by testing the idea in the cities with the highest traffic. To do this, it is enough to look at the "Google Ad Sizes" tab to determine in which cities user remarketing ads should be placed first [13].

3.1. Types of remarketing and comparative analysis of the company

As we know, remarketing is working with a "warm" audience that has already visited the desired site. In such cases, not using remarketing is a big mistake, because you can miss not only accidentally visiting customers, but also those who put the goods in the basket. Technically, this process is implemented using a special code that is installed on the site. After the remarketing visits the site, it is called personalized. And he, in turn, is divided into:

- Remarketing website;
- Dynamic.

A remarketing site means any visit to the site, and a dynamic one can list advertising updates generated automatically [14].

Further, the comparative analysis of this type of remarketing for more info Google Adwords, Facebook, MyTarget, Yandex Direct and Vkontakte:

Table 2
Comparative analysis of the remarketing company

	Vkontakte	Yandex Direct	Facebook	MyTarget	Google AdWords
Configuration via the interface	-	-	-	-	+
The need for analytics	-	+	-	-	+
Target Setting	-	+	+	+	+
Remarketing website	+	+	+	+	+
Dynamic remarketing	-	-	+	+	+
Ability to load the user base	+	-	+	+	-
Participation period (days)	180	30	180	365	540
Minimum number of users	50	-	-	-	100

Summing up, you can see that Google Adwords wins by many criteria. It is enough to configure it directly through AdWords or through Google Analytics. And also one of the main advantages is that remarketing ads can be shown in a search engine. That is, at the next search, the ad is displayed there to him. And he also has a minimum period of participation – 540 days. Although on the one hand it is good, on the other hand, this method can also "annoy" the user. With the help of Advwords, it is possible to create lists only based on the pages viewed, here it can also be classified by "visitor behavior" (for example, users from Moscow who viewed the catalog page for 7 minutes);

It is also worth noting the opportunity to demonstrate not only graphic ads (banners), but also text (picture and text), which can be displayed not only in the display network, but also on sites that place only text ads.;

It is also important that all site visitors can be reminded of a special offer, promotions or sales. Those who have not completed the purchase and viewed the product-return and place an order (possibly a discount offer).

To remind customers about new offers or to "sell" related products (cross-selling).

Depending on the goals or features of the online store, you can segment the audience more narrowly in order to increase conversion [15].

Google Dynamic remarketing has a recommendation system tool. The mechanism identifies not only the products that the user has viewed, but also finds those that he may be interested in.

Frequent mistakes are repeated, as in normal site remarketing and, in general, they will be the same in any retargeting.

It is also important to note that in remarketing, limiting the frequency of impressions and the length of the user's stay in the list is an important factor. Since there are a lot of cases when the accompanying advertising irritated potential buyers everywhere. For example, the story of the store Zappos.com when the girl for some reason changed her mind about buying shoes there, for a long time she could not get rid of advertising with these shoes.

In addition to personalized, remarketing is distinguished, which is not based on the user's visit to the site:

- Search Engine. Advertisements relevant to queries (search engines independently collect information about search queries);
- Social (advertising for a potential audience that has shown interest in your offer in the social network. social networks: likes, retweets);
- Behavioral (without search queries, information about visited sites is collected).

Also, it is important to notice that remarketing should lead to a page with an appropriate offer. In long deals or multi-stage sales, it is important to use different content at different stages of the funnel. People who have returned and performed a targeted action should be excluded from the remarketing list or transferred to another [16].

4. Comparative analysis of rebranding and remarketing

In this section we consider a comparative analysis of two company promotion tools - rebranding and remarketing.

Table 3
Comparative analysis of the rebranding and remarketing

Characteristics	Rebranding	Remarketing
Purpose	Complete qualitative transformation of all brand components	Increase sales, as it is a search for new communication opportunities with the target audience to ensure sales growth, customer returns, and repeat sales
Causes and prerequisites	The emergence of new innovations, the transition to a new market, changing the image, making a profit	The need to attract back potential customers and increase sales, through advertising and announcements
Types	Productive, comprehensive	Personalized retargeting, search engine, social, behavioral
Digital tools	Online servers, SMM technologies, promotion in social networks	Google Ads, AdRoll, Mailchimp, ReTargeter.
The technology of work	Complex	The technology allows you to return the departed user who viewed or put the product in the basket, but did not make a purchase. To do this, the visitor is shown ads relevant to his request on the network of partner sites.
Coverage	For the whole organization	Remarketing coverage is determined by all lists at the campaign level.
Advantages	A new breath of creativity will help to increase brand awareness while preserving the original values	Conversion growth. Targeting a warm audience that is already familiar with the company and its products allows you to save your budget and increase sales.
Disadvantages	Requires a large amount of resources (financial, time, human)	The importunity of advertising, the presence of an ad blocker (AdBlock and others), banner blindness of users

In modern world of innovations, digitalization, and trends, one of the most relevant definitions is the concept of digital marketing. Conducting any kind of commercial promotion depends directly on the use of digital tools. With such a dynamic development of the market, the question appears and growth about the flexibility of the companies themselves – how quickly and correctly they adapt to new conditions and whether they can introduce trending novelties in a timely manner.

Based on the above, it should be noted that rebranding and remarketing are among the most effective methods for commercial promotion of the company and increasing profits. Both methods are working and quite successful, but they are used for certain purposes, so the end result from the application will be different.

The adaptation of companies directly affects the success of commercial promotion, hence the resulting profit. To manage the promotion more effectively, as well as increase the level of profit, companies use various methods of rebranding or remarketing. Despite the similarity in sound, these approaches differ in the method of application, purpose, tools, and end result. In this article, these definitions are disclosed in detail, special cases are analyzed and a comparative characteristic for each of them is derived [17].

If we briefly define these two terms, then:

• Rebranding is a tool for completely changing the essence of a brand to increase sales. In other words, it is a change in visual style, positioning and communication with customers, while necessarily maintaining continuity with the "old" brand, so that the customer still recognizes the company and its products.

• Remarketing is an Internet marketing tool that helps return departed users to making a purchase of a product or ordering a service on the site. In simple words, this tool allows you to show visitors the ads that are relevant to their recent request, and thus redirect them to the right application or platform.

5. Conclusion

Summing up, we can say that with the correct application of digital marketing tools, in particular rebranding and remarketing, in order to solve global marketing problems, this technology allows to get obvious advantages. The main feature of digital marketing can simplify communication and make many "non-individual" things "obvious" to consumers. Also speed up processes, watch accurate real-time results. It helps to ensure rapid coverage of a huge target audience, and to establish interaction with potential consumers. But it is important to keep in mind that if do not use these tools correctly, it is possible, on the contrary, harm the company and make everything worse. Therefore, there will be further disadvantages of digital marketing. In fact, the disadvantages of digital marketing come from two reasons: inept use of technology and ignorance or disregard of the laws and the norm of marketing.

The main goal of a company during rebranding is to acquire new potential customers, enter or even create a new financial market with a wider target audience, however, changing the image just for the sake of this request can have the opposite effect. The application of rebranding may not always be successful, as in the examples we have described above. Based on the foregoing, I would like to note the fact that before deciding to rebrand, it is necessary to conduct various kinds of surveys with existing consumers, for example, to get feedback by filling out questionnaires, social networks and instant messengers, this is recommended in order to increase the loyalty of existing consumers. A rebranding change is not a change in the logo, it is a complete structural transformation of the entire structure of the organization, a change in the approach to work and to clients. That is why cardinal decisions should begin precisely with the organization of the internal structure of the company - from superiors to ordinary employees.

The rebranding should highlight the opportunity to look at the company and its products from a new angle. This can increase brand loyalty and expand the audience of consumers. If the rebranding is carried out competently and efficiently, it will increase the company's profit. But if the work is done poorly, it can lead to financial losses or even ruin the business. And large investments in rebranding are a serious risk of losing them. After all, even big brands are wrong. Pepsi invested $1 million in a new logo in 2008 and did not get the reaction of customers that it expected.

It's the same with remarketing. The purpose of this technique is to return the missing visitors and turn them into regular customers. This means that the approach to them should be special, that is, individual in each case. Yes, remarketing has several advantages that work successfully to achieve goals. But sometimes such advertising is annoying and even aggressive, which irritates the client. Since it is placed anywhere, sometimes an ill-fated banner pops up in the most inconvenient place and closes what a person needs right now or prevents him from doing a targeted action. This is a huge disadvantage of remarketing as a method.

Therefore, it is important to remember that these are excellent tools for companies that want to remain competitive, change with the market and customers. It is important that work is carried out not only on the external gloss, but also on internal processes. In this case, rebranding and remarketing will only benefit the company. But with an amateur approach, such an event can turn into a tragedy for business.

6. References

[1]   A.S. Williams, et al. The influence of logo change on brand loyalty and the role of attitude toward rebranding and logo evaluation //Sport Marketing Quarterly. – 2021. – T. 30. – №. 1. – C. 69-81.

[2]   A. Joseph. et al. Corporate rebranding: An internal perspective //Journal of Business Research. – 2021. – T. 130. – C. 709-723.

[3]   L. Palchinska, 2021. The history of Kaspi.kz, the largest fintech project in Kazakhstan, which is actively conquering the Ukrainian market. URL: https://ain.ua/ru/2021/11/01/kaspi-kz/.

[4]   Z. Lee, I. Davies. Nonprofit brand and managing nonprofit rebranding strategy //Charity Marketing. – Routledge, 2021. – C. 46-58.

[5]   V. Tarnovskaya, G. Biedenbach. Corporate rebranding failure and brand meanings in the digital environment //Marketing Intelligence & Planning. – 2018.

[6]   M. Blazquez. et al. The effects of rebranding on customer-based brand equity //International Journal of Business and Globalisation. – 2019. – T. 22. – №. 1. – C. 91-109.

[7]   M. Isoraite. Remarketing features //International Journal of Trend in Scientific Research and Development (IJTSRD). – 2019. – T. 3. – №. 6. – C. 48-51.

[8]   P. Kotler, V. Balachandran. Strategic remarketing: The preferred response to shortages and inflation //Sloan Management Review (pre-1986). – 1975. – T. 17. – №. 1. – C. 1.

[9]   S. Garrity. What is remarketing and how does it work?[Online] 16.9. 2011 //Cit. – 2014. – T. 8. – №. 4.

