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SANDRA ŚCIERANKA 

A Teacher in the Era of the Spread of Artificial Intelligence Applications – Challenges and Difficulties

ORCID: 0000-0002-7814-4288, MA, University of Rzeszow, Institute of Pedagogy, Poland

Abstract

The tasks of a modern teacher are definitely different from those they had to perform a decade ago. In the era of various changes taking place, constantly developing, but also accompanying digitization in every sphere of life, the role of the teacher takes on a new meaning – flexibility and openness to changes on their part become necessary. Therefore, teachers face new challenges, roles and skills to expand. The conducted considerations are aimed at showing the impact of digitization both on the daily work of the teacher, the performance of professional functions, as well as his relationship with students. The punchline becomes the need to use artificial intelligence tools, as well as the essence and necessity of media literacy of modern teachers, which is reflected in the entire didactic process carried out among students shaped by digitization and the world of media.

Among the others, the aim of the work was to determine attitudes of the educators (on the rating scale) about the presented approach to the work.

Keywords: digitization, teacher, student, challenges, difficulties

Introduction

The face of the present world is defined by the variability that affects all spaces of life. Therefore, as a result of ongoing transformations both in the socio-political aspect, ideological transformations, educational reforms, and above all the significant impact of digitization on every level of life, education is also gaining new importance, and the related role of the teacher. The educational system, which is assumed to be the most specific to teachers, who are responsible for ensuring adequate access to knowledge, extends both the responsibility for improving the quality and level of education as well as increases the scope of competences and qualifications (Muchacka, Szymański, 2008, p. 11). Therefore, the changing school reality needs teachers who will meet new tasks and chal-

lenges, at the same time support and inspire students in their comprehensive development (Szempruch, 2001, pp. 9–10).

Therefore, one of the priorities in the area of changing education is the impact of digitization and both on the change of the model of a typical student, variability in the area of achieved learning goals, but above all on the person of the teacher, because it significantly introduces pedagogy into a new, updated space, which is of particular importance for the effectiveness of the entire didactic process implemented in schools. Undoubtedly, artificial intelligence is a tool of promising importance both for the work of teachers and for the pupils themselves, including support for pupils with special educational needs. Therefore, we should reflect on the essence of the media character of the teacher. Can they pursue the didactic sphere on the basis of the knowledge initially acquired, or do they have to follow digitalisation, which, in addition to the positive aspects, also entails a number of negatives? In the face of this variability, what are the challenges and difficulties for the teacher, and what are the benefits?

Purpose of research

The priority objective of this review study is to draw attention to the changes that result from the development of broadly interpreted artificial intelligence in an area that also includes all technology and digitization affecting the school space. Taking into account both the impact of digitization on education, on the daily work of teachers, as well as their relations with students, it is necessary to highlight the significant transformations taking place, which thus require teachers to look at education and their roles in a new way, as well as indicate the direction in which they should go. Because there is still a large part of teachers opposing any variability or the need to improve their qualifications. There is no doubt that the profession of teacher is a profession that constantly confronts them with numerous question marks, which in their essence constantly tend to make reflections. Therefore, in this work several questions have also been posed, the answers of which will be provided by the considerations made.

Materials and methods

The work was carried out using a descriptive method, using information obtained in the course of the analysis of available literature and source materials for the analysis of research results in the field of educational applications of artificial intelligence. The use of the review of existing data made it possible to take a closer look at the issues discussed as well as the final formulation of conclusions.

Discussion

The teacher's methodological efficiency is determined not only by theoretical knowledge and practical use of IT tools, but also by their attitude to continuous professional development in this area. Therefore, it is not only about the

efficient use of a multimedia computer set or the ability to cope with hardware failures, but it is about a number of different factors that make up the entire methodological plane of the modern teacher. They also manifest themselves in the adequate and skilful use of available information technology solutions, which for the main goal is to improve educational processes, the ability to analyze as well as substantive and pedagogical assessment of available media resources, the choice, including the use of a specific tool, and very important – sensitization to how the media affect students. From the point of view of pedagogy, this use of digital technologies (including artificial intelligence) has a significant impact on the entire didactic process, i.e. teaching, learning, and in particular reaching the student of the new generation, the generation of the twenty-first century (Warzocha, 2021, pp. 151–156).

