

The importance of digitalization in the education process

Marta Ciarko^{1*}, and Agnieszka Paluch-Dybek²

¹Stanisław Staszic State University of Applied Sciences in Piła, Poland

²University of Szczecin, Faculty of Economics, Finance and Management, Poland

Abstract. Ubiquitous digitization is a domain of the community that seems to be increasingly visible in the education process. It can bring many benefits not only to students but also to other entities. Knowledge is one of the most important values. It is largely the basis of the modern economy – Knowledge Based Economy (GOW). The education process is one of the most important factors influencing the civilization level of the society, and teaching is a process consisting primarily of activities that lead mainly to the organization and direct management of the learning process, aimed at creating conditions conducive to learning, and is related to the teacher's personality and work. Both the literature on the subject and observations of the education market clearly indicate that the issues related to digitization and its importance in the education process should be considered in the context of teacher's work at school. The article focuses on the teaching process in the context of organizing a teacher's workshop at school, and to a lesser extent on teacher's qualifications and professional competences. Moreover, attention was focused on issues related to the problems of equipping schools with high technology teaching aids.

1 Introduction

Contemporary teachers as witnesses of dynamic changes taking place in social, political, economic and cultural life characterized by dynamic progress in all areas of science and technology should properly organize a workshop in order to effectively fulfil their basic duties.

Undoubtedly, modern technologies allow for efficient and effective work. Nowadays, when the situation on the labour market is constantly changing, the available technology becomes invaluable due to the need to react quickly to the changes taking place. The role of a teacher should include providing students with relevant knowledge about the ways of navigating the virtual market, including labour market, showing the potential of the Internet and making them aware of the fact that in the current reality, an efficient use of the global network is a necessary skill. Of course, technology is only a tool that under no circumstances can replace interpersonal contact, professional knowledge or skills necessary in the teaching process.

The article has been divided into parts. The first one is an introduction to the issues related to the organization of a teachers' workshop, developed on the basis of applicable legal acts

* Corresponding author: mciarko@puss.pila.pl

and a critical analysis of the literature on the subject. In addition, the issues of teacher qualifications and competences were considered. The second part deals, in particular, with the recognition of issues related to equipping schools with high-tech teaching aids in the context of specific regulations, focusing on the formal requirements for equipping schools and the conclusions resulting therefrom and their verification. At the same time, efforts were made to probe the need for introducing new technologies to optimize the teacher's work.

The research problem discussed in this study was considered on the basis of theoretical context aimed at indicating the theoretical approach to the issues discussed in it and their interpretation, as well as indicating their social and scientific significance. The aim will be to establish a theoretical and methodological pattern of conduct as a starting point for implementing a research project aimed at enriching the discussions in this field so far. The whole is summarized by the conclusions to the study.

2 Organization of the teacher's work in the era of digitization

The term "information society" is inextricably linked with information and communication technology. Contemporary youth is subject to various, attractive and often alternative factors, compared to which the traditional way of acquiring knowledge useful for making the right choice of profession has little chance of success. The use of electronic information carriers in the learning process increases the attractiveness of this process and the search for the appropriate educational and professional path by young people [2].

In Poland, digital education has been included in the document "Strategy for Responsible Growth up to 2020 (with an outlook to 2030)" [3], which is a key document of the state in the field of economic policy, in which, as a part of digital education, according to the Digital Education report, e-learning in the EU provides for access to broadband Internet and the development of citizens' digital competences.

According to the document "Fundamental goals of Polish education" [4], prepared by the Office of the Ombudsman, "universal schooling and education are the most important national investment, guaranteeing a safe and prosperous future for Poland in the family of the world and European nations. In order for the social effort to develop education in Poland not to be wasted, it is necessary to clearly formulate the basic goals of national education, and then to ensure that they are achieved as quickly and as well as possible".

Modern technologies in the education process, especially in the teaching process, provide opportunities that have not been feasible until now. Quick information exchange and its universality are the advantages of modern technologies and the Internet, which facilitate work with a student. Skilful use of these tools in the teacher's work allows for greater student involvement.