[10]   I. Chernyshev, Remarketing.URL: https://in-scale.ru/blog/remarketing/.

[11]   S.C. YILDIRIR THE ATTITUDES OF SOCIAL MEDIA USERS ON REMARKETING //Osmaniye Korkut Ata Üniversitesi İktisadi ve İdari Bilimler Fakültesi Dergisi. – T. 5. – №. 2. – C. 37-52.

[12]   R. Pathak, G. Waghmare. Remarketing through Social Messaging Apps-Promotional Tool or Sales Strategy. – 2020.

[13]   J. Dane. 2019. Retargeting Case Studies That'll Boost Your Current Campaigns. URL: https://cxl.com/blog/ppc-retargeting-case-studies/

[14]   V. Väisänen. Social media and the remarketing strategy. CASE: Kiho. – 2018.

[15]   J.R. Saura. Using data sciences in digital marketing: Framework, methods, and performance metrics //Journal of Innovation & Knowledge. – 2021. – T. 6. – №. 2. – C. 92-102.

[16]   B. Melović, et al. The impact of digital transformation and digital marketing on the brand promotion, positioning and electronic business in Montenegro //Technology in Society. – 2020. – T. 63. – C. 101425.

[17]   K. Gielens, J.B.E.M. Steenkamp. Branding in the era of digital (dis) intermediation //International Journal of Research in Marketing. – 2019. – T. 36. – №. 3. – C. 367-384.

The Role of 7P's of Marketing in the Digital Strategies of Kazakh Tourism Destinations

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Abstract

Promotion of tourism destination in the digital environment on the one hand gives great opportunities, but on the other hand arise competitiveness. One of the useful tools in marketing analysis is model of 7ps (product, price, promotion, place, people, process, physical evidence). Adoption of this model for digital strategies might become inevitable part of tourism destination marketing strategy. In this paper, we considered the role of 7Ps of marketing in the digital strategies by comparative analysis of three Kazakh destinations. The analysis identified gaps in digital marketing strategies of destinations and related issues. The findings would be interesting as for researchers from tourism and marketing so for practitioners in this field.

Keywords

Digital strategy, digital marketing, tourism destination, Kazakhstan

1. Introduction

Akmola region of the Republic of Kazakhstan has significant natural, geographical, historical and cultural resources for the development of tourism.

In addition, the close location to the capital of Kazakhstan, Astana, creates favorable conditions in the form of effective demand for recreation and recreation of capital residents and guests of the city.

The region is located in the northern part of the country and covers an area of about 150 sq. km.

On the territory of the region there are such unique natural objects as the Korgalzhyn reserve, the Burabay, Zerendy resort zone, the Jockey, Kotyrkol, Maybalyk, Bolshoye and Maloe Chebachye lakes, the state national natural parks "Kokshetau", "Burabay", "Buyratau".

Erementau and Sandyktau also have opportunities for the development of ethno-tourism and ecotourism [1].

The natural complexes of the Shchuchinsko-Burabay resort zone attract tourists not only from the entire Republic of Kazakhstan, but also from near and far abroad: these are resort places with excellent natural and climatic conditions, rich medical and recreational resources and a historical and cultural fund, a favorable geographical location, the presence of trans-state aviation, railways and highways.

The resort features of the Shchuchin-Burabay zone have been known since the 19th century. The first sanatorium with a kumys hospital on the shores of Lake Burabay was built in 1910, the state health resort Borovoe was opened in 1925, and in 1927 the first health resort on the shores of Lake Shchuchye "Barmashino" appeared [2].

The region also has unique opportunities for the development of ecological tourism with a high bird population in Korgalzhyn and historical monuments in Yermentau.

Another unique attraction of the region is the Kobeituz lake in the Erementau region, which turns pink every few years, presumably due to the presence of dunalella algae.

In the era of digitalization promotion and development of tourism destination heavily depends on digital marketing strategy. In the theory of marketing, the 7Ps helps companies to review and define key issues that affect the marketing of its products and services. A popular marketing model, the marketing mix is can also be referred to as the 7Ps framework for the digital marketing mix. In this paper we consider how 7Ps of marketing affect digital strategies of tourism destinations.

To do this, we will conduct a competitive analysis of the Akmola region as a tourist destination for digital marketing activities. The Almaty and East Kazakhstan regions are considered as competitors, a comparison is made of the use of digital marketing for 7P, including marketing research. Moreover,

this analysis shows how digital marketing used in the activities of a tourist destination, what are the disadvantages, obstacles and potential for further improvement.

2. Literature Review
2.1. Tourism

The phenomenon of people traveling to different countries for leisure or commercial purposes is known as tourism [1]. A tourist trip is taken by a person for the purpose of pleasure, rest, business, etc. People in Kazakhstan define tourism as the temporary movement of people to places other than their usual places of work and residence, the activities they do while there, and the infrastructure built to meet their needs [2]. People who don't have a permanent home or a job also take part in the tourism phenomenon.

2.2. Digital Marketing

A. Komari, L. D. Indrasari, A. Y. Tripariyanto, and S. Rahayuningsih (2020) use SWOT analysis and the 7P model to explain what variables impact customers' choices to purchase certain goods [3]. The 7Ps of marketing are the product itself, the price at which it is offered, the place, the channels used, the people, the process, the product itself, and finally, the physical evidence made. Dependent and independent variables can be used to figure out the different steps of the buying process, as the work of A. Komari et al. (2020) shows. When considering the 7P model, this suggests that X1 elements are important to customers when they make their final choices. Therefore, all of these methods for evaluating digital marketing are very recent developments. So, the value is down since Considering how much may shift in a SWOT analysis, it's clear that further investigation is required for improved decision making. It could also help the economy get back on its feet and give governments a lot of new ways to work better [4].

According to Almeida-Santana and Moreno-Gil (2017), traditional forms of marketing and advertising have given way to more innovative forms of digital marketing. Its potency is the main cause of everything. It may also aid in economic revival and open up vast new possibilities for governments to operate more effectively [5]. In the Akmola region, digital marketing strategies and methods have been tried and tested, and the results have been good [2]. Thus, the development of new technology and shifts in market dynamics have contributed to the expansion of digital advertising.

2.2.1. The 7 Ps model of digital marketing

In conducting marketing activities, having skills is needed, because in this case, related to how the product can reach customers if the ways in marketing are not done creatively. So far, marketing-related models are known as 7P. This 7P model is a marketing mix model based on seven marketing elements beginning with the letter 'P,' which is a refinement of the 4P concept that is very popular and fundamental to its use in the marketing world. Consumers and producers have differences in the use of promotional tools, people, and physical evidence. Next about each component in 7P:

a. Product

Products are the main component in the 7P model, as well as the 4P model that explains how product or service specifications are offered. The product developed to become an entrepreneurial idea is Herb, which is a traditional herbal drink with classy packaging and quality raw materials to benefit customers if consumed according to the recommended dosage

b. Price

The pricing strategy is very diverse and is a critical review of the 7P model. Pricing is related to the basics that are not simple. Scopes such as selling pricing strategies, giving discounts, and all things related to transactions. There are many pricing strategies you can implement on your website, which will make your products stand out to your customers:

Discount codes

Online vouchers
Price cutting (20% off etc)
Packages and bundles
c. Promotion

Promotion is closely related to strategic steps in sales, such as how ads are right for a product, how the sales model is right on target, and so on. The strategy is to market the product to the hands of consumers and get feedback that is as expected, which is to do promotions by relying on social media, electronic media, and mass media and door to door, to be more effective. Promotion in the online marketing mix is the use of online marketing communication tools to reach your target audiences. Promotion includes the use of online advertising, public relations, direct communication, and sales promotions to reach and influence an audience. Online marketing offers many effective strategies to choose from to include in your marketing mix. Every business and its online products require different approaches when reaching their customers.

d. Place

Not far from the promotion, the place here means the right distribution location. This factor is significant and conservative for certain environments. Transportation is also a consideration in distribution. Place in the online marketing mix means the place where and how you provide your customers access to your products. In online marketing, there are many options for you to sell on a wide range of platforms and methods. The best place for your customer comes down to what is the best place to reach and is convenient for your target audience.

e. People

People here are human resources. It should be noted the relationship between consumers and companies to be maintained properly with consumers without knowing the formal strategy in the company. The author here always prioritizes service that is friendly and always prioritizes the establishment of a peaceful impression in the transaction. People as a marketing decision in the online marketing mix is crucial. Great products and businesses require people that are involved in the online distribution and personnel who are in direct contact with customers.

f. Process

Business processes cover all aspects of the business itself. Not far from human resources, commitment as a businessman and workers for a business needs to be patented so that the business flow can run as expected. People as a marketing decision in the digital marketing mix is crucial. Great products and businesses require people that are involved in the digital distribution and personnel who are in direct contact with customers.

g. Physical Evidence

Physical evidence becomes important, especially in the present era. Although digitalization is increasingly prevalent, sales through social media are very prevalent, but the existence of valid company buildings and locations greatly influences marketing, in this case, to convince customers to buy product. In the extended marketing mix, physical evidence refers to the different elements of service experience, such as facilities, interior designs, livery, and post-purchase artifacts (souvenirs). In an online setting, these pieces of evidence will not have a physical element to them. However, the digitalization of this physical evidence is still possible, and an important marketing decision to have. Online brand awareness across multiple channels is an excellent example of online evidence. How well these channels expand service experiences, for instance, through the number of followers, likes, and other social engagement metrics.

3. Methodology

The development of tourist destinations uses digital platforms to interact with the environment. They are interactive and enable stakeholder involvement in the management and development of the destination, automate marketing activities and, as a result, create an image in the digital environment using information content created by both suppliers and users. The analysis of the digital marketing activities of the destinations conducted using open sources, and the data is valid at the time of the study, since data changes very quickly in the digital environment.

This analysis is limited, since a complete and in-depth analysis of all digital marketing information requires access to internal information from the Regional Tourism Office and tourist information centers of tourist destinations and a more detailed analysis can be quite voluminous within one section of the thesis. According to the methodology of marketing research of competitors, as a rule, such research methods used as "mystery shopper", marketing intelligence, observation, polling and others.

