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The Influence of Digital Technologies on the Development of Smart Education in a Technologically Advanced Society

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ABSTRACT

The purpose of the study is to conceptualize the impact of digital technologies on the development of smart education in a technologically advanced society. The model of adaptation of technologies to the education system is analyzed and the problems that arise in this process are identified. The essence and directions of digital education development as a factor in the development of smart education are revealed. The possibilities of using Facebook, Twitter, robotic platforms in the intelligent educational system, their tasks and objectives are shown. The object of the research is the development of smart education in a technologically advanced society. The subject of the study is the impact of digital technologies on the development of smart education in a technologically advanced society. The impact of digital technologies on the development of smart education in a technologically advanced society allows for cognitive mediation with students. Using digital technologies for interactive learning, students acquire new knowledge, deepen their education, develop creativity, become socially responsible citizens of the digital society, and form digital culture and thinking.

KEYWORDS: Digital technology, education, e-learning, online learning, social networks.

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La influencia de las tecnologías digitales en el desarrollo de la educación inteligente en una sociedad tecnológicamente avanzada

RESUMEN

El propósito del estudio es conceptualizar la influencia de las tecnologías digitales en el desarrollo de la educación inteligente en una sociedad tecnológicamente avanzada. Se analizó el modelo de adaptación de la tecnología al sistema educativo y se identificaron los problemas que surgen en este proceso. Se revelan la esencia y las direcciones del desarrollo de la educación digital como factor en el desarrollo de la educación inteligente. Se muestran las posibilidades de uso de Facebook, Twitter, plataformas robóticas en el sistema educativo inteligente, sus tareas y objetivos. El objeto de la investigación es el desarrollo de una educación inteligente en una sociedad tecnológicamente avanzada. El tema de estudio es el impacto de las tecnologías digitales en el desarrollo de la educación inteligente en una sociedad tecnológicamente avanzada. El impacto de las tecnologías digitales en el desarrollo de la educación inteligente en una sociedad tecnológicamente avanzada permite la mediación cognitiva con los estudiantes. Mediante el uso de tecnologías digitales para el aprendizaje interactivo, los estudiantes adquieren nuevos conocimientos, profundizan su educación, desarrollan la creatividad, se convierten en ciudadanos socialmente responsables de una sociedad digital y forman una cultura y un pensamiento digitales.

PALABRAS CLAVE: Tecnología digital, educación, E-learning, aprendizaje en línea, medios sociales.

Introduction

The relevance of the influence of digital technologies on the development of smart education in a technologically advanced society is determined by the introduction of such theories as the technology adaptation model, the theory of task and technology matching, and the actor-network theory, which are innovative and relevant to this type of society. To construct a conceptual model of smart education, it is necessary to use the actor-network theory in view of its widespread use in the implementation of smart education technologies. This theory, developed in the 1980s, includes the relationships between the objects that ensure the introduction of a new technology of the network society. In the context of conceptualizing the impact of digital technologies on the development of smart education, the researchers were able to use digital technologies to form the theoretical basis for the smart education implementation strategy, especially given the increasing presence of computerization in the modern education system. To address these challenges, the authors

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applied the technology adaptation model to provide insight into the socio-technical conditions of human-machine interaction in a high-tech society, describing the ways in which technology principles can be incorporated into a toolkit for building a smart education strategy. Moreover, rapidly developing technologies are now an integral part of any education system.

The purpose of the study is to conceptualize the impact of digital technologies on the development of smart education in a technologically advanced society.

Objectives of the study: 1) to analyze the model of adaptation of technologies to the education system and identify the problems that arise in this process; 2) to reveal the essence and directions of digital education development as a factor in the development of smart education; 3) to show the possibilities of using Facebook, Twitter and robotics platforms in the smart education system, their tasks and goals.

