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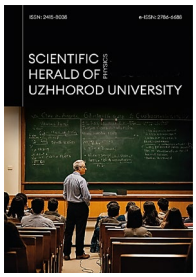

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Development of the creative potential of future teachers based on smart education

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Abstract

Relevance. In the modern world, education is undergoing a digital revolution, and smart technologies are becoming increasingly important in the educational process. Future educators need to be ready to effectively use these technologies to enrich the learning experience and teach their future students with the help of creative thinking and other teaching skills, which is relevant today.

Purpose. The purpose of the study is to investigate and discuss methods and strategies aimed at developing creative skills and competencies of future teachers using smart technologies in the educational process.

Methodology. The paper uses the method of analysis, systematisation, and generalisation.

Results. It was found that the use of smart technologies in education contributes to a significant increase in the level of creativity of future teachers. Smart technologies enrich the educational experience by providing teachers with new tools and resources to develop their creative skills and abilities, which, in turn, can positively affect the quality of education that future teachers will provide to their students. The paper examines how modern smart technologies can be successfully integrated into the curricula and how they can become tools for stimulating creativity in future teachers. The study also examined the paradigm of smart education and its constituent elements.

Conclusions. The study revealed that modern smart education significantly contributes to the development of creative skills of future teachers due to access to modern technologies such as virtual reality, augmented reality, blockchain, and others that create interactive and exciting educational environments, focusing on interactivity and collaboration. A survey

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of students was conducted on how they feel about smart education and their willingness to use it to develop creativity in the educational process and future professional activities. The results of the study can help educational institutions and teachers optimise learning processes using smart technologies focused on the development of creativity in future teachers.

Keywords: digitalisation of society; innovations; information and communication technologies; thinking; professional competencies.

Introduction

Smart education can contribute to the development of creativity of future teachers. It provides a variety of tools and resources that allow educators to create learning materials and techniques that are suitable for different types of students. Smart technologies can help future teachers to implement innovative teaching methods and strategies, which is especially important in modern education, where a more flexible and adaptive approach to students is required. In a world that is constantly changing and requires new skills and knowledge, it is important for future teachers to master modern educational technologies and techniques in order to be ready for the challenges of the future and provide quality education to their students. The topic of the research is the need to assess the impact of smart education technologies on the development of creativity among future teachers, despite their prevalence and accessibility in educational institutions.

B.J. Sharipov and D.M. Dzhussubaliyeva [1] point to the changing nature of education in the context of modern technological opportunities. Researchers present e-learning as a step that has already become the norm and suggest that technology plays an important, but already proven role in education. The leading universities in the world have already reached a certain level of technological sophistication, and further improvement of the information base will not bring significant innovations [2; 3]. Such technologies as access to educational content, feedback, knowledge sharing, and automation of administrative tasks are considered technological. According to the researchers, the main task of modern education is to ensure the highest possible level of knowledge corresponding to modern challenges and opportunities of the economy. To do this, it is necessary to move from conventional education to active e-education, which can help young people adapt to a rapidly changing environment, and therefore, it is important to investigate this issue more deeply.

G.K. Mataeva and N.N. Ospanova [4] argue that the use of smart technologies helps to stimulate students' interest in knowledge and motivation to obtain it. This, according to the researchers, creates conditions for continuous self-development, which is important in modern education. Researchers note that smart technologies allow students to think more creatively and offer non-standard solutions to various problems. This contributes to the development of creative competencies. It is important to investigate this issue more thoroughly.

A. Pregowska et al. [5] emphasise that the use of digital technologies in the educational process, in particular, in lessons that apply smart education, can actively involve schoolchildren and strengthen their participation in educational activities. According to researchers, the effective use of multimedia tools, such as online learning, video and audio broadcasts, teleconferences, watching podcasts, and the possibilities of virtual, augmented and mixed reality, requires the availability of appropriate educational tools for students that help develop creative skills in future teachers and young people. In modern schools in Kazakhstan, digital technologies are actively integrated into the educational process and have a positive impact on the overall development of younger schoolchildren, so it is worth studying this process in the country more carefully [6; 7].

According to T. Karpenko and L. Seri [8], interactive technologies such as web conferences, virtual classrooms, online platforms, and interactive learning materials can provide students and future educators with the opportunity to interact more actively with the learning material and other students. Researchers are convinced that this can contribute to the development of their creativity, since they can find and create new solutions themselves, adapt educational material to different needs and teach other students. It is worth studying in more detail the features of using interactive technologies in the framework of modern smart education as tools for developing creativity among future teachers.

