Developing a Culture of Academic Integrity in Examinations in a Distance Learning Environment

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***Abstract*—The article deals with the issues of observing the culture of academic integrity in examinations in a distance learning environment. The purpose of this study is to provide an overview of the solutions that are currently used in our organization to monitor educational achievement, while maintaining an appropriate level of culture of academic integrity by technologization of the assessment process as one of the necessary ways. The authors, based on their research, which was carried out for two years, give recommendations on the organization of online exams, consider various types of control and the corresponding digital technologies that allow maintaining academic integrity. Identified possible violations during the online exam, analyzed the causes and proposed solutions. Types of exam that develop critical thinking and have zero tolerance for any violation of the code of academic integrity are the open book written exam, project and practical exams, as well as testing and closed book written exam using a proctoring system. Identified principles that should become the norm to strengthen the culture of academic integrity.**

***Index Terms*—Types of control, digital technologies, academic integrity, critical thinking, proctoring system.**

I. Introduction

In order to obtain a high level of competencies of highly qualified specialists in the future and improve the quality of education at the present stage of development of university education, the issue of developing a culture of academic integrity in Kazakhstani universities is actual. The President of the country K.K.Tokayev has repeatedly noted the adoption of appropriate measures to strengthen the responsibility of universities for violation of academic integrity, corruption violations, up to the deprivation of licenses.

The culture of academic integrity in universities should be the bearer of the mission of educating young people and responsibility to society.

Academic integrity as a certain set of rules of human behavior in an academic environment, provides, first of all, moral, and only secondly - the legal components of the regulation of this behavior during the performance of educational or research tasks. Academic dishonesty is seen today as any type of fraud or deceit that is associated with educational and scientific activities.

An analysis of the higher education system showed the following features that contribute to the inhibition of the development of academic integrity of students:

- academic integrity of students does not have a corresponding value at the proper level;
- no interest in strict adherence to the ethics of academic integrity, since the budget of universities largely depends on maintaining the size of the contingent;
- the educational process is based on the use of outdated methods of teaching and assessment;
- an excessive sense of solidarity makes it difficult to trace academic integrity among students;
- a fairly significant part of the students is not familiar with the document, which contains clauses on the application of sanctions for violations of academic ethics.
- possible negative emotional experiences associated with a stressful state during online learning of a student

Universities have adopted Codes of Honor for students and teachers, developed and approved the Rules of Academic Integrity, adopted Regulations on diploma and course design, providing for the use of Anti-plagiarism programs, numerous seminars and various youth events are held, which are posted on the university website, chats, social networks, social videos are shown on the LED-screen, advisory hours are held, where the Rules of Academic Integrity are explained.

However, for sufficient effectiveness of the measures taken, the technologization of this process is also necessary, especially when assessing the knowledge of the student. “Academic Integrity” describes the values that are considered important when studying at universities in the UK. The five core values we work for at the University of Reading are: Accuracy - making sure your work is error-free, Integrity - being truthful about which ideas are your own and which are from others, as well as methods and results of your research, Fairness – not trying to gain an advantage through dishonest means, such as passing off someone else’s work as your own, Responsibility – actively participating in self-learning: for example, by seeking information necessary for effective learning, Respect – for fellow students, mentors, and the work of others scientists [1].

In [2] students' answers to open questions were analyzed, whether it is possible to cheat on online tests in the presence / absence of proctoring. According to the results of the survey, students showed that the results of knowledge control in online learning are not an indicator of the effectiveness of training, and teachers and administrators need to think about such assessments of students. There is a prevailing perception by students of Internet fraud as the fault of the faculty and the university itself, which do not improve

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classroom culture to promote academic integrity and transparency. The work uses R. J. Di Pietro's approach to role theory [3], Kohlberg's theory of moral development [4], the concept of neutralization by Sykes and Mitza [5], the theory of planned behavior states that cheating occurs when the student has both the intention to cheat and opportunity [6]. In the work there was a comparison of students' beliefs with these theories.

