SRSTI 14.27.21

E.Sh. SALIMZYANOVA
Kazan Federal University, Kazan, Russia,
e-mail: elmira.salimzyanova@inbox.ru

DIGITAL COMPETENCE: THE VITAL 21ST-CENTURY SKILL FOR FUTURE TEACHERS OF UNIVERSITIES

Abstract. *Modern digital technologies are the catalyst for the world transformation. The use of digital technologies for teaching and learning has been high on the policy agenda for the past few years and, given the rapid evolution of technologies, is expected to remain a central topic in education policy. Digital literacy skills enhance students in society; those who are excluded from such involvement will be left behind and are seriously disadvantaged in their ability to participate in future education and employment opportunities.* ***The aim of the study*** *is to analyze the methods of forming digital competencies among students of Kazan (Volga region) Federal University, future teachers of biology and English language, in the educational space of the university. Thanks to the rapidly evolving technology, today's students are improving along with the digital world. The objective of our study was to study the level of students' knowledge of digital technology (computer, tablet computer, smartphones, interactive whiteboard). The results of a sociological survey, diagnostic testing and various assignments completed by students, future teachers, demonstrated the presence of certain digital competencies for them, as well as their readiness for mobile learning. In our study we used the following* ***research methods****: observation, comparative analysis and synthesis of modern approaches to the formation of digital competencies of students, analysis of science, sociological, pedagogical and methodological literature; the study and implementation of various approaches, programs, mobile devices for the development of digital competence of students, the modeling of various approaches and pedagogical situations, the comprehension of their own experience. The study involved 37 students, future teachers of biology and English language of Kazan (Volga region) Federal University.* ***Conclusions and recommendations.*** *After the study, we decided to organize a special laboratory to provide advisory assistance to students and teachers, to conduct additional classes for one group of students in teaching programs for working with digital media. After their training, we came to the conclusion that students enthusiastically learn, easily absorb information on working with digital media. We also came to the conclusion that in the curriculum for future biology and English teachers it is necessary to include the study of programs on digital media, the knowledge of which will be useful to them in further practical activities in educational organizations. We believe that when organizing educational and research activities it is advisable to use tablet computers, various mobile applications, an interactive whiteboard in conjunction with circuit modeling systems in the educational research environment, which will increase the level of information and digital competence of students, master the natural-scientific methods of cognition and basic research procedures and processing the results of information. Thus, students will be able to critically interpret the results of the analysis of the computer model of the process under study and increase the level of understanding of the theoretical material and its practical orientation, learn how to create virtual experimental setups and computer models of the studied phenomenon, etc. The experience of using information technology changes the position of the teacher: he ceases to be a "source of knowledge", and becomes the creator of the creative process of processing, use of information and a more active participant in shaping the personality of the future teacher. The study of new information environments makes it possible to identify the*

future specialist the strengths and weaknesses of these programs and thereby determine the degree of their effective use in practice. As a result of the study, we came to the conclusion that in the university it is necessary to have a laboratory where not only computers, but also tablet computers, modern smartphones must be in order to teach humanitarian students digital technologies in the classroom, since their level of knowledge of various digital programs media insufficient for creative use in practical teaching activities. ***The results of the study*** *can be used to formulate initiatives to develop the skills of the digital economy in the population. The result also makes it possible to argue that as the role of human capital for the digital economy grows, it becomes essential to carry out initiatives to form new competencies, affecting the teaching staff of universities and schools. The findings from this study would further help educators and policymakers to ascertain the best approaches needed to improve the digital literacy competence of youths so they would be able to access and process information effectively for academic needs and, later on, for employment and career purposes. The study will provide a significant contribution to the development of a digital literacy education framework to enhance Kazan (Volga region) Federal University's students digital literacy competence.*

Key words: *digital competence, students, Kazan (Volga region) Federal University, digital skills, biology and English teacher, technology.*

INTRODUCTION

Extensive implementation of digital technologies in universities is the main factor conditioning the acceleration of innovative changes in the education process, while digital technologies themselves become one of the key mechanisms for creating the competitive advantages of education institutions on the market of educational services.

Digital technologies are becoming one of the main priorities in the higher education development plan, and using technologies in class might serve as an appealing factor for universities to attract potential students.

