Concept of Ict Competence as One of the Core Competencies of a Modern Person

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Abstract

The article examines the concept of ICT competence as one of the core competencies of a modern person, as demonstrated largely in students' confident mastery of information technology in educational and professional activities. The importance of complete ICT-competence development for students is demonstrated. The most relevant and accessible modern techniques of developing ICT-competence in the educational process are studied.

Keywords: competence, ICT-competence, formation, methods, information technologies, information culture, educational process, development.

Introduction

The process of modern society's informatization necessitates the development of a new model of education based on the use of modern information and communication technologies (ICTs). The ability of a highly skilled specialist to navigate in a certain life situation, as well as the ability to quickly solve professional difficulties, is decided by his level of proficiency in information technology and technical means.

Information technology is viewed from four angles in the educational sphere: as an automated tool, a subject of study, a technique of teaching, and a means of communication that may be in demand. A confident mastery of information technology at the level of information culture is required for training a highly trained specialist, including the capacity to create information demands, search for it, analyze it, and apply it effectively. The successful utilization of the broadest range of opportunities enabled by information technology is inextricably linked to the development of ICT-competence in higher education students. [19]

Competence is a new unit of measurement for a person's education that arose as a result of the fact that knowledge, talents, and skills no longer allow for the demonstration and measurement of educational quality. Competence is a term that describes the relationship between a person's knowledge and practical activity. It can be evaluated in the context of participation in real-life activities.[20] ICT competence is one of a modern person's key competencies, manifesting itself principally in the activity of solving various tasks with the use of a computer, telecommunications, the Internet, and so on. Students' confident mastery of digital technology, communication tools, and/or networks for obtaining, managing, integrating, and assessing information to solve problems in educational and professional activities is referred to as ICT competence. [21]

It should be mentioned that the process of forming ICT-competence among university students should occur not only during the study of information subjects, but also during the entire learning activity, i.e. in an integrated manner. Furthermore, some scholars feel that this approach should include all stages of lifetime learning [22]. The fundamental issue in this situation is the acquisition of knowledge and skills in this sector in accordance with the modern requirements of information society, the majority of which is supplied in electronic form. Personal computers, multimedia technologies, and applied software products should be used to improve ICT capabilities in higher education. Computer testing, computer-based business games, an online rating system of knowledge assessment, the use of electronic textbooks, and multimedia in the classroom are, in our opinion, the most relevant and accessible means of ICT skill formation [23].

Methods and Discussion

Students in any professional field must have strong ICT skills. Incorporating ICT competencies into curricula has been shown in studies to improve learning in terms of both cognitive and non-cognitive development [1,2], such as higher order thinking abilities, self-assessment, learning processes, academic performance [3,4,5], and developing students' work skills. Meng et al. [6] discovered a substantial negative association between perceived ICT proficiency and student achievement in China. As a result, past research on the association between ICT proficiency and academic success is lacking.

Yardi and Bruckman believe that ICT work is essential for preparing and motivating students for future jobs. Numerous studies have demonstrated that a lot of graduates are unable to satisfy the demands of the business world because they lack advanced ICT skills and capabilities. [7]The digital civilization, as well as the recent COVID-19 pandemic, have altered how people live, work, and learn around the world [8,]. ICT competencies are in high demand in the workforce as a tool for obtaining knowledge, communicating, learning, working, and choosing a profession [4, 5]. Basic ICT abilities are not occupation-specific in certain occupations; nonetheless, many occupations are increasingly requiring high levels of ICT work and cross-functional skills [7] to apply specialized software to their occupation [8]. Basic ICT skills are no longer sufficient, as the labor market in the digital era and COVID-19 severe circumstances necessitates greater technology capabilities and highly specialized talents [9]. As a result, for their occupation, students must have appropriate knowledge and abilities in the usage of sophisticated ICT systems.[10]

ICT competencies were described as follows by Koen Aesaert & Johan van Braak: [11]

• a personal trait that demonstrates a person's aptitude for using information and communication technologies (ICTs) to handle common problems that come up in everyday life and that assist a person achieve professionally significant goals; [12]

• a core personality trait that involves the desire to learn the necessary material, the aptitude for using computers to solve problems in academic and professional settings, and the capacity to master computer-assisted problem-solving strategies; [13]

• a person's cognitive quality, which entails a collection of knowledge, skills, and capacities to carry out various information and communication activities; this quality also includes the capacity to apply these talents to problem-solving using the most recent information technology; [14]

