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THEORETICAL FOUNDATIONS OF INFORMATION TECHNOLOGY

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ABSTRACT

This article deals with the emergence of a new environment for the accumulation of information on typewritten media, the development of means of communication that ensure the delivery of information to any point of the earth without significant restrictions in time, a wide coverage of the population by means of communication and the possibility of automated processing of information using a computer according to specified algorithms.

KEYWORDS

Development, foundations, information, technology, theory, external environment, exchanging information, computer science.

INTRODUCTION

The transition to the new millennium coincides with the change of eras in the development of society. The era of industrial society should be replaced by the era of information technology, when humanity is moving to a new stage of information development. In the 21st century the level of development of the state will be determined rather than by the volume of industrial output, but by the state of science and education, International Journal of Pedagogics (ISSN – 2771-2281) VOLUME 02 ISSUE 09 Pages: 53-57 SJIF IMPACT FACTOR (2021: 5.705) (2022: 5.705) OCLC – 1121105677 METADATA IF – 5.689

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which characterizes the quality of knowledge produced.

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Indeed, in the modern world it is impossible to take any progressive step, to solve any universal or particular problems without appropriate information support, i.e. obtaining information from the external environment, its appropriate analysis and prompt decision-making. Information has become a strategic resource of society, and the body of knowledge has become a decisive factor in the development of any country. [1]

THE MAIN RESULTS AND FINDINGS

For the first time in the history of the development of civilization, a person has opportunities that enhance his intellectual abilities: a computer and a computer network. The creation of a computer and means of processing and exchanging information at a new level is due to a new natural science - informatics, which arose in the middle of the 20th century. on the achievements of mathematics, physics, cybernetics, information theory.

From the theoretical foundations of computer technology, computer science in our time has become a science that studies the laws and methods of accumulation, processing, transmission and assimilation of information using computers and communications. In the bowels of informatics, more and more new information technologies are being born, allowing a person to successfully operate with an increasing information flow.

Informatics has become necessary for any specialist who wants to improve their intellectual activity.

At present, it is difficult, if not impossible, to manage a modern enterprise without knowledge of information systems and the methods by which information systems make the activities of any organization more competent and efficient. Only with the help of information systems, firms and global corporations successfully operate, producing useful products and providing the necessary service to society. [2]

The technical basis of information processing and transmission systems is information technology, the study of which at the user level is devoted to this book. Let's define right away that by information technology we will understand the methods, systems and tools used to store, process, perceive and transmit information in all possible forms and use it in all aspects of our multifaceted life.

It is impossible to name any other technology that could be compared with information technology in its impact on society. Information technologies integrate the fruits of the human mind and skill: computer databases, computer networks and telecommunications systems in networks, radio broadcasting, television, information support of society through satellite repeaters, electronic commerce and electronic business, artificial intelligence systems that help a person make decisions in a complex information environment.

Thanks to the global Internet network, our planet is turning into a system of global communication between people and the collective use of society's information resources. A technical platform is being created for an even more progressive development of human intelligence. As academician N.N. Moiseev, "the rate of development of knowledge is growing not only with the growth of the number of people involved in the creative process, but even more so with the intensity of information exchanges", which is facilitated by the development of global computer networks. International Journal of Pedagogics (ISSN – 2771-2281) VOLUME 02 ISSUE 09 Pages: 53-57 SJIF IMPACT FACTOR (2021: 5.705) (2022: 5.705) OCLC – 1121105677 METADATA IF – 5.689



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To improve their activities, a person needs elementary knowledge about modern information systems, about the technical capabilities of computer systems and information technologies, one needs to be able to use the information wealth of modern society, to be able to independently solve professional problems using a Understanding computer. the capabilities of information technology is becoming an indispensable element of the culture of a modern person and, at the same time, a condition for achieving success in professional activities. All these issues are the subject of this study. Its purpose is to help pupils and students organize their professional activities based on the competent use of information technology.

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Computer science as a scientific direction owes its origin to the ideas of creating a computer. In the United States, the science of computer technology was called computer science, in France it was given the name informatics from the words information and automation. We have adopted this concept as "informatics". [3]

In general, computer science is the science of computer technology, the principles of its development and operation. A significant place in computer science is occupied by the issues of computer hardware, its software, the interaction of software and hardware, and, of course, the development of such a computer operating system that would provide a friendly user interface.

A significant place in computer science belongs to the development of computer elements - integrated circuits, microprocessors, computer memory systems.

Along with the development of computer science, methods and means of information exchange developed, and it is quite natural that the means of microprocessor technology and programming began to be successfully introduced into information transmission systems. The computer allowed the creation of a new type of information technology.

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In addition, the computer began to play a paramount role in science, technology, education, and culture. Computer methods for processing information and solving mathematical problems are beginning to spread to applied problems, and the scope of computer technology is expanding. That is why computer science is turning into the science of information processes in modern society.

According to academician Semakin I.G, "originated in the depths of the science of control processes cybernetics, informatics. Literally before our eyes, from a technical discipline about methods and means of data processing with the help of computer technology, it is turning into a fundamental natural science of information and information processes in nature and society." [4]

Academician A.P. Ershov, who wrote that "the science of the rational use of a computer to solve various problems is called informatics."

In our time, microprocessor technology allows you to create effective information service technologies, thereby creating conditions for creative activity. Note that technology is a set of methods for manufacturing or processing materials or raw materials carried out in the production process or, more simply, the art of making things. In scientific terms, technology consists in identifying patterns in order to put into practice the most efficient and economical production processes.

New information technologies are a complex of scientific and engineering knowledge embodied in computer hardware, algorithmic and software using communication facilities.

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Information technologies significantly increase the efficiency of human activity by automating the processing of information and calculations.

Information technology has an integrating property in relation to all other technologies. So, in information systems in which the processes of real relations are modeled (an industrial enterprise, a transport company, a bank, a sports association, an insurance company, etc.), a kind of synthesis of various knowledge in a particular subject area takes place on a computer base. Due to the preliminary formalization of this knowledge, it is possible to manipulate and analyze situations. Databases, and then knowledge bases, allow some automation of scientific activity.

It can be said without exaggeration that information technologies form the cutting edge of scientific and technological progress, create an information foundation for the development of science and other technologies.

The emergence of speech marked the beginning of human history. It was speech that allowed a person to rise above other biological objects. Speech is a fundamental difference between a person and all living organisms. In essence, language is a method of encoding a message that a person reproduces. Although messages are formed by other living beings, and even plants, the message of a person is distinguished by the complexity of the code used and its very high arbitrariness.

The transmission of information through speech not only gave rise to the possibility of a rapid exchange of knowledge, but also played a decisive role in the transformation of people into human civilization. Ever since man became a source and consumer of information, knowledge has become the main result of his life activity. No wonder four centuries ago, the English philosopher Francis Bacon, Lord Chancellor of England, said: "knowledge is power." The power of information and knowledge lies in the fact that with their help new opportunities for a person are revealed.

Lednev V.S claims that throughout the development of civilization, there have been several information revolutions, mainly related to the ways of presenting and processing information. With each such revolution, humanity moved to a new stage of development. [5]

CONCLUSION

Perhaps, historically, writing should be called the first stage of information technology, the next stage invented in the 15th century. typography. The development of the sciences, stimulated by printing, accelerated the rate of accumulation of professional knowledge. Knowledge, realized through the labor process in machine tools, machines, structures, research, etc., became a source of new ideas and scientific directions.

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