With increasing rapid knowledge transfer and technological diversity becoming a global phenomenon, it is essential to examine whether Kazan (Volga region) Federal University's students, future specialists of biology and English language, have similar digital literacy skills, like most Russian students of leading universities, to perform tasks effectively in a knowledge based society with digital information and meanings represented in multimodal forms.

PURPOSE AND OBJECTIVES OF THE STUDY

From this perspective, the study was conducted to analyse the digital literacy competence of Kazan (Volga region) Federal University's students to effectively access and use digital texts for obtaining information needed for academic tasks.

Students who possess higher education and digital literacy skills will most likely be able to retrieve more relevant and useful information, which will then be translated into academic, commercial, political and social advantages.

Additionally, this issue has implications on employment opportunities since more and more employers demand that their employees have some digital literacy skills.

To prepare a competitive teacher, it is necessary to continue the formation of digital competencies at the university.

A university teacher should contribute to the development of digital competencies of students. But more often it happens that the digital

competencies of a professor lag behind the competencies of students.

To solve this problem, it is advisable to talk about designing the educational space of the university, creating a special professionally-oriented environment for the formation of digital competence of both the teacher and the student.

This environment should be created in accordance with the following principles: the definition of the learner as an active subject of knowledge; his orientation to self-education, self-development; reliance on the subjective experience of the student, taking into account his individual characteristics, training in the context of future professional activity.

METHODOLOGY

In our study we used the following research methods: observation, comparative analysis and synthesis of modern approaches to the formation of digital competencies of students, analysis of science, sociological, pedagogical and methodological literature; the study and implementation of various approaches, programs, mobile devices for the development of digital competence of students, the modeling of various approaches and pedagogical situations, the comprehension of their own experience.

Experimental base of research

The experimental base of the study was the Kazan (Volga region) Federal University.

Research stages

The study of the problem was carried out in three stages: at the first stage, a theoretical analysis of the existing methodological approaches in philosophical, psychological and pedagogical scientific literature, dissertation works on the problem, as well as the theory and methodology of pedagogical research was carried out; highlighted the problem, the purpose and methods of research, made a plan of experimental research.

At the first stage of the formation and development of digital competence, the student must realize the importance and necessity of using computer and digital technologies in modern society.

Besides, at the first stage, we conducted a sociological survey in the form of a survey, as a result of which were interviewed by 37 students, future teachers of biology and English.

Also, using diagnostic testing, we identified the degree of knowledge of digital technologies.

At the second stage, students complete tasks aimed at acquiring practical skills in working with different programs to solve educational and practice-oriented tasks in their future professional activities. This stage of the study is devoted to monitoring the activities of future teachers through intermediate tests.

The third stage of the study shows the dynamics and level of knowledge of digital technologies of each individual student. We came to certain conclusions, for example, that the experience of using digital technologies changes the position of the teacher (deepens professionalism, expands the scope of the knowable).

The teacher ceases to be a “source of knowledge”, but becomes the creator of the creative process of processing the use of information and a more active participant in the formation of the personality of the future specialist in the digitalization era.

RESULTS

The study involved the following stages of experimental work: at the first

stage of the formation and development of digital literacy and digital competence, a future graduates of the Kazan (Volga) Federal University, studying in the field of training 44.03.05 "Pedagogical education (with two provisioning profiles), 2 profiles: "Biology" and "English language") should realize the importance and necessity of using computer and digital technologies in the realities of modern society.

At the first stage of the formation and development of digital literacy and digital competence, the student must realize the importance and necessity of using computer and digital technologies.

In the first classes, the main task of the teacher is the formation and development of a future specialist's motivation to use digital technologies in the university and in later life, in their professional activities.

At this stage, the teacher using questionnaires and diagnostic testing reveals the degree of ownership of specific digital technologies, the correct application of the conceptual-categorical apparatus (knowledge of terminology), etc.

Entrance testing allows the teacher to make adjustments to the organization of the educational process, taking into account the capabilities and potential of students, their preferences and interests, to plan individual independent work of students aimed at filling the gaps in the framework of the studied discipline.

The next stage is substantive and active. At this stage, students perform various tasks aimed at acquiring practical skills in working with different programs to solve educational and practice-oriented tasks in their future professional activities. The main goal of this stage is to create automatism when working with digital technology (computer, tablet computer, smartphones, interactive whiteboard): create presentations, know the basics of programming, search for information on the Internet, work with graphic data, the ability to draw up text documents, perform calculations using formulas and functions in spreadsheets, etc.