4. Result and Discussion

To study competitors' digital marketing activities, we assessed their digital platforms and tools, user activity metrics, reach, automated programs used, and other digital marketing metrics.
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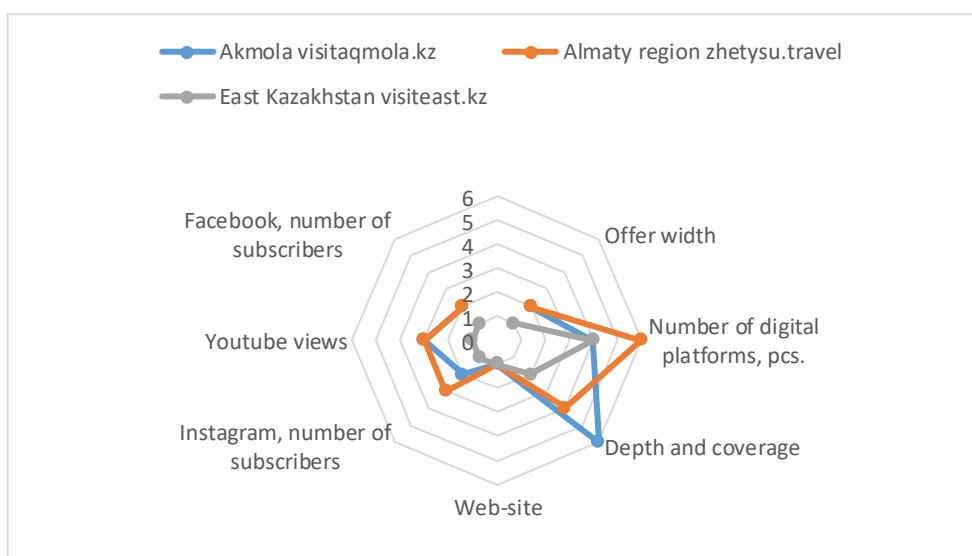
Figure 1: Digital product policy analysis of competitive destinations

Digital Product policy represents the range, quality and design of offered digital products or company products in a digital environment. All three compared destinations have their own official website (visitaqmola.kz, zhetysu.travel, visiteast.kz) and represented on popular social media (Facebook, Youtube, Instagram) (Figure 1). Almaty destination also has a Telegram channel and a VK page. Nevertheless, not all three destinations have their own platform for booking or buying services online and there is also no e-mail marketing (automated mailings, etc.). In this analysis, we did not assess the quality and design of the digital platforms presented, since this requires a survey among users, but we gave an assessment based on the reach or number of subscribers and channel views. The Akmola region is in the leading position, but the East Kazakhstan region platforms are not so popular among users.
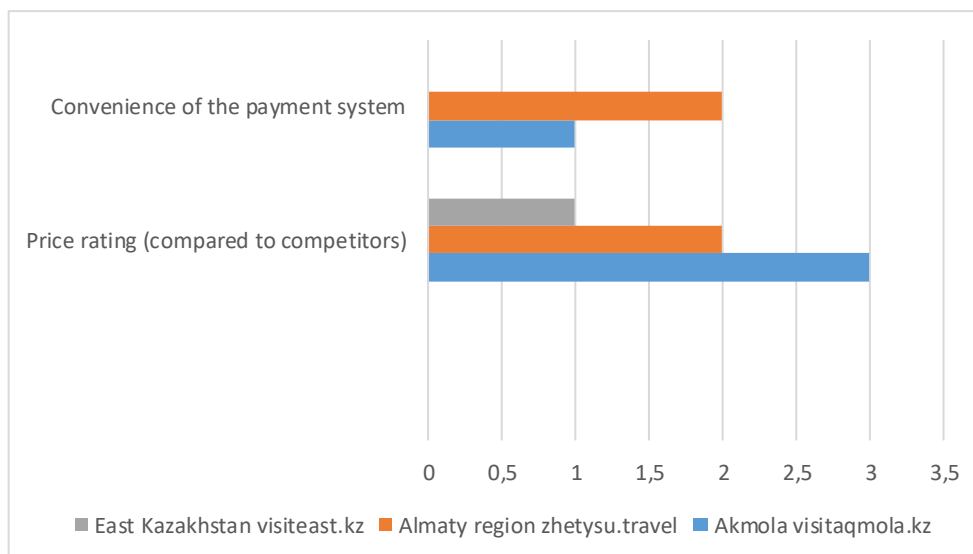
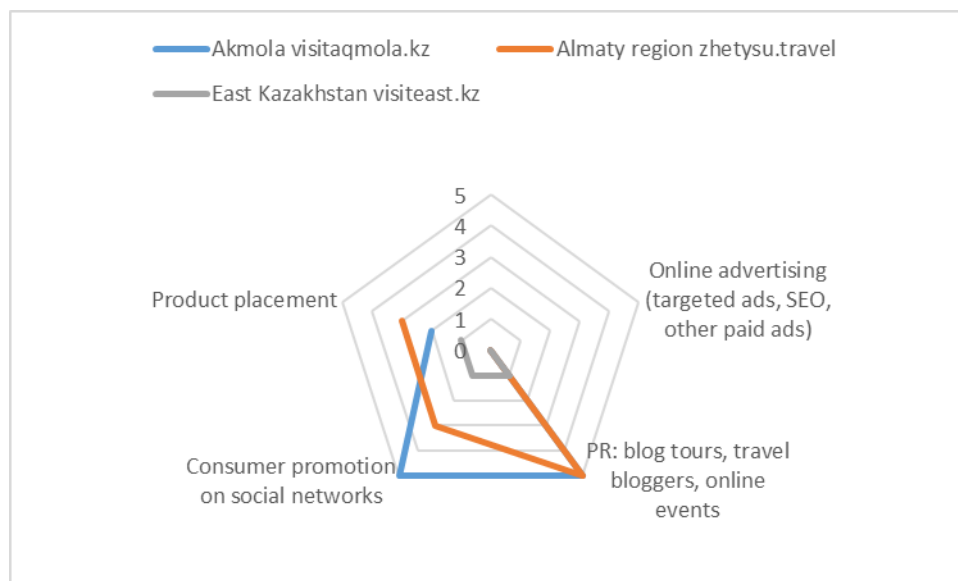**Figure 2**: Digital price policy analysis of competitive destinations

Pricing policy in the digital environment can be assessed by the convenience of online payment systems, the provided price preferences and the level of prices offered on the online market. The tourism destinations in question do not have their own platform, they only provide a link to third-party platforms where you can book accommodation or buy transport tickets. Therefore, here we compared the price level (the lower the price level, the higher the destination rating) and the convenience of payment on third-party platforms. At this point, the payment systems and prices of the Almaty region turned out to be more convenient and competitive (Figure 2.)
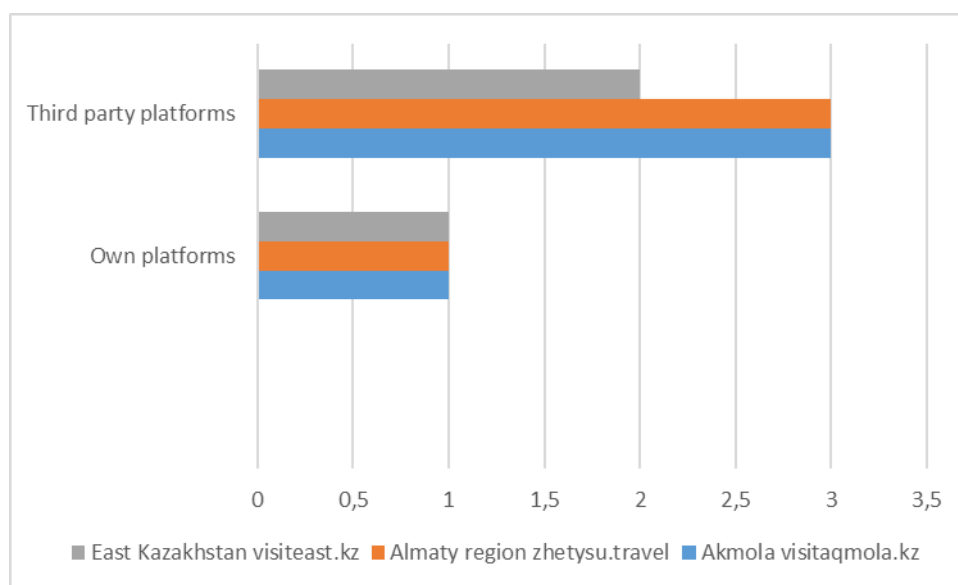
Figure 3: Digital place policy analysis of competitive destinations

Place policy in the digital environment involves the promotion of products through its own and third-party digital channels. The analyzed tourism destinations mainly use their own channels only; from third party channels use the websites and social networks of the service providers in the destination, the Tourism Authority, and some international hotel booking websites (Figure 3). This item poorly developed in all three destinations. Today, platforms of many online travel agencies, booking and ticketing systems are available at the international and regional levels, which can successfully used. But these platforms, as a rule, require commission fees, and the Tourism Departments and TIC in

Kazakhstan are not commercial organizations and do not carry out commercial activities, which is a limiting factor in the promotion of destinations.

