ICT Role during COVID-19 Pandemic in Lifelong Learning for Disabilities

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Abstract

Education of people with disabilities requires special attention because data from world organizations show that only 5% of people with disabilities receive a quality basic education. This study seeks to determine the possibility of improving the education of people with special needs through the use of ICT technologies during the covid-19 pandemic in continuing education, that is, life-long learning. Even though most studies focus on the possibility of using ICT in the education of children with disabilities and are subject to the formation of an inclusive digital space, the feasibility of using basic knowledge of people with disabilities during their profile education and self-development with the help of ICT through distance or blended life-long learning becomes relevant. A review of the literature on the problem of research shows that when ICTs are transformed due to the use of additional technical or software tools, people with disabilities have the opportunity to life-long learning, obtain a profession, develop in it and move up the career ladder. At the same time, ICTs can be used to learn foreign languages and acquire a whole range of knowledge in a distance or blended format.

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Contents

1   Introduction

The rapid development of modern society and its constant transformation requires the training of highly qualified specialists in all leading sectors. A graduate of a modern school must possess a set of basic skills and abilities that are formed in parallel with the basic competencies. At the same time, the knowledge acquired in the course of basic education is practically accurate and allows him to not only adapt to the environment but also comfortably develop in it, acquiring the desired profession (Davydov, 2010). Of course, having received a vocational education, a person realizes himself in a particular profession, constantly improving his professional skills and knowledge, self-developing and improving throughout life. But what about those people whose physical or mental capabilities are limited? (Poroshenko, 2019). According to the World Health Organization, more than one billion people live with some form of disability. This figure is 15% of the entire population of the planet, of which 3.8% account for people aged 15 years and older, and these are individuals who need the assistance of others because of significant health problems (WHO, 2020).

Data from the UNESCO World Organization confirms the fact that people with physical and mental disabilities are very unlikely to visit [UNESCO]. Experts estimate that only 5% of people with disabilities finish elementary school since general education programs are not adapted to the level that is available to children with special needs (Peters, 2003). And the United Nations Children's Fund (UNICEF) estimates that in low-income countries 90% of children with disabilities will never receive basic education (UNICEF, 2014a).

The UNESCO database for 2019 notes that adults with disabilities are considered one of the most vulnerable segments of society. Due to the limited opportunity to attend general education institutions for general basic education, the level of literacy in adulthood is low, which does not allow them to obtain higher specialized education and to realize themselves in a certain profession (UNESCO, 2019).

In 2006, the UN adopted the Convention on the Rights of Persons with Disabilities. This convention clearly states that every child and every person with a developmental disability, as well as healthy people, has the right to quality basic education, and in 2016 adjustments were made about vocational education (UN Division).

At the present stage of development in the world there is no single model of education that could meet the needs and capabilities of all people with special needs, so the relevance of individual educational trajectory, which is based not only on taking into account the individual capabilities of people with special needs but also on the need to adapt educational programs to the level of these people (Kavcic, 2005). The solution to this problem is possible under two conditions, the first of which is the use of the electronic form of learning with the use of ICT, the second is the organization of life-long learning activities - continuous learning (Brahim et al., 2013).

Continuous learning is a dynamic process, which is defined and implemented taking into account the individual characteristics and needs of the applicant for education. Continuous learning is based on an individualized approach that takes into account the level of mental and physical capabilities of the individual who seeks to learn (Vuorikari et al., 2016). Continuous education is an active life-long learning activity of a person based on her desire for self-development and self-improvement (London, 2012). Life-long learning and continuing education contribute to the development of a learning society. A learning society is a vision of

society that is based on the possibility of providing educational activities for everyone, wherever they are, whatever their age, no matter what their gender or level of physical or mental development (Laal, 2013).

Life-long learning is a form of learning that is suitable for absolutely everyone but people with disabilities. It is an opportunity to get not only basic education but also a professional one. Recently, people who live with disabilities are increasingly expressing a desire not only to improve their level of literacy but also to get a profession that could help them feed themselves, earn more (Díez-Palomar et al., 2021).