Using resources on the Internet allows you to teach students to work with huge and often conflicting arrays of information, to be able to quickly carry out information retrieval, analyze the information received and use it in educational and professional activities. Of great importance is the use in the performance of many tasks of a variety of practical tasks oriented to professional activities. Students must learn how to effectively use computer science knowledge to solve educational and professional problems. Trainees at this stage are supervised by the teacher with the help of intermediate tests, if necessary, an adjustment is possible according to the number and level of difficulty of the tasks during practical work.

Structuring into separate elements of the content of training (sections) allows you to track the level of formation and development of digital literacy and digital competence. Active and interactive teaching methods used in the classroom bring students a productive and creative character.

The productive and reflective stage of the development of digital literacy and digital competence of students shows the dynamics and level of knowledge of digital technologies. Evaluation of the development of digital competency is carried out through the participation of students in Internet testing.

Evaluation of the formation of digital competencies are four levels of knowledge acquisition (Bespalko, 2006).

Testing results allow you to focus on the achievements of each individual first-year student, evaluate the level of formation of digital competence within the framework of the discipline under study.

The experiment involved 37 students. The study showed that 37 students (100%) have good working skills with a stationary computer, since they were acquired at school. But worse were the results of owning a tablet computer: only 60% of students familiar with the programs on a tablet computer. 85% of students are well-versed in smartphone applications. 80% of students know how to use an interactive whiteboard. Not every student has a new smartphone, so it is difficult to work with applications. In preparation for the seminar use video materials from YouTube - 8% of students; preferred presentation performance - 40%; oral communications - 55% of students.

After the study, we decided, firstly, to organize a special laboratory to provide advisory assistance to students and teachers,to conduct additional classes for one group of students in teaching digital media programs. After their training, we came to the conclusion that students with the desire to learn, easily absorb information on working with digital media. Thus, we came to the conclusion that in the curriculum for future biology and English teachers it is necessary to include the study of programs in digital media, the knowledge of which will be useful to them in further practical activities in educational organizations.

Currently, the teacher needs to plan, organize and direct the learning process in accordance with changing ideas about the student's readiness to perform professional functions and social roles, provide conditions for preparing for life in changing socio-economic conditions, demonstrating the diversity of the use of information environments and basic knowledge gained.

The study of new information environments makes it possible to identify to the future specialist the advantages and disadvantages of these programs and thereby determine the degree of their effective use in practice.

The creation of a digital economy in the framework of modern realities today requires an appropriate orientation of the education system, training a specialist who uses modern digital technologies in his activities. For a teacher to participate fully in the educational process, it is necessary to have digital literacy, which is considered as a key functional literacy, which allows expressing information needs, creating new information products using digital devices, digital resources, digital technologies and a willingness to participate in information and educational interaction [1], [2].

The digital competence,as a confident use of information and communication technology (ICT) tools, is vital for a person to participate today's socio-economic life.

That is why digital literacy (or digital competence) is recognized by the EU as one of the eight key competencies for a full life and activity. In this regard, the problem of improving (transforming) the education system as a social institution for human development for the training of competent specialists, taking into account the needs of the market and the current trends in the development of digital technologies, is being actualized [3].

The digital competence or digital literacy has the potential to promote student subject learning, and equip students with the necessary digital skills

and attitudes to function in the twenty-first century knowledge society.

Due to the rapid development of digital technologies in the emerging information society, today's workforce requires individuals to be able to employ a variety of cognitive skills in order to solve problems in digital environments [4].

As a consequence, the digital revolution and the increasing digitalization of school and university life over the past decades have created a need for digitally competent teachers who can implement ICT in an adequate manner.

Thus, it has been argued that both students and teachers must acquire a certain level of computer-literacy to keep up with the growing digital societies.

However, sometimes in educational institutions, the teachers themselves, ignoring the possibilities of modern digital technologies in learning, impede the effectiveness of educational activities. In the concept of "digital competency" we put the students confidently using a computer, mobile phone, tablet computer, interactive whiteboard, etc. This competency is based on logical thinking, a high level of mastery of information management and highly developed mastery of digital technology [5].

