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Digital Mathematical Literacy As A Component Of The Life Skills Of Students Of Modern Educational Institutions

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ABSTRACT

The article reveals the essence of the concepts of digital literacy, mathematical and digital-mathematical literacy, the views of international experts and researchers, the role and significance of these concepts in teaching and educating the younger generation in the digital environment.

KEYWORDS

Digital literacy, mathematical and digital-mathematical literacy, digital environment, media environment, information, content, media content, digitalization, gadget, competence, communication, digital competence.

INTRODUCTION

In the new conditions of growth in the volume of information, changes in the media environment, there is an urgent need for the formation of competencies that allow not only to search for information, but also to critically evaluate it, to protect oneself from harmful influences in the media space, to create new content, to distribute information through various channels.

We are moving into a world where computers will be so intelligent that they can do the routine part of work, and people will need to do and cultivate what they can do, such as

emotional intelligence. Already, computers are capable of performing creative, research, and intellectual work. For example, in the context of digitalization, the approach to programming as a component of digital literacy is rapidly changing.

People's thinking also develops and changes. After all, for orientation in a large amount of information, creativity is required, in order to search "more broadly" for what may be relevant, and critical thinking is required to assess the adequacy and reliability of information.

The perception of information on social networks differs from the usual print media, where it is revealed in time in a linear, sequential manner. The way of reading on the Internet is branchy - you can "roll up" to the right, left, go deeper into a section, orient yourself, choose navigation, based on what is needed more at this moment.

Moreover, each of us can be both a reader and an author. Therefore, we can talk about the possession of tools for creating and posting information as an important component of digital literacy.

Literacy implies the level of knowledge and skills in a particular area and the ability to apply them in practice. If we take the basic ones: reading, counting, writing - this is the ability to communicate some information to the world and perceive it from outside, i.e. a literate person is visible and sees what surrounds him, he hears others, and they hear him. The concept of literacy is not static when the social and technological cultural environment in which we live is updated - we need to acquire new skills.

In addition, if to improve language literacy, you need the practice of communication and reading books, then the development of digital literacy requires the practice of cultural use of technical means (mobile gadgets and computers), opportunities and communications of the digital environment.

Knowing the modern language of communication is also necessary in order to transfer your knowledge to learners and students. Otherwise, digital illiteracy will become a barrier between generations.

Digital literacy is the ability to use the opportunities that modern society opens up with all its technologies, the ability to communicate with people in a new social format and be ethical and attentive to each other [1, p. 7].

Digital literacy is high on the list of basic skills in demand in the 21st century for almost any job. It is noted that digital literacy will be as much in demand as the ability to write and read [2, p. 64].

Digital literacy covers a wide range of skills, from assessing the credibility of websites to creating and sharing media content.

Today, about 60% of people have accounts on more than five social networks. How many of them think about their safety on the Internet? And this is also a digital literacy issue.

The life of society and education have always been closely interrelated: the development of society sets before education the task of orienting the younger generation in a transforming society. The social order of the modern information society is the education and upbringing of the younger generation,

oriented in the field of mass communication and "speaking" in their language.

There is now a large gap between the educational environment and the environment in which children are accustomed to living at home. It is not only a matter of equipping schools with computers and digital laboratories, but also the readiness of teachers to use digital means of communication. For example, a child receives a task at school that requires searching the Internet and processing information, not just memorizing facts. It is important not to divide the digital environment between school and home, but to bridge this gap.

By 2025, the education system in Uzbekistan should be built in such a way as to prepare for the digital future a sufficient number of literate information technology users who have the competencies necessary in the 21st century. Digitization is not just about transferring data and processes from the "analog" era to digital form.

The digitalization of the education system cannot be limited to creating a digital copy of familiar textbooks, digitizing workflow and providing all schools with access to high-speed Internet. The approach itself is changing, what and how to teach. The digital economy requires from the education system not just the "digitization" of individual processes, but an integrated approach that would set new goals, change the structure and content of the educational process.

In particular, the understanding of literacy as the degree of mastery of basic cognitive skills: reading, writing, numeration, is expanding with the development of technology and the complication of the information space in which we exist.

In international practice, descriptions of competencies are currently an integral part of the education system from primary and secondary schools to upper secondary schools and higher educational institutions. Recently, the concept of digital competencies has become widespread. In the school context, the British project Future Lab on digital literacy [3], the Norwegian national framework for the use of ICT in schools [4], the Welsh digital competence framework for schools, implemented in 2016, are quite popular.

Digital literacy (digital fluency) - the availability of knowledge and skills necessary for the safe and effective use of digital technologies and Internet resources. Digital literacy is based on digital competencies - the ability to solve the widest range of tasks associated with the use of information and communication technologies (ICT), including the ability to digitally collaborate, ensure security and solve problems. Digital literacy includes digital skills - well-established, automated behaviors (personal, technical and intellectual) based on knowledge and skills in the use of digital devices, communication applications and networks to access and manage information. About approaches to the formation of digital skills of students at the level of general education [5].

Digital literacy is the ability to create and use content using digital technologies, including computer programming skills, search and exchange of information, communication with other people [6].