Digital technologies are making a huge difference in education, skills and employment. These changes reflect how technology plays an increasingly important role in education [7]-[12].

Development of a typology based on a conceptual model that identifies three profiles of teachers that have emerged during the pandemic: Experienced teachers, enthusiastic teachers and cautious teachers. Studies [13]-[15] have shown that the main variable influencing a teacher's compliance with one of these profiles is the level of digital literacy before the crisis.

Evaluation and monitoring of learning during the covid-19 crisis have been analyzed in [16]-[18].

The purpose of this study is to provide an overview of the solutions that are currently used in our organization to monitor educational achievement, while maintaining an appropriate level of culture of academic integrity by technologization of the assessment process as one of the necessary ways.

II. Method

In order to achieve this purpose, it is necessary to solve the following tasks: to investigate what technologies are used at the university to control educational achievements as a help to maintain the academic integrity of students; to analyze and select types of control and justify their importance in the development of academic integrity; to identify problems in the use of digital technologies and possible negative aspects that may arise.

The methods used in this study is the analysis of test results without the use of the necessary technologies for the development of academic integrity. The comparison method was used to review similar studies and draw the necessary conclusions. The synthesis method was used to select the types of control and the corresponding digital technologies.

III. Results

Academic integrity is an integral part of the educational process and academic life of our university. Teachers and students shape the learning community and culture of learning based on values such as honesty, trust, fairness, respect and responsibility. A fundamental component of the university's approach to integrity is how it accounts violations of academic integrity by students, including plagiarism or collusion. The consequence of these violations is a reassessment of the processes for developing and using the assessment of knowledge, understanding and skills acquired by students. There are a number of factors associated with academic misconduct, including student motivation, individual experience, and contextual factors. Activities at our university aimed at counteracting manifestations of corruption and observing the principles of academic integrity during the session are carried out in accordance with the instructions of the Ministry of Education and Science [19], as well as the Academic Policy and the Code of Academic Integrity and KazNU named after Al-Farabi [20]. The authors from KazNPU named after Abay developed a program for combating corruption of the Testing Center based on SWOT - an analysis of the influence factors of the anti-corruption control system (Table I), as well as a register of corruption risks.

TABLE I: SWOT — Analysis of the Management System Influence Factors to Comply with Academic Integrity

	Positive influence		Negative influence	
Internal environment	**S**trengths	Organization of testing with digital technologies	**W**eaknesses	Students receive a ready base with test tasks from the teaching staff
		Conducting an anonymous survey among students during the session to identify facts of corruption in order to prevent them		The teaching staff develops tests in a non-isolated location
		Transparency of passing an interactive exam during the session		Poorly written tests
		Organization of an automatic seat		Weak material support: old laptops, keyboards, mice, Internet
		Engaging university students to check the exam		Lack of staff awareness of the importance of testing
External environment	**O**pportunities	For more convenient data analysis, and the convenience of survey and appeal among students, it is required to switch from a paper form for filling out a survey to a digital one.	**T**hreats	Weak preparation of the applicant
		Improve the types of examination tasks in accordance with Bloom's levels		Decrease in the quality of students' knowledge due to ready-made bases with tasks not requiring mental operations

		Checking the examination by employees of the anti-corruption department.		Inspections by the Supervisory Authorities
		The use of proctoring systems and technologies that leave a digital footprint for academic integrity		Changing Exam Rules
		Sharing experiences with other universities		Employment of new employees

A. How Technology Help Improve Academic Integrity?

The main aim of the program is to strengthen the culture of academic integrity, the formation of zero tolerance for any violations of the norms of academic integrity during the session from teachers, staff and students. The program covers the most important tasks to reduce the risk of corruption during the exams. To solve these problems, it was necessary to introduce a system that eliminates conflicts of interest, as well as providing visual and technical monitoring of the exam procedure (tracking login, logs for answering questions, timekeeping for answers, behavior at the computer).