• an essential element of the specialist's overall system of professional competence, a stage in the development of his or her informational and communicative self-awareness, which is reflected in their information and communication activities, information and communication literacy, and information and communication culture; [15]

• the capacity of a person to carry out professional duties by looking for information via various media sources in order to communicate, address issues, learn new information, and come up with solutions, which ultimately ensures his or her self-actualization; [16,17]

• a system of knowledge, skills, abilities, personal experiences, and personal qualities that are intended for effective and rational use of contemporary ICT, search, analysis, and critical understanding of information, mastering rational working methods with various types and sources of information to perform tasks in various domains of life, and self-assured orientation in the information space. [18]

One of the most accessible methods of developing students' ICT competencies is the use of various electronic textbooks in the learning process, which are widely represented in electronic libraries of technical, scientific, and fiction literature, sold in Internet stores, and offered for free by various websites. Teachers can also use their own creations, which should be openly accessible to students. [19]

The use of electronic teaching aids has a number of major advantages, including the timely updating of material, the accessibility to instructional arrays, and the decrease of paper carriers. An electronic textbook, when utilized properly, may be a powerful tool for mastering most subjects.

When evaluating ICT competency building approaches for students, the usage of multimedia in the higher education learning process should be given special consideration. Interactivity, adaptability, generalization of multiple types of visual learning material, and the capacity to take into account unique student characteristics and improve motivation make multimedia a particularly successful and productive technology in education. Interactivity is an indisputable advantage of digital multimedia over traditional methods of delivering data.[19]

Improving learning quality in specific subject areas is also dependent on the widespread usage of multimedia. Furthermore, multimedia products are used to foster creative thinking and critical thinking. Multimedia allows students to employ many channels of perception at the same time throughout the learning process, which aids in the integration of information supplied by multiple senses and the modeling of complex phenomena and processes. It should also be mentioned that multimedia tools enable the visual presentation of abstract material through the dynamics of processes, as well as the development of students' cognitive structures and interpretations when educational content is considered in a socioeconomic and historical context. Thus, the previously defined principle of visualization in learning is implemented, but it requires further scientific research and practical implementation in the formation of ICT-competence in the educational process. Thus,

employing the aforementioned methodologies in the practice of teaching the entire range of academic courses in higher education institutions will contribute to the active development of students' ICT-competence.

Conclusion

To summarize, ICT competence is one of a modern person's core competencies, manifesting itself principally in the activity of completing various tasks utilizing computers, telecommunications, the Internet, and so on. Students' confident mastery of digital technology, communication tools, and/or networks for obtaining, managing, integrating, and assessing information to solve problems in educational and professional activities is referred to as ICT competency [21].

It should be mentioned that the process of developing ICT-competences for university students should occur not only during the study of information subjects, but also within the framework of all learning activities, i.e. in an integrated manner. Furthermore, some scholars feel that this approach should include all stages of lifetime learning [22]. Simultaneously, the main challenge is gaining of knowledge and skills in this sector in accordance with modern information society standards, with the majority of information supplied in electronic form.

Based on the foregoing, it should be concluded that new ICT tools should be used rationally in conjunction with traditional teaching approaches during the learning process.

References

1. Almerich G, Suarez-Rodriguez J, Diaz-Garcia I, Cebrian-Cifuentes S. 21st-century competences: The relation of ICT competences with higher-order thinking capacities and teamwork competences in university students. Journal of Computer Assisted Learning. 2020;36(4):468–79. 10.1111/jcal.12413. WOS:000548006800005. [CrossRef] [Google Scholar]
2. Valtonen T, Sointu ET, Kukkonen J, Häkkinen P, Järvelä S, Ahonen A, et al. Insights into Finnish first-year pre-service teachers' twenty-first century skills. Education and Information Technologies. 2017;22(5):2055–69. 10.1007/s10639-016-9529-2. [CrossRef] [Google Scholar]
3. Li S, Liu X, Tripp J, Yang Y. From ICT availability to student science achievement: Mediation effects of ICT psychological need satisfactions and interest across genders. Research in Science & Technological Education. 2020:1–20. 10.1080/02635143.2020.1830269. [CrossRef] [Google Scholar]
4. Skryabin M, Zhang J, Liu L, Zhang D. How the ICT development level and usage influence student achievement in reading, mathematics, and science. Computers & Education. 2015;85:49–58. 10.1016/j.compedu.2015.02.004. [CrossRef] [Google Scholar]
5. Park S, Weng W. The relationship between ICT-related factors and student academic achievement and the moderating effect of country economic index across 39 countries: Using multilevel structural equation modelling. Educational Technology & Society. 2020;23(3):1–15. 10.2307/26926422. [CrossRef] [Google Scholar]

