Opinion Article

Philosophical aspects of application of information and communication technologies in contemporary continuous education of adults

Mohdin Lukmann[1], Ahmad Ali Farris[1]

[1]Kuala Lumpur Institute of Computer Technologies, Malaysia

The widespread use of Information and Communication Technologies (ICTs) in education has raised a number of philosophical questions regarding their role, impact and ethical implications. As technology becomes more integrated into our lives, it is increasingly important to understand the philosophical underpinnings that shape our relationship with it. In the field of education, the use of ICTs has the potential to transform teaching and learning, but also raises concerns about issues such as access, equity, privacy, and control. Philosophical inquiry into the use of ICTs in education can help to illuminate the values and assumptions that underpin different approaches, and can provide a critical lens for evaluating the benefits and drawbacks of different technological interventions. This essay will explore some of the key philosophical questions surrounding the use of ICTs in education, and will consider the implications of different philosophical approaches for the design and implementation of educational technology.

The general requirement of education development in the 21st century is lifelong education. Informational pedagogy should also develop in the same context. Its the meaning is that a person owns electronic (computer) tools not only during the period of intensive education at the institution, but also throughout life. The latter is implemented through appropriate promotion courses, qualification or retraining of personnel, activities of various training and information centers, implementation of various international and corporate training programs, etc.

The rise of humanity to the level of global information civilization led to the fact that the process of informatization of all spheres of social reality has become an inevitable stage in development of each society. A country, striving to become a full-fledged participant in the world civilizational progress, must meet the latest requirements and pace of global informatization of social and individual life. In the modern world the ability of each society and its institutions to collect, process, analyze, systematize and accumulate information with the help of modern of information and communication technologies becomes a key prerequisite for social and technological progress.

For the social adaptation of a person in new conditions arises the need not just to adapt to them, but also to develop harmoniously. This contributes to the information culture of the individual, which allows not only to navigate freely in the information environment, but also participate in its formation and transformation. And considering the changes in ICTs occur faster than one human generation transforms, mastering them requires constant improvement and self-improvement of personal and professional abilities in the field of informational competences.

Hence, the urgent need is actualized development of the system of information education throughout life, development of developmental methods of pedagogical skill that would meet the latest requirements of the global information and communication environment.

The world that develops on the basis of the principles of perception and transmission of large information flows, as well as the development of the latest information and communication technologies, requires from a person a new attitude to information and knowledge, without which it is impossible personal adaptation and socialization.

The philosophy of information has been defined as philosophical field that looks at critical investigation of conceptual nature and principles of information which includes its dynamics, uses and sciences (Nicolas & Mugeni, 2014)

In this regard, informational education, ICTs in particular, is one of the most relevant areas modern social functioning. A need for special preparation of modern man for life in the information society and the society of knowledge has become one of the key problems of the dynamically changing world. Such a society, which is often called a "learning society", is directly connected with the growing needs of every citizen for constant improvement of qualifications, updating of knowledge, mastering of new types of activities. A special attention is paid towards ICTs that reveal unprecedented opportunities, access to information and knowledge and allow all the learners to realize their potential and to improve the quality of professional activity. The main tool for such self-realization and self-improvement is education available at any stage of life and professional activity.

Information education becomes one of the key tools throughout life human adaptation to modern civilizational requirements. At the same time, constant self-improvement in the field of application of ICTs becomes the main condition of professional and personal socialization.

The latest information revolution transforms not only the sphere of material production, but also the intellectual spheres of life. Currently, we observe the process of transition from an industrial to an information society. The central core of this process is information transformation with the help of innovative technologies. In the information society, where information turns into a strategic resource, each person must have a sufficient level of information culture for successful self-realization.

Informational culture, like any other manifestation of human cultural activity, demands a certain degree of self-improvement and a set of enabling communication skills a person to create a discursive social unity. Precisely for the purpose of providing each person must achieve a certain level of information culture and be aware of development of innovative forms of information pedagogy on the principles of using ICTs.

Today, information illiteracy and incompetence are a significant obstacle to the social development of many countries of the world. But a low level of information culture is also a factor in the impossibility of personal self-development (Ivanković et al., 2013). Today, it is often possible to encounter a situation where a person is unprepared to the progress of information technologies in a certain professional area. At the same time, naturally, professionals sometimes do not possess the skills sufficient to perform necessary work, but still they have to carry out the tasks independently.

In such a situation, society faces the task of active development of the information system continuous education, which would cover all levels - from preschool to adult education – and could flexibly respond to new information and communication technological challenges, and as well as the current needs of various professional fields.

The development of continuous education, a harmonious part of which is the education of adults, is already is a priority task of the structure of social improvement for several decades in many countries. Therefore, it is important to include such a component in the process of building modern continuous education information pedagogy and improvement of information literacy and culture of the population.

