INFORMATION SKILLS AS A MOTIVATING FACTOR IN THE TRAINING OF THE FUTURE SPECIALIST IN THE EDUCATIONAL FIELD
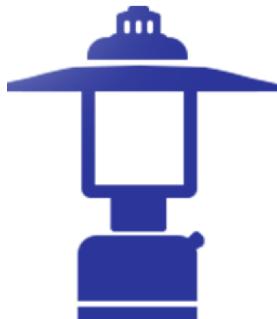
LAS COMPETENCIAS INFORMATIVAS COMO FACTOR MOTIVADOR EN LA FORMACIÓN DEL FUTURO ESPECIALISTA EN EL ÁMBITO EDUCATIVO

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ABSTRACT

The article considers the conceptual aspects of information technology competencies as a motivating factor in the training of a future specialist. The authors review specialized bibliography from databases of open publications of the last 10 years and analyze statistical databases of the All-Russian Public Opinion Research Center for 2024. Results: the introduction of digital technologies is perceived by the social group of young people as progress. In the group of respondents aged 18 to 24 and 25 to 34, 92% value new technologies positively, which demonstrates their willingness to master the necessary computer skills. The trends associated with the total digital transformation that stimulate and determine the importance of mastering computer skills were taken into account. Modern research shows that information competencies are mastered at all levels of the educational system and are a mandatory component of the reproduction of professional personnel for the entire social institution of education, regardless of the profile of educational organizations.

Keywords:

Education, digital transformation, information technology competences, specialists, cross-cutting competences, educational organizations.

RESUMEN

El artículo considera los aspectos conceptuales de las competencias en tecnologías de la información como factor motivador en la formación de un futuro especialista. Los autores revisan bibliografía especializada de bases de datos de publicaciones abiertas de los últimos 10 años y analizan bases de datos estadísticos del Centro Panruso de Investigación de la Opinión Pública para 2024. Resultados: la introducción de las tecnologías digitales es percibida por el grupo social de los jóvenes como un progreso. En el grupo de encuestados de 18 a 24 y de 25 a 34 años, el 92% valora positivamente las nuevas tecnologías, lo que demuestra su disposición a dominar las competencias informáticas necesarias. Se tuvo

en cuenta las tendencias asociadas a la transformación digital total que estimulan y determinan la importancia de dominar las competencias informáticas. La investigación moderna muestra que las competencias informativas se dominan en todos los niveles del sistema educativo y son un componente obligatorio de la reproducción del personal profesional para toda la institución social de la educación, independientemente del perfil de las organizaciones educativas.

Palabras clave:

Educación, transformación digital, competencias en tecnologías de la información, especialistas, competencias transversales, organizaciones educativas.

INTRODUCTION

According to current forecasts, several professions related to data transmission are expected to become obsolete in the new digital age, turning specialists into mere operators. The integration of the population into digital services necessitates the development of basic information and technological competences, regardless of their professional activity. It is of research interest to study the population's engagement in mastering information technology skills as a new social practice influencing professional education in the context of its continuity.

The digital transformation of economic and social spheres is driving significant changes across all levels of the education system. Information and communications technologies facilitate IT competence formation in the educational environment and have recently taken priority among the most sought-after pedagogical technologies for training specialists across various fields. The significance of these competences for specialists of any profile classifies them as cross-cutting competences together with general cultural, cognitive, general civil, and regulatory-psychological skills, which constitute the invariant of a specialist's non-core competence.

The digital transformation of all economic and social spheres necessitates modernizing social institutions responsible for reproducing professional personnel (Gadzaova et al., 2023a; Khudoikulova & Goverdovskaya, 2024; Abashkin, 2024). According to modern social forecasts, several professions related to data transmission will become obsolete in the new digital environment, reducing specialists to operators. Integrating the population into digital services requires the development of basic IT competences, regardless of the type of professional activity (Donika, 2022, 2023; Trofimov, 2023b).

Many scholars study population engagement in acquiring IT competences as a social practice influencing professional education continuity (Gadzaova et al., 2023b; Abidova & Maltsev, 2024). The development of IT competences in the educational environment is facilitated using ICT. ICT has recently become the most in-demand pedagogical technology for specialist training across all fields.