Literature review

The peculiarities of modern society informatization in their studies describe Bykov & Ovcharuk (2017), Osadchyi & Osadcha (2015), etc. The peculiarities of the country's information and digital environment formation were investigated by Hurevych et al. (2012), Piekhota et al. (2013), etc. Mechanisms and specifics of the introduction of ICTs in the educational space of institutions of general secondary education in their works described: peculiarities of the introduction of information and communication technologies in the educational process in institutions of general secondary education were studied by Bak (2014), Vorozhbyt (2018), Dyshlieva (2010), Shevchenko (2017), etc. Among the scientists who researched the forms of implementation of life-long learning were foreign scholars Beaton (2019), London (2012), Laal (2013), Hurevych et al. (2012), etc.

The problems of life-long learning for people with disabilities are of increasing concern to society, so many studies are being conducted in this aspect, and ways of solving this problem are being considered. Laabidi et al. (2014), are working on developing and implementing technology to enable people with disabilities to receive continuing education. Cooper (2016) is looking for ways in which online learning can be made accessible to students with disabilities. Beaton (2019), has analyzed how distance learning can be used to enhance the skills of individuals with disabilities. Hayes & Bulat (2020), developed a guide to inclusive education systems and policies for people with disabilities in low- and middle-income countries.

Despite the availability of information and communication technologies (ICT) in today's world, the daily creation of new applications that are actively used in educational activities (Ghavifekr et al., 2013; Schaper & Pervan, 2007). Their use by people with disabilities can be the basis for their life-long learning and the acquisition of new knowledge and skills, which, in turn, allow them to master a particular profession or improve their professional skills. This article focuses on how ICTs can be used by people with disabilities for life-long learning and at different stages of learning.

2   Materials and Methods

Analysis of the relevant literature on the problem of introducing ICTs in the implementation of the principles of life-long learning for people with special needs.

3   Results and Discussions

3.1 Results

Informatization of society is a rapid process, which is determined by the active introduction of digital technologies in all spheres of human activity, in particular in the field of education (Sereda et al., 2019). Informatization of education is a process aimed at providing education with methodological and practical developments with optimal use of information and communication technologies in all areas of educational activity (Sartaeva, 2019; Aiqun, 2018; Kim & Lee, 2011). The Law of Ukraine "On Education" notes that education is aimed at harmonious, comprehensive development of the individual as the highest value of society. It is noted that the development must take into account the physical and intellectual needs of the individual, his abilities, talents, and aspirations for self-development and self-realization.

Information and communication technologies in education - a set of methods and techniques of educational activities, providing for the use of digital technologies in educational activities to optimize the

ways of transferring information (Bykov & Ovcharuk, 2017; Dyshlieva, 2010; Morze &Vorotnukova, 2016). "The National Doctrine of Education Development" defines as a priority direction of modern education not just the introduction of ICTs in the educational process, but also their active use in the implementation of mixed and distance forms of learning (Montequin et al., 2014; Sukmana et al., 2021).

Distance education, according to the Concept of Distance Education Development in Ukraine, is one of the forms of education, which is considered equivalent to full-time, part-time, evening classes. The implementation of distance education is possible with the use of distance learning technologies and ICT technologies. Blended learning is a form of education, which combines the basic components of distance and "traditional" education in those proportions that are appropriate for a particular situation. "Traditional" or face-to-face learning systems can fully correct the shortcomings of distance learning, while distance learning eliminates the possibility of eye problems (Murashchenko, 2017).

A separate form of training is training with the use of mobile technology - m-learning. This technology is based on the use of the mobile devices capabilities during the acquisition of a certain set of knowledge and the formation of elementary skills of working with search information systems and the world information network (Alsaadat, 2020). Both full and blended, and mobile learning technologies are available only when ICTs are used in the educational process. The listed forms of education opened several opportunities for education applicants associated with the advantages of these forms:

- access to learning materials at any time convenient for the education seeker;
- no ties to the classroom and no need to visit the educational institution;
- the opportunity to communicate in virtual space through e-mail correspondence, SMS, or during online conferences (Rahman, 2014; Kumar, 2016; Kalita & Das, 2015).

The introduction of ICT technology in educational activities has not only changed the approach to the system of information exchange in the learning process, but also opened new horizons for people whose opportunities and time are limited, but the desire to learn and develop prevails over the disadvantages they have. Improvement of digital technologies, the growing popularity of mobile devices, and certain mobile applications provided the formation and development of such a form of education as continuous.