Information education is an essential organic part and a necessary dimension of continuous education, it is based on information and communication, social, humanitarian sciences and relevant educational disciplines, provides the necessary and constantly updated knowledge necessary for life and activity in a high-tech, information-rich society. Moreover, the system of information education and enlightenment, and as well as the latest innovative pedagogical technologies in this field, become one of the most important sectors of both socio-economic and intellectual-humanitarian development of every society that strives to be competitive in the complex system of civilizational and informational progress.

Similarly, the competitiveness of each person in the social-adaptive dimension depends on the level of his information and communication education. Information literacy plays a special role in the field of personal professional self-realization. And professional competence of a modern specialist is decisive factor determined by the level of his computer literacy and information competence, ability to self-improvement in the field of modern information technologies.

Self-improvement skills, obviously, are acquired during educational process and self-education affected by the development of general computer and information technology culture significantly. Modern changes in politics, economy, ideology and culture led to the need for intensive development of the domestic education system, in particular the informatization of educational and scientific processes, which requires mastering computer skills.

The rethinking of the theoretical foundations of education is a natural reflection of the objective conditions of our social existence and these peculiarities cause new pedagogical and educational ideas that become the basis of national revival, reproduction of the intellectual potential of the people, ensuring the priority of human role and its comprehensive development.

Achieving this goal is possible only when new pedagogical technologies are spread extensively and oriented towards the use of the individual's unique capabilities and the formation of creativity among learners. Currently, the education system has significant methodological achievements, however, the field of information and computer science literacy needs qualitative improvement and intensification. This is primarily due to insufficient development of the national strategy in the field of informatization and development of computer literacy and communication competence of the population.

Information development is creating technologies that have the potential to catalyze social change, and mapping human needs to technologies that directly respond to specific development problems (Nicolas & Mugeni, 2014). Today, there is already some positive progress in this area. The current state of informatization is characterized by the following achievements:

- the state policy in the field of informatization has been formed and is being implemented;

- regulatory and technical bases of the field are being actively created informatization;

– the informatization process ceased to be spontaneous and acquired signs of control;

– the regional component of informatization is gaining strength;

– the market of modern information technologies and services has been formed and is gaining strength;

- measures are taken to protect information and ensure the information security of the state in the conditions of the use of computer technology;

– international cooperation in the field of informatization is developing.

Also, we will list the main problems in the informatization system and development of information literacy in our country. They include (Ladislas, 2020, Infante-Moro et al., 2019):

- absence of applicable strategy for the development of the information society and an action plan for its implementation;

- no coordination of efforts of the public and private sectors for effective use of available resources;

- the low efficiency of the use of financial, material, personnel resources, the implementation of ICTs in the socio-economic sphere;

- low level of informatization of certain branches of the economy

– insufficient development of the regulatory and legal framework of the information sphere;

- slow creation of national information infrastructure;

- insufficient level of computer literacy among population;

- necessity of implementation of new teaching methods on the basis of ICTs;

- the level of state support for the production of informatization and software means and introduction of information and communication technologies does not provide all the needs of the economy and social life;

- issues of copyright protection.

Thus, after analyzing the listed problems, we can draw conclusions that the development systems of information and communication education are hindered by many factors, including the insufficient development of the integrated strategies.

In additions, the advantages of ICTs in education concern the following (Mensah & Agyei, 2019, Kaware & Sain, 2015, Stamoulis & Plakitsi, 2013):

1) Access to vast amounts of information: ICTs allow students to access information from a wide range of sources, including online libraries, academic journals, and databases. This makes it easier for them to conduct research, gather information, and learn about new topics.

2) Increased engagement: ICTs can make learning more engaging and interactive. For example, online games, simulations, and virtual reality experiences can help students understand complex concepts and retain information more effectively.

3) Flexibility: ICTs allow for more flexibility in terms of when and where students can learn. They can access educational materials and communicate with teachers and classmates from anywhere with an internet connection, making it easier for them to balance their studies with other responsibilities.

4) Personalized learning: ICT can be used to provide personalized learning experiences that cater to each student's individual needs and abilities. For example, adaptive learning software can adjust the difficulty level of questions based on a student's performance, helping them to stay challenged without becoming overwhelmed.

5) Improved collaboration: ICT makes it easier for students to collaborate with each other on projects and assignments, regardless of their location. This can help them develop teamwork and communication skills that are valuable in the workplace.

6) Increased efficiency: ICT can help teachers save time by automating administrative tasks like grading, attendance tracking, and record-keeping. This allows them to focus more on teaching and interacting with students.

7) Cost-effective: ICT can be a cost-effective way to deliver educational content and resources, especially in remote or underserved areas where traditional education infrastructure may be lacking.

Thus, ICT has the potential to transform the way we teach and learn, making education more accessible, engaging, and effective for students of all ages and backgrounds.