Progress of information network and work means related to flow of the information, carried weight on its simple acquisition.

Activities, connected with the use of network and new forms of work, are forcing new functional and spatial relations and interactions in the university buildings. Nowadays, the process of gaining knowledge is taking place in different locations - not only in lecture rooms, but also in social links and electronically. With the support and through access to digital resources and mobile devices, learning can take place anywhere in many ways.

These new trends have their reflection in the architectural spaces of universities. Polish researchers describe a way to create a modern and innovative student zone on Faculty of Architecture, Silesian University of Technology in Poland.

There were presented the following steps: an idea, schedule of the task, surveys carried out among students, student competition for interesting thoughts, creation of project team involving students, accomplishment of the project financing and implementation. Zone for student of architecture has a chance to become a model for the other faculties.

In this competency, some researhers propose to include the following knowledge: understanding of the general structure and interaction of computer equipment, digital devices, software, digital resources; understanding the potential of digital technology for innovation; basic understanding of the reliability and reliability of the information received, the ability to use programs for designing a training session.

Some researchers argue that in the preparation of teachers it is necessary to form digital competencies, since the success of students' results depends on them in the future. Others believe that it is necessary to design the educational space of the university and the classroom should meet the modern requirements and demands of the digital society.

Digitally competent teachers have an positive effect on students' subject learning and use of ICT in schools, teacher education programs and student teachers are a "natural place to start with respect to integrating technology

into education" [5], and need to critically reflect on how they structure and facilitate their approaches and strategies for this integration.

CONCLUSION

After the study, we decided to organize a special laboratory to provide advisory assistance to students and teachers, to conduct additional classes for one group of students in teaching programs for working with digital media.

After their training, we came to the conclusion that students enthusiastically learn, easily absorb information on working with digital media.

We also came to the conclusion that in the curriculum for future biology and English teachers it is necessary to include the study of programs on digital media, the knowledge of which will be useful to them in further practical activities in educational organizations.

We believe that when organizing educational and research activities it is advisable to use tablet computers, various mobile applications, an interactive whiteboard in conjunction with circuit modeling systems in the educational research environment, which will increase the level of information and digital competence of students, master the natural-scientific methods of cognition and basic research procedures and processing the results of information.

Thus, students will be able to critically interpret the results of the analysis of the computer model of the process under study and increase the level of understanding of the theoretical material and its practical orientation, learn how to create virtual experimental setups and computer models of the studied phenomenon, etc.

The experience of using information technology changes the position of the teacher: he ceases to be a «source of knowledge», and becomes the creator of the creative process of processing, use of information and a more active participant in shaping the personality of the future teacher.

The study of new information environments makes it possible to identify the future specialist the strengths and weaknesses of these programs and thereby determine the degree of their effective use in practice.

As a result of the study, we came to the conclusion that in the university it is necessary to have a laboratory where not only computers, but also tablet computers, modern smartphones must be in order to teach humanitarian students digital technologies in the classroom, since their level of knowledge of various digital programs media insufficient for creative use in practical teaching activities.

The results of the study can be used to formulate initiatives to develop the skills of the digital economy in the population. The result also makes it possible to argue that as the role of human capital for the digital economy grows, it becomes essential to carry out initiatives to form new competencies, affecting the teaching staff of universities and schools.

The findings from such research would further help educators and policymakers to ascertain the best approaches needed to improve the digital literacy competence of youths so they would be able to access and process information effectively for academic needs and, later on, for employment and career purposes.

The study will provide a significant contribution to the development of a digital literacy education framework to enhance Kazan (Volga region) Federal University's students digital literacy competence.

REFERENCES

1. Ilomaki, L. Digital competence – an emergent boundary concept for policy and educational research / L. Ilomaki, M. Lakkala, A. Kantosalo, S. Paavola // Education and Information Technologies. - 2011. - 21(3). – P. 655–679.

2. Ruliene, L. N. Cifrovaya gramotnost' i gumanitarnaya kul'tura pedagoga v innovacionnoj obrazovatel'noj praktike/ L.N. Ruliene // Otkrytoe i distancionnoe obrazovanie. – 2016. - 4(64).