The reproducibility and effectiveness of ICT allow the formation of the most popular IT competences in educational institutions, regardless of their profile. The importance of these competences for specialists in any field allows them to be classified as cross-cutting competences together with general cultural, cognitive, civil, and regulatory-psychological skills, which constitute the invariant of a modern specialist's non-core competence (Baikhanov, 2022). The objective is to study the conceptual aspects of IT competences as a motivating factor in forming future specialists.

MATERIALS AND METHODS

To achieve the research objectives, we reviewed special literature over the past 10 years from open publication databases. According to a working hypothesis, we analyzed statistical databases of the All-Russian Public Opinion Research Center (VCIOM) for 2024. In addition, we used online surveys on a stratified random sample (1,600 people over 18) based on a probability panel.

Panel participants were recruited during the daily all-Russian telephone (CATI) survey called "Sputnik", conducted on a random (RDD) sample of mobile numbers from the full list of telephone numbers used in the Russian Federation. The data were weighted by socio-demographic parameters. For this sample, the margin of error with a probability of 95% did not exceed 2.5% (WCIOM NEWS, 2024).

RESULTS AND DISCUSSION

The Atlas of New Professions (2021), lists the most desirable cross-functional competences for future specialists, including skills in cross-sector communication, client orientation, project and process management, programming IT solutions, managing complex automated systems, the ability to work under uncertain and rapidly changing conditions, and using artificial intelligence. These competences include systems thinking, lean production skills, ecological thinking, attention management, critical thinking, mindfulness, and emotional intelligence. According to contemporary perspectives, IT competence, which is a major part of the core competence of future specialists, encompasses a combination of knowledge, skills, abilities, and behavioral qualities that enable the effective search, evaluation, and use of information for successful integration into various activities (Zamara, 2014).

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The significance of developing IT competences among specialists within educational environments is also driven by their impact on the broader information and educational space. Currently, it is impossible to imagine the educational process without ICT, which necessitates a basic level of IT competence among students. This competence is reflected in their ability to use various technical tools and devices and to work with information, including its search, evaluation, and use. Computer technologies play a key role and represent a special category of ICT. The ongoing updating and modernization of computer equipment further stipulate the need to develop new IT competences closely linked to the use of the Internet and regional and local computer networks. There is a growing trend toward replacing traditional educational tools with IT, which demands a high level of IT competence among the teaching staff of educational institutions, thereby altering the specification and structure of post-graduate education in the framework of continuous professional education.

Digital transformation in Russia is accompanied by several social risks, primarily due to the low digital literacy of the population and underdeveloped IT competences among social groups above the working age. Social isolation during the pandemic stimulated the integration of all population groups into the virtual space, leading to rapid growth in IT competences. However, according to the Federal State Statistics Service of Russia, there remains a significant lag in IT competences among older age groups and persistent digital inequality between rural and urban residents. The development of digital literacy is significantly lagging. It is characterized by deviations, including high levels of Internet immersion in the 18-55 age group, a breakdown in intergenerational connections, high conflict in communications, and Internet addiction among users of the digital space (Trofimov, 2023a).

It is required to study conceptual factors in forming IT competences and determine their significance for future innovative technologies. According to the sociological survey of March 2024, the respondents associate future technologies with AI, robotization, and automation of processes, which were noted by every third or fourth respondent (Figure 1).

Fig. 1: Public perceptions of future technologies
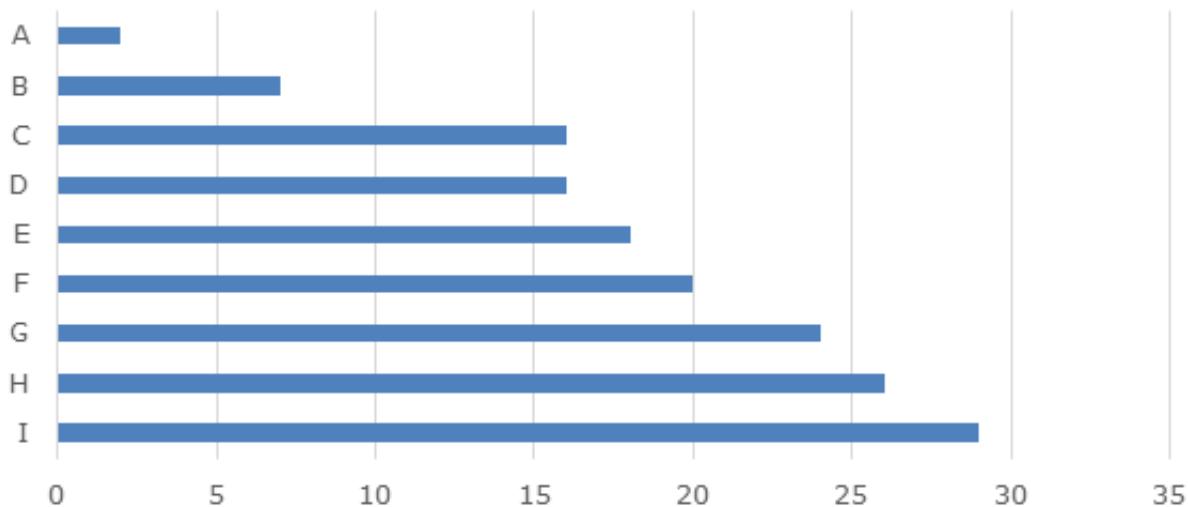
Source: According to VCIOM sociological survey.

