Beata Kuźmińska-Sołśnia

Remote Teaching – a Challenge for School Education

Introduction

The modern 21st century society (mobile information) which provides access to many devices, including the Internet, has a significant impact on a daily life of the society, as well as the teaching process. Current situation in Poland has obliged many teachers to use tools for remote work.

Will the suspension of a stationary classes at school due to a pandemic and the experience gained during several months of remote learning change the attitude of teachers and students to the teaching and learning process, and will online learning become a real alternative to some forms of traditional learning? The answers to these questions are crucial for the 21st century students and therefore it is worth considering how education can or should change and what challenges we face.

Trends in teaching

Digital technologies nowadays offer potential for learning opportunities not only at school. It is worth to refer to the Horizon Report, developed periodically for several years, showing changes in both the technology and school education sectors. The trends included in the report provide educators with many ideas and guidelines for implementing new educational tools. In the Horizon Report: 2017 K-12 Edition, prepared by an international team of experts, they are presented in three perspectives: short, medium and long (related to years of implementing changes) (Freeman et al., 2017).

In the first one, coding played an important role as a basic skill to understand, communicate and use digital devices. In recent years, there has also been an emphasis on the STEAM education model (Plebańska, 2018), a combination of fields such as Science, Technology, Engineering, Arts and Maths (STEAM), which primarily supports the development of innovation and the economy. It was complemented by multi-disciplinary and interdisciplinary education, which put knowledge from different areas of science into practice.

The medium perspective (3–5 years) concerns the present day and includes, among other things, measuring progress in the learning process. New measuring tools

are emerging in this respect, which allow to monitor the educational achievements of students, not only the current state of knowledge, skills or abilities but also to stimulate their development and motivation to learn. Moreover, the transformation of educational spaces is also expected in this period. As students nowadays have unlimited access to the various sources of knowledge, the teacher must change his or her thinking about his or her role. At present, there is no place for a teacher to play the traditional role which guaranteed him/her a central and dominant position in the teaching process, i.e. to transfer knowledge and control students. Instead, he or she should take the position of an organizer of the learning process and a supporter of students' educational activity.

The long term perspective (over 5 years) includes the promotion of a culture of innovation in schools through activities aimed at developing competences such as teamwork, project-based learning, creativity or critical thinking, and the development of deep learning concepts that seek to move from theoretical to more practical education.

Certainly, in today's world the only constant thing is change. This also applies to education systems. As a result of the emergence of new online learning environments that foster exchange and learning, traditional education models are constantly evolving. Therefore, we should be aware of the fact that many changes will accompany us throughout our lives, and the undertaken reforms of education will never end (Kołodziejczyk, Polak, 2011).

Remote learning

Computer-based learning can take place in various ways. The two basic forms of e-learning are:
– Computer Based Training (CBT) – training based on a computer technology,
– Web Based Training (WBT) – training using the Internet.

In the case of WBT it is also said about Online Learning, i.e. remote "live" teaching via a computer network (in synchronous mode) (Nojszewski, 2003).

Online learning has been arousing interest among educators for years due to its flexibility and increasing accessibility. Especially nowadays, in the era of rapid change, sharing knowledge and information, communicating at a distance using modern information techniques plays an important role and can at the same time constitute an individual educational environment.

The advantages of such a system include:
– the possibility of learning at a time and pace adapted to individual possibilities,
– easy access to teaching materials published in electronic form,
– accessibility for disabled people,
– reducing the costs of universal education,
– increasing self-education opportunities.

Moreover, this form of communication is supported by the fact that the modern generation, called generation Y, does not know the world without the Internet, computers, mobile phones. It is a natural environment of the young generation, for whom a school classroom and standard education becomes unattractive.

School at home – such a form of teaching was valid for almost the entire summer semester of students at all stages of education in the school year 2019/2020. The specificity of the implementation of remote education was faced by both teachers and their pupils. What was until recently the perspective of education for the future, and largely for adults, suddenly became a reality and a necessity.