Since the last academic year, in order to implement the tasks, set in the educational process, the following types of control have been introduced, shown in Table 2 using a proctoring system.

TABLE II: PLATFORMS USED FOR ACADEMIC INTEGRITY

Types of control	Platform	Type of proctoring	Opportunities			
			Personal identification	Student observation	Tracking Violations	Analysis of violations
Testing	AERO Proctoring	Asynchronous	+	+	+	+
Oral	MS Teams, Zoom	nchronous	(with a proctor)	+	-	-
Close book	Oqylyq, Anti-plagiarism	Asynchronous	+	+	+	+
Open book	Oqylyq, Anti-plagiarism	-	-	-	-	-
Practical Exams	MS Teams	Synchronous	(with a proctor)	+		-
Project Exams	MS Teams	Synchronous	(with a proctor)	+	-	-

For testing, a proctoring system with artificial intelligence "AERO Proctoring" is used, namely asynchronous proctoring, which evaluates the correctness of the procedure after its completion, when the student has already completed the exam.

The AERO proctoring system makes it possible to conduct and observe online exams simultaneously from two devices per person in real time, uses a neural network to identify and verify a person with an accuracy of 99%, analyzing the behavior of the person taking the exam and issues fast and efficient reports, works at low Internet speed and on old computers, since for the simultaneous examination of 10,000 people, 5 times less power is needed (https://aeroproctoring.com/). To accompany oral, project and practical exams, the MS Teams platform is used to control the process of submitting and checking submitted papers, and in this case it is used as synchronous proctoring, in which the proctor and the student are in the system at the same time, the proctor can interrupt the procedure in case of violation.

Microsoft Teams is a collaboration application that allows you and your group to stay informed, organized, and connected. Teams allows to chat, to discuss topics on a given project or practice topic. A team and channels are created on the platform to bring learners together and work in the spaces with conversations and files. A calendar is used to comply with the time period allotted for the exam. And it is also possible to work with other applications within the platform to simplify work and manage projects (https://www.microsoft.com).

For conducting written exams, there is used a proctoring system with artificial intelligence "Oqylyq". A system for conducting written exams that controls the process of passing and checking written works for academic integrity.

Oqylyq is a 100% Kazakhstani product, which is completely local without foreign participation. It eliminates all corruption risks in the educational process due to the transparent platform system. Internet requirements are reduced as much as possible and the system can function when connected at 52 kB / s. It has an intuitive and simple interface that you can easily get used to in a minimum amount of time.

On the one hand, the Oqylyq system includes the full range of tools required for distance learning and control. There is a designer of lessons and tests / exams (video, text, questionnaires, audio files, documents, formulas, etc.), as well as streaming and video conferencing, administration, analytics and monitoring. The system is integrated with plagiarism checking, which allows to carry out the entire cycle on the principle of "one window" without switching to third-party systems. Possibility of forming a random distribution of questions, encryption of user data, personalization of training.

On the other hand, it performs the function of automated proctoring (without installing an additional extension), which allows to monitor and control the process of distance

knowledge testing using computer vision. Face identification, recording and analysis from a webcam, recording and analysis from the desktop, fixing an additional screen, copying and pasting, violations (head turns, strangers, etc.) are performed. There is an index of confidence in the dealer, the creation of a screenshot of the user's violation indicating the type and exact time when it occurred. It is possible to use synchronous proctoring (recording from an additional device, 360 view) (https://oqylyq.kz/).

B. How to Solve the Problem of Academic Dishonesty in a Distance Education Environment?

Let us dwell on the issue of conducting various types of control using digital platforms in terms of achieving the level of a culture of academic integrity and corruption risk at our university. One of the types of control of knowledge and skills of students is testing, which consists of a system of test tasks, a standardized procedure for conducting, processing and analyzing the results.