On the Y-axis: technology options that the respondents associate with the concept of "future technologies": A – Artificial intelligence and related technologies; B – Robotics and process automation; C – Medical and bioengineering technologies; D – Transport technologies; E – Digitalization, computerization, informatization; F – Space exploration/space tourism/planetary exploration; G – Convenience, comfort and improvement of life; H – Ecology and alternative energy solutions; J – Military developments. On the X-axis: the number of respondents as a percentage.

The components of technologies associated with IT competences are perceived ambiguously, i.e., most respondents associate them primarily with working on computers and/or handling information, while fewer respondents link them with VR or advanced IT (Figure 2).

Fig. 2: The structure of digitalization according to the respondents
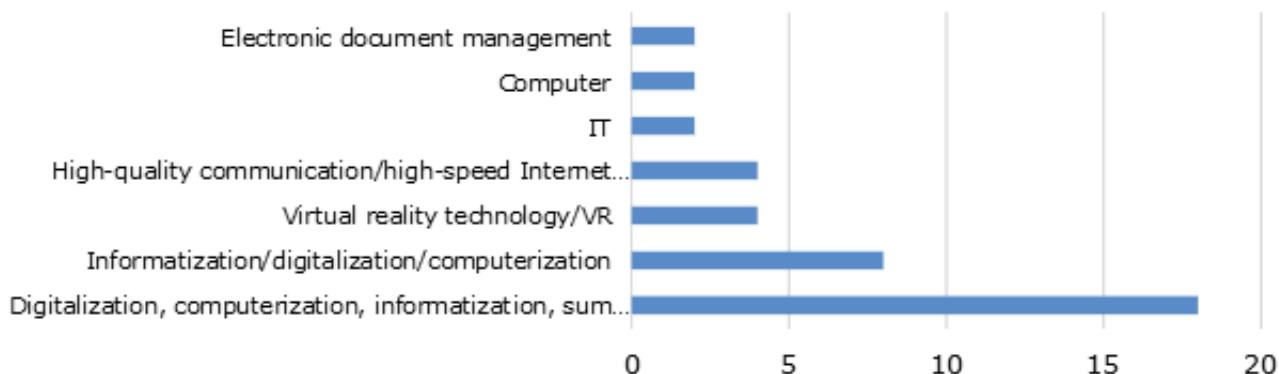
Source: According to VCIOM sociological survey.

On the Y-axis: digitalization components. On the X-axis: the number of respondents who marked the options for digitalization components (in %).

According to the Federal State Statistics Service data, the primary IT competences of the population in 2022 (noted by more than 40% of the respondents aged 18-55) are as follows: copying or moving files or folders; copying and pasting to duplicate or move information within a document; working with a word processor (inputting and editing text); working with spreadsheets; using software for editing photos, video, and audio; creating electronic presentations using specialized programs; sending messages via email, messengers, or SMS with attached files (e.g., documents, photos, video, audio, or other files); connecting and installing new devices (e.g., modems, cameras, printers, etc.); transferring files between a computer and other devices (digital cameras, players, smartphones), including using services like Yandex. Disk, Mail.Ru Cloud, Google Drive, Dropbox, iCloud, etc.; searching for, downloading, installing, and configuring software; creating passwords to protect devices, applications, or accounts (e.g., email, social networks, and other online services) from unauthorized access; changing account settings to enhance security (e.g., using security questions, two-step verification requiring a code from SMS, or biometric data, such as facial recognition or fingerprints); changing web browser settings (e.g., Internet Explorer, Microsoft Edge, Mozilla Firefox, Google Chrome, Safari, Opera, etc.) to disable or block cookies, browsing history, or location tracking; installing or reinstalling an operating system; developing custom software using programming languages (Donika, 2023).