It should be boldly said that children with all digitization are delayed from an early age. And the current young generation is characterized precisely by their attitude to the media. American media researcher Marc Prensky has defined that there is currently a term among young people: the “copy-paste” generation (Jurczak, 2018, p. 116; Morbitzer, 2012, p. 136). The generation of these students, i.e. digital students, compared to the generation that functioned until recently, is radically different in many aspects. The world of this generation is largely created through digitization, and therefore above all the world of media – which create not only an environment of social functioning, mutual communication, but also an educational environment. In addition, many authors emphasize the ease and speed with which young people both learn and use digital tools – mainly based on the Internet. By analyzing the present and the essence of online initiatives or the possibilities of artificial intelligence, it creates the foundations for creating even greater changes in the future (Jurczak, 2018, p. 116; Morbitzer, 2012, p. 136).

Unfortunately, for most modern teachers, the world of media is perceived as a riddle that they are in some way forced to learn either by the students themselves or as a result of other circumstances. There is no doubt that one of such factors was the COVID-19 pandemic, which in a short time contributed to the reformulation of the entire existing school functioning, thus introducing education as well as teachers to a completely different “dimension”. This was related to the comprehensive organization of the existing traditional form of conducting lessons, as there was a transfer from the classroom to the complete remote form, using only the available information technologies for work. Undoubtedly, this situation has highlighted, but also accelerated, what was inevitable. Namely, the need to take action to improve qualifications in the area of theoretical knowledge, practical skills, but also awareness of the need to use modern technologies, including AI tools in the school space, which should be used by teachers.

The world of digitization creates new students, so there is a need for new teachers, media teachers who will adapt to changing education in order to be

able to accompany students as fully as possible, but also to pass on knowledge in a professional, understandable and accessible way to every student. Therefore, flexibility and openness to change on the part of the teacher becomes necessary, which can be safely described as the key to changing the perception of oneself and one's professional role in the conditions of interpenetration of traditional education with the use of modern teaching methods. Because conducting lessons using only traditional methods is unfortunately not enough for students of the "copy-paste" generation, which often becomes a group that does better in the space of modernity. On the other hand, the model of having these skills should be the teacher themselves so as not to lose authority in the eyes of the student, which in the general perception will also translate into didactic backwardness.

Challenges, and often related difficulties, which are undoubtedly inscribed in the teaching profession, and which are created as a result of widespread digitization, are constantly expanding their scope, thus affecting more and more extensive areas of the teacher's work. They are directly related to the person of the teacher, the fulfillment of educational duties, as well as significantly affect the change of the teacher-student relationship. Below will highlight only a few challenges that are at the same time difficult, which in my opinion are the most visible. Moreover, whether an aspect is a challenge, or a difficulty undoubtedly depends on the attitude of the teacher, on how he or she personally perceives this variability. Thus, in the area of significant challenges and difficulties facing the teacher of the twenty-first century, the following can be taken into account:

- Reflection on a new role;

The teacher should make a reflective and objective assessment of themselves, because digitization somehow forces a change in this perception: "He will cease to be the ruler in the classroom, (...) The master in the chair, and will become the student's helper in the learning processes undertaken by him. His work will become more transparent, and at the same time he will have to constantly learn" (Pachociński, 2002, p. 4). The traditional relationship between teacher and student was based on the transmission of knowledge and wisdom by the teacher, i.e. the older person, to the students – therefore to the younger people. However, nowadays, in the era of accompanying digitization, these roles are intertwined. For not only can the student learn from the teacher, but the teacher can also educate themselves from their pupils. It turns out that mature and older people often do not keep up or find it more difficult to find themselves in the world of technology, which is why they need support. Thus, it becomes noticeable that there is a penetration of roles, or reversal, which also requires full openness on the part of the teacher, but also distance to his person and reformulation of the role of the teacher, because they cease to be an omniscient person.