1. Literature analysis

In our study, we base our research on the work of Andriukaitiene Regina, Voronkova Valentina, and Nikitenko Vitalina "The concept of digital transformation of e-learning in the European Union: European experience", in which we studied the European experience of modernizing education (2021). The work of Voronkova Valentina, Nikitenko Vitalina "Smart education in the digital age: from smart education to smart business" (2022). The methodological basis was the work of Valentyna Voronkova, Vitalina Nikitenko, Vlada Bilohur, Roman Oleksenko, and Taras Butchenko "The conceptualization of smart-philosophy as a postmodern project of non-linear pattern development of the XXI century" (2022). As an example, we analyzed the formation of socially responsible governments and societies that have introduced the concept of e-education during the COVID-19 crisis, which is described in Voronkova, Valentyna, Oleksenko, Roman & Fursìn, Alexander's "Formation of the concept of the socially responsible state as a factor of increasing the public governance and administration efficiency" (2021). The general trend of digitalization is studied in Buhaychuk, Oksana, Nikitenko, Vitalina, Voronkova, Valentyna, Andriukaitiene, Regina & Malysh, Myroslava "Interaction of the digital person and society in the context of the philosophy of politics" (2022), which also influenced the development of smart education.A number of monographs that address the problems of implementing

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smart education to varying degrees have been published in Ukraine: Innovative technologies in the modern educational space: a collective monograph / edited by H.L. Yefremova (Sumy, 2020); Social, economic and educational transformations in the digital era: a monograph / edited by S.V. Leonov et al. Nikitenko, Vitalina, Andriukaitiene, Regina, & Punchenko, Oleg (2019). Formation of sustainable digital economic concept: challenges, threats, priorities Humanities studies: Proceedings Scientific publications.Issue 1. Zaporizhzhia: ZNU. 1 (78). 139-152. The works of Vìtalina Nikitenko, Valentyna Voronkova, Roman Oleksenko, Andriukaitiene Regina, Liudmyla Holovii "Education as a factor of cognitive society development in the conditions of digital transformation" (2022); Oleksenko R.I. "The influence of communications on the value orientations of the individual" (2015); "Philosophy of education as an integral factor of economic development" (2013); Sultanova G. M. "Smart technologies as a means of improving the quality of education"; Cherep A, Voronkova V., & Cherep O. Humanocracy as a factor of improving human resources management in organizations (2022). The substantiation of the SMART technologies implementation specifics in the educational process presented in paragraph 2.5 is of great interest. In particular, scientist O. Guzenko emphasizes that the formation of a Smart society in Ukraine is possible through the development of a methodological framework for the functioning of the educational system in the context of Smart, training, and retraining of teaching staff capable of acting in the context of Smart education and using Smart technologies to form the intellectual, creative and spiritual potential of the younger generation of the state, as it is presented in the monograph "Innovative technologies in the modern educational space: a collective monograph / Edited by H. Efremova.

2. Research methodology

The following methods are the leading ones for researching the influence of digital technologies on the development of smart education in a technologically advanced society 1) axiological method, which offers the concepts of "value-based use of resources" and the formation of values of the digital culture of smart education, based on the value of personal self-determination in the rapid flow of changing values of the society; 2) Agile methodology, based on the adaptability of the individual to changing environmental conditions and the

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flexibility of worldview structures that can contribute to the enhancement of the integrity of the individual; 3) synergistic method, based on self-organization and search for the point of the attractor (attraction) of the individual, which allows to overcome the crisis and instability; 4) phenomenological method - analysis of the phenomena of the digital person, digital society, smart education as social, cultural and economic phenomena that can lead to an increase in the competitiveness ratings of smart education in the advanced countries of the technologically developed world. The methodology of studying the influence of digital technologies on the development of smart education is based on the identification of new contradictions of digitalization, the overcoming of which made it possible to formulate practical recommendations for the evolution of education from the traditional type to smart education in a technologically advanced society.

Methods of general philosophical orientation - analysis and synthesis, abstraction, concretization, historical and logical, cross-cultural, and statistical analysis have played an important role. This made it possible to formulate the concept of the influence of digital technologies on the development of smart education in a technologically advanced society. The content analysis technique was used to process meta-details as key conclusions. The key conclusions indicate that smart education is a rapidly developing scientific field that complements the use of a number of advanced technologies. By combining them, a new innovative structure of a smart educational artifact is presented as a case study demonstration that basically allows the student to manage their learning and career development for a better future.