The effects of education and upbringing of students depend on the properly organized work, teacher's competences, their motivation and personality traits, and thus broadly understood qualifications. IT competences and the ability to use modern information and communication technologies (ICT) tools are described in the recommendations of the European Parliament and the Council [5]. IT competences cover the skilful and critical use of information society technologies (ISTs) in both work and play, and in free communication. They are based on basic ICT skills, i.e., using computers to obtain, evaluate, store, create, present and exchange information, to communicate and participate in collaborative networks via the Internet".

The role of a teacher in the teaching process is extremely important. The discipline of knowledge called *pedeutology* is devoted to it, and is defined as the science of the activity, education and self-education of teachers [6]. Teachers educate and develop a student under their professional supervision. The effects of their work depend, *inter alia*, on the attitudes and abilities of students, the educational program, external conditions, and a properly planned

and organized work. The "Lexicon of Pedagogy" provides a similar definition of a teacher who is a properly prepared specialist to work in educational institutions [7].

Thanks to properly organized activities of a teacher, didactic ideas, goals, content, methods and principles of education and upbringing are realized. Teachers' person and personality, their preparation and professional qualifications, authority and ideological and moral attitude play a decisive role in the process of teaching and learning. The teacher is an organizer, manager and guardian of this process [8].

The teacher's work should be an inspiring, creative and research activity. It is them, in particular, who are expected to become students' leaders who guide their development and set educational paths for them in line with their individual interests and predispositions [9]. It should be a conceptual work on organising a modern education and upbringing system. In order for this activity to be properly planned and carried out, it is necessary to properly organize a workshop. Moreover, the ability to organize and plan work, especially didactic one, by both the teacher and the student consists in deliberately predicting the course of the education process in accordance with the adopted project, a plan of prepared activities including a list of tasks to be performed and goals to be achieved along with the deadlines for carrying out tasks, the expected result, persons responsible and performing individual tasks, as well as modern methods and means that will be used in the process of implementing planned activities.

The teachers' workshop should be based on current assumptions of pedagogical theory and practice and facilitate the implementation of their own original program concept, and thus contribute to the teachers' professional development. It is worth emphasizing that thanks to individual work and self-education, this workshop has a chance to develop.

A workshop should be understood as all the methods and forms used by the teacher in his didactic and educational work, as well as the means used to achieve this, i.e., technical conditions that enable full control of the process (methodological and student library, demonstration and individual aids for the student, tools for the teacher to prepare teaching aids, laboratories or classrooms). The factor which determines the development of the didactic workshop to a large extent is the teachers themselves. Only they - creative and searching - will undertake solving problems occurring in didactic, educational and caring processes, with a previously planned and then properly organized and secured workshop, which is one of the basic conditions for achieving the desired state with regard to the organization of their own activities. It is also important to equip the workshop with appropriate items and devices, especially those that are to be directly used as teaching aids during lessons.

The digitization of the education process, society and the economy is one of the most dynamic changes, which provides many new opportunities, and, at the same time, brings uncertainty and various types of threats, for example in the context of broadly understood security. Digitization as a continuous process of real and virtual world convergence is becoming the main driver of innovation and changes in the educational process, in particular in organising the teachers' work and equipping schools with teaching aids, especially the digitization of teaching materials.

3 Qualifications and pedagogical competences

The teaching profession is one of the few occupations in which constantly updated pedagogical knowledge is a necessary condition that all teachers should fulfil if they have the ambition to achieve good results in their work. Therefore, they have to devote a lot of time to their own specific professional development in the framework of the latest digital technologies.

In pedagogical, psychological and praxeological literature it is difficult to find a clearly defined concept of the teacher's work organization. Hence, both the above-mentioned elements as well as the qualifications, competences and skills of teachers significantly affect the quality of their work and the success of the education process. When analysing the literature on the subject, many different views and definitions of the above-mentioned terms can be found.

In "Nowy słownik pedagogiczny" W. Okoń defines professional qualifications as the scope and quality of preparation necessary to perform a given profession. Professional qualifications include the following factors: the level of general education, professional knowledge, professional skills and especially the level of skill and the ability to organize and improve work, talents and professional interests. Professional qualifications are defined on the basis of tariffs that list the standards of professional activities necessary for the position held [10].

According to Z. Woroniecki, the concept and scope of pedagogical qualifications are variously understood in terms of competences, skills, functions and professional tasks of a teacher. Despite this, it is recognized that there is a common belief that pedagogical qualifications have a decisive influence on the effectiveness of the teacher's work and that it is possible to learn these qualifications in the literature on the subject, where authors present the concept of competence in different ways. Regarding the subject of this study, the authors adhere to the definition according to which competence is a harmonious composition of both knowledge and skill, understanding and desire [11].