To achieve the advantages of ICT, one must follow some recommendations: increasing access through distance learning, enabling a knowledge network for students, training teachers, broadening the availability of quality education materials, enhancing the efficiency and effectiveness of educational administration and policy. According to Kaware & Sain (2015) these steps will enhance the efficiency of use of ICTs within the educational process and brings improvements to its understanding as a powerful teaching tool.

The use of ICT in education has been growing rapidly in recent years, and it is likely to continue to do so in the future. Here are some of the prospects for the use of ICT in education in the years ahead (Mensah & Agyei, 2019, Infante-Moro et al., 2019, Kavathatzopoulos & Asai, 2018, Khan et al., 2011, Fu, 2013):

Blended learning: Blended learning, which combines online and in-person instruction, is likely to become even more prevalent in the future. This approach allows students to access educational resources and materials from anywhere at any time, while still benefiting from face-to-face interaction with teachers and peers.

Artificial intelligence and machine learning: As AI and machine learning technologies become more advanced, they will likely be used to create personalized learning experiences that are tailored to each student's individual needs and abilities. These technologies could help identify areas where students are struggling and provide them with targeted support and resources.

Virtual and augmented reality: Virtual and augmented reality technologies are already being used to create immersive learning experiences in fields like science and engineering. In the

future, these technologies could be used to create virtual classrooms and simulations that allow students to explore new concepts and ideas in a safe and controlled environment.

Data analytics: Data analytics tools are already being used to track student performance and provide teachers with insights into how to improve their instruction. In the future, these tools could be used to identify trends and patterns in student data, helping to inform educational policy and practice at a broader level.

Gamification: Gamification, which involves using game-like elements to make learning more engaging and interactive, is likely to become more prevalent in the future. This approach could help students stay motivated and interested in their studies, while also providing teachers with a way to measure and track progress.

To conclude, the prospects for the use of ICT in education in the future are exciting and promising. As technology continues to evolve and improve, it is likely that we will see new and innovative approaches to teaching and learning emerge, transforming the way we think about education and preparing students for success in the 21st century.

References

Nicolas, K. K. & Mugeni, G. B. (2014). Is it time for the Philosophy of ICT? *International Journal of Information and Communication Technology Research*, 4(8), 299-303.

Ivanković, A., Špiranec, S. & Miljko, D. (2013). Student's level of ICT literacy by study groups on Faculty of Philosophy, University of Mostar. *36th International Convention on Information and Communication Technology, Electronics and Microelectronics (MIPRO)*, Opatija, Croatia, 2013, pp. 605-609.

Mensah, F. S. & Agyei, D. D. (2019). Philosophy of teaching, teaching style and ICT use: a qualitative study of the perspectives of high school mathematics teachers. *African Journal of Educational Studies in Mathematics and Sciences*, 15(1). https://dx.doi.org/10.4314/ajesms.v15i1.1

Kaware, S. S. & Sain, S. K. (2015). ICT Application in Education: An Overview. *International Journal of Multidisciplinary Approach and Studies*, 2(1), 25-32.

Stamoulis, E. & Plakitsi, K. (2013). Activity Theory, History and Philosophy of Science, and ICT Technologies in Science Teaching Applications. In: Plakitsi, K. (eds) *Activity Theory in Formal and Informal Science Education. Cultural and Historical Perspectives on Science Education.* SensePublishers, Rotterdam. https://doi.org/10.1007/978-94-6091-317-4_6

Ladislas, E. S. (2020). What Is Philosophy of Computing and Information Technology? *International Journal of Engineering and Information Systems*, 4(11), 238-241. http://ijeais.org/wp-content/uploads/2020/11/IJEAIS201153.pdf

Infante-Moro, A., Infante-Moro, J.-C., & Gallardo-Pérez, J. (2019). The Importance of ICTs for Students as a Competence for their Future Professional Performance: the Case of the Faculty of Business Studies and Tourism of the University of Huelva. *Journal of New Approaches in Educational Research*, 8(2), 201-213. http://dx.doi.org/10.7821/naer.2019.7.434.

Kavathatzopoulos, I. & Asai, R. (2018). Philosophy as the Road to Good ICT. In: Kreps, D., Ess, C., Leenen, L., Kimppa, K. (eds) *This Changes Everything – ICT and Climate Change: What Can We Do?* HCC13 2018. IFIP Advances in Information and Communication Technology, 537. Springer, Cham. https://doi.org/10.1007/978-3-319-99605-9_22

Khan, S. A., Bhatti, R. & Aqeel, A. K. (2011). Use of ICT by Students: A Survey of Faculty of Education at IUB. *Library Philosophy and Practice (e-journal).* 677. https://digitalcommons.unl.edu/libphilprac/677

Fu, J., S. (2013). ICT in Education: A Critical Literature Review and Its Implications. *International Journal of Education and Development using Information and Communication Technology*, 9(1), 112-125. https://files.eric.ed.gov/fulltext/EJ1182651.pdf