IRSTI 27.01.45 https://doi.org/10.52081/mpimet.2026.v14.i2.077

EXPERT INDICATORS OF THE LEVEL OF FORMATION OF STUDENTS' INFORMATION CULTURE IN MATHEMATICAL DISCIPLINES

Shamilov T.G.,[1] Candidate of Technical Sciences, Associate Professor
tebrizshamilov@mail.ru, https://orcid.org/0009-0007-0496-6717
Medetbekov D.R.[2,*]**,** Master's Degree, Senior Teacher
b.medetbekov@agakaz.kz, https://orcid.org/0009-0003-0004-2622
Imanchiyev A. E.[3]**,** Candidate of Physical and Mathematical Sciences, Associate Professor
imanchiev_ae@mail.ru, https://orcid.org/0000-0002-1835-2501
Khusaynova A.B.[4]**,** Master of Pedagogical Sciences

[1]*Azerbaijan University of Architecture and Construction, Baku, Azerbaijan*
[2]*Civil Aviation Academy, Almaty, Kazakhstan*
[3]*Aktobe Regional University named after K. Zhubanov, Aktobe, Kazakhstan*
[4]*Secondary school No. 13 named after M. Makatayev, Almaty, Kazakhstan*

Annotation. In the article are described the experimental indicators of the level of formation of students' information culture in the disciplines of Mathematics.Scientists dealing with the main pedagogical and psychological issues of the use of computer technologies and technologies in the educational process, as well as the experience of researchers in the field of informatization of education, the use of information technologies in secondary and higher education, the process of cognitive activity, content, methods, means, types of training and its control results is based on new didactic conditions and defines a new structure, organizational activityThe identified aspects of the problem in the article can serve as the basis for the study of work in the future in the direction of training students in general secondary education institutions, colleges and universities, the organization of the educational process in general and vocational education institutions, the creation of electronic tools of a subject nature for the development of educational activities of schoolchildren and students, the introduction of new information technologies in the educational process.The monitoring and evaluation of students ' academic achievements in the credit training system has undergone changes. The assessment of knowledge in the credit system of training has two legendary functions: ranking by progress and motivation of learning.

Keywords: information, student, information culture, experiment, credit system, elective course, computer literacy, internet technology

Introduction. At the present stage, we cannot meet the needs of the times and ensure the development of the economy without providing students with high-quality education. The main goal of educational institutions for students is to train future specialists who are educated, armed with new ideas. This is not only the professional, technological training of the student, but also the versatility of his knowledge and high Information Culture, that is, fluency in computers, the ability to use internet resources, the ability to master new computer technologies in teaching, conduct interactive classes and much more. To achieve this goal of the educational process, there is a need to switch from traditional training to a new type of training – innovative training.This type of teaching develops the individual abilities of learners and shapes them as individuals who can quickly adapt to social and economic changes. Educational institutions should implement these directions to further improve the quality of education. Training competent specialists is a distinctive goal of the higher education sector [1-4].

The tasks of introducing new teaching technologies into the education system and improving information technology support, forming an information culture of a student are inextricably linked, that is, the educational process requires the introduction of modern technologies and technical means of teaching. The satisfaction of such requirements is

directly related to the need to solve the problems of training highly qualified specialists in educational systems on a scientific basis.

Researchers dealing with the main pedagogical and psychological issues of using computer technology and equipment in the educational process, as well as informatization of education, include E.Y. Bidaybekov, Zh.A. Karaev, G.K. Nurgalieva, S. Kariev, S.S. Usenov [5-8], among others. Their works highlight the practical experience of using information technology tools in secondary and higher educational institutions, managing cognitive activities, curriculum content, methods, teaching tools, types of instruction, and new didactic conditions. They emphasize the need for extensive research in new structures, organizational activities, and monitoring learning outcomes.

On the formation of professional, pedagogical and methodological training of future specialists in Kazakhstan, on the development of the educational sphere in accordance with the reforms in society Sh.X. Kurmanalina, A. M. Mukhanbetzhanova, Abylkasymova A.E.Sh. Kozybayev, S. Rakhmetova and others can be seen in the works of scientists [9-11].

An effective solution to the problem of informatization of education, in principle, is directly related to the formation of Information Culture of pedagogical personnel. The information culture of a teacher today is an important part of his pedagogical culture.

Analysis of the above studies shows that the current direction of higher education does not clearly outline the main directions for forming students' information culture. Therefore, the pedagogical conditions for forming students' information culture remain insufficiently defined, and further research is needed on the content, types, and methods of teaching informatics and information technologies.

In improving the formation of the information culture of students in accordance with the credit system of training in higher educational institutions, there are clearly contradictions between the possibilities of information technologies and their incomplete use in the educational process by a higher educational institution and the need to improve the information culture of students on the basis of information technologies and insufficient study of this problem in pedagogical theory and practice. In order to find a solution to these contradictions, the formation of the information culture of students in accordance with modern requirements, the problem of the study was identified, and the topic of the study was defined as “Didactic conditions for the formation of the information culture of students in the subjects studied in the specialty mathematics”.