Figure 4: Digital place policy analysis of competitive destinations

*Promotion policy in the digital environment* is one of the main functions of digital marketing; it implies paid and free communications with the environment of the organization (destination). The digital communication mix of tourism destinations includes advertising, PR, sales promotion, product placement. However, direct sales, which are in traditional offline marketing, not provided in the digital environment. Due to the problem outlined above, Kazakhstan tourism destinations do not use paid advertising on the Internet. Nevertheless, travel service providers (hotels, travel agencies and other organizations) of the destination mostly use targeted advertising, SEO optimization and other types of paid advertising in the digital environment (Figure 4). These types of advertising are inexpensive and show good conversion, however, service providers in tourism destinations are representatives of SMEs, who do not always have the resources and the necessary competencies to use these opportunities. Recently, one of the most effective ways to promote is attracting bloggers (opinion leaders). Akmola and Almaty regions actively attract Kazakh and Russian bloggers; organize blog tours around the destination. Further, personalities popular on social networks share their impressions with their subscribers, raising awareness and encouraging interest in the destination. In addition, the considered destinations hold and take part in various online events (tourist summits, exhibitions, and others). Actions to stimulate users, various sweepstakes, contests in social networks held regularly by the Akmola region, because of which the destination has the largest number of subscribers in comparison with competitors. Popularization of tourism destinations also carried out through the shooting of feature films and documentaries (product placement). Therefore, in the summer of 2019, a comedy film about a vacation in Burabay shot, and in 2020, a new film released, popularizing recreation in the Almaty region. In addition, documentaries often shot about the natural resources of the regions of Kazakhstan, and picturesque local resorts chosen as filming locations. In this point, the Akmola region received a relatively high rating, and in the East Kazakhstan region, it is very low in comparison with competitors.
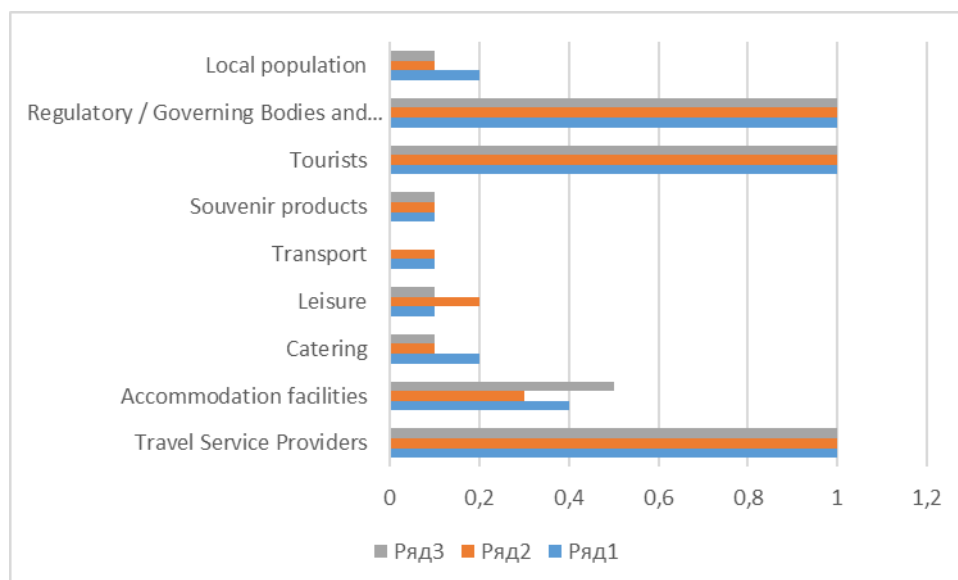
Figure 5: Digital people policy analysis of competitive destinations

People in digital marketing closely related to the previous communication policy. In a tourist destination, DMO interacts with travel service providers, associations, government agencies, local communities, tourists and facilitates effective interaction of these entities with each other. Therefore, the development of a destination requires not only external connections via the Internet, but also internal interaction via the Intranet. Unfortunately, this work poorly done in all Kazakhstani destinations, especially the internal interactions between service providers, regulators and local communities (Figure 5). Such interaction either formalized or absent altogether. DMO digital platforms could not only represent service providers in the destination, provide information to tourists, businesses, investors, but also all stakeholders have the opportunity to actively participate in the development of the destination, make proposals, vote for certain initiatives. Therefore, one of the gaps in the activities of the destinations is the weak interaction between the stakeholders.
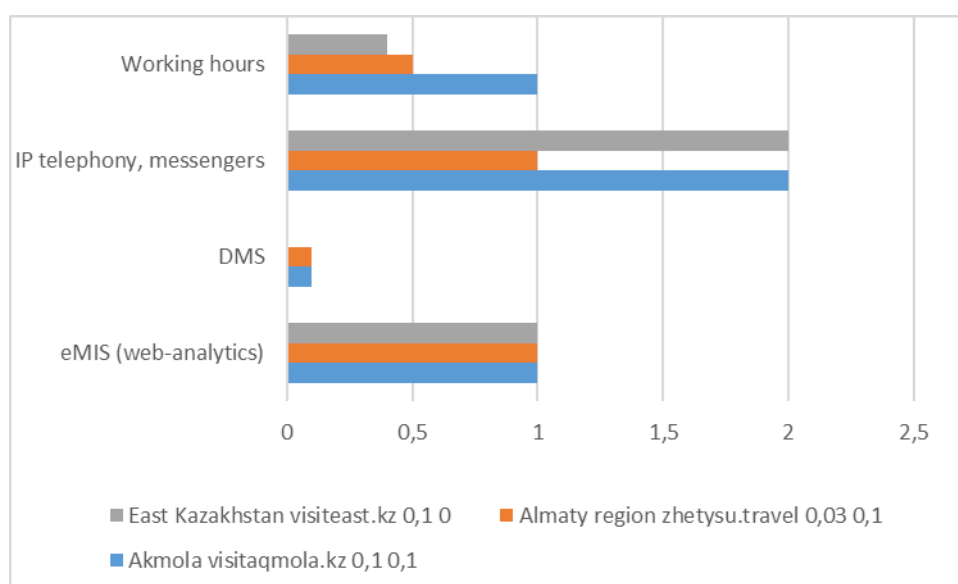
Figure 6: Digital process analysis of competitive destinations

Processes in digital marketing include effective marketing automation. ICT in this area is developing quite actively. Tourist destinations do not use automated business analytics, electronic

CRMs in their activities, only call centers, interaction through instant messengers are used and web analytics (Google-analytics, Yandex-metrics) used to view the web metrics of sites and social networks.
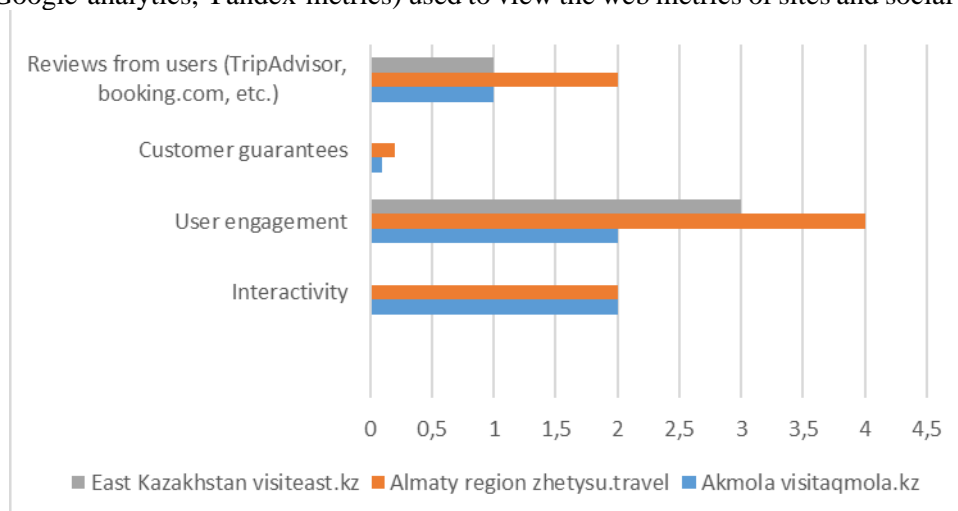

Figure 7: Digital evidence analysis of competitive destinations

Physical evidence - A "tangible" environment in a digital environment can be demonstrated through high interactivity, user engagement on digital platforms (large number of comments, participation in competitions and polls), guarantees provided to customers in an online environment and customer feedback. When not the representatives of the destination, but the users themselves actively create content, share their impressions and reviews, a trust channel eWOM "electronic word of mouth" created, which serves as a guarantor and promotes the destination, creates a certain image for it. We compared the number of reactions of users in one of the social networks of the destination ("likes") to assess interactivity, the number of posts by hashtags # rest in burabay, # rest in almati region and # rest in order to assess engagement (content created by the users themselves) and the number of reviews about third party platforms (TripAdvisor.com) (Figure 7).
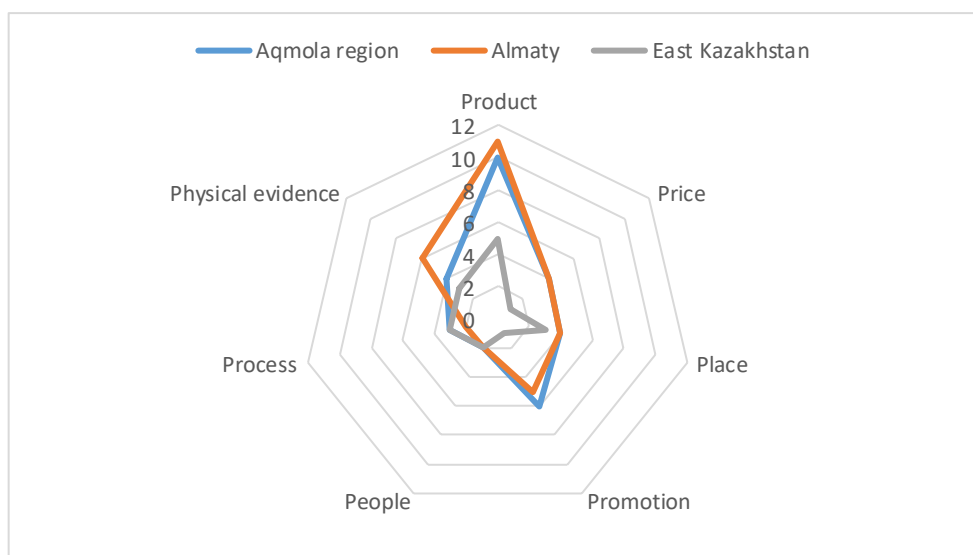
Figure 8: Digital 7Ps of marketing analysis of competitive destinations

According to the results of assessments, with a small margin, the digital marketing activity of the Almaty region (52 points) turned out higher compared to the Akmola region (50 points). In addition, the East Kazakhstan region is significantly inferior in its activity on digital platforms (27 points).

These three tourist destinations were quite comparable in terms of the use of digital marketing in their activities, but if these indicators are compared with the leading destinations in Kazakhstan or the world, then the indicators will be very weak. Although the destination has digital platforms to engage with users, the reach rates are very low, i.e. the channels are not very popular among the population. All channels are mainly aimed at domestic tourists, there is no activity on the international market. Due to legal restrictions, the current DMOs (Tourism Administration, TIC) do not use paid channels to drive traffic to their websites. But at the moment, as a solution to this issue, it is possible to establish a process through the activities of the Kazakh Tourism NC, which is designed to promote Kazakhstan tourism in the international and domestic markets. Another of the main problems identified during the analysis is that the destinations completely lack platforms for e-commerce and platforms for internal interaction between stakeholders. Marketing processes are not automated, existing developments in this area are not used by destinations in their activities, which, possibly, is also associated with financial constraints. Although there are free versions of such programs available, albeit with limited functionality (AmoCRM, Megaplan and others). The regions have problems with digital marketing competencies. And, as a result, low interactivity and user engagement with digital destination platforms, which do not allow disseminating information about the destination among the general public and forming a stable image of the destination.