R. Szultz created the concept of a creative teacher who, by using modern technologies in the work with students and digitization of didactic materials, shapes the professional personality through self-education, continuous professional development to improve qualifications and his own workshop, participation in research, both scientific and methodological, undertaking innovative activities, searching for new areas and challenges in didactic and educational work [12]. In addition, the organization of work related to the collection of various didactic materials or teaching aids as well as preparation for lessons using digitization of the teaching process, especially in the field of teaching materials applied is of paramount importance.

Organization of a teachers' workshop is primarily a matter of proper equipment, not only with furniture, but also with teaching aids, equipment, the use of which is necessary for the proper delivery of classes, implementation of didactic and educational goals, all the more so in the face of constant changes in requirements for schools and for teachers, using only the textbook and the blackboard for teaching is definitely not enough anymore [13].

According to A. Tomaszewska [14], a teacher nowadays does not only transmit knowledge, but is to be an advisor in learning, to support the acquisition and discovery of knowledge, views and skills. An innovative teacher "introduces" the student to the idea of reflective thinking, analysis and rational interpretation (problems, phenomena, information - reduced to the common denominator of the category of knowledge), and encourages the student to draw conclusions, evaluate the discovered knowledge and acquired skills. By preparing students for changes and making them aware of their unpredictability, the teacher releases the skills of optimal reactions and actions in dynamic, unique and difficult situations. A contemporary teacher becomes a person introducing the student to the perspective of the necessity of permanent development – the idea of continuous learning. It should be remembered that the teacher's activity is always directed towards the future [15]. He is responsible for the educational future of the next generations of students, their further professional path and their social role. In the long term, the teacher's educational activity indirectly determines the civilization, cultural and social future of the country in which he practises his profession. Since the quality of education depends on meeting new civilization and cultural challenges, the teacher is largely responsible for the future of the humanity [16].

To sum up, apart from subject education, the teacher's professional skills, understood as competences, which, when compared to the three main components, include knowledge, skills and responsibility [17], comprise in-depth psychological and pedagogical knowledge, specific personality traits and interpersonal skills. Moreover, in order for an educator to be promoted and receive a higher degree of professional recognition, the teacher must first of all obtain positive outcomes in didactic, educational or caring work as a result of implementing activities aimed at improving his own work and increasing the quality of school work and achieving positive results in the proper implementation of tasks for education, social assistance or juvenile delinquency proceedings in connection with the position held or the function performed. It is necessary for the teachers to be able to organize and improve their workshop, applying methods that activate the student as well as multimedia and IT tools that favour the learning process, evaluate their own activities, increase their effectiveness and make changes in these activities, be able to take into account the needs for students' development, issues of local environments and contemporary social and civilization problems.

4 Equipping the school with high-tech teaching aids

The element indicated in the literature on the subject, necessary to obtain the desired parameters of modern educational services, is the appropriate technical equipment of a school. It is emphasized that equipping the school with modern teaching aids supports the entire didactic process and contributes to a greater involvement and concentration of students in class [18]. It should be emphasized that the quality of educational services is positively influenced by using, in particular, modern information technologies, both directly in the didactic process and in libraries, reading rooms and community centres. Moreover, the skilful use of information technologies facilitates the day-to-day administration of the school and provides relevant data, which, after being structured and analysed, become a source of important information in the decision-making process by both the school headmaster and superior units. Preparation for life in the information society is one of the challenges of today's school, which must equip students with the skills to use information and communication technologies, especially in the field of searching, processing, analysing and using information. To carry out these tasks, it is necessary to equip the school with modern computer equipment with the access to high-speed Internet, high-quality educational resources and well-prepared teachers.

Equipping the school with teaching aids undoubtedly encourages active participation in the didactic and educational process, enables the creation of conditions for a comprehensive, harmonious, intellectual and emotional development of students who can find themselves in today's reality.

The implementation of the goals and assumptions of education requires a proper selection of both methods and forms of work as well as didactic aids and the possibility of using them in the teaching-learning process. Significant importance should be attached precisely to equipping the school with didactic means activating students, developing creative thinking, enabling independent discovery of the world and the dependencies occurring in it.

