

## THE ROLE OF INNOVATIVE TECHNOLOGIES IN DEVELOPING INFORMATION SECURITY COMPETENCES IN STUDENTS

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**Abstract:** This article analyzes the role of innovative technologies in the process of formation and development of information security competence in students. The rapid development and deep penetration of information and communication technologies (ICT) into educational processes is considered as an important tool in the formation of an individual's Information Culture, the development of knowledge, skills and skills in cyber security. The article outlines the importance of innovative approaches such as "blended learning", "flipped classroom", distance learning platforms, virtual labs, Interactive Simulations in developing practical competencies in information security in students.

**Keywords:** information security, innovative technologies, competence, cyber security, ICT, digital education, virtual lab, blended learning.

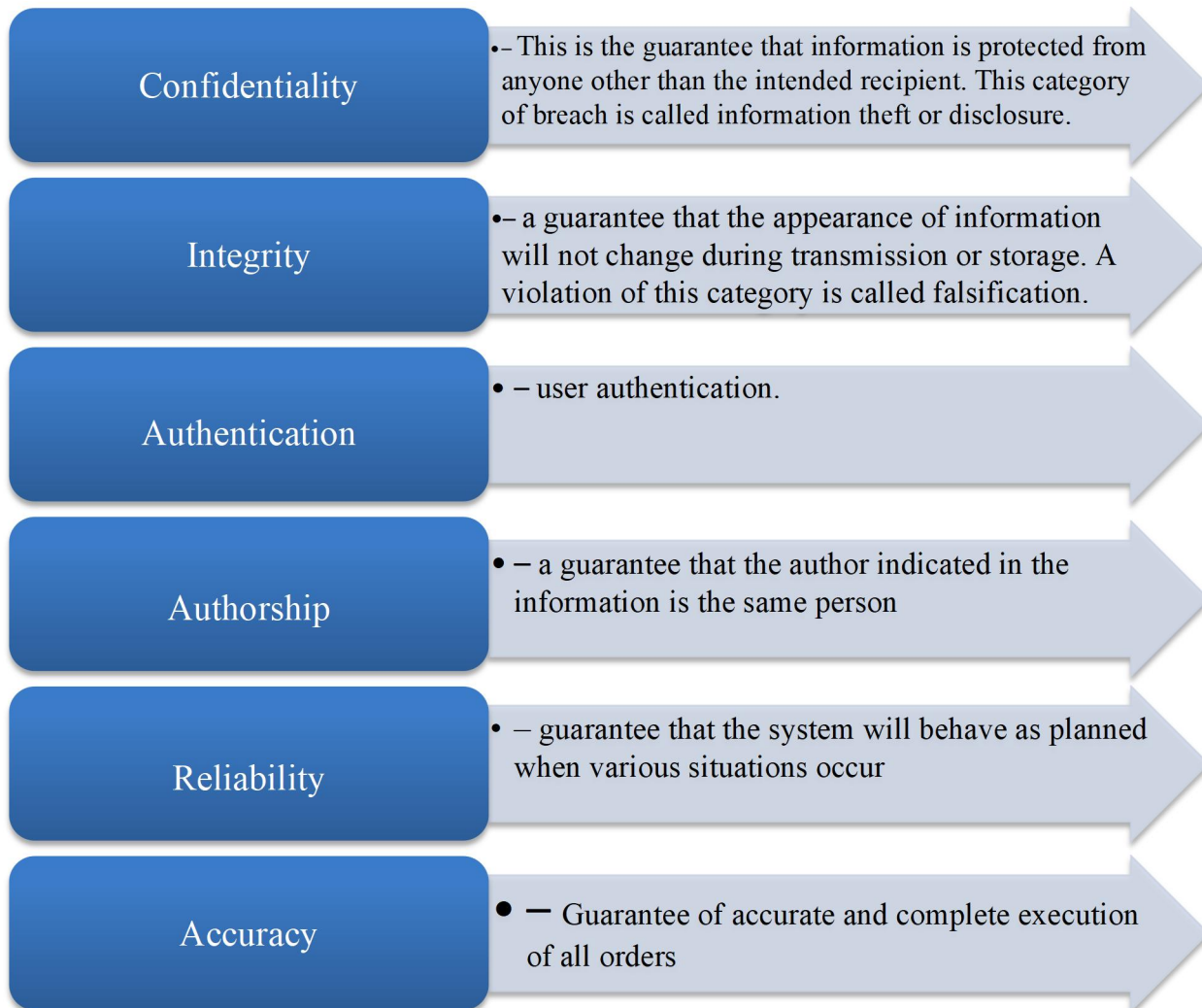
The formation of a national system of informatization, the mass introduction and use of modern information technologies, computer equipment and telecommunications in all spheres of the economy and social life. Also, the development of computerization and information and communication technologies and the introduction of their modern systems, aimed at creating favorable conditions for more fully satisfying the growing demands and needs of citizens for information, entering the global information community, and expanding access to global information resources, are recognized as the most important tasks for the first time. Improving the system of training personnel in the field of information technologies is one of the important conditions for the successful implementation of the "Digital Uzbekistan - 2030" strategy, the development of digital technologies and their widespread introduction into the daily lives of the population.