There are different criteria for the development of digital literacy. For example, Henry Jenkins believes that digital literacy includes the ability to work with a computer as "hardware", understanding the features of the device and distribution of digital information, understanding the structure of the network community and the characteristics of social media [7].

A. Ferrari defines digital competence as a set of knowledge, skills, attitudes (including abilities, strategies, values and awareness) required when using ICT and digital media to solve problems; communication; information management; cooperation; creating and sharing content; raising the level of knowledge effectively, efficiently, adequately, critically, creatively, independently, flexibly, ethically, by analogy and for work, recreation, participation, learning, communication, consumption and empowerment. [8, p. 43].

There are many terms used to refer to digital competencies. Some also use the terms digital competence and digital literacy interchangeably [9].

O.E.Hatlevik and K.A.Christophersen argue that there are differences in the content of the concepts of digital skills (focus on working with technical devices) and digital competence and literacy (are broader terms that define what skills of understanding and critical thinking should be used depending on from the situation) [10, p. 241.].

C.Hague and S.Payton believe that digital literacy is about collaboration, safety and effective communication. It is about cultural and social awareness and understanding, and about creativity. Digital literacy is the

knowledge of when and why digital technologies are suitable and useful for solving a given problem, and when not. It is about a critical understanding of all the opportunities and challenges that digital technologies represent [3, p. 19].

Doug Belshaw identifies eight elements of digital literacy, including understanding the cultural context of the Internet environment, the ability to communicate in online communities, the ability to create and distribute content, and the skills to use digital technologies for self-development [11].

International organizations are trying to classify the competencies necessary for a modern person, talking about the importance of digital, information, scientific literacy. Often these types of literacy overlap and complement each other.

One of the components of scientific literacy is mathematical literacy.

The concept of mathematical literacy began to form at the end of the twentieth century in the studies of the International Association for the Assessment of Educational Achievements of Students IEA. In these studies, mathematical literacy was understood as "the readiness of high school graduates to cope with life problems, for the solution of which it is necessary to use some mathematical knowledge. Here, mathematical literacy is understood as "the ability of a person to define and understand the role of mathematics in the world in which he lives, to express well-grounded mathematical judgments and to use mathematics in such a way as to satisfy the present and future needs inherent in a creative, interested and thinking citizen".

Today there are several approaches to the essence of the concept of mathematical literacy. For example, G.S.Kovaleva [12] reveals the concept of "mathematical literacy" as "the ability of a person to determine the role of mathematics in the world in which he lives, to express well-grounded mathematical judgments and to use mathematics in such a way as to satisfy needs in the present and future, inherent in a creative, interested and thinking citizen".

The PISA (Program for International Student Assessment) assessment of students' mathematical preparation is based on the following definition of mathematical literacy: "Mathematical literacy is the ability of an individual to conduct mathematical reasoning and formulate, apply, interpret mathematics to solve problems in a variety of real-world contexts". [13, p.67; 14, p.8].

Researchers offer several separate descriptions of mathematical literacy and digital literacy, but they are rarely considered as a whole. The significant dependence on digital tools in teaching and learning mathematics today often requires the simultaneous activation of both digital and mathematical literacy - this can be called digital mathematical literacy. From a theoretical point of view, to date, there are no unambiguous statements about the final content of the concept of digital mathematical literacy. The individual descriptions of digital and mathematical literacy do not fully capture the potential interaction between the two sets of literacy under consideration.

The development of digital technologies displaces "routine" labor from production, and the conveyor of mass education, which trains specialists in one program, becomes irrelevant. In addition, the digital economy requires a person to develop skills of self-organization, planning, self-motivation, this is facilitated by the individualization of education.

A number of initiatives are being implemented in our country aimed at creating the necessary conditions for the development of the digital economy in Uzbekistan, which increases the country's competitiveness, the quality of life of citizens, ensures economic growth and national sovereignty. First of all, it is the Decree of the President of the Republic of Uzbekistan "On approval of the strategy" Digital Uzbekistan-2030 and measures for its effective implementation".

The digital economy requires a competent workforce. In addition, for their preparation, it is necessary to properly modernize the education and vocational training system, bring educational programs in line with the needs of the digital economy, widely introduce digital tools for educational activities and integrate them into the information environment, provide an opportunity for citizens to study according to an individual curriculum throughout their lives - anytime, anywhere.

The interaction of digital and mathematical literacy makes it possible to form the content of the concept of "digital mathematical literacy":

- The opportunity to participate in technical and mathematical discourse, in particular, aspects of artifact-instrument duality in the context of generating mathematical problems from digital instruments;

- Knowledge of the use of digital tools in various mathematical situations and contexts, knowledge of the possibilities and limitations of various tools, in particular, aspects of the duality of tools-instrumentalization;

- The ability to use digital technologies reflexively in solving problems and in the study of mathematics, which implies the awareness and use of digital tools that serve both pragmatic and epistemic purposes, in particular, aspects of the duality of schema-technique, both in relation to predicative and operational forms of knowledge.

Currently, research is actively continuing to study the areas of effective interaction between digital and mathematical literacy in education. This problem is international in nature, and the content of education in mathematics and ICT in vocational training depends on its solution.

The use of digital educational resources is becoming an effective tool not only for teaching, educating and developing educators, but also for preparing them for life in a digital society.

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