A. Sánchez, V. Font and A. Breda [9] argue that the development of creative thinking and abilities in future teachers has a connection with various aspects that can be effectively implemented within the educational process. Thus, the researchers emphasise that the development of creative abilities of future teachers is not limited to studying as such, but also depends on the use of modern educational technologies, active practical activities and collaboration, which contributes to their deeper and integrated learning. It is worth delving into the process of smart education to explore the features of the development of creativity in future teachers.

The purpose of this study is to investigate and discuss a variety of methods and strategies designed to stimulate the development of creative skills and abilities of future teachers, while the focus is on the use of smart technologies in the educational environment.

Materials and Methods

This study used methods of analysis, generalisation, and systematisation of data to achieve a deep and comprehensive understanding of the problem of developing the creative potential of future teachers based on smart education. The study also conducted a survey of students about their attitude to smart education.

The analysis was used for a detailed breakdown of existing educational practices and technologies related to smart education. The analytical method allowed identifying the main trends and characteristics and assessing their impact on the development of creativity of future teachers. Using the analytical method, this study examined in more depth how smart technologies enrich the educational experience, in particular, how these technologies provide teachers not only with access to new, innovative tools and resources, but also contribute to changing the very nature of education. Based on this

method, the possibility of creating individualised educational paths and personalising learning was analysed, which contributes to the development of creative skills in each student. In addition, this analytical method allowed the study to identify how smart technologies promote cooperation and interaction in the educational process and create opportunities for students to work together, which can contribute to the development of their collective creative abilities. The use of the analysis method allowed exploring more deeply the impact of modern technologies, such as virtual reality (VR), augmented reality (AR), blockchain, and other innovative approaches in education, making it interactive and motivating to the development of students' creative potential.

The generalisation was actively used to collect and examine data in detail, which eventually allowed creating an extensive and informative database for the study. By applying the generalisation method, the use of smart technologies in higher pedagogical education was comprehensively investigated. As a result of using the generalisation, the key role of smart technologies in setting up the educational process was revealed, which included the possibility of adapting educational material and teaching methods that promote the use of creative approaches in educational practice. In addition, this method revealed how smart technologies contribute to the collection and analysis of data on learning processes, which gives teachers valuable information to improve the educational experience and supports the development of creative skills among students.

The application of the method of data systematisation in the course of the study included the organisation of information into logical categories and groups. This method allowed for a clearer and structured presentation of information, which, in turn, contributed to the identification of key topics and patterns in the context of the development of creativity of future teachers using smart education. Based on the method of systematisation, it was possible to identify how students who are actively involved in the use of smart education show interest in research and innovation activities in the field of education, whether they are inclined to participate in various projects and research, which allows them to develop their creative and research abilities in practical training. Thus, the application of the systematisation method not only strengthened the structure of the study, but also confirmed that smart education stimulates the active participation of future teachers in the educational process, which contributes to the development of their creative and research abilities, and the successful integration of these skills into educational practice.

As part of this study, a survey was conducted among 100 (85 women and 15 men) students attending Abai Kazakh National Pedagogical University. Respondents answered questions related to the topic of smart education and its potential for the development of their creative potential. At the time of the survey, all respondents were located in Almaty, Republic of Kazakhstan.

Results

In the modern world, where technology and innovation play an increasingly important role in education, the development of the creative potential of future teachers is becoming one of the key aspects of the educational system. Smart education, which includes modern educational technologies and tools, is a powerful tool for stimulating creativity and innovation in the training of future teachers. The concept of "creativity" describes the ability of an individual to generate original ideas and propose new approaches to solving various educational tasks that arise in the process of communication and interaction of students with each other [10; 11]. This ability allows young people not only to overcome learning difficulties, but also to creatively initiate innovative ideas and solutions, contributing to the enrichment of the educational process and stimulating collective learning.

In the 21st century, society puts forward requirements for the development of creative thinking among young people through the use of creative education. This area is focused on the cultivation of the creative potential of the individual, conscious self-knowledge, and the ability to use the acquired knowledge as a starting point for creative thinking. Creative thinking depends on various individual qualities, such as inventiveness, reflection, willingness to experiment, the ability to make decisions in new contexts, and the importance of the ability to generate new ideas [12; 13]. In the context of developing the creative potential of future teachers based on smart education, the need for training teachers who will be able not only to transfer knowledge, but also to inspire and stimulate students to develop creative thinking is emphasised. Modern technologies, including smart learning, can serve as powerful tools for this purpose, helping future teachers to develop the creative skills of their students and inspire them to innovative approaches to learning and problem solving [14; 15].