Computer hardware has always played an important role in computer security. Over the years, this role has grown significantly. This is due to increased processing power, increased memory capacity, and increased communication capabilities, along with a decrease in the cost and size of devices. Technical means of information protection are technical means designed to eliminate or reduce the detection of masking (disguising) signs of an object, create false signs, and prevent unauthorized access to information through technical means.

While the issue of information security in a modern digital society is becoming a pressing global problem, the need to form and develop information security competencies of students in the education system is also increasing. Because in our time, the ability not only to use information, but also to protect it, analyze it, and determine its reliability is considered one of the important competencies of each educational subject. The rapid development of information and communication technologies (ICT) and their deep penetration into educational processes are becoming one of the main sources of forming an information security culture among students. In the process of obtaining, analyzing, storing and

distributing knowledge through digital means, it has become an important methodological task to form knowledge, skills and competencies in compliance with security requirements, identifying potential threats, analyzing and protecting against harmful information flows.

From the point of view of information security, information can be divided into the following categories:



**Figure 1. Information security categories.**

Innovative technologies in education, including distance learning platforms, webinars, blended learning, flipped classrooms, digital laboratories, interactive simulations, and specialized information security training platforms, can gradually develop students' information literacy and security competencies. These technologies allow students to self-study, model real-life threats, and acquire practical skills in a secure environment. Innovative technologies can also help students visualize lessons, make decisions based on problem situations, consciously assess their actions in the digital information environment, and form competencies in personal data security. In this regard, in particular, pilot projects, simulation exercises, and interactive training on cybersecurity serve as effective tools. Since students widely use information media, they need to have a solid foundation of knowledge in

ensuring their security, to have skills such as critical analysis of information flows, identification of false and manipulative information, and protection against cyberattacks. The development of such competencies is carried out as effectively as possible through an educational process organized on the basis of innovative technologies. In addition, in order to form awareness of information security among students, digital resources that promote information culture, technical means that create a secure information environment, and methodological guidelines are being systematically introduced in educational institutions.

Hardware and software tools for information protection are various electronic devices and special programs that perform information protection functions (identification and authentication of users, restriction of access to resources, recording of events, cryptographic protection of information, etc.). Hardware tools for information protection are a special protective device or a device included in the set of technical means for information processing. Information security software is a special program designed to ensure information security and is included in the software of computer equipment. Protection against computer viruses and other programs and their impact and modifications is an independent direction of protecting the information processing process in computer systems. Inadequate assessment of this risk can lead to serious negative consequences for users' information.

In conclusion, the role of innovative technologies in the formation and development of information security competencies in students is invaluable. These technologies not only improve the quality of education, but also allow young people to be formed as conscious, responsible and security-conscious individuals in the information space. Therefore, the modern education system should implement an integrated approach based on innovative technologies, aimed at developing information security competencies.

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