Methodsand materials. The level of familiarity and the level of awareness in the formation of readiness for new information technology are characterized by the level of grouping. In our work, we use some concepts with the introduction of a description of teacher training in the use of electronic computing equipment.

The following characteristics can be given to the level of training of students in new information technologies.

1.At the level of familiarization, the student, according to the rules, does not understand the purpose of computerization of the educational system, receives personalized knowledge about computer technology, not on a simple superficial scientific basis. Due to the fact that students do not have the skills and abilities to work with computers in the educational process, their understanding of the possibilities of using computers is completely denied.

2.The level of awareness is explained and characterized by the general purpose of computerization of the education system using new information technology in teaching, explanations of some documents of the future teacher about the tasks and structures of the physical basis of computer activity, knowledge of interesting examples of its use, complete information about the general prospects for the introduction and development of new information technology, knowledge of a certain or limited amount of knowledge in computer

science. Skills and skills of working with a personal computer are further explained how to use some simple standard programs that provide the educational process at school.

3. The basic level of training is determined by the internal purpose and understanding of the use of new information technologies in teaching, the presence of the structure and elements of the computer, its physical basis, tasks of activity and developed leading directions in the complex education of the future teacher, acquired in the course “fundamentals of Computer Science and computer engineering”. Students have a good understanding of the promising area of computer use, especially its place in the education system. He must have an understanding of the basics of algorithmization and programming, various types of instructional computer programs, be able to develop simple algorithms, develop instructional programs, and create programs in one of the high-level programming languages or specially designed systems.

The use of new information technologies in teaching in their professional activities in the system of general-reproductive training can form a simple training of the future teacher. The importance of elementary training is primarily determined by the teacher's understanding of new information technology, the main directions of its use in the educational process, as well as a thorough understanding of himself as a subject of Information Technology in training. At the same time, simple training introduces the future teacher to the formation of working skills on simple software tools of academic disciplines conducted in the classroom or in other pedagogical activities (additional classes, circles, views – knowledge contests).

4. The level of functional training of the future teacher is coordinated with the understanding of Strategic and tactical problems of computerization of the educational system, the formation of psychological installations for the comprehensive use of new information technologies in the educational process. The student is well versed in working with a personal computer, he is also able to create a project of teaching programs and create programs in one or more languages (depending on the basic course of Computer Science in higher educational institutions), equip certain computer classes in his academic discipline with software, fully master the material base, correctly use standard software. He constantly strives to deepen and expand his knowledge and skills in the field of using new information technologies in the educational process. The level of functional training in the use of new information technologies is formed in the system of general-reproductive training with an element of creative activity.

The functional training of the teacher is characterized by the ability to work with new information technologies, using a computer in educational activities with developed technological skills. In addition to “using” computers in the content of functional training (spreadsheets, text and graphic editors, databases, etc.), they learn how to design and program various types of training programs and independently improve existing training programs.

5. At the level of systematic training in the use of new information technologies, the future teacher acquires a complete knowledge and business system in the field of use of new information technologies in the educational process, which allows him to freely work and direct them with software tools for computers of one or more classes. The student has a deep understanding of the information science prospects of society, competently disseminates the strategy and tactics of computer training is able to create a new and constantly updated software tool in his field of activity, use similar tools in the activities of other students working in the same creative team and provide real assistance.

Personal creative readiness corresponds to achieving a systemic level of preparedness in the working environment of new information technologies. Systemic readiness is characterized by a deep understanding of computerization within the education system in the consciousness of the future educator. It reflects a system of persistent psychological processes aimed at the continuous development of learners within the context of information

technology-based educational environments. This readiness stimulates methodological and research activities related to the formation of informational culture, creativity, and professionalism. Systemic readiness clearly defines the reconstruction of all future professional activities of the learner in advance. The involuntary integration of computers has become the foundational structure of pedagogical activity based on the study of computer usage in the learning process, specialized new information technologies, and educational opportunities.

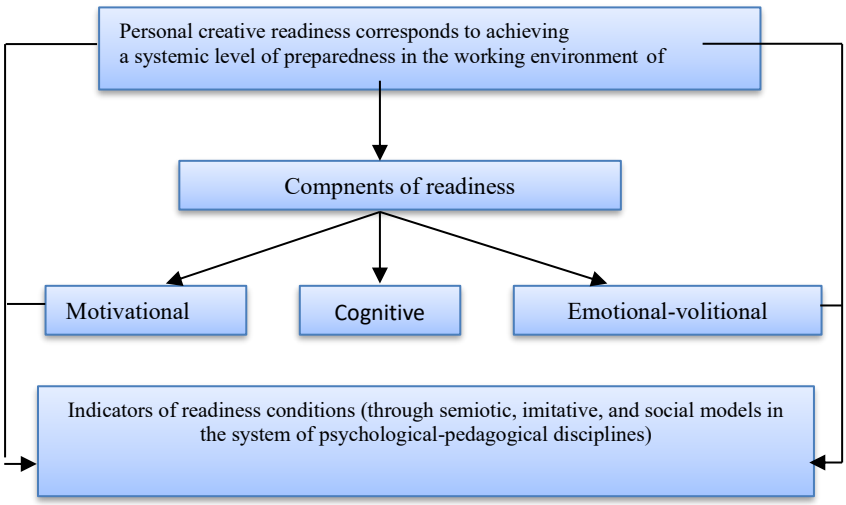

Figure 1 – Scheme for forming the readiness of learners to use new information technology

Block 1. Motivational readiness. This readiness includes the following formations: interest in working with computers, ability to use them for coursework and diploma projects; the necessity for students to use various types of educational software in different learning and cognitive activities (as a requirement); motivation to engage in scientific and scientific-methodological work on the issue of using new information technology, and so on.