In the scientific literature, didactic materials understood as material objects and symbolic signs facilitate a better understanding of reality and the acquisition of skills of its proper transformation [19]. According to F. Bereźnicki [20], these are, on one hand, objects that provide sensory stimuli, as well as technical devices that facilitate the transmission of these stimuli. The variety of didactic aids and their rational use in conjunction with the correct selection of teaching methods and other components of the didactic process make them contribute to enhancing teaching results and improving the quality of education.

Nowadays it is recognized that education is indispensable for the development of society and the knowledge-based economy. One of the ways of ensuring a high-quality level of educational services provided is the work of a teacher using the opportunities offered by modern information and communication technologies which is consistent with the activities undertaken for the digitization of Polish education implemented under the EU financial perspective. Undoubtedly a school, equipped with modern teaching aids and mobile computer equipment, will enable the introduction of modern, innovative methods to activate students in practice.

The literature on the subject and the available studies, including the Supreme Audit Office report [21] on the effects of education in schools (broken down into public and non-public), indicate differences in the various legal and organizational conditions in which these two groups of schools operate. According to the report, equipping schools with teaching aids is sufficient for the implementation of the teaching content included in the core curriculum. However, only 14% of public-school teachers consider this equipment to be modern, while in non-public schools as many as 92% of teachers were of a similar opinion. One third of students of public (34%) and private (29%) schools indicated that only some teachers use multimedia aids available at school during their lessons. The report shows that equipping non-public schools with modern teaching aids and teaching equipment and the possibility of determining the number of students in a class is definitely at a higher level than in the case of public schools, as evidenced by the results of the audit carried out by the Supreme Audit Office.

Both the literature on the subject and personal observations also indicate a significant amount of funds in this regard allocated to the development, maintenance of schools and equipping schools with modern technology with access to high-speed Internet. It should be borne in mind that an under invested school is not able to offer effective and full implementation of the tasks entrusted to it. The results summarised in the report indicate a relatively poor condition of Polish schools in this respect.

Recognition of the technical level of school equipment with multimedia teaching aids and teaching equipment proves that the vast majority of schools have the necessary technical equipment for going through the didactic process properly. Observation of the educational services market also shows that schools equipped with modern teaching aids, multimedia equipment, laboratory rooms, language labs, often do not properly use the potential created by this equipment to introduce modern, innovative, effective and attractive methods to teaching practice. The most common reasons in this respect are the competence deficits of teachers and their insufficient commitment to their work.

It should be added that equipping schools with digital teaching aids is sufficient for implementing the teaching content included in the core curriculum. However, few school teachers consider the equipment to be modern. It has been observed that only a small number of teachers make a full use of the multimedia aids available at school during their lessons.

The current regulation of the Ministry of National Education [22] on the basic conditions necessary to be implemented by schools and teachers of didactic, educational and care tasks as well as curriculum, clearly organizes issues related to equipping the school with teaching aids and didactic materials as well as the schools' premises. It indicated that schools should be equipped with teaching aids and equipment enabling the implementation of teaching, upbringing and caring tasks, which should enable the implementation of the school's set of curricula. The regulation also obligates to provide teachers free of charge with materials necessary to perform activities falling within the scope of teacher's duties, according to the specific nature of a given school.

It is important for the proper functioning of schools and institutions to enjoy the scope of powers of the governing body, regulated in the Educational Law Act [23], which is responsible for the activities of the school and institution, being also responsible for

equipping the school or institution with teaching aids and equipment necessary for the full implementation of curriculum, educational programs, conducting tests and examinations and performing other statutory tasks. Other tasks of the governing body include: ensuring the conditions for the operation of the school or institution, including safe and hygienic conditions for learning, upbringing and care; providing conditions for the use of special organization of learning and working methods for children and young people in special education; carrying out renovation of school facilities and investment tasks in this regard; providing administrative services, including legal services, financial services, including the performance of activities referred to in art. 4 sec. 3 points 2-6 of the Act of 29 September 1994 on accounting and organizational service of the school or institution; performing activities in matters related to the labour law in relation to the headmaster of a school or institution.