5. Conclusion

Our analysis revealed that there are problems for the development of digital marketing in the tourism industry of the Akmola region, which lie in the communication plane.

The first block of problems is the lack of well-established relations, coordination and effective interaction between the players of the tourism market (tour operators, travel agents, tourist objects, service providers, associations, central and local executive bodies, consumers, etc.).

In addition, there is a lack of coordination between LEBs and providers of travel services in the region, in particular, the lack of a unified digital platform for stakeholders.

The second block of problems is the unformed image of the region as a tourist destination, the lack of information support about the places of tourism.

The development of digital marketing in Akmola region is also hampered by weak digital infrastructure, digitalization of enterprises and digital literacy of the population, these indicators are discussed in the next section. We will also take a closer look at the content of the tourist digital platforms of the Akmola region.

6. References

[1] Tourist opportunities of the Akmola region. URL http://visitkazakhstan.kz/ru/guide/information/1/0/20/. — visitkazakhstan.kz.

[2] Official site of the Department of Tourism of the Akmola region. URL http://www.turakmo.kz/?c=151. — Туристский потенциал области.

[3] A. Komari, L.D. Indrasari, A.Y. Tripariyanto, S. Rahayuningsih. Analysis of SWOT Marketing Strategies and 7P Influence on Purchasing Decision. In: *Journal of Physics: Conference Series* Bd. 1569 (2020), Nr. 3

[4] M. Watkins, S. Ziyadin, A. Imatayeva, A. Kurmangalieva, A. Blembayeva. Digital tourism as a key factor in the development of the economy. Economic Annals-XXI, 169(1-2), 40-45 (2018).

[5] A. Almeida-Santana, S. Moreno-Gil. New trends in information search and their influence on destination loyalty: Digital destinations and relationship marketing. Journal of Destination Marketing and Management, 6(2), 2017, 150–161.

The Efficacy of Printed Modular Learning Modality Approach in Teaching and Learning English Language

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Abstract

The Covid-19 pandemic has tremendously affected the teaching mode as well as the approaches of teachers in nurturing the students. This concern has brought the attention of Department of Education (DepEd) of what modality should be used in order to continue the education process among the students of the country in public schools. The purpose of this study is to investigate whether the Printed Modular Learning Modality Approach (PMLMA) is effective as a mean of continuing the education without face-to-face approach among the learners. Using controlled approach, this paper analyzed the validity of the platform to see the progress of students each quarter this school year, 2021-2022. With the continuous usage of the same tool in assessing the advancement of the learners, it was found out that it played a vital role to gauge their progress. The purpose of this paper is to determine whether PMLMA is an effective alternative teaching tool during the unplanned closure of public schools due to Covid-19 pandemic. In conclusion, the research was able to identify participants' predominant challenges in terms of resources, readiness, and communication. The findings of this article could be used to improve the existing school programs and policies for implementing modular distance learning in the future.

Keywords

Modular distance learning, proficiency level, education, pace, progress

1. Introduction

When Covid 19 pandemic broke out in 2019, schools, colleges, universities and other educational institutions have been temporarily closed to contain the spread of the virus and reduce the number of infections [1]. Face-to-face interaction between students and teachers has also been suspended within the school. Faced with this colossal problem in education, the Department of Education (DepEd) has decided to use Modular Distance Learning (MDL) to ensure continuity of learning in the face of the outbreak of COVID -19. Students use Self-Learning Modules (SLM) that are based on the Department of Education's Most Essential Learning Competencies (MELCS) [2]. MDLs are considered the most common type of distance learning approach in the Philippines. MDL is now used in all public schools after a DepEd poll found that 8.8 million parents supported it.

The Philippines is currently adapting to a new normal form of education, with educators' continuous innovations and the active participation of other stakeholders driving its success.

Buhisan National School switched its teaching mode from face-to-face to Printed Modular Learning Modality Approach (PMLMA). Distance Learning is one of the options to combat on how to continue teaching the students. It is a method of studying in which lectures are broadcast or lessons are conducted by correspondence, without the students needing to attend a school, college, university or other educational institutions [3].

Using PMLMA, students are encouraged to learn on their own pace by using the given modules. Modules are organized collection of course content by weeks, units, or varied organizational structures. These direct the students the flow on what to do in a course. Each module contains files, topics, discussions, assignments, quizzes, and other learning materials to be covered within a week. After the given period of time, parents or guardian will then return the accomplished module to replace a new one in the school. This continues until each quarter is over. Parents are increasingly serving as educators alongside teachers, as education is no longer limited to the classroom. They serve as a bridge to continue the learning process. The teacher is in charge of keeping track of the students' progress. Students may

reach out their teachers by contacting them via e-mail, phone, text messages or any other communication means if problem arises during their studies. A home visit may be done for those students who need assistance [4].

Since the presence of teachers is missing, parents have significant roles to ensure that their children complete the various tasks in the printed module. The module itself encourages learners to study independently. This builds the sense of responsibility and accountability among students by achieving the given tasks in the printed module with minimal supervision, or without guidance at all.

With the current state of education around the world, the PMLMA has been extremely beneficial in continuing the learning process in the new normal of education.

2. Related Works

Face-to-face approach in learning process in the field of education has completely changed when Covid-19 pandemic spread globally. Many educators are worried about the pacing and academic progress of students in absorbing the lessons if they are taught in different modes. Modular approach is used by the DepEd to ensure the continuity of learning amidst of pandemic, although online learning is one of the options to be considered, learners in far flung area with poor internet connectivity or completely no access to the internet were taken into consideration.

The modular approach is not a novelty in the field of education. It was mentioned in scientific papers as early as the late 1860s, when it was called the "Russian system" or the "Russian method." This teaching method was based on the identification of clearly described components of professional skills (operations and actions) that were studied and refreshed element by element [5]. With this approach, the teacher could control the process of teaching in a large number of students at the same time. In the English-speaking countries of Europe and the United States, the modular approach became widely used in the 1960s as an alternative to traditional teaching [6]. Borrowed from computer science, the term "module," has become an integral part in pedagogy's basic vocabulary. It may refer to numerous derivatives: modular approach, modular structure, modular programme, modular rating- technology, and modular technology. However, in all angles, it refers to the methodology based on the development of educational modules for different courses [7].

There are myriads of definitions of "module". For example, the online dictionary, Lexico, defines it as each of a set of independent units of study or training that can be combined in a number of ways to form a course at a college or university [8] while collinsdictionary defines it as one of the separate parts of a course taught at a college or university [9]. Which means, a modular approach can be used in teaching students in their own pace.

Modular distance learning is a type of learning that allows students to use self-learning modules that are either printed or digital. It is only available to teachers and their students' parents or guardians. A study conducted on the effective learning strategy for secondary school students using modular approach, it was found that the modular teaching method is better than the traditional teaching method [10]. A module comprises either a single element of subject matter or a group of content elements that form or knowledge area. A module has clearly defined objectives, preferably in the forms of behavior [11]. Using this approach, students have more time to enhance their learning capacity and understand the materials in their own pace.

3. Methodology

The purpose of this study was to evaluate the effectiveness of the modular instructional approach on the learning of Grade 10 students of Buhisan National School. The main step in testing the relative effectiveness of an independent variable, i.e. a teaching paradigm (PMLMA), was to choose the best design for this experiment. A comparison of each quarter results was being considered to identify the efficacy of modular teaching approach. There are several factors that affect the internal and external validity of experimental design and these are history, maturation, testing, instrumentation, statistical regression, differential selection, experimental mortality, and selection maturation interaction [12].

4. Results

The Philippine basic education program uses a standard and competency-based grading system. All grades will be based on the weighted raw score of the learners summative assessments. The minimum grade needed to pass in a specific subject area is 75%. This research focuses on English subject of grade 10 students with the following class group names: Bonifacio, Jacinto, Mabini, and Rizal. Since classrooms do not exist physically in the new normal of education in implementing the learning process, students were opted to stay home to mitigate the spread of Covid-19 while learning. PMLMA was used to continue the education process. The Proficiency Level (PL) of students were measured based on module results.

The table shows the four Class Group Names of Grade 10 students with a total population of 201 who studied English using printed modules.

Table 1
Grade 10 students of 4 Class Group Names during the first quarter

Grade 10 Students			
Class Group Names	Male	Female	TOTAL
BONIFACIO	17	34	51
JACINTO	23	25	48
MABINI	25	26	51
RIZAL	40	11	51
TOTAL	105	96	201

The table shows that 201 Grade 10 students namely Bonifacio, Jacinto, Mabini, and Rizal comprise of 105 male students and 96 female students got 75% and above of their general average.

Table 2
Total students with 75% and above during the first quarter

Class Group Names	Male	Female	TOTAL
BONIFACIO	17	34	51
JACINTO	23	25	48
MABINI	25	26	51
RIZAL	40	11	51
TOTAL	105	96	201

The table shows that no learners coming from four sections namely Bonifacio, Jacinto, Mabini, and Rizal comprise of 105 male students and 96 female students got below 75%.

Table 3
Total students with below 75% during the first quarter

Class Group Names	Male	Female	TOTAL
BONIFACIO	0	0	0
JACINTO	0	0	0
MABINI	0	0	0
RIZAL	0	0	0
TOTAL	0	0	0

This table shows the combined general average of Grade 10 students which was 15 581.40. This means that the Proficiency Level of 201 Grade 10 ENGLISH Students is 77.52%; and the Percentage of Leaners who obtained a PL of 75% and above is 100%.

Table 4
Proficiency Level (PL) of Grade 10 students during the first quarter

Class Group Names	Total General Average
BONIFACIO	3 927.00
JACINTO	3 682.08
MABINI	3 985.14
RIZAL	3 987.18
Total general average of learners	15 581.40
Proficiency Level (PL) of Grade 10 leaners	77.52

The table shows the four Class Group Names- Bonifacio, Jacinto, Mabini, and Rizal of Grade 10 students with a total population of 201 who studied English using printed modules.