Creative thinking of students strongly depends on the social context, and to a certain extent, it is developed and limited by the curricula. The use of video games in the classroom can be an effective incentive for the development of creative abilities of students. This creative activity is carried out in the process of interaction between linguistic and symbolic development, and with the use of modern technologies [16].

The process of development of creativity in young people ends with creative activity. The main goal of creativity is to create something new that is recognised by society as valuable, substantiated, or satisfying needs. However, an important part of creative activity is the preparatory and educational stage of creating and implementing creative ideas in young people [17]. The stage of education that students go through at school or in specialised educational institutions plays an important role in forming the ground for creativity and creative enthusiasm in the future. The process of development of creativity in students includes several stages, starting from the preparatory stage and ending with the presentation of the results of creative work to the public. Each of these stages can be influenced by personal factors, so the teacher should carefully monitor this effect at each stage of the creative process. This is the only way to ensure the most successful development of creativity among young people within the framework of smart education.

Smart education is a concept that covers the comprehensive modernisation of all aspects of the educational process, including the methods and

technologies used in it. This concept is aimed at ensuring that children become active and independent participants in the educational process, able to move freely in the information space [18; 19]. The educational paradigm of smart education represents the evolution of the field of education in which modern technologies play a central role. This paradigm recognises that the use of modern tools, including artificial intelligence and data analysis, has enormous potential to transform the ways of learning and educational research [20]. Artificial intelligence, for example, can be used to create personalised educational plans, analyse educational data, and provide students with individualised feedbacks. This allows studying in the most effective way, considering the unique needs and learning styles of each student. Data analysis in smart education can be used to identify trends and patterns in learning, which allows improving the quality of education and adapting curricula. It also contributes to a deeper understanding of which methods and strategies are most effective in teaching.

An important aspect of smart education is the active involvement of students. Modern technologies create interactive learning environments in which students become active participants in the learning process. They can collaborate, research, create, and share knowledge, which contributes to their deeper understanding of the educational material and the development of critical thinking. Training teachers to use modern methods and tools is also a key component of smart education. This includes teaching teachers in the field of technological literacy and methods of using new educational technologies in the educational process. Teachers should be ready to adapt to the rapidly changing educational environment and integrate modern teaching methods into their work.

Smart education is a key factor for ensuring the successful development of education in the future. It allows using technology more effectively to improve education, makes the learning process more accessible and interactive, and also promotes the development of creativity and critical thinking among students. In particular, smart technologies provide future teachers with a number of tools and resources to develop their creative skills and abilities in the educational process (Table 1).

Table 1. Smart education tools and resources designed to develop the creativity of future teachers

No.	Tools	Description
1	Interactive whiteboards	With the help of interactive whiteboards, teachers can create dynamic lessons that include interactive tasks, multimedia presentations, and opportunities for active participation in the educational process.
2	Learning platforms	Smart technologies provide access to online learning platforms where teachers can create interactive courses, upload training materials, and track progress.
3	Video conferences and webinars	These tools allow students and educators to communicate and collaborate in real-time, which facilitates the exchange of ideas and stimulates creative learning.
4	Interactive learning applications	There are many applications and programmes designed specifically for education that help create interactive tasks, games, and simulations for educational purposes.
5	Multimedia resources	Future teachers can use multimedia materials such as video, audio and interactive graphics to enrich lessons and make them more attractive and informative.
6	Cloud services for collaboration	Smart technologies allow students and teachers to work together on projects, share documents and exchange ideas in the cloud, which promotes joint creative activity.
7	Analytics and reporting	Smart technologies provide tools for analysing student performance, which allows teachers to find ways to improve learning and stimulate creative thinking.

Source: compiled by the authors.

All these tools and resources together contribute to a more interactive, flexible, and creative educational process, which allows future teachers to develop their creative potential more effectively. The integration of modern smart technologies into the curricula for future teachers is a powerful way to stimulate and develop their creativity. Modern educational platforms and web applications provide opportunities for creating interactive educational materials. Future teachers can use such platforms to develop educational games, quizzes, virtual laboratories, and other educational resources that promote active participation and creative thinking of students.