Block 2. Cognitive readiness (knowledge, skills, abilities). As a purposeful readiness of the learner to use new information technology, this is the cognitive and constructive element. Based on pedagogical experiments, computers are used as learning tools, supporting research groups with didactic and methodological tools. Additionally, we highlight several knowledge and skill aspects from theoretical and practical works of scientists in the new information technology environment in our country. That is, as an element of readiness for pedagogical activity in a new context, we consider the component of computer literacy for educators. The readiness of students for future professional activities in teaching with new information technology is integrated into the educational system that introduces high motivation for its use, theoretical knowledge, the emotional-volitional quality of pedagogical skills adapted to the new conditions, and the manifestation of its complex distribution.

Block 3. Emotional-volitional readiness. This readiness includes: confidence in successful work with computers, responsibility of a university graduate regarding the computerization of the education system, the ability to self-assess readiness for working with new information technologies in education, understanding the future importance of computer skills, and so forth.

In complex situations fully characterized by pedagogical activity, to prepare students, and mostly in the modern context of using new information technologies, we employ the following methods in teaching, research, and scientific research activities: expanding student work on problem-solving related to developing schoolchildren's abilities and using computers in learning processes; addressing pedagogical issues related to the lack of information on new

information technologies; introduction of laboratory-practical lessons, educational readiness games related to new information technology, creating scenarios with hidden barriers, unexpected difficulties, minor failures, and demands for active engagement; as well as checking and forming several models of future pedagogical activities in connection with changing conditions of using new information technology [12-13].

Good results in the motivational, cognitive, and emotional-volitional formations that construct readiness are observed in students' work in various stable and temporary groups.

In stable groups, we consider the organization and conduct of the learning process in classroom settings, whereas temporary groups involve students' pedagogical practice, small group coursework, diploma projects, and conducting educational-research activities [14].

Finally, based on the studied issues, we define the formation of students' information culture at the university level as the ability to freely conduct any necessary processes of searching, collecting, processing, storing, and transferring information through personal computers, technical devices, and computer networks, which is essential for obtaining a bachelor's degree in the credit education system [15-16].

Results and discussions. Indicators of the level of formation of information culture of students of the credit system of higher professional education have been determined and defined in practice.

We determine the level of formation of the information culture of students in accordance with the credit system of education. The indicators of the formation of information culture should be specified in accordance with informational, motivational and communicative, operational criterias.

If we analyze the informational culture of a student, we see the following:

- flexibility of decision making in real life situations, information literacy and culture,
- the results of activities in typical and model situations related to the informatization of education,
- coordination of training and work in production or professional practice, engaged in research work.

In the course of the research, the technical base of the credit education system for the formation of the information culture of the student was developed - computer classes; intra-university network, classes with internet connectivity, etc. Software, control and test programs, coaching programs, information and reference system - database, electronic textbooks are equipped with multimedia programs.

- Educational-methodical: methods of working with software and information equipment, methodological preparation for the use of new software technologies.

At a high level of information culture formation, there is a readiness for creative work, software and hardware, pedagogical, psychological, didactic requirements for educational software;

- the stage of software development for an educational facility;
- Possibilities of tools for creating educational software, tools, software interface.

Attainment:

- development of scripts for educational software;
- work with applications for creating texts;
- Analysis of pedagogical goals using teaching software;
- analysis of the experience of using information technologies, etc. formed at a high level.

Table 1 – Indicators of the level of formation of students' information culture at the beginning and end of the experiment

Level	The first indicator		The result	
	Experimental group	Control group	Experimental group	Control group
high	24,0%	10,0%	46,0%	12,0%
medium	34,7%	28,0%	43,0%	35,0%
low	41,3%	62,0%	11,0%	53,0%

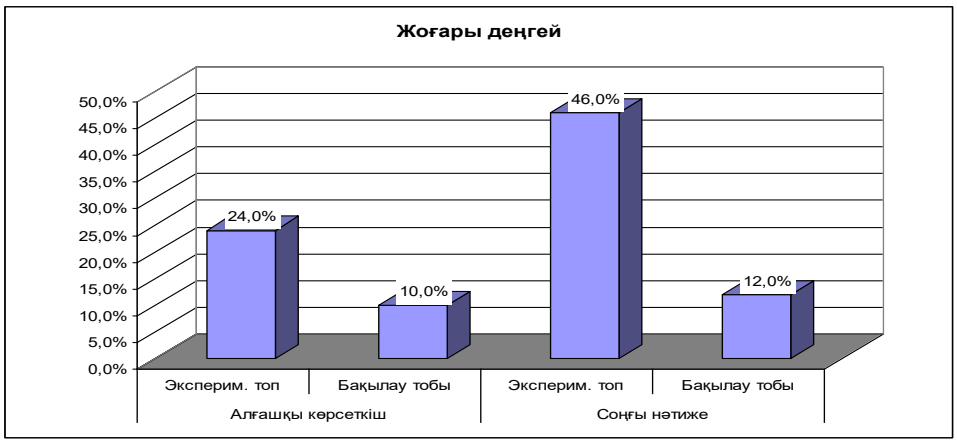

Figure 2 – Indicators of the formation of information culture of students-High level indicators