Therefore, it becomes noticeable that it is digitization that has changed the flow of knowledge. It does not have to take place only from older to younger

people, but these roles interpenetrate, thus the teacher becomes not only a person teaching pupils, but also uses their knowledge resources in the field of digitization. Or, with the use of appropriate AI tools, students can independently verify their level of education, which some time ago was only the teacher's task (Ciesielski, 2023). Certainly, all this is a real challenge, but also a difficulty, especially for teachers practicing the traditional education system, but at the same time it is also an expression of a properly worked out own identity and the aforementioned openness to change, which will enable proper fulfillment in the role of a teacher.

– Self-educational competences, in which media competences are currently the strongest part;

“Wisdom and knowledge do not dwell in books, computer programs or on the Internet. There is only information. Wisdom and knowledge are always embodied in man, acquired by the learner and used by him” (Drucker, 1999, p. 171). The definition of self-educational competences should be understood as continuous improvement and improvement of qualifications. However, in the twenty-first century, they are most strongly expressed in media skills, so in order for the teacher to be able to meet the expectations and requirements of new students – students growing up in the digital era, there is a need for new teachers who consciously and correctly use the available tools offered by the development of technology.

Currently, competences related to information technology are becoming a particularly important component of the teacher's workshop. Therefore, it seems important to acquire knowledge and skills to use these skills in education in such a way that it supports the child's development, enriches the entire educational process, and does not obscure what is most important. In addition, the teacher should bear in mind that children, students from an early age have access to mobile phones or the Internet, which somehow also translates into the entire functioning of the child and his learning process. Therefore, education and the teacher can neither avoid nor prevent children from learning in modern conditions, because they will not be able to reach them, but thus causes backwardness and somehow suspends the child's development in the new conditions created by modern reality. The content provided by the teacher should be presented in such a way as to encourage students to learn, and relying only on traditional forms of work can cause considerable difficulties, because the attention of students is absorbed by all digital devices. In addition, the teacher should constantly bear in mind, as already mentioned – they are not a know-it-all person, therefore they must be aware of the gaps in their didactic process and constantly correct them. One of the possibilities offered by AI is the use of the Coursera system, whose task is to inform the teacher when a large number of incorrect answers of students to a given homework will be sent. At the same time, it creates a platform

for analyzing one's own mistakes made by the teacher and providing personalized tips for students on how to develop the correct answer (Gajewski, THINKTANK Review).

Therefore, there is no doubt that the innovativeness of modern education requires from the teacher a great openness to modern solutions, but at the same time a reasonable approach to their professional role and noticing that modern education as well as the teacher cannot be closed to the need to improve new skills – self-educational skills.

– Combining traditional teaching methods with modern solutions;

“The winner will be the one who combines the knowledge of the latest technologies with the world of traditional values” (Santorski, 2005, in: Morbitzer, 2012, p.150–151). Although in practical terms this thought seems to be a great challenge and difficulty for some teachers, it plays a significant role in the general sense for the student. It is a guideline for actions that a teacher should take to be an effective and good teacher of the twenty-first century.

Therefore, the teacher should accompany the child in learning about the world as they found them. This is related to the change of the teaching model to adapt the traditional way of teaching to current needs, but also to the implementation of modern methods. This is a real challenge for teachers, especially older ones who built their professional experience on traditional forms of work, or for those who act as teachers only out of duty, not out of inner vocation and satisfaction. However, it is important for the child's future functioning how both the whole education and the teacher will find themselves in the new reality. It will enable the student to develop in the conditions created by the presence of digitization in every area of life, whether using, for example, interactive whiteboards or other artificial intelligence tools, it will interest the student and arouse in him curiosity to explore knowledge, values that are presented only on the basis of a textbook cause discouragement and boredom. In the past, this way of teaching was the only and effective, because the teachers themselves used such solutions, but now – it is insufficient –modern children do not know the world without digitization, and it should be emphasized that the task of the pedagogue is to adapt didactic methods to the conditions in which children function, to the tools they know. And using these interactive whiteboards, the teacher can not only prepare and implement lessons in a constructive way, but also dynamically. In addition, it is also a platform for direct contact with the student, because the teacher can engage the student to manipulate the board (Perzycka, 2021, p. 92). It is also worth emphasizing that the current educational system in its assumptions focuses most strongly on the so-called encyclopedic approach to teaching, fulfilling the assumptions of the core curriculum and the implementation of certain standards. However, this lacks what artificial intelligence makes possible – namely an in-depth analysis of reality, which inspires the search for existing