Table 5
The proficiency level of learners during the second quarter

Grade 10 Students			
Class Group Names	Male	Female	TOTAL
BONIFACIO	17	34	51
JACINTO	23	25	48
MABINI	25	26	51
RIZAL	40	11	51
TOTAL	105	96	201

The table shows that 201 Grade 10 students namely Bonifacio, Jacinto, Mabini, and Rizal comprise of 105 male students and 96 female students got 75% and above of their general average.

Table 6
Total students with 75% and above during the second quarter

Grade 10 Students			
Class Group Names	Male	Female	TOTAL
BONIFACIO	17	34	51
JACINTO	23	25	48
MABINI	25	26	51
RIZAL	40	11	51
TOTAL	105	96	201

The table shows that no learners coming from four sections namely Bonifacio, Jacinto, Mabini, and Rizal comprise of 105 male students and 96 female students got below 75%.

Table 7
Total students with below 75% during the second quarter

Class Group Names	Male	Female	TOTAL
BONIFACIO	0	0	0
JACINTO	0	0	0
MABINI	0	0	0
RIZAL	0	0	0
TOTAL	0	0	0

This table shows the combined general average of Grade 10 students which was 16 985.00. This means that the Proficiency Level of 201 Grade 10 ENGLISH Students is 84.50; and the Percentage of Leaners who obtained a PL of 75% and above is 100%.

Table 8

Proficiency Level (PL) of Grade 10 students during the second quarter

Class Group Names	Total General Average
BONIFACIO	4 297.00
JACINTO	4 201.00
MABINI	4 197.00
RIZAL	4 290.00
Total general average of learners	16 985.00
Proficiency Level (PL) of Grade 10 leaners	84.50

The table shows the four Class Group Names- Bonifacio, Jacinto, Mabini, and Rizal of Grade 10 students with a total population of 201 who studied English using printed modules.

Table 9

Grade 10 Students of 4 Class Group Names during the third quarter

Grade 10 Students			
Class Group Names	Male	Female	TOTAL
BONIFACIO	17	34	51
JACINTO	23	25	48
MABINI	25	26	51
RIZAL	40	11	51
TOTAL	105	96	201

The table shows that 201 Grade 10 students namely Bonifacio, Jacinto, Mabini, and Rizal comprise of 105 male students and 96 female students got 75% and above of their general average.

Table 10

Total students with 75% and above during the third quarter

Class Group Names	Male	Female	TOTAL
BONIFACIO	17	34	51
JACINTO	23	25	48
MABINI	25	26	51
RIZAL	40	11	51
TOTAL	105	96	201

The table shows that no learners coming from four sections namely Bonifacio, Jacinto, Mabini, and Rizal comprise of 105 male students and 96 female students got below 75%.

Table 11

Total students with below 75% during the third quarter

Class Group Names	Male	Female	TOTAL
BONIFACIO	0	0	0
JACINTO	0	0	0
MABINI	0	0	0
RIZAL	0	0	0
TOTAL	0	0	0

This means that the Proficiency Level of 201 Grade 10 ENGLISH Students is 88.01; and the Percentage of Leaners who obtained a PL of 75% and above is 100%.

Table 12
Proficiency Level (PL) of Grade 10 students during the third quarter

Class Group Names	Total General Average
BONIFACIO	4 472.00
JACINTO	4 354.00
MABINI	4 400.00
RIZAL	4 465.00
Total general average of learners	17 691
Proficiency Level (PL) of Grade 10 leaners	88.01

The table shows the four Class Group Names- Bonifacio, Jacinto, Mabini, and Rizal of Grade 10 students with a total population of 201 who studied English using printed modules.

Table 13
Grade 10 students of 4 Class Group Names during the fourth quarter

Grade 10 Students			
Class Group Names	Male	Female	TOTAL
BONIFACIO	17	34	51
JACINTO	23	25	48
MABINI	25	26	51
RIZAL	40	11	51
TOTAL	105	96	201

The table shows that 201 Grade 10 students namely Bonifacio, Jacinto, Mabini, and Rizal comprise of 105 male students and 96 female students got 75% and above of their general average.

Table 14
Total students with 75% and above during the fourth quarter

Class Group Names	Male	Female	TOTAL
BONIFACIO	17	34	51
JACINTO	23	25	48
MABINI	25	26	51
RIZAL	40	11	51
TOTAL	105	96	201

The table shows that no learners coming from four sections namely Bonifacio, Jacinto, Mabini, and Rizal comprise of 105 male students and 96 female students got below 75%.

Table 15
Total students with below 75% during the fourth quarter

Class Group Names	Male	Female	TOTAL
BONIFACIO	0	0	0
JACINTO	0	0	0
MABINI	0	0	0
RIZAL	0	0	0
TOTAL	0	0	0

This means that the Proficiency Level of 201 Grade 10 ENGLISH Students is 94.78; and the Percentage of Leaners who obtained a PL of 75% and above is 100%.

Table 16
Proficiency Level (PL) of Grade 10 students during the fourth quarter

Class Group Names	Total General Average
BONIFACIO	4 865.00
JACINTO	4 765.00
MABINI	4 657.00
RIZAL	4 764.00
Total general average of learners	19 051.00
Proficiency Level (PL) of Grade 10 leaners	94.78

The table shows the four Class Group Names- Bonifacio, Jacinto, Mabini, and Rizal of Grade 10 students with a total population of 201 who studied English using printed modules.

5. Conclusion

The following conclusions can be drawn based on statistical analysis results and research findings.
- Modular teaching is more effective in the teaching-learning process methods because students learn at their own pace using this modular approach.
- A modular approach helps maximize students' pace of learning using PMLMA in order to complete a given task to be done at home. So, the students feel free to learn in their own style.
- This approach is considered as a self-learning style in which learners are motivated and interested by instant reinforcement and feedback on practice exercises.
- Cheating should be addressed in this type of modality of teaching approach.

6. Recommendations

In the light of above conclusions, following recommendations are made:
- This research proved that the modular teaching is effective approach to teach High school students in English subject. This method can be applied widely to other fields and subjects as well as other level of education because this approach has the ability to fulfill the diversified needs of learning of students of all levels.
- Teachers should be provided enough trainings about how to design and implement modules.

7. References

[1] J.Z. Tria. (2020, June 3). The COVID-19 Pandemic through the Lens of Education in the Philippines: The New Normal. ResearchGate. Downloaded from https://www.researchgate.net/publication/341981898_The_COVID 19_Pandemic_through_the_Lens_of_Education_in_the_Philippines_The_New_Normal.

[2] C. Vallespin. (2021, October) Effectiveness of Modular Learning Approach in Teaching Elementary Grade Learners. Downloaded from https://www.globalscientificjournal.com/researchpaper/EFFECTIVENESS_OF_MODULAR_LEAR NING_APPROACH_IN_TEACHING_ELEMENTARY_GRADE_LEARNERS.pdf last visited on May 10, (2022).

[3] https://www.lexico.com/definition/distance_learning last visited on May 10, (2022).

[4] M.A. Llego. (n.d). DepEd Learning Delivery Modalities for School Year 2020-2021. TeacherPh. https://www.teacherph.com/deped-learning-delivery-modalities/.

[5]   V.A. Erofeeva. (2012). Znachenie blochno-modul'noj sistemy obuchenija anglijskomu jazyku v vuze. Downloaded   from http://naukarus.com/znachenie-blochno-modulnoy-sistemy-obucheniya-angliyskomu-yazyku-v-vuze#.

[6]   I.S. Bashmakova. (2014). Modul'noe obuchenie v tehnicheskih vuzah. Vestnik IrGTU. № 6 (89), 249-253.

[7]   O.A. Kakurina. (2012). O modul'noj tehnologii obuchenija inostrannym jazykam. Downloaded from http://pskgu.ru/projects/pgu/storage/wt/wt111/wt111_14.pdf.

[8]   https://www.lexico.com/definition/module last visited on May 10, (2022).

[9]   https://www.collinsdictionary.com/dictionary/english/module last visited on May 10, (2022).

[10]   https://indianjournals.com/ijor.aspx?target=ijor:zijmr&volume=7&issue=1&article=006last visited on May 10, (2022).

[11]   I. Daries. (1981). Instructional Technology and Media. McGraw Hill Book Company New York, USA. p. 72.

[12]   D.T. Campbell. Factors relevant to the validity of experiments in social settings. Psychol. Bull., 1957, 54, 297-3 12

[13]   J.C. Stanley. Controlled experimentation in the classroom. expo Educ., 1957, 25, 195-201.

Information and Communication Technologies in Vocational Guidance: Problems and Solution Ways

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Abstract

The article is devoted to analyzing the problems and determining the ways of introducing information and communication technologies in the system of career guidance. The existing problems in the system of career guidance, as well as a survey of schoolchildren in Almaty showed the need for ICT support for career guidance. On this basis, the author proposes to implement a start-up project, which expresses the fusion of IT-sphere and psychological work, aimed at digitization of career guidance activities. In particular, the author proposes to use artificial intelligence to develop a career guidance diagnostic product and big data analysis to interpret the results of the developed product.

Keywords

Vocational guidance, information and communication technologies, continuity of school and university, awareness of school leavers about specialties, integration of psychology, vocational guidance system and IT-sphere

1. Introduction

As technology advances, more and more new professions are appearing. At the same time, some professions are becoming obsolete or are being modified. The wide range of different professions makes it difficult for high school students to choose their future professions. Adults, too, sometimes face the torment of choice, because you have to keep up with the rapidly changing world. Thus, the issues of career guidance are especially relevant today and affect people of all ages. Unfortunately, not everyone manages to find their vocation at an early age. One of the most important decisions a person makes in his life is the choice of profession and career path, which determine the quality of his entire life. Unfortunately, very often such a choice is made without proper deliberation, at the level of intuition or momentary desires and hobbies. Often high school students choose their future profession under pressure from their parents or relatives.

According to the Ministry of Labor and Social Protection of the Republic of Kazakhstan and the Chamber of Entrepreneurs "Atameken" in the last 3 years, about 40% of university graduates can not find jobs in their specialty and about 35% work in positions that do not match their qualifications in their diploma (not in their specialty). These problems determine the ineffectiveness of existing methods of vocational guidance for high school students,

It is obvious that the choice of professional direction or future specialty is an important factor in the success of a person's future life. The right choice of professional sphere and specialty allows achieving not only economic and financial well-being, but also to fully realize one's creative potential, contributes to personal growth and self-development. In other words, a person who is engaged in business that brings him pleasure increases self-confidence, preserves and strengthens psychological health, and in general improves the quality of his life.