The analysis of attitudes toward integrating new technologies across different social groups shows a significant dependence on the age of the respondents (Figure 3).

Fig. 3: Attitudes towards the integration of new technologies across age groups,
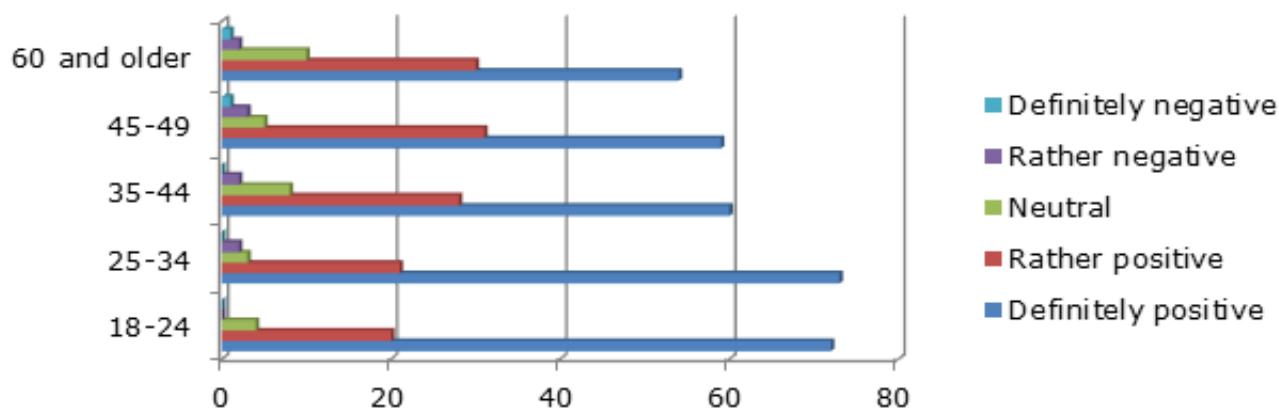
Source: VTsIOM (2024c)

On the Y-axis: respondent groups. On the X-axis: percentage of the respondents.

In the 18-24 and 25-34 age groups, 92% of the respondents positively assessed new technologies, which reflects their readiness to acquire IT competences. Understanding the significance of digital transformation creates the foundation for mastering these competences, partially integrating them into routine tasks in professional and social life. In the comparison groups (60 and older), significantly fewer respondents unequivocally supported information and technological transformation (54 vs. 72%; $p < 0.5$).

According to modern scholars, parental influence continues to affect the choice of professional fields. The 2024 survey results show that 20% of parents (one in five respondents) want their children to become AI developers, while 15% of them favor a career in robotics engineering. This indicates the complementarity between public perceptions of the importance and structure of future technologies and parental desires regarding their children's professional choices, further validating the data.

Fig. 4: Parents' preferences for their children's potential professions.
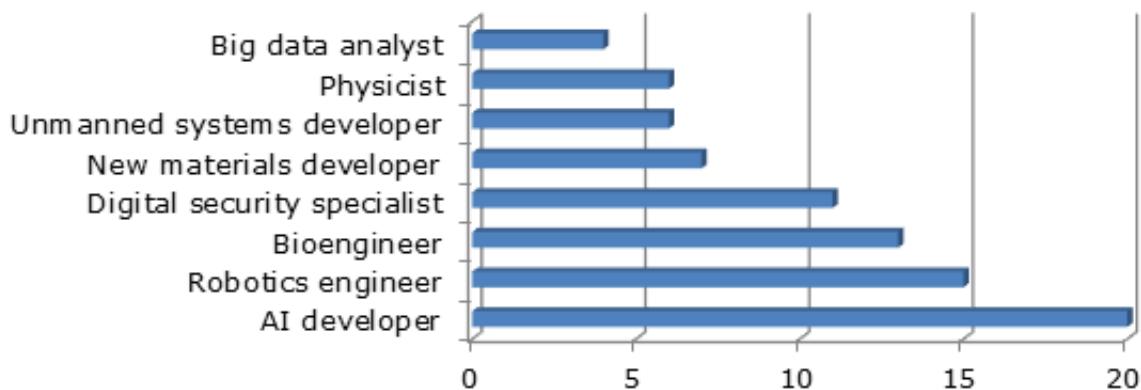

Source: VTsIOM (2024b).