3. Results and discussion

3.1. The model of technology adaptation to the education system and the problems that are emerging in this process

The model of adapting technology to the education system was presented by Fred Davis in 1986. Davis emphasized that advances in computer technology have made a huge contribution to making powerful systems economically attractive to end users. The technology acceptance model was developed to simulate user acceptance of information systems or technologies by explaining the common determinants of computer acceptance

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that led to explanations of user behavior toward such technologies. The basic model of technology adoption tested two specific beliefs:

1) perceived usefulness;

2) perceived ease of use. Perceived usefulness is described as a potential user's belief that using a particular system will improve his or her performance. (Cherep, Voronkova et al., 2022)

On the other hand, ease of use was defined as the degree that a potential user expects a technology system to be convenient, effective, and easy and the adaptation of technologies to the education system can be influenced by external variables, including users' digital competencies, leadership abilities, and human resource capacity.The researchers examined the behavioral intentions of students at technology colleges and universities when using a web-based performance assessment system as a tool to evaluate their digital skills, including their usefulness and ease of use. The authors found that each theory provides unique perspectives on understanding technology acceptance in the application of smart technologies. The link between human resource capacity and smart education played a major role. According to the basic condition of the influence of digital technologies on smart education development, it can be stated that human resources are one of the most important factors that education shapes (Andriukaitiene Regina, 2021).

The subject of the researchers' in-depth analysis is the problem of smart education development, which affects the potential of human resources, meaning the development of knowledge, and skills, expanding design capabilities and improving the management as well as support for institutional and operational infrastructure and computerization processes. Theories of the motivation process play an important role in developing human resources capacity: the expectancy theory of valence-instrumentality (awareness); the goal-setting theory (readiness/knowledge); the content theory of motivator-hygiene (two-factor) theory (motivation). Research has shown these theories to have a significant impact on employee job satisfaction and performance in computers and software for solving strategic problems. A prerequisite for the use of these theories is to show that human resources based on digital empowerment capabilities are more likely to gravitate toward a new smart education project. The results showed a strong positive relationship between human resource capacity development and smart education adoption (Voronkova, Nikitenko, 2022a).

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In order to realize the full benefits of digital technologies in smart education, systems such as computer and software infrastructures must be available to apply the art of digital strategy, and harness leadership and human resource capacity to achieve smart education goals. Tools and environment as a perceived barriers to technology adoption in the educational environment are manifested in the lack of equipment/resources, conditions and restrictions, and technical support for IT technologies. Universities wishing to adopt educational technology platforms should be funded or participate in strategic partnerships to gain access to the best appropriate innovation infrastructure. Furthermore, it is necessary to develop strategic policies, identify the obstacles that hinder the impact of digital technologies on the development of smart education, and appropriately shape the relevant investments that can combat such obstacles.Researchers of other intelligence concepts, such as smart cities, have identified several investment initiatives. Among them are the development of policies for smart strategic partnerships, innovative infrastructure, and public sensitization as investments that can ease the pressure of technology adoption in the educational process (Voronkova, Nikitenko, et al., 2022b).

3.2. The essence and directions of digital education development as a factor in the development of smart education

Digital education refers to the use of information and communication technologies in the education system (digital education = ICT + education). Digital education combines a set of tools for creating, processing, storing, sharing, classifying, searching, and storing digital documents for educational purposes. The study of teaching methods that integrate digital education is the subject of " technopedagogics". Information and communication technologies (ICT) have become one of the main drivers of digital society in a short time. Today, many countries consider mastery of these technologies and skills as part of basic education, as well as reading, grammar, or arithmetic. In addition to the various measures taken at the national level to promote the introduction of digital technologies in the education system, the European Commission is implementing a number of measures aimed at accelerating changes in education and training systems, taking various measures affecting the telecommunications industry and the labor market. Throughout the 20th century, schools tried to appropriate media and technical devices for their own purposes,

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starting with school radio (1930s), school television (1950s), the computer (1970s), the VCR (980s), and multimedia (1990s).