Moreover, an important tool for smart education is the use of VR and AR in educational programmes that allow creating simulations and virtual excursions that immerse students in learning material and can stimulate their creative thinking when solving problems and exploring new concepts. VR immerses students in virtual space, and AR complements the real world with virtual objects. This creates an environment in which students can literally plunge into the learning material, which contributes to a deeper and more creative understanding of concepts. With the help of VR and AR, simulations and virtual experiments can be created that allow students to study and understand complex concepts, conduct scientific research and experiments in a safe and controlled environment. These technologies can be customised to the individual needs of students, which contributes to individualised learning and the development of creative abilities in accordance with the level and interests of each student [21]. VR and AR allow creating multimedia learning materials, including visualisations, animations, and 3D models, which makes learning more attractive and interesting. Thus, VR and AR provide powerful tools to stimulate creative thinking in students, allowing them to learn more deeply and interactively and explore new concepts within the framework of smart education.

Modern learning platforms enable collaboration and real-time data exchange. This allows future teachers to work in a team, exchange ideas, and create joint projects, which contributes to the development of creative skills [22]. The promotion of the e-learning platform is closely

linked to the overall socio-economic development and the development of information technology, which includes both the availability of high-speed Internet and cultural and technological factors [23; 24]. Cultural background and thinking habits can also influence the ways and content of learning.

Smart technologies can also create personalised curricula and materials, considering the level and needs of each student. This allows future teachers to develop creative methods for individualised learning and maximum disclosure of the potential of each student. Personalised adaptive learning is an important and evolving pedagogical approach that is made possible through the use of modern learning environments such as smart learning environments. This approach makes it possible to individualise the educational process and adapt it to the unique needs of each student [25]. Modern educational technologies and tools collect a large amount of data about students and their learning. This data can be used to create individualised educational programmes that consider the level of knowledge, learning style, and specific needs of each student. Thus, personalised adaptive learning contributes to a more effective educational process and increases students' motivation and results, and the development of creative thinking among future teachers.

Future teachers can use smart technologies to create multimedia presentations, animations, and video materials that will make the educational material more attractive and understandable for students. Video learning is an important and integral element in the field of smart education. It plays a key role in modern educational practices and is considered a powerful tool for enriching learning and enhancing student engagement [26; 27]. Video learning allows visualising complex concepts and processes, which makes them more accessible and understandable for students. Interactive elements, such as tests, assignments, and additional materials, can be embedded in videos to enhance learning. Video learning is a modern and effective tool that integrates into the concept of smart education, making education more accessible, interactive, and personalised. Modern smart education significantly contributes to the development of creativity of future teachers. It provides access to modern technologies such as VR, AR, and blockchain, creating interactive and exciting learning environments. These environments emphasise interactivity and collaboration, contributing to the development of creative skills.

In the survey, students of higher educational institutions were interviewed about smart education and the development of the creative potential of future teachers (Table 2).

Table 2. Survey results

Question	Yes	No
Do you consider smart education important for the development of creativity in the educational process?	75%	25%
Have you had any experience using smart technologies for educational purposes?	60%	40%
Do you think smart education promotes more interactive learning?	85%	15%
Do you think that smart education allows you to better adapt learning to the individual needs of students?	70%	30%
Are you inspired by the possibilities of smart technologies for creating creative educational materials?	80%	20%
Are you ready to learn how to use new smart technologies in your future professional activity?	90%	10%

Source: compiled by the authors.

The majority of students (75) suggest that smart education plays an important role in the development of creativity in the educational process. This indicates the recognition of the importance of innovative technologies in teaching. 60 respondents had experience using smart technologies for educational purposes, which indicates the prevalence of such experience among future teachers. A very high percentage of students (85) suggest that smart education promotes more interactive learning. This highlights the importance of technology for creating learning environments with active interaction. The majority of students (70) suggest that smart education contributes to a better adaptation of learning to the individual needs of students. This shows the importance of a personalised approach in education. Moreover, 80 students feel inspired and see the potential of smart technologies to create creative educational materials. This indicates a willingness to experiment and innovate in teaching activities. A significant majority of students (90) are ready to learn how to use new smart technologies in their future professional activities, which indicates a high motivation for professional growth and adaptation to modern educational requirements.

Smart technologies also allow teachers to personalise learning and collect data on learning processes, which contributes to creative teaching methods and adaptation to the individual needs of students. Thus, future teachers can actively participate in research and innovative projects in the educational field, developing their creative and research abilities and applying them in practice.