The experimental results presented in the table and in the diagram above show that the number of students with a low level of education in the experimental groups decreased from 41.3% to 11%, students with an average level increased from 34.7% to 43%, and students with high level increased from 24% to 46%.

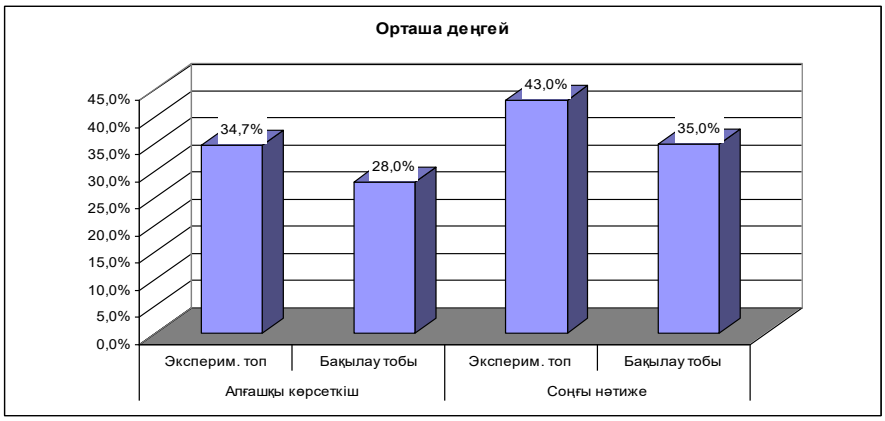

Figure 3 – Indicators of the formation of information culture of students-Medium level indicators

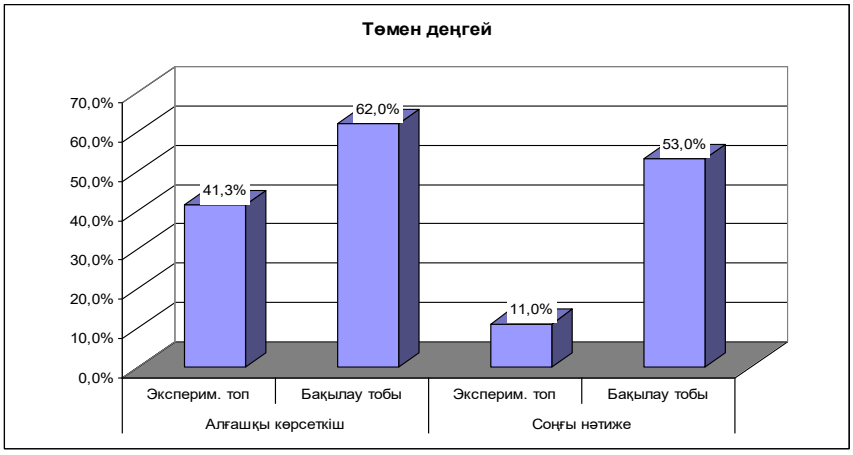

Figure 4 – Indicators of the formation of information culture of students-Low level indicators

During the theoretical study of effective methods for the formation of information culture of students in the credit system of education in higher educational institutions during the experiment, the fulfillment of the expected results was checked in accordance with a given hypothesis. At the beginning of the experimental work, the revealed level of formation of the information culture of students increased by 46%, the number of middle-level students increased from 34.7% to 43%, and decreased from 41.3% to 11% of junior students.

Students became interested in information of professional content and effectively mastered innovative teaching technologies and interactive methods that contribute to the informatization of professional activities. Students have developed the flexibility to use e-learning in their independent work and to demonstrate that, as future professionals, they can manage and organize technology and teaching methods using information technology.

Students have mastered the use of a set of tools, techniques and techniques that use multimedia technologies to prepare, process, integrate, present different types of data, use hardware and software, and use hardware and software.

In accordance with the requirements of the credit system of education, multimedia has achieved the effective use of Internet technology and organized video conferences with other universities via the Internet.

Information technology has created opportunities for the development of information culture through the effective and productive organization of independent work of students. SIS was carried out in accordance with the objectives of educational work, as a result of various cognitive tasks, creative work. Professionally oriented and well-organized independent work created favorable conditions for professional development of students.

Since the new information technology of education is based on finding solutions to the most pressing technological problems, IWS, effective management of the educational process, the introduction of new information technology in education has allowed teachers to qualitatively change the content, methods and organization of teaching.