There is no unified definition of life-long learning, but many terms are actively used, which are considered synonymous to this concept: "adult education", "continuing education" (life-long learning), "further education", and " recurrent education". In the case when they talk about life-long learning, note its relevance during professional growth without discontinuing production, so it is also appropriate to use such phrases as: "permanent education", or "life-long education" (Ozdamli & Ozdal, 2015; Bidokht & Assareh, 2011). Each of the proposed concepts has its characteristic, specific distinction, but they are all similar, similar in that they characterize education as an incomplete process, is relevant for every adult (Salo, 2017).

For the first time, continuous education was talked about in the 1960s, and as a basic principle of education reform, it was defined in 1974 at the Council of UNESCO, which led to the formation of the Concept of Continuing Education. This concept is aimed at defining the individual as the center of civilization development, its continuous development and improvement should be carried out continuously, which will lead to the possibility of adaptation to the society, which is constantly transforming.

The traditional form of education is available to schoolchildren and students. It is aimed at obtaining basic knowledge, based on which a person chooses a profession, and, in the future, masters it through profile training. The acquired set of knowledge is fully implemented in professional activities, but later it is not enough, so the person continues learning throughout life, increasing the level of professional education, moving up the career ladder.

The educational process of people with special needs has its characteristic differences, which are determined not only by the formation of an inclusive educational space but also by an individual approach to the learning process. People with developmental disabilities can be grouped into four main groups:

- people with physical disabilities related to movement (limited limb movements, or reduced control over the movements of the arms and legs);
- people with visual impairments (blindness, partial loss of vision, color blindness);

- people with hearing disabilities (deaf, partially deaf);
- people with cognitive defects.

According to the Law of Ukraine "On Education", in regards to developmental defects, all people have the right to receive a quality education, but the UNESCO Global Report (2013) noted that not all children with disabilities receive basic education. Through the obstacles that arise both in the process of learning activities, later there is a problem with obtaining vocational education, mastering a profession, and finding a job. Inclusive education is a complex of educational services aimed at ensuring the basic right of children with special needs to receive education at the place of residence in a general education institution. Inclusive education requires the formation of an inclusive educational environment and adaptation of educational institutions with the needs of education applicants who study there (Mishchyk, 2012; Sofija & Ivan, 2018).

In Ukraine, all children with special needs have the opportunity to attend general educational institutions and receive education individually, taking into account their basic needs, which require adaptation of the program material per the needs of each child. Teachers working with such children receive additional training enabling them to carry out the educational process in a high-quality manner.

Informatization of society and the educational process also concerns children with special needs, it requires teachers to create an informative inclusive environment. The informative inclusive environment involves the use of ICT in educational activities and the development of digital competence in children with special needs.

The formation of an informative and inclusive environment is possible through the use of ICT tools and assistive technologies. Assistive technologies include tools, additional equipment, or software that allow people with disabilities to use a computer or mobile device in learning activities (Boyle et al., 2020; Domingo, 2012). Assistive technologies greatly simplify the process of accessing information and make it accessible for disabled people. Additional assistive technologies include:

- screen-reading software (an additional element that allows you to add a soundtrack to the text that is played, the ability to simulate mouse movements with the keyboard);
- software to enlarge the image on the screen;
- Braille display (a display that displays Braille characters);
- alternative means for entering information (on-screen keyboard, audio recording, and microphone input);
- keyboard enhancements (such as StickKeys, Mousekeys, repeatKeys, SlowKeys, BounceKeys, or ToggleKeys), mnemonics, key combinations;
- alternative devices that allow you to follow the text (Arrigo, 2005).

Studies by Duque et al. (2020), indicate that the use of ICT in an inclusive educational environment has a positive impact on children's development, and if they develop information and communication competence, they can learn continuously throughout their lives. The use of ICT in an inclusive educational environment can be done in three ways:

- for compensatory purposes (as technical support before the lesson, allows partially compensating or replacing lost or missing functions);
- for communication purposes (additional software and additional assistive technologies allow the use of ICT as an additional means of communication and significantly simplify the process of communication)
- with the didactic purpose (meeting individual needs of the child through differentiation of learning materials and simplification of the process of learning activities) (Zaporozhchenko, 2013).