It will be appropriate to note the importance of effective career guidance in improving the quality of secondary vocational, higher and postgraduate education. If professionally motivated and self-determined students study at universities, the level and quality of education will increase noticeably. There will be consistency and continuity in education, which is an important condition for its productivity.

Thus, the search for the most effective ways of career guidance among children, adolescents, and young people is relevant both at the national level and at the individual level. Obviously, the search for

effective tools and formats of career guidance should meet modern challenges: universal digitalization, increasing pace of life, globalization, generational and intergenerational interactions, etc.

Modern, innovative ways of career guidance are needed, capable of properly guiding school leavers in choosing their professional direction and solving important issues of improving the quality of higher education in our country. We must understand that education is a system in which all of its components must function coherently. Today we observe the disconnection, fragmentation of the levels of the education system, the lack of continuity and cooperation between the school and the university, as well as poor integration of information technology in the system of career guidance.

2. Problems

The analysis of vocational guidance in the Republic of Kazakhstan has shown that it requires revision and development of new approaches to its organization. Despite the fact that the government pays attention to improving the quality of career guidance services, the real situation shows a situational manifestation of interest in career guidance.

Stereotypically, vocational guidance is perceived as a situational (one-time) work that occurs "on demand" and is reduced to the fact that schoolchildren are informed about some universities, conduct tests, the results of which are compiled profile with professional preferences.

Such work does not bring the proper effect and the problem of low awareness, low level of readiness for professional self-determination, lack of interconnection and continuity between school and universities remains unsolved.

In Kazakhstan, career guidance is supervised simultaneously by two Ministries - the Ministry of Labor and Social Protection and the Ministry of Education (after the reorganization of the Ministry of Education and Science). Vocational guidance problems can also be regulated by the newly formed Ministry of Higher Education and Science.

Unfortunately, the central problem and obstacle to the effective development of the vocational guidance system is the lack of coherence, centralized coordination on the part of the Ministries.

Now there is some activation of career guidance work in schools of the Republic of Kazakhstan, there are a variety of non-state career guidance organizations. Due to interaction and cooperation with various foreign specialists and organizations, career guidance has become multidirectional. New forms and types of vocational guidance work appear.

For example, at the request of the Government, the company "BTS" developed the Atlas of professions and competencies, launched an information platform Edunavigator [1]. In the last 2-3 years, private career guidance services provided by career counselors have intensified.

However, the development of the vocational guidance system in Kazakhstan is not yet consistent with established trends in this area in Europe and the United States. Most of these countries have intensified the development, implementation and successful use of digital tools based on big data analysis, interactive systems based on the Internet, digital online systems in solving career guidance tasks.

Thus, we can identify two areas of problems that reduce the productivity and quality of vocational guidance and complicate the professional self-determination of Kazakhstani youth.

On the one hand, the conscious professional choice of young people is hindered:

•	Poor awareness of the occupations (and professions) in demand in the labor market. There is practically no explanatory information about the specialties included in the existing classifier of training areas and specialties in Kazakhstan [2]. High school students have a vague idea in what sphere they can work, choosing a certain specialty, what professional functions and competencies should be formed during its mastering. Finally, many modern high school students are completely unfamiliar with the specifics of higher education, they know nothing about the Bologna Process and its requirements. Quite a large percentage of schoolchildren do not have a clear idea of what universities there are in the country;

•	Many of today's high school students lack the motivation and desire to continue their studies at college or university. This trend is caused by the devaluation of education in society, when the main factor of a person's success is the achievement of economic well-being. Social media and other sources

show that it is possible to achieve economic well-being without much effort. For example, bloggers, gamers, etc. All of this creates a distorted idea of young people's professional self-determination, which in their opinion should be reduced to the fact that one should be engaged in what brings pleasure and decent remuneration. They believe that you can work for anything and anywhere. The main thing is that it should be paid decently;

• Environmental and circumstance influences. Quite often, high school students in our country choose a specialty and an institution of higher education based on the strong recommendation of their parents or relatives. It happens that a person enters a university "for the company" because his or her friends go to that university. Circumstances such as lack of financial resources, poor academic performance, the need to work, etc. quite often prevent a young person from successfully building his professional path.

Another direction is the problems associated with the state regulation of career guidance in the country. Among them:

• The state order and grant distribution system does not always correspond to the real needs of the constantly changing and dynamically developing labor market. Recently, we are faced with an oversupply of specialists in one area and a shortage in another. Obviously, this issue requires careful analytical calculations, a clear view of the country's and labor market development prospects, strategic planning, and the ability to make adjustments and redistribute grants;

• The procedure for admission to universities today demonstrates a detachment from existing professional spheres and indicates a lack of continuity between school and university. The system of tests in the UNT does not show whether school leavers have developed aptitudes, motives and values for a certain professional sphere and specialty. The system of admission to universities depersonalizes applicants, because it is focused on quantitative indicators;

• Low level of awareness, which is manifested in the lack of systematic informing the population on the issues of education in the country. For example, up-to-date information about the UNT procedure, the rules of admission to universities, the changes introduced, often appears just before the beginning of these activities. This complicates the orientation of school leavers in the issues of higher education in the country, reduces the effectiveness of career guidance.

Thus, to solve the above problems, systematic work on the part of the state and educational organizations (schools, universities) is necessary. Improving the effectiveness of vocational guidance is determined by the construction of a clear hierarchy of tasks, to which it is aimed. In this sense, we believe that it is necessary to move from the general to the particular.

First of all, it is important to solve the problem of poor awareness of the population about professions, specialties, universities, the system of admission to universities and the distribution of grants, etc. And after that it becomes possible to solve all other career guidance tasks: diagnostics, consulting, building a personal trajectory of professional development, etc.

ICT should become an important tool in the development of career guidance system. The use of a wide potential of digital tools will successfully solve the above tasks.

3. Research Methods

We conducted a survey of students in grades 10-11 of schools in Almaty in the number of 540 people. The survey was conducted on the basis of the author's questionnaire, aimed at obtaining information about the preferred ways and factors influencing the choice of future profession.

The purpose of the study was to determine the leading factors of high school students' professional choice. This will make it possible to prove the validity of our idea that in today's system of career guidance it is necessary to use the capabilities of ICT and the potential of project-research activities. The questionnaire met the requirements for the structure, scope, and wording of the questions:

• presence of open and closed questions, ranking procedure, which ensured reliability of the results obtained;

• balance of questions and answer options;

• relevance, ensuring independence and independence of answers from the influence of respondents.

The number of questions was adequate to the conditions of the survey and the age and psychological characteristics of the respondent groups.

Questionnaires were adapted to the Internet environment, based on the principles of friendly interface (Respondent-Friendly Design) and usability (Usability). The Kinesis Surwey service was used to create a Web-based questionnaire.

The responses received were automatically converted into an array of data processed by computer statistical programs and the results were presented in the form of a distribution and graphs. Qualitative analysis and interpretation of the results were then performed. The study was conducted between September 2021 and March 2022.

The reliability of the results of the study was ensured by:
- representativeness of the sample in relation to the general population;
- correspondence of the instruments to the survey;
- application of quantitative data processing methods.

3.1. Results

The analysis of answers to the question "Do you choose your future profession independently?" showed that 45.8% of high school students choose their profession independently. Schoolchildren who made a conscious choice of profession, as a rule, know what they will do in the future. Already at the stage of choosing a specialty and university they have an idea of how and where they will be employed. Those young people who strive to develop and consider professional growth to be a priority motive for obtaining education in their field of study have chances to succeed in their chosen professional field.

54.2% of high school students responded that their choice can be influenced by various factors, ranging from their parents to the large number of specialties offered by universities. In case of unconscious choice, when young people choose their future profession guided by various factors of the social environment, the desires and requirements of parents, there is often a loss of interest in the specialty and disappointment in future professional activity.

The results of processing the answers to the question "Did your parents help you choose a specialty?" showed that 69.4% of respondents focused on the help of parents in choosing a future specialty. Parents usually take an active part in determining their children's life and professional plans. At the same time, the issues of choosing a profession and determining educational paths is a difficult task for both students and their parents. For 30.6% of schoolchildren parental assistance in the choice is not significant. But many graduates can repeat the professional path of their parents, some by listening to stories about work or by being at their parents' workplace, form their choice.

Some graduates already know exactly what specialty they will enter by the end of school, studying it on their own. But it is worth considering that the family is still the leading factor in choosing a profession.

The information received concerning the high school students' appeal to the services of career counselors, psychologists or other professionals for career guidance showed that the majority of 86.3% of applicants did not use the services of a career counselor in choosing their future profession.

Perhaps this suggests that even with a large number of tests, methods of psychological and pedagogical support of the career guidance process, the organization of the career counselor remains a serious problem. The needs of society, individual-psychological properties and age features of the personality of schoolchildren are not always taken into account. Incorrect choice of profession will lead to dissatisfaction of students and university graduates with the chosen sphere of professional activity, and the number of students who do not expect to work in their profession will grow.

Only 13.7% of applicants used the services of vocational guidance specialists. School students have little information about many new professions, and traditional professions are undergoing significant changes. The problem of choosing a profession is always faced by high school students, and now it is becoming especially urgent in connection with the changes taking place in our society.

A professional choice made taking into account such factors as the demand of the labor market, requirements of the profession for a person and his/her individual characteristics becomes the most

important condition for successful mastering of the profession, harmonious entry into labor activity, formation of a competitive professional, in the end - well-being.

The survey showed that high school graduates in search of information about the university are more often guided by information from social networks (61.9%) and the website of the university (61%). We can also note that quite often applicants are guided by the opinion of parents (40.6%) and reviews of friends (39.6%).

The smallest percentage was given to the option "Open Doors Day at the University" (20.6%). (20,6%). Some applicants among sources of information about the university indicated publicly available ratings of universities (0.6% of the number of respondents), the availability of specialties of interest (0.2%), reviews on the Internet (0.2%).

Thus, the results indicate that the most effective way to attract applicants are a page on social networks and high-quality, understandable university website.

Finally, almost all respondents (98%) indicated a lack of experience in doing career guidance projects, while expressing great interest and desire to do them. Secondary school students noted that if they had had the opportunity to develop various career guidance research projects during their studies, they would have had a more accurate idea of their favorite specialty and profession by the end of school. Almost all respondents pointed to the need for a publicly available information platform where they could take career guidance tests and, based on the results, receive information about professional directions and ways to build a career path.