3. Kuzminska, O. Digital competency of the students and teachers in Ukraine: Measurement, analysis, development prospects / O. Kuzminska, M.Mazorchuk, N. Morze, V. Pavlenko, A. Prokhorov // Proceedings of the 14th International Conference on ICT in Education, Research and Industrial Applications. Integration, Harmonization and Knowledge Transfer. ICTERI'2018. - Kyiv, 2018. - P. 366–379.

4. Alviram, A. Towards a theory of digital literacy: Three scenarios for the next steps /A. Alviram, Y.Eshet-Alkalai // European Journal of Open Distance E-Learning. – 2006. – (http:// www.eurodl.org/materials/contrib/2006).

5. Horvath, I. Digital life gap between students and lecturers / I. Horvath// 7th IEEE International Conference on Cognitive Infocommunications. – 2016. – P. 353–358.

Е.Ш. САЛИМЗЯНОВА

САНДЫҚ ҚҰЗЫРЕТТІЛІК: ЖОО-НЫҢ БОЛАШАҚ ОҚЫТУШЫЛАРЫ ҮШІН 21 ҒАСЫРДЫҢ ӨМІРЛІК МАҢЫЗДЫ ДАҒДЫСЫ

Қазан федералды университеті, Казан қ., Ресей,
e-mail: elmira.salimzyanova@inbox.ru

Э.Ш. САЛИМЗЯНОВА

ЦИФРОВАЯ КОМПЕТЕНТНОСТЬ: ЖИЗНЕННО ВАЖНЫЙ НАВЫК ДЛЯ БУДУЩИХ ПРЕПОДАВАТЕЛЕЙ ВУЗОВ 21 ВЕКА

Казанский федеральный университет, г. Казань, Россия,
e-mail: elmira.salimzyanova@inbox.ru

Аңдатпа. *Қазіргі заманғы сандық технологиялар әлем трансформациясының катализаторы болып табылады. Оқыту және оқыту үшін сандық технологияларды пайдалану соңғы бірнеше жыл ішінде саяси күн тәртібінде маңызды орын алды және технологиялардың жылдам дамуын ескере отырып, білім беру саласындағы саясаттың негізгі тақырыбы болып қалады. Сандық сауаттылық дағдылары оқушылардың қоғам өміріне қатысу деңгейін арттырады; мұндай қатысудан шығарылғандар артта қалады және болашақта білім алуға және жұмысқа орналасу мүмкіндіктеріне қатысу қабілеті тұрғысынан елеулі қолайсыз жағдайда болады. Зерттеудің мақсаты - Қазан федералды университеті студенттерінің, болашақ биология және ағылшын тілі мұғалімдерінің білім беру кеңістігінде сандық құзыреттілікті қалыптастыру әдістерін талдау. Жылдам дамып келе жатқан технологияның арқасында бүгінгі студенттер сандық әлеммен бірге жетілдірілуде. Зерттеудің міндеті - студенттердің сандық технологияларды (компьютер, планшеттік компьютер, смартфондар, интерактивті тақта) меңгеру деңгейін зерттеу. Әлеуметтік сауалнаманың, диагностикалық тестілеудің және студенттердің, болашақ оқытушылардың орындаған әр түрлі тапсырмаларының нәтижелері олардың белгілі сандық құзыреттіліктерінің болуын, сондай-ақ олардың ұтқыр оқуға дайындығын көрсетті. Біздің зерттеуде біз зерттеудің келесі әдістерін қолдандық: студенттердің сандық құзыреттілігін қалыптастырудағы заманауи тәсілдерді бақылау, салыстырмалы талдау және синтездеу, ғылыми, социологиялық, педагогикалық және әдістемелік әдебиеттерді талдау; студенттердің сандық құзыреттілігін дамыту үшін әртүрлі тәсілдерді, бағдарламаларды, мобильді құрылғыларды оқу және жүзеге асыру, педагогикалық жағдайларды және әртүрлі тәсілдерді моделдеу, өз тәжірибесін ұғыну. Зерттеуге Қазан федералды университетінің болашақ биология және ағылшын тілі оқытушылары, 37 студент қатысты. Қорытындылар мен ұсыныстар. Зерттеу жүргізілгеннен кейін біз студенттер мен оқытушыларға консультациялық көмек көрсету үшін арнайы зертхана ұйымдастыруды, сандық медиамен жұмыс жасаудың оқу бағдарламалары бойынша студенттердің бір тобы үшін қосымша сабақтар өткізуді*