The new remote learning process, as opposed to the traditional one, has reduced (blended learning) or turned off (e-learning) direct contact between the student and the teacher. Oral communication has largely been replaced by written communication, using online IT tools (Wedeł-Domaradzka, Raczyńska, 2013). Teachers and students had to switch to remote education overnight without prior preparation. Many new challenges emerged for teachers. From the previous organizer of typical lessons, they had to become organizers of the remote education process, during which the student worked mainly independently with didactic materials. The teachers intuitively adjusted the ways of acting to the specifics of the new form of work with students, the content they passed on, motivating to act and checking the effectiveness of teaching. The consequence of this unexpected situation was a necessary change in attitudes and evolution of teachers' working methods.

Thanks to a large number of digital educational resources and a good computer infrastructure and the availability of devices which are able to connect to the Internet, virtual space has unexpectedly become a new environment for learners to work and cooperate. According to Marcin Polak, this process should be based on four pillars: infrastructure, services, education and management (Polak, 2016).

Of course, hardware and software would be useless without a teacher who could not use it skillfully. Therefore, in this case, the teachers' attitude of "I don't need it, I'm not going to use it on a daily basis" was replaced with the approach "how can I use these methods, these techniques in my subject" (Rokicka-Broniatowska, 2005).

Technology has primarily a servant role and should therefore strengthen and support educational processes. It is worth mentioning the SAMR model constructed by Dr. Ruben Puentedura, which defines different levels of technology integration in the education process (Puentedura, 2014). SAMR stands for the first letters of four words in English: **S**ubstitution, **A**ugmentation, **M**odification, **R**edefinition.

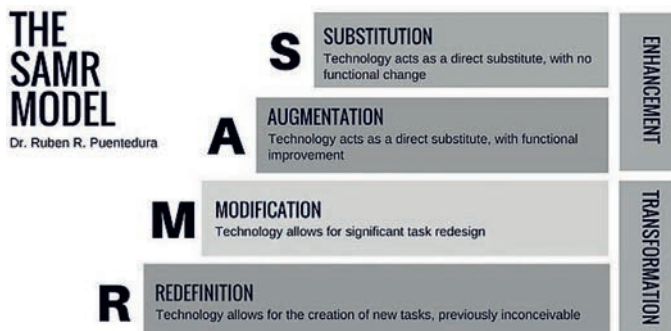They characterize the successive levels of using technology in the teacher's work (Fig. 1.).

Fig. 1. Model SAMR [source: https://en.wikiversity.org]

The first stage – SUBSTITUTION i.e. using ICT tools interchangeably with traditional ones. In the second stage – AUGMENTATION, the teacher introduces ICT tools, which are used to effectively solve the tasks set for the student. On the third level – MODIFICATION, technology becomes essential to solve tasks. The student has the opportunity to actively use the digital tools for educational purposes. The fourth stage – REDEFINITION, allows to take full advantage of the benefits of modern technologies and achieve the goals and tasks that were previously impossible to achieve without them.

New technologies are therefore powerful educational tools, but the main key to show their proper usage is the human factor – the knowledge and experience of the teacher and his or her ability to apply ICT in teaching. His or her proper competences will allow them to choose from the variety of educational tools available on the Internet and offer their students the most suitable ones.

As a result of the pandemic, the Polish school has unexpectedly entered a new era of teaching – one could say of the 21st century. The whole process involved both teachers, students and parents.

In case of teachers, many, in the face of a new situation that has overwhelmed them, have shifted responsibility onto the parents. Others overwhelmed students with tasks and materials for self-analysis and resolution. On the other hand, those familiar with the online world conducted their lessons in an interesting and creative way.

The students were initially rather enthusiastic about remote teaching. Free from the rigors imposed by the school – they could sit in front of the screens of a monitor or smartphone and use modern communication tools, which were forbidden at school before. With the passing of time however, they began to lack direct relations – between the teacher and the student, as well as with their peers.