interdependencies, but also possible solutions that are currently becoming a significant aspect of the entire scientific space and didactic. It should also be boldly said that AI “opens” not only teachers, but every person to go beyond the area of certain accepted schemes, process learning to willingness and openness in learning and using new tools (Gajewski, THINKTANK Review).

It should also be emphasized that the aim is not to lose ourselves completely in digitalisation, but to rationally complement it and make everyday lessons more attractive. Because the role of the teacher is not only to teach, but to teach – and this is only possible when there is a thread of understanding between the teacher and the student.

– The learning process in the twenty-first century;

“Education flows from the image of the future and at the same time shapes this image itself” (Toffler, 2008, p. 16). Therefore, what the current education looks like is undoubtedly a consequence of how the reality in which we live is shaped. Therefore, the mediality of the contemporary young generation is certainly influenced by many factors that immerse the child in the world of media (Morbitzer, 2011–2012, p. 149). Students who grow up nowadays are children and young people who are growing up in *the so-called audiovisual culture*. This means that the sphere of the word (logosphere) has been dominated by the sphere of the image (iconosphere) (Morbitzer, 2011–2012, p. 141). Therefore, the thought processes that are stimulated by the text have been somewhat replaced by emotions that are evoked by the image. Thus, all this translates into the perception of information and knowledge passed by teachers towards students. There is no doubt, therefore, that children’s concentration and focus are much more difficult to obtain, because it is distracted by the numerous stimuli caused by digitization, which in turn is reflected in the educational process. Therefore, the teacher should modify the way knowledge is transmitted.

Using AI tools such as Sheek by iNaturalist, teachers not only arouse curiosity in the student, but above all the desire to learn and learn about the processes occurring in nature, in a more vivid and creative way. For learning foreign languages, one of the possibilities is the Duolingo application, while in the field of sociology and artistic classes you can use the Newspaper Navigator, which allows you to browse and search archival scientific achievements. Therefore, there is no doubt that only a few examples of artificial intelligence applications presented a wide range of its capabilities as well as confirmation that applications, as well as the whole essence of AI, facilitate learning for students, support teachers in constructing lessons, as well as make the entire didactic process more attractive.

Therefore, the teacher of the twenty-first century faces a huge challenge when it comes to the learning process. This is a real challenge, which consists not only in transferring knowledge – in a way that has been practiced so far, but

creates a whole correlation of coherent activities that have been previously raised, i.e. adapting traditional, updated methods to students of the digital age, but also implementing new ways to interest the student, focus their attention but also effectively inspire and encourage learning. A significant difficulty of modern education is the fact that everything can be found on the Internet, which is why students are discouraged from the traditional form of exploring knowledge or making efforts in the area of all thought processes or memorization processes. And by using AI tools in their lessons, teachers can seek to change the perception of the learning process. It does not have to be boring or monotonous, but interesting, full of innovative solutions to enrich the knowledge transferred, as well as its acquisition. Therefore, a particular challenge is both to effectively implement didactic goals (using artificial intelligence, as well as awareness of its negative impact on the young generation, with improper use), which in turn will bring the expected preparation of the student for independent functioning in the social environment along with the workshop of the necessary knowledge, as well as sensitizing students that information technologies are not without drawbacks. You cannot completely exclude media from your life, but it should be borne in mind that they are often accompanied by unrealistic promises aimed at reformulating reality into fiction, while entailing some changes in the functioning of the human brain (Warzocha, 2021, p. 159).