Comparison of the results of experimental work for the purpose of research proved the validity of the principles and hypotheses proposed for defense. Accordingly, the following conclusions were made:

- Student with an established information culture: understanding the laws of information processes; organize the ability to search and select the information necessary to solve a particular problem; completeness, adequacy, evaluation of information, the ability to present, process, etc. in different ways. have skills; knowledge of the basics of computer literacy; to understand that the computer, information technology, a set of tools to solve problems in human life, and to identify its opportunities and shortcomings; be able to use the

information obtained in practice, in professional activities, in solving any problems, etc. acquire skills and qualifications;

- It is substantiated that the method of formation of information culture of students through the use of information technology in higher education can create great opportunities to improve the learning process, IWST, IWS in the credit system

- Electronic teaching aids, multimedia, Internet technologies, etc. in the credit system of education. application leads to changes in the activities of students and teachers and allows you to design the educational process, analyze, systematize, evaluate the results of student learning activities;

The organization of elective course programs in such a way as to meet the needs of future professionals will enrich the methodological base of each student.

Conclusion. One of the mechanisms for integrating the higher education system into the international educational space is the credit system of learning. The essence of this system lies in prioritizing students' independent learning and forming in specialists the skill of "lifelong learning." In general, organizing the educational process in higher education institutions on the basis of the credit system is implemented through ensuring continuous self-development and high motivation for research activities. At the same time, the introduction of the credit system of learning requires the adoption of new conceptual frameworks. Therefore, an important part of implementing the credit system is the informatization of the educational process and providing communication tools, under which the issue of forming students' information culture becomes increasingly relevant.

Researchers engaged in the main pedagogical and psychological issues of using computer technology and equipment in the learning process, as well as scholars working in the field of informatization of education, have demonstrated that the use of information technology tools in secondary and higher education institutions, the management of cognitive activities, the content, methods, tools, forms of teaching, and the monitoring of learning outcomes are based on new didactic conditions. They also highlight new structures, organizational functions, implementation results, the need for extensive exploration, and specify the pedagogical and psychological characteristics.

At the end of the practical-experimental work, the obtained results showed that the level of students' information culture had improved, in accordance with the principles and pedagogical conditions of applying information technology in the learning process.

The results of the experiment demonstrated that, in the experimental groups, the number of students with a low level of information culture decreased from 41.3% to 11%, while the number of students who reached a high level increased from 24% to 46%.

Based on theoretical principles and the results of practical-experimental work, the following recommendations are made in order to form students' information culture:

- to widely use modern computer devices and interactive online learning technologies in order to improve the educational process in higher education institutions and enhance the quality of education;

- to collect, systematize, and constantly update best practices of informatics teachers that demonstrate the effectiveness of using ICT in the educational process, and to create a database of such practices;

- to create a unified educational portal that integrates the education system for learners across the country's educational institutions, ensuring that all universities are connected to it.

The clarified aspects of the issue in the article can serve as a basis for further research on organizing the educational process in general secondary schools, colleges, and universities, preparing students, developing subject-specific electronic tools aimed at fostering students' and learners' educational activities, and introducing new information technologies into the educational process.

Literatures:

[1] Қазақстан Республикасының білім беруді дамытудың 2005–2010 жылдарға арналған мемлекеттік бағдарламасы // Ресми интернет-ресурс. – № 1459. – 2004 ж., 11 қазан.- www.edu.gov.kz сайты. (қаралған күні: 12.09.2025)

[2] ҚР Президенті Н. Ә. Назарбаевтың Қазақстан халқына арнаған Жолдаулары: «Қазақстанның әлемдік бәсекеге барынша қабілетті 50 елдің қатарына кіру стратегиясы» (2006 ж.), «Жаңа әлемдегі – жаңа Қазақстан» (2007 ж.) және «Қазақстан халқының әл-ауқатын арттыру – мемлекеттік саясаттың басты мақсаты» (2008 ж.) // Ресми интернет-ресурс. – www.e.gov.kz сайты. (қаралған күні: 15.09.2025)

[3] «Қазақстанның жоғары мектебі Болон процесіне бет ұстауда», Қазақстан Республикасы – Еуропалық Одақ: ынтымақтастық нәтижесі мен болашағы»:Ресми басылым. – Астана: ҚР Білім және ғылым министрі Ж. Қ. Түймебаевтың баяндамасы. – 2007. – 45 б. – www.edu.gov.kz сайты. (қаралған күні: 18.09.2025)

[4] Қазақстан Республикасының «Білім туралы» Заңы // Ресми басылым. – Астана, Ақорда, 2007 ж., 27 шілде. – № 319-III ҚРЗ. www.edu.gov.kz сайты. (қаралған күні: 13.10.2025)

[5] **Байдыбекова, А**. Компьютерлік технологияны оқу процесінде қолдану / А. Байдыбекова // Информатика. Математика. Физика, 1998. – №1. – 53 б.

[6] **Grigoriev, S.** Informational technologies in education as separate direction of preparing a pedagogical personnel / «Information Technologies and Telecommunications in Education and Science IT&T ES'2005» Materials of the International Scientific Conference: SIIT&T Informika. – Moscow: VIZCOM, Ege Uneversity, Izmir, Turkey, 2005. – 98-101 pp.