Discussion

Teachers with smart education skills and the ability to creatively apply these technologies can be more competitive in the labour market and attractive to employers in the field of education. This is conditioned by the fact that modern education is increasingly focused on integrating smart technologies and innovations into the educational process. Teachers who are able to effectively use modern educational technologies can not only achieve better results in teaching students, but also contribute to the development of creativity and independence in them [28; 29]. Many researchers have been engaged in the study of this issue, so it is worth considering their opinions and comparing them with the results obtained to form a more extensive picture.

S. Anuar et al. [30] argue that the use of AR as an educational material has a positive impact on the motivation of students. According to researchers, virtual and augmented elements make the learning material more attractive and interactive and allow students to literally "see" and "interact" with the learning material, which contributes to a better understanding and memorisation of information, which can motivate students, as they see the practical value of learning. Scientists are convinced that AR can also be customised to individualise learning, which supports the learning needs of each student. Comparing the results with this study, it helps to increase motivation and develop creativity, as students feel that the learning process is focused on their needs and interests.

P. Yang and H. Xue [31] suggest that the use of mobile technologies on university digital campuses has become a necessity today. The researchers claim that the creation of an educational platform based on the mobile Internet is a key aspect of modern higher education. This platform is an effective and feasible learning model that can cope with the challenges of the modern educational environment. Researchers emphasise that the development and implementation of a training platform based on the mobile Internet represent a revolution in educational methods and are a new stage in higher professional education [32]. It is important to note that, comparing with the results of this study, the use of digital educational platforms within the framework of smart education is an important element in the development of creative thinking among future teachers who are just receiving higher education at a university

D. Kem [33] emphasises the importance of personalised and adaptive learning, which is becoming increasingly relevant and in demand in the modern era of smart education. Personalised learning, according to the researcher, means adjusting the educational process to the unique needs and preferences of each student. The researcher suggests that ethical and effective personalised and adaptive learning can be achieved through the use of modern educational platforms and technologies. These platforms allow collecting and analysing data about students in order to create individualised educational paths, considering the level of knowledge, interests, and learning style of students. The researcher emphasises that these new learning platforms and tools play a key role in transforming education and helping to shape the creativity of young professionals, as they create the opportunity to study at any time and in any place, and provide access to education for diverse audiences. Comparing with the results of this study, it is worth paying attention to the importance and prospects of personalised and adaptive learning supported by modern educational platforms in the field of smart education.

J.L. Ramos et al. [34] emphasise the importance of developing pedagogical models that contribute to the professional development of future teachers using video learning. This approach, according to the researchers, not only corresponds to the modern concept of smart education, but also has a number of significant advantages, namely, interactivity and active participation, access to experts and the best training samples, flexibility, and accessibility. Thus, according to researchers, video-supported co-education is an important element of smart education, since it contributes to the development of teachers and to improving the quality of education in general. In comparison with the results of this study, the use of video tools allows future teachers to be more prepared and effective in the modern educational environment and develops skills of creative potential.

B. Tabuenca et al. [35] emphasise in their study the importance of certain capabilities and basic functions in smart educational environments. These characteristics are considered key to improving the educational process and creating more effective and adaptive educational environments for students. Special attention is paid to personalised learning, data mining, interactivity, adaptability, optimisation of the learning process and teacher support. Comparing with the results of this study, it is worth agreeing that these aspects emphasise the role of smart education in the modern world and its ability to improve learning and educational outcomes, in particular, the development of future teachers' creative potential.

H. Nusantoro et al. [36] argue that the learning process based on blockchain technology is a key element of smart education in universities. Using blockchain technology, according to the researchers, it is possible to significantly improve educational processes, providing a more transparent, secure and efficient way to record and verify students' educational achievements. Researchers are convinced that this allows increasing the trust and quality of education in higher education. Comparing with the results of this study, it is worth noting that the use of blockchain technology in education really has significant potential for improving educational processes, since it provides transparency, reliability, and security in keeping records of student achievements and managing educational data.

R.A. Beghetto and G.J. Jaeger [37] are convinced that uncertainty and ambiguity can serve as catalysts for creativity, learning, and development. Researchers emphasise that situations in which people face uncertainty and uncertainty can stimulate their creative thinking and contribute to learning processes and personal development. This approach, according to researchers, emphasises the importance of perceiving uncertainty as an opportunity for experiments and new ideas, and not as obstacles or threats. Comparing with the results of this study, it is necessary to agree that different approaches can stimulate the development of creative potential of young people, however, the most effective approach in this case is smart education.