International networks (electronic bulletin board systems, networks, etc.) began to be used, and by the end of the estimated year 2000, secondary schools were equipped with computers, but colleges and especially schools often had to wait longer, as a digital divide was taking place to give all social categories access to the possibilities of digital tools. The development of digital use in education was in response to a strong desire of policymakers to teach young people how to use these technologies responsibly, especially in the area of the Internet, namely: to learn how to search and sort information according to their needs, which remains a communication network as an important critical analysis of information sources; to protect information from malicious intentions (pornography, fraud, disguised trading sites); to explain the benefits of knowledge sharing and to initiate networking, i.e., collaboration. As a result, teachers had to be trained to master all competencies in the use of digital technologies. In terms of initial training, in order to strengthen the skills of future teachers in France, certification for the appointment as a professor (June 2012) of the Certificate of Computer and Internet Teacher Level 2 or C2i2e became mandatory. The development of digital skills for teachers was aimed at improving overall digital pedagogical effectiveness. Particular attention was paid to certain skills: comprehension, creativity, and memorization through more specific exercises (Social, economic and educational transformations in the digital era, 2022).

After the healthcare crisis, the phenomenon of hybrid or distance education is becoming widespread, increasing the need to think about the use of digital competencies. However, studies have also shown a paradoxical result: the more digital technologies are used in schools, the lower the results in reading, math, and science. The reason for that could be the fact that the use of computer equipment detracts from the human interaction and commitment needed for deep understanding and reflection. Digital education offers significant potential for educational innovation and an almost endless reservoir of new practices for teachers and for education in general.

At the heart of digital education is online learning, which takes place by electronic means and can be characterized from several perspectives: economic, organizational, pedagogical, and technological. E-learning is the use of new multimedia technologies of the Internet to improve the quality of learning by facilitating, on the one hand, access to

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resources and services, and, on the other hand, exchange and distance collaboration. In English, the term "e-learning" used by the economic world is the result of the desire to unify terms such as open and distance learning to define its open dimension, which comes from the world of learning; computer-mediated communication to translate communication technologies (mail, forum, groupware) used in learning; Internet-based learning to translate the dominant technology on the Internet for learning; a constructivist pedagogical approach based on the distribution of Online learning as a factor in the development of smart education is a pedagogical and technological modality that applies to continuing education, higher education, and company training, i.e. for an adult learner, for example, in business. This method can take place within a business, given its flexibility and the richness of its resources when placed online. However, it should be noted that in the United States, in recent official texts, e-learning is often deflected in the form of extended learning through information technology for all types of audiences, from kindergarten to continuing education, and includes all educational technologies, curricula, etc. (Voronkova, Oleksenko, & Fursìn, 2021).

E-education as a factor in the development of smart education is a set of smart practices and educational technologies that have been developed due to the explosion of the Internet (2000/2001) with its potential for dissemination. However, in relation to the recent evolution of organizations, it seems that e-learning as it is in the process of emerging has characteristics that distinguish it from education technology approaches as we have known them. There is a clear reference to information and communication technologies in e-learning. Hybrid learning combines the concepts of online learning and offline learning, it refers to a method of acquiring knowledge or building knowledge using interactions (actor-actor or actor-resources) transmitted by a telematic system (electronics, computer). E-learning can take place remotely (online), in a classroom (offline and/or online), or both.Online learning as a factor in the development of smart education is a specialization of distance learning (or distance education), a more general concept that includes, among other things, correspondence courses and any other means of learning in asynchronous time and place. This is a method of teaching/education that theoretically allows you to overcome the physical presence of a teacher nearby. On the other hand, the role of a remote tutor is manifested in the activities of a facilitator and mediator. An e-learning platform sometimes called an LMS (Learning Management System), is a website that hosts didactic content and

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facilitates the implementation of educational strategies. We find here the names of virtual learning centers or e-learning platforms (FOAD). An e-learning platform (or LMS) is a product based on CMS (content management system) software, but with different functions for teaching and learning. It is a component of an e-learning framework, but not the only one. A digital workspace (ENT) is a secure online portal that allows all members of the school community (students, teaching staff, non-teaching staff, and parents) to access services related to student activities, education, and support (Buhaychuk, Nikitenko, et al., 2022).