The phenomenon of the role of teachers boils down to being conscious guides for students who need role models and authorities. They should rationally, wisely and courageously use the technologies offered by the changing reality, because they often make the knowledge more attractive or complement the knowledge transmitted in the way with which children are introduced from an early age. Therefore, the teacher must not be afraid or discouraged from using these tools, but he should constantly bear in mind creating in students the feeling that the ubiquitous artificial intelligence available is only an addition, complement or facilitation in everyday life, it can not be a leading plane in life, or obscure what is most important. Undoubtedly, the use of various forms of available information technologies is becoming in a way an identification of modern education. And the teacher must constantly be prepared for the emerging changes, and thus must also prepare the students for this, because they themselves must constantly learn, as well as teach “how to teach learning”.

The development of a child depends on many factors – own activity in the desire to explore the surrounding world, psychophysical capabilities, but also on the work performed by the teacher. It is they who is most responsible for all processes of stimulating students’ activity, which in the school environment are reflected, e.g. in discovering talents and interests. In addition, children learn primarily through observation or constant contact with both adults and their peers, thus it is conducive to acquiring new learning skills, because learning

itself takes place in an informal way (through observation). Therefore, a good teacher, aware of his influence on students' attitudes and creating their image of reality, constantly expands the catalog of his skills and competences to become a reliable source of knowledge (Truskowska-Wojtkowiak, Wojtkowiak, 2008, p. 278). Similarly, if the teacher shows students their essence, wise use and application in everyday life, then this will translate into their holistic perception of what the modern world offers.

Conclusions

To sum up, there is no doubt that the continuous development of digitization, which significantly affects the functioning of the whole society, thus determines the need for permanent improvement of teachers, including openness on their part to constantly emerging changes and challenges. Teachers should realize that the initial knowledge and specific workshop acquired by them seems to be insufficient in the context of the challenges ahead. The ability to subject oneself and the role of professional reflection, continuous expansion of one's competences – theoretical and practical, expanding the workshop are factors enabling the teacher to find themselves in the modern world and school – therefore tools with broadly understood digitization, including artificial intelligence, thus making them a good and conscious teacher wishing to pass on knowledge in the most professional and understandable way possible.

In addition, in the information society, access to knowledge is definitely more important, which is why the school has lost its hierarchy of importance. Thus, it requires even more work from the teacher to be able to skillfully reach the student shaped in truth by the world of media with knowledge and values that technology cannot convey. As Luckin emphasized, "The real power of artificial intelligence in education is that we can use it to process huge amounts of data about students, teachers, interactions in teaching and learning" (Gajewski, in THINKTANK Review: <https://think-tank.pl/ai-w-edukacji-nadchodzi-rewolucja/>). Therefore, the role of AI is not to replace the teacher – despite various fears, but to help teachers and, above all, to help them in certain areas so that they can focus more on the essence of their work – that is, building relationships with students, which will then transform into a comprehensive didactic success (Gajewski, THINKTANK Review).

The answer to the question formulated in the initial part of the article becomes unequivocal that the teacher is obliged to follow the changes, introducing new teaching methods equipped with various types of technologies that are the basis for joint communication with students of the digital age. Moreover, they should be aware that the disciples also acquire knowledge through observation – so that it becomes impossible for them to be completely closed to modernity and its tools, because thus they cause their own backwardness and that of the younger

generation. As mentioned, artificial intelligence also entails a number of negative aspects, which is why the task and the challenge of teachers is to teach how to use the goods of modernity wisely, as well as to sensitize students to the consequences of too intensive penetration into digitization and the traps associated with it. Teachers are also obliged to educate the selection of information, as well as its adequate use – because each of us, both adults and students, are dominated by a large amount of information available from various sides.

Therefore, gaining knowledge, awareness and IT skills are priority components of the work of a modern teacher (Gruchola, 2019, p. 113). Finding a common language with the student, combining tradition with modernity in the context of education, boldly using the tools of artificial intelligence and, above all, being able to realize oneself in the role of a teacher seems to be the biggest challenge and at the same time the difficulty of teachers of the twenty-first century – a century dominated by digitization on the one hand, and on the other enriched with new solutions.

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