Nowadays, modern technologies, teaching aids and widely understood teaching materials are the main tool of a teacher's work, constituting one of the areas guaranteeing the quality improvement of the educational services provided and the success of the educational process.

5 Methods

When considering the scientific problem presented, it is necessary to define the procedure that leads to achieving the intended goal [24]. When solving a specific research problem, one method is usually taken as the leading one, and the others are referred to as auxiliary or complementary [24]. According to the literature on the subject, the main research methods include the following: observational and experimental, statistical, construction, source criticism, comparative and logical analysis [25].

The article in its assumption is the result of a critical analysis of the literature on the subject, which mainly consisted of scientific works from various disciplines, popular science, journalistic and methodological publications, scientific articles, reports and observations, as well as the legal regulations in force in this area. The above is only a starting point for a specific research procedure in the field of determining the validity or importance of digitization in the education process, considered in this article only from the perspective of the teaching process in relation to the teacher's work, qualifications and competences, and equipping schools with high-tech teaching aids. Thus, the information obtained as a result of a properly conducted study should, in principle, be a source of information that can be properly used.

The literature on the subject indicates that one of the main divisions of research methods is the distinction of quantitative methods, which boils down to scaling the studied phenomena and their numerical (percentage) parameterization, and qualitative methods, which assume the study of a given phenomenon by recreating the internal perspective of people shaping this phenomenon. Thus, it may be a problem to adopt certain methodological assumptions in relation to the problem under investigation, which should take into account all the shortcomings and difficulties of applying a given research method.

6 Conclusions

To conclude these considerations, it should be emphasized that in the context of the educational process particular importance is ascribed to the use of broadly understood digitization in the teaching process, which translates into the students' interest in receiving education in a given school and, consequently, translates into their educational success.

The challenge for today's school is to prepare students for life in the information society, and, therefore, all students should have the ability to apply information and communication

technologies, especially in the field of searching, processing, analysing and using information. To accomplish this task, school principals must undertake a number of activities aimed at promoting the use of modern information and communication technologies and equipping schools with modern computer equipment, access to high-speed Internet and high-quality digital educational resources. In order to develop the competences of students and teachers in this area, it is also necessary to support the change of the teaching model towards the development of creativity, cooperation skills and critical thinking, including the search, evaluation and creative use of available sources of knowledge.

The variety of digital tools for conducting classes, e-learning platforms, digital educational resources undoubtedly creates great opportunities for the education process, but also some limitations. The technological equipment of institutions, the availability of equipment and the Internet at home, the level of digital competences of teachers and students, the availability of digital teaching materials, online teaching methodology made education a very big challenge both for the institutions themselves and, above all, for teachers and students.

Designing the theoretical background, reference to literature and reference to specific legal regulations in the field of the research subject in question by no means exhausts the presented issue, it is only one of many approaches, constituting a proposal to extend reflections and research on the importance of digitization in the education process. The implementation of such a goal set provided a lot of interesting and useful information, allowing for a better understanding of the issues presented.

The reflections undertaken in the article may constitute a platform for further discussions in the analysed area, understood only in the context of the teaching process in relation to the organization of the teacher's work and equipping schools with high-tech teaching aids.

References

1. N.U. Nowak, *Edukacja jaka ma być z niej korzyść dla przedsiębiorcy* <https://digitalandmore.pl/cyfrizacja-na-czym-polega-i-jaka-ma-byc-z-niej-korzysc-dla-przedsiębiorcy> (2019)
2. A. Mazurek, *E-learning jako nowoczesne narzędzie wykorzystywane w szkołach*, Projekt realizowany w ramach Działania 9.4. „Wysoko wykwalifikowane kadry systemu oświaty” na podstawie umowy podpisanej z Urzędem Marszałkowskim Województwa Lubelskiego, (2014)
3. Strategia na rzecz Odpowiedzialnego Rozwoju do roku 2020 (z perspektywą do 2030 r.), https://www.google.pl/url?sa=t&rct=j&q=&esrc=s&source=web&cd=&ved=2ahUKEwi8pbyboL_yAhUDvYsKHRLoCFIQFnoECAMQAQ&url=https%3A%2F%2Fwww.gov.pl%2Fdocuments%2F33377%2F436740%2FSOR.pdf&usg=AOvVaw28aF21CZQJDIYhAC5ZlyNP, Warszawa (2017)
4. Biuro Rzecznika Praw Obywatelskich, *Obywatelska odpowiedzialność za edukację narodową, Zasadnicze cele polskiej edukacji*, <https://bip.brpo.gov.pl/pliki/1139860517.pdf>, (2006)
5. Zalecenie Parlamentu Europejskiego i Rady nr 2006/962/WE z dn. 18 grudnia 2006 r. w sprawie kompetencji kluczowych w procesie uczenia się przez całe życie (Dz.U. L 394 z 30.12.2006), s. L 394/13
6. W. Kopaliński, *Słownik wyrazów obcych i zwrotów obcojęzycznych*, Wydawnictwo Wiedza Powszechna, Warszawa (1989)
7. B. Milerski, B. Śliwerski, red., *Leksykon Pedagogika*, PWN, Warszawa (2000)