Thus, the survey confirmed the relevance of ICT in modern career guidance. Modern schoolchildren, as bright representatives of the digital generation, solve all their problems with the help of ICT. For them it is natural, convenient and fast. Digital reality today should cover all spheres of life of young people. And career guidance is no exception.

3.1.1. Project idea

Our project, aimed at assisting in matters of professional self-determination with the help of artificial intelligence, will help to solve the problem of informing young people in career guidance, as well as allowing to construct an authorial diagnostic tool to determine the personality types, interests and abilities of respondents. The author's vocational guidance test is based on the logic and methodology of well-known tests: Gallup Clifton Strengthsfinder, The Open Extended Jungian Type Scales (OEJTS), Holland test.

The Gallup Institute's Clifton StrengthsFinder measures 34 traits called talents [3]. Talents are patterns of thinking, perception, and behavior that influence a person's achievements. Each of us has 5 dominant traits (talents) that do not change over the course of our lives. They represent a natural potential, a predisposition for something.

Carl Jung (1875-1961), a Swiss psychiatrist, proposed a theory of psychological types. His theory was taken and extended by Catherine Briggs and her daughter Isabel Myers. They developed the Myers-Briggs Type Indicator, which classified people into 16 different types based on four dichotomies: introversion-extroversion, feeling-intuition, thinking-feeling, and judgment-perception . The first three were adapted from Jung, and the latter from Myers-Briggs.

So, for example, a person can be extrovert-feeling-perception (ESFP) or introvert-intuition-thinking-judgment (INTJ). The Myers-Briggs types are the most popular system of pop psychology. The Open Extended Jungian Type Scales were developed as an open-source alternative to the Myers-Briggs Type Indicator [4].

The theoretical basis of the questionnaire of professional self-determination is the theory of professional choice, developed by the American professor J. Holland. Its essence is that success in professional activity depends on the correspondence of the condition of the personality type and the type of professional environment. A person's behavior is determined not only by his personal features, but also by the environment in which he shows his activity. People strive to find a professional environment peculiar to their type, which would allow them to more fully reveal their abilities, to express their value orientations. J. Holland's method of professional self-determination allows to correlate aptitudes, abilities, intellect with various professions.

The confirmation of this idea is the application and automation of the Myers-Briggs typology of personality types, which was originally created in 1940 to distribute occupations among women whose husbands and sons had gone to war.

The above determines the need for research among young people, integration into the developmental environment, and implementation of machine learning based on the research data.

The result will be software that provides data based on machine learning and Myers-Briggs typology, developed by a team of programmers together with professional psychologists and career counselors.

The basis for the development and implementation of the project will be sources of statistics, indicating the current situation on employment of the population (to a large extent, these are the media). If we look at the root of the problem, the negative results are mainly the result of ill-considered choice of profession.

The external conditions and factors are:

1. The conduct of the study, which includes a survey. The quality and quantity of data depends on this point.

2. Human resources, their search, quality, conditions and requirements on both sides.

To assess the reality of the goal, the method OKR (Objectives and Key Results) is used.

Monitoring the implementation of the project, really contributing to the goal will be carried out by summarizing the intermediate results in a given time frame.

Since the project is a startup, it must be flexible. This way, changes can be made with less risk without exposing the underlying structure to complexity. A suitable strategy would be an iterative Agile methodology.

Let's look at the logic of working through tests with artificial intelligence as an example:

Here are the top 10 areas according to the Gallup questionnaire:

1. Individualization;
2. Achievement;
3. Learner;
4. Strategy;
5. Focus;
6. Analyst;
7. Discipline;
8. Catalyst;
9. Generator of ideas;
10. Maximizer.

4 of 10 areas are in the Strategic Thinking area, the program already makes the assumption that my personality type belongs to the Analytics group.

Now we turn to the second test and there is the following result:

Since the database already contains areas inherent in the personality type Scientist (INTP), the program by comparison determines how my areas on the Gallup test correlate with the qualities in the database.

75% of the top 10 domains are Scientist

67% of them are in the top 5.

Next, the program, having a list of majors that fit the personality type Scientist in the database, matches them with the result of the third test.

The expressed inclinations for the artistic, intellectual and social types are revealed.

We have the following list of possible professions for this individual:

- Scientist (especially in the field of physics, chemistry);
- Photographer;
- Analyst;
- Journalist;
- Mathematician;
- University professor;
- Author of technical literature;
- Engineer;

- Lawyer or judge;
- Criminal investigator.

Of the 12 professions represented in the database, 10 belong to the artistic, intellectual and social types, i.e. approximately 83%.

Thus, it is possible to correlate the obtained result with the education that the individual has or plans to get. By creating a database with a large number of diverse and modern majors, it is possible to provide a wide range of choices for test takers, perhaps even offering courses or programs of study based on recommendations. Also, with a lot of statistical analysis, you can improve accuracy and add more and more metrics for more interesting recommendations.

Thus, this project reflects the emerging trend of integration of psychological, pedagogical, and IT sciences.

4. Conclusions

Thus, the results of the survey showed the relevance of finding the most productive ways of career guidance. We propose to organize modern career guidance work based on the principle of consistency and interdisciplinarity, which defined the author's approach.

Firstly, we are convinced that career guidance should be implemented at school from the 7th or 8th grade. This work can be implemented both in the educational process and during extracurricular time. In our opinion, it should be aimed at involving students in career guidance projects. This will not only expand students' understanding of the existing modern professions but will also form the necessary research skills and competencies that will be useful in higher education.

Such work has already been implemented by the author in cooperation with schools in Almaty and IITU. It should be noted that this direction of career guidance work provides real interaction between school and university, ensuring the development of their connections and continuity.

We believe that the innovative form of students' project-research activity allows productive:

- organize effective interaction in the triad "school-teacher-student", based on the principles of partnership, which shows an interested attitude to learning, understanding of their own role in it, as well as the joint search of the teacher and the student, where the teacher of higher education acts as a partner, not a mentor;
- to increase motivation for learning by developing cognitive interest and research skills, providing independence and freedom in the ways of conducting cognitive activities;
- organize interaction with organizations and school, promoting the development of continuity of different levels of education and creating conditions for lifelong learning.

Secondly, career guidance today must be realized on the basis of the integration of specialists from different spheres - psychology, education and IT [5]. Digitalization of our life requires the use and active use of digital tools in different spheres, including career guidance. The results of the survey showed that secondary school students get the main information from Internet sources and social networks. This was the reason for developing the project aimed at increasing the probability of high school students to make more accurate career choices by expanding the system of professionally oriented information through the Telegram Bot.

Telegram Bot, which will describe each specialty and video with basic information. The Bot will have different professional areas: technical, financial, humanities, natural sciences, etc. And each area will have specialties represented. Telegram has a popular reputation and will be a great additional tool for choosing a specialty.

As a result of the rapid socio-economic development and democratization of society, the question of students' professional development is increasingly in need of study. On the basis of few but significant studies some choices were made and methodologies were formed. In particular, in the field of psychology, some discoveries were made and certain regularities, or patterns, were revealed, on which one can then already base and promote the professional definition of a person. At this time, not only in foreign countries, but also in Kazakhstan, career guidance is gradually becoming a fundamental basis for choosing a life path. Many universities and companies are already applying different ways, classifying the options and offers, thus guiding the person to a more appropriate choice.

Thus, developed and supported by the state, systematic vocational guidance should solve all arising problems and contribute significantly to the distribution of human resources, to the determination of optimal professions according to abilities, to the successful adaptation of labor resources to the received specialty and to the labor education of the younger generation.

According to leading foreign experts in career guidance Barnes [6], Gonzalez Vazquez [7], Watts [8], Kettunen [9], Cogoi [10], etc. ICT fills the career guidance system with innovative potential and contributes to informing, gaining experience, automating interaction and providing an opportunity for communication. With the help of ICTs, students, their parents, and other stakeholders can easily obtain information about in-demand professions, university entrance rules, required competencies and skills, and other relevant information. This is possible with the help of websites, telegram bots and other messengers, social networks, etc.

The experience with the help of ICT is aimed, in our opinion, at assisting learning, self-diagnosis, self-knowledge. It is also important to interact with specialists or other clients, during which students get answers to their questions, exchange opinions, communicate. This is possible by using the potential of email, messengers, and online platforms. Of particular importance in this direction is the automation of vocational diagnostics and testing. For this purpose, it is necessary to develop a convenient and modern platform or application.

5. References

[1] Atlas of New Professions, 2020. URL: https://www.gov.kz/memleket/entities/enbek/press/news/details/130888?lang=ru.

[2] Classifier of Specialties of Higher and Postgraduate Education of the Republic of Kazakhstan, 2021. URL: https://findhow.org/2490-klassifikator-spetsialnostey-vyisshego-i-poslevuzovskogo-obrazovaniya-rk.html.

[3] The Gallup Institute's Clifton StrengthsFinder, 2015. URL: http:// https://www.gallup.com/.

[4] The Open Extended Jungian Type Scales (OEJTS), 2017. URL:https://openpsychometrics.org/tests/OEJTS/comparison/.

[5] N. Ameen, S. Hosany, A. Tarhini Consumer interaction with advanced technology: Implications for future research, Computers in Human Behavior, 2021. doi.org/10.1016/j.chb.2021.106761.

[6] A. Barnes, N. La Gro, A.G. ane Watts. Developing competencies in e-leadership: Results of a two-year European project on transforming professional development Career guidance practitioners. Career research and development: The NICEC Journal, volume 25, 2010.

[7] G.I. Vazquez, et al. The changing nature of work and skills in the digital age Luxembourg: Publications Office of the European Union, 2019.

[8] A.G. Watts. The role of information and communication technology in integrated Career information and guidance: a policy perspective. International Journal for Educational and Vocational Guidance, 2, pp. 139-155.2002. doi:10.1023/A:1020669832743.

[9] J. Kettunen, J.P. Sampson Jr. Challenges of ICT implementation in career services: perspectives from Career development experts' perspectives. International Journal for Educational and Vocational Guidance, 19, 1-18. 2019. doi: 10.1007/s10775-018-9365-6.

[10] C. Cogoi, (Ed.), Using ICT in leadership: Competencies and training for practitioners. Report of the EC Leonardo project on ICT skills for consultants. Bologna: Outline Edizione.2005.