On the Y-axis: professions. On the X-axis: number of the respondents who indicated some professions as desirable for their children.

The acquisition of IT competences in a professional context is viewed by most respondents aged 18-24 as being driven by labor market needs. Personal interest ranks as the top motivation for choosing a profession or professional field, with 66% of the respondents aged 18-24 highlighting it as a key factor (Figure 5). The second most important criterion is salary, noted by 40% in the 18-24 and 25-34 age groups. The third-ranked criterion cited by 35% of young respondents is the demand for their chosen field in the labor market. Interestingly, the prestige of a profession has little influence on selecting a professional field.

Fig. 5: Criteria for choosing a professional field by the respondents from different age groups
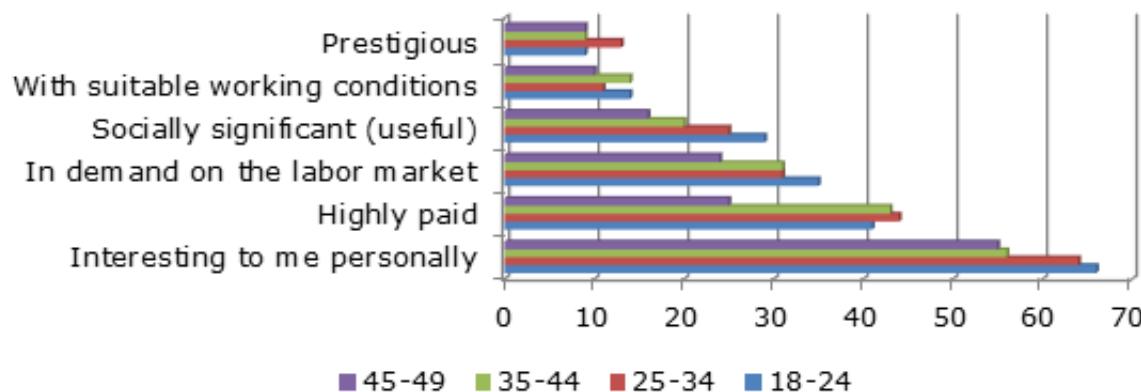
Source: VTsIOM (2024a).

On the Y-axis: criteria for choosing a professional field by the respondents. On the X-axis: number of the respondents (in percentages).

The choice of a professional field among young people aged 18-24 is driven by personal interests and labor market needs. This contrasts with older age groups (45+) who demonstrate a more indifferent attitude toward choosing a professional field. However, considering the demographic trend of an aging population, the national policy focuses on continuous professional education, development of new competences, and horizontal career movement, thereby extending the duration of professional life.

The evolution of educational institutions has seen four significant milestones: the emergence of universities in Europe in the 10th century, the development of the class-based system of education, the creation of research universities following Wilhelm von Humboldt's model, and the introduction of active methods of training at the turn of the 19th and 20th centuries. The digital transformation of education is inevitably leading to the next revolutionary stage. This is noted in the "Education Foresight 2035. Strategic Guidelines: A Vision for the Future of Education in 2035" (Lampert & Duffner, 2023) concept, which identifies the strategic directions for the modernization of all educational levels in Russia.

Mastering IT competences is based on the active engagement of learners in this process even before entering universities, starting as everyday users of digital services. In the digital sphere, IT competence becomes a supra-professional skill, which highlights society's readiness to adopt digital services. This readiness forms the basic motivation for mastering IT competences (Pavlova, 2023; Trofimov, 2023a).

CONCLUSIONS

The digital transformation of economic and social life is driving significant changes in the education system at all levels. The introduction of digital technologies is perceived by the youth as progress, creating motivational foundations for mastering information and technological competences. The widespread integration of digital technologies influences the opinions of parents who view fields related to these technologies as the most promising for their children's future careers.

The choice of profession among young people (aged 18-34) is determined by personal interests and labor market needs. The trends associated with pervasive digital transformation further encourage and highlight the importance of acquiring information and technological skills. Recent studies have shown that these competences are acquired at all levels of the education system and represent a mandatory component of professional development across all educational institutions, regardless of their specific focus.

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