8. B. Suchodolski, red., *Pedagogika (podręcznik dla kandydatów na nauczycieli)*, Warszawa (1980)
9. A. Płatnerz, *Nowy model nauczyciela a europejski wymiar kształcenia*, www.szkolnictwo.pl/index.php?id=PU5772, (2010)
10. W. Okoń, *Nowy słownik pedagogiczny*, Warszawa (1996)
11. Z. Woroniecki, *Wymagania kwalifikacyjne (zawodowo-pedagogiczne) wobec nauczycieli wynikające ze swoistości działalności pedagogicznej*, [w:] Woroniecki Z., *Wymagania kwalifikacyjne stawiane nauczycielom jako grupie zawodowej*, Warszawa (1988)
12. R. Schulz, *Nauczyciel jako innowator*, WSiP, Warszawa (1988)
13. A. Janus, *Dobre Praktyki: Zawód - nauczyciel*, <https://zasobyip2.ore.edu.pl>
14. A. Tomaszewska, *Nauczyciel na miarę XXI wieku*, W: *Nauczyciele wobec wyzwań współczesności. Doświadczenia – badania – koncepcje*, Przygońska E., Chmielewska I. (red.), Wydawnictwo WSH-E, Łódź (2021)
15. Cz. Banach, *Nauczyciel*, W: *Encyklopedia pedagogiczna XXI wieku*, Tom III, WA. Żak, Warszawa (2004)
16. Cz. Banach, *Nauczyciel*, W: *Encyklopedia pedagogiczna XXI wieku*, Tom III, WA. Żak, Warszawa (2004)
17. E. Sobol, L. Drabik, *Słownik języka polskiego*, Wydawnictwo PWN, Warszawa (1994)
18. A.M. Zemła, *Technologie informacyjne w zarządzaniu szkołą* [w:] *Współczesne problemy organizacji i zarządzania oświatą. Wybrane aspekty teoretyczno-praktyczne*, red. Karcz E., Wydawnictwo Uniwersytetu Opolskiego, Opole (2009)
19. E. Fleming, *Unowocześnienie systemu dydaktycznego*, Wydawnictwo WSiP, Warszawa (1984)
20. F. Bereźnicki, *Podstawy dydaktyki*. Oficyna Wydawnicza „Impuls”, Warszawa (2007)
21. Najwyższa Izba Kontroli, Informacja o wynikach kontroli, *Efekty kształcenia w szkołach publicznych i niepublicznych o uprawnieniach szkół publicznych* http://kogorzow.edu.pl/wp-content/uploads/2015/06/nik_efekty_ksztalcenia.pdf, (2015)
22. Rozporządzenie MEN z 17 grudnia 2010 r. w sprawie podstawowych warunków niezbędnych do realizacji przez szkoły i nauczycieli zadań dydaktycznych, wychowawczych i opiekuńczych oraz programów Nauczania (Dz.U.2011 nr 6 poz. 23)
23. Ustawa z dnia 14 grudnia 2016 r. Prawo oświatowe (Dz. U.2019 poz. 1148 i 1078)
24. M. Sławińska, H. Witeczak, *Podstawy metodologiczne prac doktorskich w naukach ekonomicznych*, Polskie Wydawnictwo Ekonomiczne, Warszawa (2008)
25. J. Pieter, *Zarys metodologii pracy naukowej*, PWN, Warszawa (1975)
26. J. Apanowicz, *Metodologia ogólna*, Wydawnictwo Bernardinum, Gdynia (2002)