During the COVID-19 pandemic, all learning became distance and the most popular type of control, due to its ease of labor, was testing. Many teachers and students are forced to face distance learning in an online format. The average test scores in “Fig. 1” showed sometimes stunning results, on the order of 95 - 100% correct answers, on online testing. Therefore, among the teachers there were suspicions about the academic dishonesty of students, noticeable fraud and cheating of students in online exams. There was confidence about cheating among students during the pandemic. The spring session of the 2019/2020 academic year is much higher than the absolute progress of the winter examination session of the same academic year. Progress was observed in all faculties of the university, which confirms the low culture of academic integrity of the student.

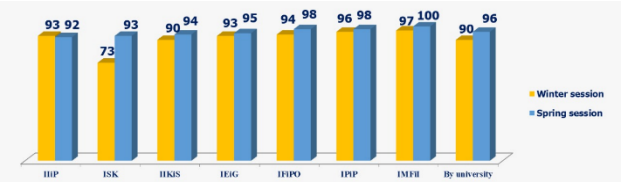

Fig. 1. Test results before and after switching to online learning.

All testing functions were violated, i.e. it was impossible to correctly diagnose the level of knowledge, skills, abilities of the student, there was no proper motivation for the student to intensify the work on mastering the educational material, due to indiscipline in online testing and high results, it was difficult to identify and eliminate knowledge gaps that form the desire to develop their abilities.

It is important to adapt “traditional” assessment methods, like testing, to the online environment so that the assessment tasks truly measure the achievement of learning outcomes in the course. It is necessary to add test tasks that meet the criteria of Bloom's taxonomy (knowledge, understanding, application, analysis, evaluation, creation), which contribute to the development of critical thinking, which can be used to study the impact of learning on knowledge and cognitive process [21]. Examples of such tasks are context tasks, chain tasks, matching tasks, sequencing tasks, etc. The development of specific and informative assessment criteria and their relationship to the course assessment policy is even more important for online learners [22]. In addition, it is important to provide such students with a variety of opportunities to track their progress in their studies, and provide timely and detailed feedback.

It was necessary to take measures to eliminate these disadvantages and explore the types of control in online learning. The most effective method was the use of digital technologies, due to its ability to conduct and observe online exams in real time, to evaluate the correctness of the procedure after its completion. Digital technologies help to meet the diverse needs of learners through alternative assessment formats and tools. When deciding whether to use technology in assessment, educators are encouraged to consider the process in terms of the learning opportunities that technology makes available to students.

Namely, when testing at our university, a proctoring system with artificial intelligence "AERO Proctoring" is used. It is necessary to harmonize assessment with the results and methods of learning and teaching [23]. The technologies used for evaluation should serve the purpose of harmonization [24]. For example, for assessing learning outcomes focused on developing critical thinking, analytical and research skills in students, on the formation of teamwork skills, leadership skills, creativity, digital skills and media literacy testing with a ready answer using information technologies may not be suitable (IS Univer and "AERO Proctoring"). While there are options for online observation of students during the exam, traditional exams (choose-answer testing, closed-book written exam, and oral ticket exams in the classroom) can be difficult to administer in an online environment, therefore, alternative online assessment methods should be considered:

- written exam with a closed book (answers to three randomly selected questions);
- open book written examination (reports, case studies or essays);
- project exams (group or mini projects);
- oral examinations (oral presentations, interviews or book trailers);
- practical exams (creation of a video or podcast by a student, reflective practice assignment and/or electronic portfolios; poster presentations submitted electronically

But in the process of using alternative methods of assessment, an important form of academic fraud, such as plagiarism, arises. To prevent any issues with academic integrity, educators may supplement some written projects with simultaneous exams or other types of tasks that require immediate responses. To avoid plagiarism, teachers should inform students about the university's policy on academic integrity and encourage students to check their tasks using the platform. Therefore, choosing the right platform for checking students' work for plagiarism becomes critical. Finally, it is important to be fair and impartial in dealing with learners in an online environment. The platform includes compliance by students with the deadlines for submitting completed tasks (except in cases where learning difficulties for certain students are obvious); assessment (excluding cases where students are disadvantaged due to poor internet access or technological limitations) and ensuring equal access to course resources.