шештік. Оларды оқығаннан кейін біз студенттер ынтамен оқып, сандық ақпарат тасымалдаушылармен жұмыс істеу бойынша ақпаратты оңай меңгереді деген қорытындыға келдік. Біз сондай-ақ, болашақ биология және ағылшын тілі мұғалімдеріне арналған оқу жоспарына сандық тасымалдағыштардағы бағдарламаларды оқытуды енгізу қажет деген қорытындыға келдік, олар туралы білімі білім беру ұйымдарында әрі қарай практикалық қызметте пайдалы болады. Біз оқу-зерттеу қызметін ұйымдастыру кезінде оқу-зерттеу ортасындағы схемотехникалық моделдеу жүйелерімен үйлесімде планшеттік компьютерлерді, түрлі мобильді қосымшаларды, интерактивті тақталарды пайдалану орынды деп санаймыз, бұл студенттердің ақпараттық-сандық құзыреттілігін арттыруға, танымның жаратылыстану-ғылыми әдістерін және ақпарат нәтижелерін өңдеудің негізгі зерттеу рәсімдерін меңгеруге мүмкіндік береді. Осылайша, студенттер зерттелетін үрдістің компьютерлік моделін талдау нәтижелерін сыни түрде түсіндіре алады және теориялық материалды және оның практикалық бағытын түсіну деңгейін жоғарылатады, зерделенетін құбылыстың виртуалды эксперименталдық қондырғылары мен компьютерлік модельдерін және т.б. құруды үйренеді. Ақпараттық технологияларды қолдану тәжірибесі педагогтің позициясын өзгертеді: ол «білім көзі» болуын тоқтатады, ал ақпаратты қайта өңдеу, қолдану шығармашылық процесінің авторы және болашақ мұғалім тұлғасын қалыптастырудың белсенді қатысушысы болады. Жаңа ақпараттық орталарды зерттеу болашақ маманға осы бағдарламалардың күшті және әлсіз жақтарын анықтауға және сол арқылы оларды тәжірибеде тиімді пайдалану дәрежесін анықтауға мүмкіндік береді. Жүргізілген зерттеу нәтижесінде біз ЖОО-да тек компьютерлер ғана емес, сонымен қатар планшеттік компьютерлер, заманауи смартфондар гуманитарлық мамандықтар студенттерін сабақтарда сандық технологияларға үйрету үшін болуы тиіс деген қорытындыға келдік, өйткені олардың түрлі сандық медиа бағдарламаларын білу деңгейі практикалық педагогикалық қызметте шығармашылық пайдалану үшін жеткіліксіз. Зерттеу нәтижелері халықтың сандық экономика дағдыларын дамыту бойынша бастамаларды қалыптастыру үшін пайдаланылуы мүмкін. Алынған нәтиже сондай-ақ сандық экономика үшін адами капитал рөлінің өсуіне қарай жоғары оқу орындары мен мектептердің профессор-оқытушылар құрамына қатысты жаңа құзыреттіліктерді қалыптастыру бойынша бастамаларды жүргізу қажет деп айтуға мүмкіндік береді. Бұл зерттеудің нәтижелері педагогтер мен саясаткерлерге сандық сауаттылық саласында жастардың біліктілігін арттыру үшін қажетті ең жақсы тәсілдерді анықтауға, ақпаратқа тиімді қол жеткізуге және оны академиялық қажеттіліктерді қанағаттандыру үшін, содан кейін жұмысқа орналастыру және мансаптық өсу мақсатында өңдеуге мүмкіндік береді. Бұл зерттеу Қазан федералды университеті студенттерінің сандық сауаттылық саласындағы құзыреттілігін арттыру үшін сандық сауаттылық саласындағы білім беру жүйесін дамытуға елеулі үлес қосады.