[7] **Нұрғалиева, Г. Қ.** Электронды оқулықтар – ізгілендіру құралы / Г. Қ. Нұрғалиева // «Қазақстан мектебі» журналы. – Алматы: Қазақстан мектебі, 2002. – № 11–12. – 14 б.

[8] **Қараев, Ж. А.** Оқушылардың танымдық белсенділігін компьютерлік технологияны қолдану жағдайында арттыру: дисс. … пед. ғылымдар докторы / Ж. А. Қараев. – Алматы, 1994. – 312 б.

[9] **Курманалина, Ш. Х.** Білімді информаттандыру жағдайында электрондық әдістемелік жүйені құрудың методологиясы мен технологиясы: монография / Ш. Х. Курманалина. – Алматы: «Алем», 2002. – 413 б.

[10] **Мұханбетжанова, Ә.** Кредиттік оқыту жүйесінде инновациялық технологиялармен оқытудың интерактивті әдістерін қолдану мәселесі / Инновациялық педагогикалық технологиялар: қолдану және дамыту перспективалары: ХҒПК материалдары. – Ақтөбе, 2005. – 4–7 бб.

[11] **Абылкасымова, А. Е.** Студенттің оқу қызметіндегі танымдық тәуелсіздігі / А.Е. Абылкасымова. – Алматы: Санат, 1998. – 144 б.

[12] **Мұхамбетжанова, С. Т.** Педагогикалық информатика: оқу-әдістемелік кешен / С. Т. Мұхамбетжанова, Г. И. Салғараева. – Алматы: Қазақ мемлекеттік қыздар педагогика институты, 2007. – 104 б.

[13] **Луканкин, Г. Л.** Научно-методические основы профессиональной подготовки учителя математики в педагогическом институте*:* дис. д-ра пед. наук / Г. Л. Луканкин. – 1989. – 375 б. https://nauka-pedagogika.com/pedagogika-13-00-02/dissertaciya-nauchno-metodicheskie-osnovy-professionalnoy-podgotovki-uchitelya-matematiki-v-pedagogicheskom-institute (қаралған күні: 14.10.2025)

[14] **Abdullaeva, B.S.** Description of information and communication tools and structures for teaching mathematics in pedagogical universities / B.S. Abdullaeva, A.S. Nurgaliyeva // Current issues in teaching mathematics, physics and computer science, 2024. – №3 (07) б.6-16. https://doi.org/10.52081/mpimet.2024.v07.i3.038

[15] **Жайдакбаева, Л.К**. Цифрлы педагог – нәтижелі білім берудің кепілі / Л.К. Жайдакбаева, Қ.Б. Естай // Математика, физика және информатиканы оқытудың өзекті мәселелер, 2025. – №1 (09) 46-55 бб. https://doi.org/10.52081/mpimet.2025.v09.i1.052

[16] **Бидайбеков, Е.Ы.** Негізгі мектептің информатика курсына толықтырылған шынайылық технологиясын енгізудің білім сапасының артуына әсері / Е.Ы. Бидайбеков, Н.Т. Ошанова, А.С. Әбділдә // Topical Issues Of Teching Mathematics, Physics And Information Science 2023, 2023. – Т. 3, №.3. – Б 36-46 https://doi.org/10.52081/mpimet.2023.v03.i3.020

References:

[1] Qazaqstan Respublikasynyn bilim berudi damytudyn 2005–2010 zhyldarga arnalgan memlekettik bagdarlamasy // Resmi internet-resurs. – № 1459. – 2004 zh., 11 qazan. – www.edu.gov.kz sayty. (qaralgan kuni: 12.09.2025) [in Kazakh]

[2] QR Prezidenti N. A. Nazarbayevtyn Qazaqstan khalqyna arnagan Zholdaulary: «Qazaqstannyn alemdik basekege barynsha qabiletli 50 eldin qataryna kiru strategiyasy» (2006 zh.), «Zhana alemdegi – zhana Qazaqstan» (2007 zh.) zhane «Qazaqstan khalqynyn al-auqatyn arttyru – memlekettik sayasattyn basty maqsaty» (2008 zh.) // Resmi internet-resurs. – www.e.gov.kz sayty. (qaralgan kuni: 15.09.2025) [in Kazakh]

[3] «Qazaqstannyn zhogary mektebi Bolon protsesine bet ustauda», Qazaqstan Respublikasy – Europalyq Odaq: yntymaqtastyq natizhesi men bolashagy»: Resmi basylym. – Astana: QR Bilim zhane gylym ministri Zh. Q. Tuimebayevtyn bayandamasy, 2007. – 45 b. – www.edu.gov.kz sayty. (qaralgan kuni: 18.09.2025) [in Kazakh]

[4] Qazaqstan Respublikasynyn «Bilim turaly» Zany // Resmi basylym. – Astana, Aqorda, 2007 zh., 27 shilde. – № 319-III QRZ. www.edu.gov.kz sayty. (qaralgan kuni: 13.10.2025) [in Kazakh]

[5] **Baidybekova, A.** Kompyuterlik tekhnologiyany oqu protsesinde qoldanu / A. Baidybekova // Informatika. Matematika. Fizika, 1998. – №1. – 53 б. [in Kazakh]

[6] **Grigoriev, S.** Informational technologies in education as separate direction of preparing a pedagogical personnel / «Information Technologies and Telecommunications in Education and Science IT&T ES'2005» Materials of the International Scientific Conference: SIIT&T Informika. – Moscow: VIZCOM, Ege Uneversity, Izmir, Turkey, 2005. – 98-101 pp.