In terms of fairness, the results of the review should be interpreted with caution, which requires the training of teachers, since the result of the report is the percentage of similarity, not the percentage of plagiarism. The platform should not be limited to detecting violations of academic integrity, it should also be able to help students develop academic writing and critical thinking skills.

Digital system Anti-plagiarism when checking a document by verbatim text overlap is a classic comparison. Checking suspicious documents in this situation requires calculating and storing effectively comparable representations of all documents in the reference collection, which are compared pairwise. Typically, models such as a suffix tree or a suffix array are used that have been adapted to perform this task in the context of computer plagiarism detection. However, substring matching is not a viable solution for checking large collections of documents (the algorithm performs an average of 2h comparisons, where h is the length of the string being searched) [25].

One of the types of alternative control of knowledge and skills of students is a written exam with a "closed book". To maintain academic integrity, our university uses the Oqylyq DLS with an automated proctoring system and is conducted on topics generated by the program. Monitoring of the course of the exam is carried out by an automated proctoring system. There are 60 questions - 2 theoretical and 1 practical. Written works of students and the results of the proctoring system are checked and evaluated by the teacher and the reviewer. The average mark of the teacher and the reviewer is set as the final one. To increase the level of the culture of academic integrity and the development of critical thinking, it is also recommended to develop tasks of a problematic nature so that the student cannot write down memorized ready-made answers, but reason and prove certain statements.

A written open-book exam without a proctoring system is a process of completing a task within a week. The task is issued to students on the day the exam begins and is completed at home within 5-7 days. The Oqylyq system selects and fixes one task for the student (it can be either a case or an essay). Educators are faced with the task of achieving learning goals such as developing the skills of constructive criticism of the sources used; development of analytical thinking; development of practical skills in working with information; development of skills in the development of managerial decisions; development of modern managerial and socio-psychological technologies; improving communicative competence; increasing motivation for learning and professional development [26].

Team project work is carried out within a week, and in order not to violate academic integrity, it is defended in the form of a presentation in accordance with the exam schedule to the teacher and members of the commission. The entire exam process is video recorded using the MS Teams synchronous proctoring platform. The project allows assessing the ability of students to independently apply their knowledge in the process of solving research problems and problems in the information space and the level of formation of analytical, research skills, practical and creative thinking.

A practical exam with a synchronous proctoring system evaluates practical abilities, in which students demonstrate their knowledge, the ability to complete tasks. In this case, students must demonstrate their skills, abilities, the application of the acquired knowledge (this can be a test to create a portfolio, or a task to design some thing or object, or a demonstration of motor, artistic, etc. skills). To maintain academic integrity, it is recommended to attach a digital footprint in the form of video, photo and audio materials, depending on the type of the task. The student, having received the task, completes it at home in electronic form (it is allowed to use any reference, educational literature and the Internet) for a week and defends the presentation in accordance with the exam schedule to the teacher and members of the commission, through the MS Teams service. The entire examination process is videotaped.

Let's show on "Fig. 2, 3" the monitoring of the results of testing by AERO artificial intelligence at our university. Violations during testing, identified by the proctoring system with AERO artificial intelligence. Some teachers are dishonest in their duties when checking exam results. "Fig. 4" shows the response data of students who wrote a regular letter, and the teacher rated it positively.

All violations of academic integrity committed by the teacher, staff and students of Abai University are subject to consideration at the meetings of the institute commissions on ethics. Measures applied in case of violation of academic integrity serve to correct and form an appropriate attitude towards academic integrity.