3.3. Possibilities of Facebook, Twitter, and robotics platforms in smart education, their tasks, and goals

The main conclusions show that smart education is a rapidly developing research field that complements the use of a number of new technologies. Combining them, a new innovative structure of a smart educational artifact is presented as a case study that is mostly mobile, it allows the student to manage both learning and career pursuit. The rapidly developing technologies of information dissemination and social networks have created great prospects for expanding the functions of smart education. In the global digital society, there has been an increase in diversified data generation, its effective use, and maintenance, which is important for smart education. " Consequently, for the development of the modern education system, the influence of human capital alone is no longer enough, it is necessary to change the educational environment itself, which involves the transition to a digital network, the spread of smart terminals, the progress of smart devices, the expansion of smart work (mobile office) - this is a new quality of society in which a set of technical means, services and the Internet leads to qualitative changes, allowing to obtain new effects - social, economic and other benefits for a better life (Innovative technologies in the modern educational space, 2022, p.176).

Facebook is a free software that is registered in the computer culture of more than a billion users, offering teachers and students the opportunity to use it freely, spontaneously and for educational purposes to improve the teaching/learning process (Oleksenko, 2015).

1. Resource sharing: Facebook makes it easy for students to share information or audiovisual resources with their colleagues.

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2. Access to educational information and lesson revision: the teacher can post hyperlinks, exercises to systematize language points or Youtube videos watched in class, roadmaps including textbook page numbers to be studied or reminders of printed exercises to be reviewed, or they can also add extra socio-cultural information as text or video.

3. Polls: An educational institution can find out about its students' satisfaction with a course or a teacher through a poll published on Facebook. Facebook is a tool that meets educational needs: 1- Bringing teacher and students closer together: the use of Facebook allows the teacher to better understand the reality of his students and become closer to them by taking on the different roles usually reserved for online learning and training. Therefore, social media is necessary as a tool to help harmonize the teacher's culture,

4. Changing the educational space-time: On the one hand, the group uses the Facebook page to prepare for classroom activities and transfer learning to their daily lives. The tool facilitates the connection between activities outside the classroom and in the classroom. On the other hand, the students want to keep in touch with each other after the course is over, both for interpersonal relations and language learning.

5. Learning continuity: The use of social media provides continuity in language learning, which can help combat dropout. In case of absence from the classroom, the student has not only online resources related to the concepts studied during the course, but also the support of the group, which allows him or her to catch up a bit and stay on the same level as others at his or her level. return.

6. Teacher sharing: If a group of teachers decide to share their material, in addition to whatever the students have been able to contribute to the teacher's content, it can result in content that is rich enough to be very difficult to work through alone.

7. In the foreign language lesson, the use of social media, especially Facebook, can contribute to a hybrid learning formula that optimizes the enjoyment of learning outside the classroom in a self-directed learning context. The technical aspects of this software and its simplicity facilitate the exchange between group members, thereby promoting the sharing of information and resources to enhance the learning process (Education of Ukraine, 2022).

Twitter is a social networking site that was launched in March 2006, created by Jack Dorsey. It is a network of people who join and follow other people's accounts in order to send or receive short messages called tweets. Today, this social network has about 321

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million active users. This social network is an important disseminator of information and is used as a tool in the school environment. Many teachers open Twitter pages to give their students the opportunity to follow their page to "tweet" information or to allow students to ask questions. This tool can also be used to exchange comments between students' parents and the teacher. In addition, Twitter can be used to teach reading and writing. This tool motivates students. They have to match letters and sounds to identify these characters on the computer keyboard and compose their messages. It is a very accessible tool for children because their tweet can be no more than 140 characters. Therefore, they have to be content with identifying the essence of the message. It is not too short and not too long (Oleksenko, 2013).

LEGO Education WeDo is a robotics platform that children ages seven to eleven can easily use to build simple LEGO models and program them to perform specific tasks. Using the WeDo software, elementary school students learn the basics of programming and become familiar with robotics, as well as automated systems and their various components. Learning robotics in a simple and intuitive way, students build simple models, activate motors, and program using basic sensors. These activities help students develop skills and knowledge.