[7] **Nurgaliyeva, G. Q.** Elektrondy oqulyqtar – izgilendiru quraly / G. Q. Nurgaliyeva // «Qazaqstan mektebi» zhurnaly. – Almaty: Qazaqstan mektebi, 2002. – № 11–12. – 14 b. [in Kazakh]

[8] **Qarayev, Zh. A.** Oqushylardyn tanymdyq belsendiligin kompyuterlik tekhnologiyany qoldanu zhagdayynda arttyru: diss. … ped. gylymdar doktory / Zh. A. Qarayev. – Almaty, 1994. – 312 b. [in Kazakh]

[9] **Kurmanalina, Sh. Kh.** Bilimdi informattandyru zhagdayynda elektrondyq adistemelik zhuieni qurudyn metodologiyasy men tekhnologiyasy: monografiya / Sh. Kh. Kurmanalina. – Almaty: «Alem», 2002. – 413 b. [in Kazakh]

[10] **Mukhanbetzhanova, A.** Kredittik oqytu zhuiesinde innovatsiyalyq tekhnologiyalarmen oqytudyn interaktivti adisterin qoldanu maselesi / Innovatsiyalyq pedagogikalyq tekhnologiyalar: qoldanu zhane damytu perspektivalary: KhGPK materialdary. – Aqtobe, 2005. – B. 4–7. [in Kazakh]

[11] **Abylkasymova, A. E.** Studenttin oqu qyzmetindegi tanymdyq tauelsizdigi / A. E. Abylkasymova. – Almaty : Sanat, 1998. – 144 b. [in Kazakh]

[12] **Mukhambetzhanova, S. T.** Pedagogikalyq informatika: oqu-adistemelik keshen / S. T. Mukhambetzhanova, G. I. Salgarayeva. – Almaty: Qazaq memlekettik qyzdar pedagogika instituty, 2007. – 104 b. [in Kazakh]

[13] **Lukankin, G. L.** Nauchno-metodicheskiye osnovy professionalnoy podgotovki uchitelya matematiki v pedagogicheskom institute: dis. d-ra ped. nauk / G.L. Lukankin. – 1989. – b.375 https://nauka-pedagogika.com/pedagogika-13-00-02/dissertaciya-nauchno-metodicheskie-osnovy-professionalnoy-podgotovki-uchitelya-matematiki-v-pedagogicheskom-institute (qaralgan kuni: 14.10.2025) [in Russian]

[14] **Abdullaeva, B.S.** Description of information and communication tools and structures for teaching mathematics in pedagogical universities / B.S. Abdullaeva, A.S. Nurgaliyeva // Current issues in teaching mathematics, physics and computer science, 2024. – №3 (07) b.6-16. https://doi.org/10.52081/mpimet.2024.v07.i3.038 [in English]

[15] **Zhaydakbayeva, L.K.** Tsifrly pedagog – natizheli bilim berudin kepili / L.K. Zhaydakbayeva, Q.B. Estay // Matematika, fizika zhane informatikany oqytudyn ozekti maseleler. – 2025. – №1 (09) b.46-55. https://doi.org/10.52081/mpimet.2025.v09.i1.052 [in Kazakh]

[16] **Bidaybekov, E.Y.** Negizgi mekteptin informatika kursyna tolyqtyrylgan shynayylyq tekhnologiyasyn engizudin bilim sapasynyn artuyna aseri / E.Y. Bidaybekov, N.T. Oshanova, A.S. Abdilda // Topical Issues Of Teching Mathematics, Physics And Information Science 2023, 2023. – T. 3, №.3. – B 36-46 https://doi.org/10.52081/mpimet.2023.v03.i3.020 [in Kazakh]

МАТЕМАТИКА ПӘНДЕРІ БОЙЫНША СТУДЕНТТЕРДІҢ АҚПАРАТТЫҚ МӘДЕНИЕТІН ҚАЛЫПТАСТЫРУ ДЕҢГЕЙІНІҢ ЭКСПЕРИМЕНТТІК КӨРСЕТКІШТЕРІ

Шамилов Т.Г.[1], техника ғылымдарының кандидаты, доцент
Медетбеков Б.Р.[2], магистр
Иманчиев А.Е.[3], физика-математика ғылымдарының кандидаты, доцент
Хусайнова А.Б.[4], педагогика ғылымдарының магистрі

[1]Әзербайжан сәулет және құрылыс университеті, Баку, Әзірбайжан
[2]Азаматтық авиация академиясы, Алматы қ., Қазақстан
[3]Қ.Жұбанов атындағы Ақтөбе өңірлік университеті, Ақтөбе қ., Қазақстан
[4]М.Мақатаев атындағы №13 орта мектеп, Алматы қ., Қазақстан