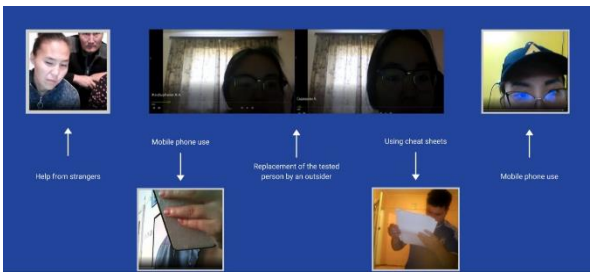

Fig. 2. Failure to maintain a culture of academic integrity during written exams identified by Oqylyq DLS artificial intelligence.

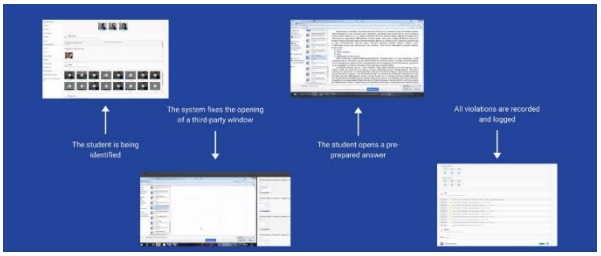

Fig. 3. Failure to maintain a culture of academic integrity during written exams identified by Oqylyq DLS artificial intelligence.

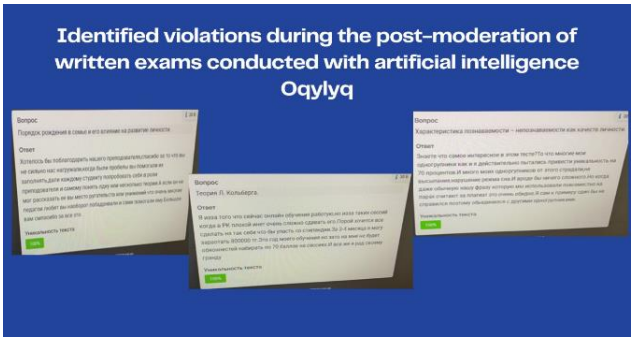

Fig. 4. Failure to maintain a culture of academic integrity during written exams identified during post-moderation by the reviewer.

Principles to Become the Norm for Strengthening a Culture of Academic Integrity:

- creating an atmosphere that reduces the possibility of violating academic integrity;
- appropriate response to any breach of academic integrity;
- close interaction of the entire university community of Abai University, based on trust.

IV. Conclusion

Therefore, academic dishonesty is quite common among students when taking online exams.

The following results were obtained during the study:

- Investigated the necessary digital resources in the control of knowledge, which effectively help to identify violations and reduce their amount.

At our university, technologies such as AERO Proctoring, LMS Oqylyq, streaming platforms MS Teams, Zoom, etc. are used to control educational achievements, as well as a means of maintaining academic integrity of students.

- Analyzed and selected types of control and substantiated their importance in the development of academic integrity.

Testing learning outcomes should be designed that motivate learners to develop higher-level thinking, problem-solving skills in a particular context, and demonstrate their personal learning experiences. Also, the careful design of assessment methods is of particular importance for problems related to academic integrity: it helps to minimize the opportunities for plagiarism and other violations of academic integrity.

- Identified problems in the use of digital technologies and possible negative aspects that may arise.

As well as the psychological picture of the wrong morals of students about cheating, it is necessary to bring to the attention of the student and pay more attention to the norms of ethical behavior at the university. The awareness of students and teachers about the specific rules that apply at the university in relation to violations of the standards of integrity in studies should be at the highest level. Since all students and teachers are well aware that it is impossible to cheat, but what actions are regarded as fraud and what the consequences may be, are poorly represented.

Train teachers to use digital plagiarism testing technologies so they can make informed decisions about academic integrity on student work.

Conflict of Interest

The authors declare no conflict of interest.

Author Contributions

Author's ABC conducted a study; BC analyzed the data; BC wrote an article; DEF participated in obtaining data for the article; all authors approved the final version.