Teachers can introduce the WeDo concept in several disciplines, such as science, technology, math, and language learning. In addition, WeDo activities allow teachers to integrate information and communication technologies. The WeDo robotics platform is designed to stimulate: 1) reflection to find alternative creative solutions; 2) learning to communicate, share ideas and work together; 3) learning to program using software, design and build a working model, use software to obtain information, measure time and distances, and operate simple mechanisms.The WeDo concept offers an experience that actively engages students in their own learning process and encourages creative thinking, teamwork and problem-solving skills. Indeed, by working in teams, children come up with their own solutions by building LEGO models and programming them to perform specific task (Nikitenko, Voronkova, 2022).

The LEGO models are connected to a computer so that children can test and modify their program in real time. They can discuss with each other, adapt the program, modify the models, or start over. LEGO Education WeDo encourages teachers to challenge students. This allows you to go further, experiment with more advanced programs to solve more

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complex problems. For each of the twelve models to be built, students can be given different challenges. These problems are related to the different actions that robots can perform, the time and speed of performing actions, the repetition of actions, the sounds made by the robot, etc. At the stage of programming the robot, the teacher can give students tasks to reproduce on a computer using WeDo software. By creating a hybrid of the virtual and physical worlds, it is possible to improve the quality of the VC and create a sense of "being there" to enhance teaching and learning. 4. Smart education as a new educational paradigm of a technologically advanced society.

Smart education applies new technologies such as artificial intelligence, virtual reality, cloud computing, and big data to improve the quality and efficiency of education. Intelligent assessment is a vital part of smart education, it can support the monitoring and measurement of the learning process and the identification of students' learning patterns, and effectively present results to teachers and students. Intelligent learning diagnostics is therefore one of the key approaches to achieving intelligent assessment, and it supports intelligent assessment through data mining and technical educational theories. "This concept is based on three main ideas: 1. Mobile access. 2. New knowledge creation. 3. Creation of Smart-environment (Innovative technologies in the modern educational space, 2022, p. 176).

Students connect to their knowledge, acquire new knowledge, get acquainted with new knowledge, students learn by creating, manipulating and participating in building and programming, learners deepen their learning by reflecting on what they have built, developing creativity, become socially responsible citizens of the digital society. Observing, they make connections between their previous experiences and new knowledge, the models they build will allow children to take certain measurements and test the speed and performance of certain patterns. In addition, WeDo designs allow students to invent stories, act them out, and use their models to create visual and sound effects. "The concept of smart education is the convergence of ICT and Internet infrastructure, the fusion of online distribution of software and multimedia content (Sultanova, 2017).

Digital technologies are enabling the integration of smart education and big data, which represents the practice of smart education and demonstrates the structure of big data in education. The architecture of the smart education system in colleges and universities proposes the introduction of cloud-based smart education centers, smart

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campuses that support education, and a learning-centered smart city that supports lifelong learning. Building a smart city is an important way to promote intensive, smart, green and low-carbon new-type urbanization, increase domestic demand, and stimulate industrial transformation and upgrading. As an important part of the beneficial application of smart city construction, smart education can monitor the overall educational situation from a macro perspective, help managers understand the allocation of educational resources, and solve educational problem points such as the regional education gap, the implementation of teaching methods, and the efforts of campus management. Relying on information technology in education (education management, education teaching, and education interaction), smart education makes full and deep use of new technologies represented by the Internet, the Internet of Things, cloud computing, big data, etc., and improves the quality and benefits of education and teaching through innovative educational models and means, and comprehensively builds a modern education system that includes digitalization, networking, intelligence, and multimedia (Nikitenko, Andriukaitiene, et al., 2019)

Information-based learning is not only a separate learning technology, but also a reflection of modern teaching methods and concepts, which not only promotes the integration of multimedia educational resources and classroom resources, but also expands the channels for the transfer of professional subject knowledge and broadens the horizons of students' professional subject knowledge. The emphasis on developing a learning model with the integration of multimedia educational resources allows us to enrich the teaching resources of professional disciplines and achieve the effectiveness of developing a learning model.

The Internet of Things (IoT) technology used in smart education is a technology that combines sensors, the Internet, and terminals to transmit information in real time. Smart education based on the Internet of Things can implement distance learning and improve its intelligent nature. Electronic commerce (e-Commerce) technologies have grown over the past two decades in various business sectors. In particular, B2C transaction technologies have greatly increased the productivity of small online businesses such as SMEs. allowing students to improve their learning and comprehension skills.