Research in the field of smart education emphasises the importance of developing creative skills in future teachers. Analysing the opinions of other researchers and comparing their conclusions with the data from this study provides better understanding of the role of smart education in the modern world and its impact on the development of future teachers. Smart education, which includes modern technologies, is important for changing the face of the modern educational process, as it contributes to improving the transparency, safety, and efficiency of educational processes at universities. The use of modern technologies in pedagogical educational institutions ensures reliable and transparent records of students' educational achievements, which increases trust and the overall quality of education. Teachers with smart education skills and capable of

creative use of modern educational technologies are becoming more competitive in the labour market in the field of education. These skills contribute to the improvement of educational processes and the active involvement of students, which is a key factor for a successful career as a teacher.

Conclusions

Smart education has a significant impact on the development of the creative potential of future teachers. It provides teachers with access to modern educational technologies such as VR, AR, blockchain, and many others. These technologies allow creating fascinating and interactive learning environments where future teachers can develop their creative abilities and experiment with new teaching methods.

The study revealed that smart education focuses on interactivity and collaboration in educational processes. This contributes to the development of creative skills of future teachers, as they can create lessons that involve students in active learning and joint problem solving. Modern educational platforms using smart technologies provide the opportunity for personalised learning, which, in turn, allows future teachers to adapt the educational process to the individual needs of students and encourages the development of creative teaching methods. Smart education also allows collecting and analysing data about learning processes. Future teachers can use this information to improve their teaching methods, which contributes to a creative approach to education. The study included a survey of students. The survey results show that the majority of students consider smart education important for the development of creativity in the educational process, have experience in its use, are convinced of its ability to promote interactive learning, adapt learning to the individual needs of students; the students are inspired by the opportunities to create creative educational materials and are ready to actively master new smart technologies in their future professional activities.

The modern form of education encourages future teachers to participate in research and innovative projects in the educational field, which allows them to develop their creative and research skills, and apply them in practice.

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Conflict of Interest

None.

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Розвиток творчого потенціалу майбутніх учителів на засадах смарт-освіти

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Анотація

Актуальність. У сучасному світі освіта переживає цифрову революцію, а смарт-технології набувають все більшого значення в освітньому процесі. Майбутні педагоги повинні бути готовими ефективно використовувати ці технології для збагачення навчального процесу та навчати своїх майбутніх студентів за допомогою креативного мислення та інших педагогічних навичок, що є актуальним сьогодні.

Мета. Метою дослідження є вивчення та обговорення методів і стратегій, спрямованих на розвиток творчих навичок і компетенцій майбутніх учителів з використанням смарт-технологій в освітньому процесі.

Методологія. У статті використано метод аналізу, систематизації та узагальнення.

Результати. Виявлено, що використання смарт-технологій в освіті сприяє значному підвищенню рівня креативності майбутніх учителів. Смарт-технології збагачують освітній досвід, надаючи викладачам нові інструменти та ресурси для розвитку їхніх творчих навичок і здібностей, що, в свою чергу, може позитивно вплинути на якість освіти, яку майбутні вчителі надаватимуть своїм учням. У статті розглядається, як сучасні смарт-технології можуть бути успішно інтегровані в навчальні програми і як вони можуть стати інструментами для стимулювання креативності майбутніх вчителів. У дослідженні також розглянуто парадигму смарт-освіти та її складові елементи.

Висновки. Дослідження показало, що сучасна смарт-освіта значною мірою сприяє розвитку творчих навичок майбутніх учителів завдяки доступу до сучасних технологій, таких як віртуальна реальність, доповнена реальність, блокчейн та інших, які створюють інтерактивне та захоплююче освітнє середовище, фокусуючись на інтерактивності та співпраці. Було проведено опитування студентів щодо їхнього ставлення до смарт-освіти та готовності використовувати її для розвитку креативності в навчальному процесі та майбутній професійній діяльності. Результати дослідження можуть допомогти навчальним закладам та викладачам оптимізувати навчальні процеси з використанням смарт-технологій, орієнтованих на розвиток креативності у майбутніх учителів.

Ключові слова: цифровізація суспільства; інновації; інформаційно-комунікаційні технології; мислення; професійні компетентності.