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She has 2 years of work experience. Has the following publication: Kazakh National Pedagogical University named after Abai, Series "Physical and Mathematical Sciences", No.4(76) Almaty, 2021. Now she works as a systems engineer at the Testing Center of the Kazakh National Pedagogical University named after Abai.

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She has 22 years of work experience. She completed an internship at the Charles University in Prague (2019), the University of Bonn, Germany (2020), the International Center for Advanced Studies and Scientific Information in Düsseldorf (2020), Leningrad State University named after Pushkin (260 hours), internship under the program of additional professional training "Specialist in innovative technologies in the field of information education" (2022). Has the following publications: 1. Distance learning at KazNPU named after Abai: Models and Technologies. Balykbayev, T., Issabayeva, D., Rakhimzhanova, L., Zhanysbekova, S. SIST 2021 - 2021 IEEE International Conference on Smart Information Systems and Technologies, 2021, 9465980. 2. Modeling for computer graphics study in terms of fundamentalization of information. Baidrakhmanova, G.A., Issabayeva, D.N., Rakhimzhanova, L.B., Sultangaliyeva, L., Suleimenova, G. Opcion, 2019, 35(89), pp. 733–755. 3. Digital Competence of a Teacher in a Pandemic. Darazha, I., Lyazzat, R., Ulzharkyn, A., Saira, Z., Manat, Z. 2021 9th International Conference on Information and Education Technology, ICIET 2021, 2021, pp. 324–328. Currently working as a Director of the Testing Center of the Kazakh National Pedagogical University named after Abai (Almaty, Republic of Kazakhstan), teaches at the Department of Informatics and Informatization of Education.

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She has 27 years of experience. She completed an internship at the International Center for Advanced Studies and Scientific Information in Düsseldorf (2013). Has the following publications: 1. Modeling in studying computer graphics in the fundamentalization of computer science. Rakhimzhanova, L.B., Issabayeva, S.N., Zhumartov, M.A., Nazarbekova, K.T., Turganbay, K.E. Periodico Tche Quimica, 2019, 16(32), стр. 755–767. 2. Criteria-based assessment as the way of forming students' functional literacy in computer science. Avdarsol S., Rakhimzhanova L.B., Bostanov B.G., Sagimbaeva A.Ye., Khakimova T. Periodico Tche Quimica, Volume 17, Issue 35 (July 2020), 41-54. 3. Digital competence of a teacher in a pandemic. Darazha I., Lyazzat R., Ulzharkyn A., Saira Z., Manat Z. ICIET 2021, 2021, pp. 324–328. Currently Associate Professor of the Department of Computer science al-Farabi Kazakh National University (Almaty, Republic of Kazakhstan).

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Ulzharkyn D. Abdigapbarova is associate professor. She is the director of the Department of Science. She has graduated from the philological faculty of Nukus State University named after T.G. Shevchenko, postgraduate study of the Kazakh National Pedagogical University named after Abai, doctoral studies of the Kazakh National Academy of Arts named after T. Zhurgenov. Her scientific and pedagogical work has been successfully combined with administrative activities from 1988 to the present time. She is the holder of the state grant "The Best Teacher of the University 2009 and 2020, she was awarded with the badge "For Honored Work in the Development of Science of the Republic of Kazakhstan" (2010) and the breastplate of "I.Altynsarin" (2011), "Honorary Worker of Education of the Republic of Kazakhstan" (2016).

She has more than 200 published scientific and methodical works. They are: 3 - monographs, 1 - concept, 3 - state obligatory standards of formation of the Republic of Kazakhstan, 9 textbooks, 2 electronic textbooks, 15 teaching aids, 10 methodical aids. 3 articles in the database Thomson Reuters, 7 articles in Scopus. She has a Hirsch index at the base of Thomson Reuters. Also she has 7 copyright certificates for scientific works.