6. Meng L, Qiu C, Boyd-Wilson B. Measurement invariance of the ICT engagement construct and its association with students' performance in China and Germany: Evidence from PISA 2015 data. British Journal of Educational Technology. 2019;50(6):3233–51. 10.1111/bjet.12729. [CrossRef] [Google Scholar]
7. Yardi S, Bruckman A. What is computing? bridging the gap between teenagers' perceptions and graduate students' experiences. Proceedings of the third international workshop on Computing education research; Atlanta, Georgia, USA: Association for Computing Machinery; 2007. p. 39–50. doi: 10.1007/s10278-007-9048-1 [CrossRef] [Google Scholar]
8. Schwab K. The fourth industrial revolution. Geneva, CH: World Economic Forum; 2016. [Google Scholar]
9. Kitamura Y, Karkour S, Ichisugi Y, Itsubo N. Evaluation of the economic, environmental, and social impacts of the COVID-19 pandemic on the japanese tourism industry. Sustainability. 2020;12(24):10302. doi: 10.3390/su122410302 [CrossRef] [Google Scholar]
10. Khampirat, Buratin. (2021). Relationships between ICT competencies related to work, self-esteem, and self-regulated learning with engineering competencies. PLOS ONE. 16. e0260659. 10.1371/journal.pone.0260659.
11. Aesaert, Koen & van Braak, Johan. (2018). Information and Communication Competences for Students.
12. Jones, C., Ramanau, R., Cross, S., & Healing, G. (2010). Net generation or digital natives: Is there a distinct new generation entering university? Computers & Education, 54(3), 722–732.
13. Kozma, R. B. (2008). Comparative analysis of policies for ICT in education. In J. Voogt & G. Knezek (Eds.), International handbook of information technology in primary and secondary education (pp. 1083–1096). New York: Springer.
14. Kuhlemeier, H., & Hemker, B. (2007). The impact of computer use at home on students' internet skills. Computers & Education, 49, 460–480.
15. Kuiper, E., Volman, M., & Terwel, J. (2005). The web as an information resource in K_12 education: Strategies for supporting students in searching and processing information. Review of Educational Research, 75(3), 285–328.
16. Liang, J. C., & Tsai, C. C. (2008). Internet self-efficacy and preferences toward constructivist internet-based learning environments: A study of preschool teachers in Taiwan. Educational Technology & Society, 11(1), 226–237.
17. Litt, E. (2013). Measuring users' internet skills: A review of past assessments and a look toward the future. New Media & Society, 15(4), 612–630.

1. Жасур Турдимуродов, [15/06/2023 14:20]
18. Livingstone, S., & Helsper, E. (2007). Gradations in digital inclusion: children, young people and the digital divide. New Media & Society, 9, 671–696.
19. Глухова, Т. В., & Бажанова, С. В. (2013). Икт-компетентность в современном образовании. Интеграция образования, (2 (71)), 130-135.

20. Hutorskoj A. V. Kljuchevye kompetencii. Tehnologija konstruirovanija [Key competencies. Construction technologies]. Narodnoe obrazovanie. 2003, no 5, pp. 71—77.
21. Polujektov A.V. Formirovanie IKT-kompetentnosti studentov special'nosti "Informatika" [Organization of ICT-competence of computer science discipline students]. Informacionnokommunikacionnye tehnologii v pedagogicheskom obrazovanii. Available at: http://journal.kuzspa.ru/ articles/17/
22. Anikina N. V, Ivanova I. A., Gordina S. V. Informacionnaja kul'tura lichnosti kak integral'nyj pokazatel' urovnja razvitija individa v sisteme nepreryvnogo obrazovanija [Information personal culture as integral development level index for subject in continuing education]. Integracija obrazovanija. 2012, no 4, pp. 108—113.
23. Bazhanova S. V., Gluhova T. V. Formirovanie IKT-kompetentnosti studentov v sisteme vysshego obrazovanija [Organization of ICT-competence of students in higher education system]. Formirovanie professional'nyh kompetencij sredstvami IKT: mezhvuzovskij sbornik nauchno-metodicheskih trudov. Saransk, 2010, pp. 19—22.