Түйін сөздер: *сандық құзыреттілік, студенттер, Қазан федералды университеті, сандық дағдылар, биология және ағылшын тілі оқытушысы, технология.*

Аннотация. *Современные цифровые технологии являются катализатором трансформации мира. Использование цифровых технологий для преподавания и обучения занимало важное место в политической повестке дня в течение последних нескольких лет и, учитывая быстрое развитие технологий, как ожидается, останется центральной темой политики в области образования. Навыки цифровой грамотности повышают уровень участия учащихся в жизни общества; те, кто исключен из такого участия, останутся позади и окажутся в серьезном неблагоприятном положении с точки зрения их способности участвовать в будущем образовании и возможностях трудоустройства. Целью исследования является анализ методов формирования цифровых компетенций у студентов Казанского федерального университета, будущих учителей биологии и английского языка, в образовательном пространстве вуза. Благодаря быстро развивающейся технологии, сегодняшние студенты совершенствуются вместе с цифровым миром. Целью нашего исследования было изучение уровня владения студентами цифровыми технологиями (компьютер, планшетный компьютер, смартфоны, интерактивная доска). Результаты социологического опроса, диагностического тестирования и различных заданий, выполненных студентами, будущими преподавателями, продемонстрировали наличие у них определенных цифровых компетенций, а также их готовность к мобильному обучению. В нашем исследовании мы использовали следующие методы исследования: наблюдение, сравнительный анализ и синтез современных подходов к формированию цифровых компетенций*

студентов, анализ научной, социологической, педагогической и методической литературы; изучение и реализация различных подходов, программ, мобильных устройств для развития цифровой компетентности студентов, моделирование различных подходов и педагогических ситуаций, осмысление собственного опыта. В исследовании приняли участие 37 студентов, будущих преподавателей биологии и английского языка Казанского федерального университета. Выводы и рекомендации. После проведенного исследования мы решили организовать специальную лабораторию для оказания консультативной помощи студентам и преподавателям, провести дополнительные занятия для одной группы студентов по учебным программам работы с цифровыми медиа. После их обучения мы пришли к выводу, что студенты с энтузиазмом учатся, легко усваивают информацию по работе с цифровыми носителями информации. Мы также пришли к выводу, что в учебный план для будущих учителей биологии и английского языка необходимо включить изучение программ на цифровых носителях, знания о которых будут полезны им в дальнейшей практической деятельности в образовательных организациях. Мы считаем, что при организации учебно-исследовательской деятельности целесообразно использовать планшетные компьютеры, различные мобильные приложения, интерактивную доску в сочетании с системами схемотехнического моделирования в учебно-исследовательской среде, что позволит повысить уровень информационно-цифровой компетентности студентов, овладеть естественнонаучными методами познания и основными исследовательскими процедурами обработки результатов информации. Таким образом, студенты смогут критически интерпретировать результаты анализа компьютерной модели изучаемого процесса и повысить уровень понимания теоретического материала и его практической направленности, научиться создавать виртуальные экспериментальные установки и компьютерные модели изучаемого явления и т.д. Опыт использования информационных технологий меняет позицию педагога: он перестает быть «источником знаний», а становится творцом творческого процесса переработки, использования информации и более активным участником формирования личности будущего учителя. Изучение новых информационных сред позволяет выявить будущему специалисту сильные и слабые стороны этих программ и тем самым определить степень их эффективного использования на практике. В результате проведенного исследования мы пришли к выводу, что в вузе необходимо иметь лабораторию, где не только компьютеры, но и планшетные компьютеры, современные смартфоны должны быть для того, чтобы обучать студентов гуманитарных специальностей цифровым технологиям на занятиях, так как их уровень знаний различных цифровых программ медиа недостаточен для творческого использования в практической педагогической деятельности. Результаты исследования могут быть использованы для формулирования инициатив по развитию навыков цифровой экономики у населения. Полученный результат также позволяет утверждать, что по мере роста роли человеческого капитала для цифровой экономики становится необходимым проведение инициатив по формированию новых компетенций, затрагивающих профессорско-преподавательский состав вузов и школ. Результаты этого исследования еще больше помогут педагогам и политикам определить наилучшие подходы, необходимые для повышения компетентности молодежи в области цифровой грамотности, с тем чтобы она могла эффективно получать доступ к информации и обрабатывать ее для удовлетворения академических потребностей, а затем для целей трудоустройства и карьерного роста. Данное исследование внесет значительный вклад в развитие системы образования в области цифровой грамотности для повышения компетентности студентов Казанского федерального университета в области цифровой грамотности.

Ключевые слова: *цифровая компетентность, студенты, Казанский федеральный университет, цифровые навыки, преподаватель биологии и английского языка, технология.*