Increased attention to the use of ICT in the formation of an inclusive educational space allowed not only to create an educational environment favorable for children with disabilities but also ensured the possibility of their further education in institutions of higher profile education, allowing for life-long learning. The formation of digital competence in school education allows further use of ICT as an effective tool for acquiring new knowledge. Depending on the complexity of developmental defects, a person can choose individual, blended, or distance learning (Gomez et al., 2020).

Depending on what developmental defects a person has, having a basic level of knowledge, independently installs additional tools on the digital tools, greatly simplifies the learning process, and allows you to process information available to all users of the world wide web (Kusumajaya, 2021). Formed skills are constantly improving, so as the level of education of a person with special needs increases, her ICT skills improve. The desire for self-development necessitates the development of new skills and new knowledge, and for people with disabilities, self-development using ICT can be carried out in the following areas:

- improving one's ICT skills
- acquiring new knowledge by processing the materials available on the world information network;
- acquiring new skills through specialized applications;
- learning foreign languages with the help of special applications or special software (Páscoa & Gil, 2014; Zaporozhchenko, 2013).

3.2 Discussions

A review of the literature shows that in today's information society it is impossible to live without formed information and communication (digital) competence. Formation of ICT skills and, consequently, digital competence takes place in the course of general education learning activities, but in the case of teaching children with special needs, this process has several peculiarities (Hussin et al., 2021; Widana et al., 2021). An ordinary child has access to ICT tools of childhood and actively learns to use them in the process of learning and cognitive activities. Using ICT in lessons and for recreational activities is normal for her, while a child with special needs may be limited in these activities. The analysis showed that children, later adults, with developmental disabilities can be grouped into four basic groups. Taking into account their developmental disabilities, the use of ICT must be implemented in a specific way.

For example, children (people) who have physical disabilities and movement disabilities require additional tools to facilitate information retrieval, processing, and presentation of results. Examples include decreased sensitivity of a computer mouse, use of a specialized keyboard, etc. On the other hand, such people may actively use ICT to view photos and videos, listen to audio files, etc.

In case people have problems with visual impairment, it is optimal to use tools that allow the display of Braille. If the person has low vision, then it is advisable to use applications that allow zooming in and analyzing the image at that level. In cases of color blindness, applications and programs can be used to greatly simplify the mechanism of perception of information by color blind people. Despite the disadvantages of vision, people with this group of limitations can use ICT to play audio files, use them for active communication using a microphone, etc. With hearing impairments, ICTs can process huge amounts of visualized material, transmit information during correspondence, or use specialized applications that allow communication via typed text. Having cognitive defects, in most cases, a person can master ICT skills, but the process is longer and slower.

After acquiring basic knowledge and having a basic level of established digital competence, people with disabilities can continue learning. Thus, using ICT a person can get a specialized education remotely or in a mixed form, without leaving the place of residence, if there is no such an opportunity. Obtaining specialized education can be only a starting point in the educational activities of a person with disabilities because using mobile technology, ICT, and specialized applications, the person can improve speech skills, learn foreign languages, raise his/her level of professional skills even without leaving home. Thus, ICT is a tool that allows anyone to learn continuously throughout life.

4 Conclusion

Information and communication technology is a component of educational activity that allows a person to learn throughout life. The digital competence developed during general education allows a person to improve and develop throughout life through the use of ICT, thus realizing life-long learning. People with special educational needs for their disabilities, just like normal children, receive basic knowledge of ICT use during

their schooling in a general education institution, but unlike normal children, their use of ICT is possible only with the use of additional technical or software tools. With a basic knowledge and a basic level of digital competence, people with disabilities can continue their education using forms such as distance, blended or mobile learning. Using this approach to educational activities, people with disabilities have the opportunity not only to receive specialized education but also to realize themselves in a particular profession, grow professionally through continuous learning, move up the career ladder.

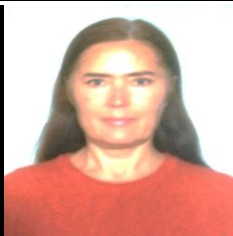## References

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