Андатпа. Мақалада математика пәндері бойынша студенттердің ақпараттық мәдениетін қалыптастыру деңгейінің эксперименттік көрсеткіштері сипатталған.Оқу процесінде компьютерлік технологиялар мен технологияларды қолданудың негізгі педагогикалық-психологиялық мәселелерімен айналысатын ғалымдар, сонымен қатар білім беруді ақпараттандыру саласындағы зерттеушілердің тәжірибесі, орта және жоғары оқу орындарында ақпараттық технологияларды пайдалану, танымдық іс-әрекет үдерісі, оқытудың мазмұны, әдістері, құралдары, түрлері және оның бақылау нәтижелері жаңа дидактикалық шарттарға негізделеді және жаңа ұйымдық қызметтің құрылымын анықтайды.Мақаладағы мәселенің айқындалған жақтары болашақта жалпы орта білім беру мекемелерінде, колледждер мен жоғары оқу орындары студенттерін дайындау, жалпы және кәсіптік білім беретін мекемелердегі білім беру үдерісін ұйымдастыру, оқушылар мен студенттердің оқу іс-әрекетін дамытуға арналған пәндік сипаттағы электрондық құралдар жасақтау, білім беру үдерісіне жаңа ақпараттық технологияларды енгізу бағытындағы жұмыстарды зерттеуге негіз бола алады. Сонымен кредиттік оқыту жүйесінің енгізілуі бойынша мынадай қорытынды шығаруға болады: студенттердің академиялық таңдау құқығы кредиттік оқыту жүйесінің ең негізгі артықшылығы. Студенттер оқытушыларды таңдауға мүмкіндік алады және өздерінің білім алу траекториясын қалыптастырады. Соған сәйкес, типтік және оқу жоспарларымен бірге студенттердің жеке оқу жоспарлары енгізілді, бұл жоспар білім беру мазмұны мен оқытуды ұйымдастыруды анықтайды. Кредиттік оқыту жүйесінде студенттердің оқудағы жетістіктерін бақылау және бағалау өзгерістерге ұшырады. Кредиттік оқыту жүйесінде білімді бағалау екі маңызды қызметті атқарады: үлгерім бойынша ранжілеу және оқуды мотивациялау.

Тірек сөздер: ақпарат, студент, ақпараттық мәдениет, эксперимент, кредиттік жүйе, таңдау курсы, компьютерлік сауаттылық, интернет технологиясы.

ЭКСПЕРТНЫЕ ПОКАЗАТЕЛИ УРОВНЯ ФОРМИРОВАНИЯ ИНФОРМАЦИОННОЙ КУЛЬТУРЫ СТУДЕНТОВ ПО МАТЕМАТИЧЕСКИМ ДИСЦИПЛИНАМ

Шамилов Т.Г.[1], кандидат технических наук, доцент
Медетбеков Б.Р.[2], магистр
Иманчиев А.Е.[3], кандидат физико-математических наук, доцент
Хусайнова А.Б.[4], магистр педагогических наук

[1]*Азербайджанский университет архитектуры и строительства, г. Баку, Азербайджан*
[2]*Академия гражданской авиации, г. Алматы, Казахстан*
[3]*Актюбинский региональный университет им.К.Жубанова, г.Актобе, Казахстан*
[4]*Средняя школа № 13 имени М.Макатаева, г.Алматы, Казахстан*

Аннотация. В статье описаны экспериментальные показатели уровня сформированности информационной культуры студентов по дисциплинам математики. Ученые, занимающиеся основными педагогическими и психологическими вопросами использования компьютерных технологий в образовательном процессе, а также опытом исследователей в области информатизации образования, использования информационных технологий в среднем и высшем образовании, процесса познавательной деятельности, содержания, методов, средств, виды обучения и контроль его результатов базируются на новых дидактических условиях и определяют новую структуру, организационную деятельность.Выявленные в статье стороны вопроса могут стать основой для изучения в будущем работ по подготовке студентов средних общеобразовательных учреждений, колледжей и вузов, организации образовательного процесса в учреждениях общего и профессионального образования, созданию электронных средств предметного характера для развития учебной деятельности учащихся и студентов, внедрению новых информационных технологий в образовательный процесс. Таким образом, по внедрению кредитной системы обучения можно сделать следующие выводы: право студентов на академический выбор является основным преимуществом кредитной системы обучения. Студенты получают возможность выбирать преподавателей и формируют свою образовательную траекторию. В соответствии с ним, наряду с типовыми и учебными планами, были введены индивидуальные учебные планы студентов, в которых определяется содержание образования и организация обучения. В кредитной системе обучения произошли изменения в контроле и оценке учебных достижений студентов. В кредитной системе обучения оценка знаний выполняет две важные функции: ранжирование по успеваемости и мотивация к обучению.

Ключевые слова: информация, студент, информационная культура, эксперимент, кредитная система, элективный курс, компьютерная грамотность, интернет-технологии