Studies show a growing trend in smart education in recent years. Smart education with the introduction of new inventions and technologies is a requirement of our time.

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Smart education is the provision of personalized learning anytime and anywhere, it is a concept to describe a completely new learning process in the information age.

Smart education requires innovative pedagogical methods and tools to maximize the opportunities for active learning and to utilize and enhance students' creativity.

Smart education as a new educational paradigm, in which students acquire knowledge and skills, in which factors such as relevance and career development, social significance and potential, impact, healthy pedagogy and classroom equipment with appropriate technologies and devices contribute to high-quality interdisciplinary education, in which knowledge synthesis takes place (Nikitenko, Voronkova, 2021).

Conclusions

The impact of digital technologies on the development of smart education in a technologically advanced society allows performing cognitive mediation with students. The teacher becomes a consultant for students in all kinds of activities, more and more establishing new relationships with the student, moving from the role of soloist to the role of guide, becoming no longer just a knowledge provider, but helping students find, organize and manage knowledge. Interactive learning can help to motivate students. Indeed, today's young people were born in the age of technology and the use of interactive learning can motivate them to succeed in their studies. Research on smart education has been rapidly developed to transform education systems, leading to more effective engagement and empowerment of students, teachers, and administrators.

The support of smart education leadership, both at the macro (national) and meso (administrators) levels, is extremely important as smart education cultivates innovative technologies and pedagogical practices. It is the responsibility of the management to formulate plans for the implementation of digital education strategies based on the future needs of the institution by influencing the development of technological innovation strategic plans. For this reason, the administration should coordinate the development of smart education with the curricula and plans of universities.

Digital education as a factor in the development of smart education allocates the following resources: 1) General computer software (digital text, sound and/or images) used for teaching or learning. 2) Databases and information (digital documents: texts, images,

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videos, etc.) that can be used by the teacher as teaching materials and illustrations which can be used as a source of information for students in documentary research. 3) Digital manuals supplemented with new data (videos) and a unique navigation tool. 4) Personal work tools (simulators, personal laboratories) adapted to the level of students, their goals and paths. 5) Expert systems that allow modeling the phenomena being studied and varying their parameters. 6) Devices for teamwork, networking, and communication. Digital education as a factor in the development of smart education is based on computer programs related to computer-based learning; interactive software designed to learn knowledge (know-how) in a particular subject area and, as a rule, self-testing of knowledge, i.e. educational software.

The main existing social networks and the ones best known to the public are Facebook and Twitter. Facebook was born on February 4, 2004, thanks to its founder Mark Zuckerberg. In fact, this site was a social network claiming to be "non-public" for Harvard University in the United States.Nevertheless, it became popular at other US universities and later spread around the world. Today, the site has about 2.7 billion users and is translated into more than 111 languages. It is the most visited site in the world right now. This social network is used today as a working tool. Among other things, in some schools, it is an approach used to disseminate information to both students and parents. The teacher creates a personal page, which is restricted to parents only, where important messages and questions are quickly posted. Many teachers use this tool to communicate their plans for the week to keep parents informed about their children's activities throughout the year.

4. The concept of smart education emphasizes human resources in smart initiatives and is being implemented in areas such as e-government, smart tourism, and smart government. For example, in addition to the availability of effective digital technology tools for the implementation of smart education, the forum for human skills, such as attitude, motivation, and knowledge, plays a major role. Some studies have assessed the importance of human resource potential for the implementation of a smart person, smart government, smart factory, and smart city. They take into account the leadership capacity (city, university, community leader) and the connection between human resource potential and intellectual education, determined by the impact of digital technologies on the formation of the ecosystem of a city, region, university. In addition, creating motivation and incentives are important leadership tasks for educational leaders who will encourage human resources

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to integrate digital technologies into teaching. The focus on digital leadership emphasizes a top-down approach for administrations to push the integration of smart education pedagogy in universities so that teachers, as an important human resource and capital, use the pedagogy of innovative digital processes.

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