She has prepared 4 candidates of pedagogical sciences, 7 PhD doctors.Chairman of the dissertation council for the defense of doctoral dissertations in Pedagogy and psychology at KazNPU named after Abay. Abdigapbarova U.M. is the author-initiator of innovative projects in the field of education: the 1 st Republican Olympiad of Master's in Pedagogical Sciences (2017); 1 st Republican Conference of Scientists and Teachers (2016); experimental educational program of the Master's program "Management in Education" (author-compiler) in 2017.

Botakoz E. Tulbassova is associate professor. She was born on January 17, 1969 in the Republic of Kazakhstan, Kyzyl-Orda. In 1990, she graduated with honors the Shymkent Pedagogical Institute named after M.Auezov in the speciality "Teacher of mathematics, informatics and computer technology". In 1996 she completed full-time postgraduate studies at the International Kazakh-Turkish University named after Kh.A.Yassavi. In 2000, she successfully defended her thesis on the topic "Didactic conditions for preparing teachers in the IAS for the use of information technologies in education" and by the Decision of the dissertation council of the Kazakh Academy of Education named after I. Altynsarin, she was awarded the Ph.D. in Pedagogical Sciences, Almaty city. In 2004, by the decision of the Higher Attestation Committee of the Ministry of Education and Science of the Republic of Kazakhstan, she was awarded the academic title of Associate Professor of

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She has 32 years of experience in education. She began her professional career in 1990 as a teacher of mathematics and informatics in secondary school No. 24 in Shymkent, Republic of Kazakhstan. She worked from the Regional Institute for Advanced Training of Teachers to the Republican Institute for Advanced Training of Pedagogical Personnel in positions from senior teacher to head of the Informatics class. She worked as a Scientific Secretary, Deputy Director at the Kazakh Academy of Education named after I. Altynsarin, Almaty. Today she works as an assistant professor at the Kazakh National Pedagogical University named after Abai. Has more than 60 scientific, educational and methodical works. Has publications: 1. Tulbassova B.K. Issues of introducing digital educational resources in the preparation of future teachers. Bulletin of KazNPU named after Abai, Series "Physical and Mathematical Sciences", No. 2, (62), 2018, pp. 187-190, 2. Tulbassova B.K. Methods of using the MathCad computer system in graphical functions, Bulletin of KazNPU named after Abai, Series "Physical and Mathematical Sciences", No. 1, (65), 2019, pp.321-326. 3. Tulbassova B.K., Salykova A.N. Features of the use of digital educational resources at the university. Bulletin of KazNPU named after Abai, Series "Physical and Mathematical Sciences", No. 1, 2020, pp.211-216.

Prof. Tulbassova B.K. in 2020 was awarded the badge "Best Teacher" of the Kazakh National Pedagogical University named after Abai.

Zhanylsyn F. Issabayeva got the master of pedagogical sciences. She was born on July 22, 1967. In 2003 she graduated the Kazakh National University named after al-Farabi (Kazakhstan, Almaty) in the speciality Jurisprudence, Qualification - Lawyer, in 2020 she graduated the Kazakh National Women's Pedagogical University in the speciality Pedagogical Measurement of the Faculty of Pedagogy and Psychology (Kazakhstan, Almaty city). Her main field of research: jurisprudence, pedagogy.

She has 19 years of work experience. Published the following publications: 1. Pedagogical conditions for the legal education of preschoolers. Science and life of Kazakhstan. International scientific journal. No. 4/3 2020. pp. 183-189. 2. Services of pedagogical control in the legal education of preschoolers. Science and life of Kazakhstan. International scientific journal. No. 11/2. (145) 2020. pp.233-237. 3. Kazak gocuklarinin nukuk egitim meseleleri.II.Uluslararasi Develi-asikseyranive Turkkulturukongresi 397-398 sayfalar. Currently she works as a teacher at the department of "Jurisprudence" of the Institute "History and Law", Kazakh National Pedagogical University named after Abai.

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