There were also different attitudes among parents. Some were satisfied that their children were busy and did not sit in front of the TV. Others carried out tasks and materials sent by teachers together with the children and they expressed their disapproval of the situation. On the other hand, the parents of the children who, as far as they were able, carried out the tasks and materials sent by the teachers on their own and analyzed the school material, approached the situation with caution.

Remote learning has become possible thanks to the possibilities offered by the Internet. Many applications and tools have proved to be perfect for conducting online lessons, sending homework or verifying students' knowledge. Most platforms used by educational institutions that wanted to implement remote learning via the Internet were based on available solutions. Among others, the tools of companies: Google (Google Classroom, Disk, Hangouts Meet), Microsoft (MS Teams), Librus and Vulkan (electronic register systems), etc. and materials of the Integrated Learning Platform, made available by MEN (Ministry of National Education) at *www.epodreczniki.pl.*

Remote teaching in the opinion of primary school students – research results

The coronavirus outbreak has forced a new reality. The middle of March changed our everyday life – social, professional, family and education. Since 25 March 2020

MEN (Ministry of National Education) regulation on the obligation to teach at a distance came into force. Due to the closure of schools, learning from a traditional school class moved from day to day to virtual spaces. All of a sudden, stationary teaching had to be reorganized into remote teaching, using distance learning methods and techniques. Polish school had never before conducted classes with such a large use of the Internet. Meanwhile, it was even forced to switch to them overnight. Pupils, parents and teachers were faced with completely new challenges. In connection with this, many questions and doubts arose, among others:

 – Is the Polish school prepared for such a change and will it cope with it?
 – How to organize remote learning in order to achieve the assumed goals and tasks of the core curriculum?
 – How will teachers who have not yet used the possibility of remote communication with students cope with online teaching?
 – Will each student have access to a computer and to the Internet?

Today, after the end of the school year, the time has come for an initial analysis and evaluation of remote school activities.

On the basis of surveys carried out in the first half of June among 100 pupils of primary schools (classes IV–VIII) in the area of Radom, it results that remote work from home was possible due to the access to the computer equipment (or phone) and to the Internet. Most of the students assessed it as very good (43%) and good (36%). In the opinion of 13% it was sufficient, and in the opinion of 8% of the respondents – weak. Permanent access to the Internet was declared by 82% of the surveyed students. The average quality of connection in the opinion of the respondents was 3.84 on a scale of 1–5. Among the educational tools most often used in communication with students and distance learning the respondents mentioned MS TEAMS application (85% of the respondents). Next, the most popular were: electronic journal (45% of respondents) and e-mail (38% of respondents) – Fig. 2.
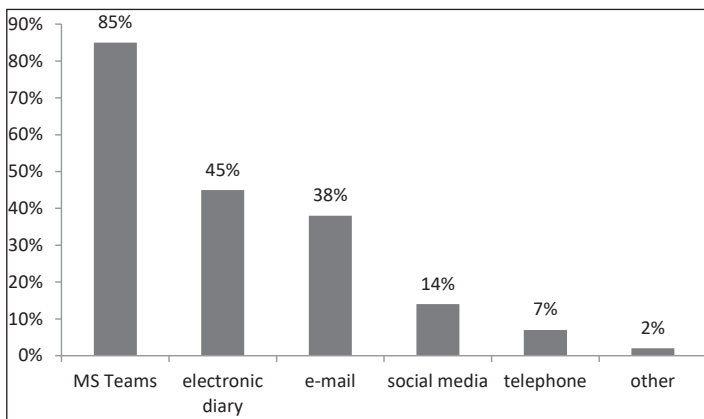

Fig. 2. Communication channels and tools of remote work

Remote learning can take different forms, but should consider the capabilities of all participants. Various tools for synchronous and asynchronous communication

have enabled continuous contact with students. In the opinion of the respondents, it varied, depending on the teachers (39% of students). In the opinion of 34% of the respondents it was good, and for 25% – very good. Only 2% of respondents indicated their dissatisfaction – Fig. 3.
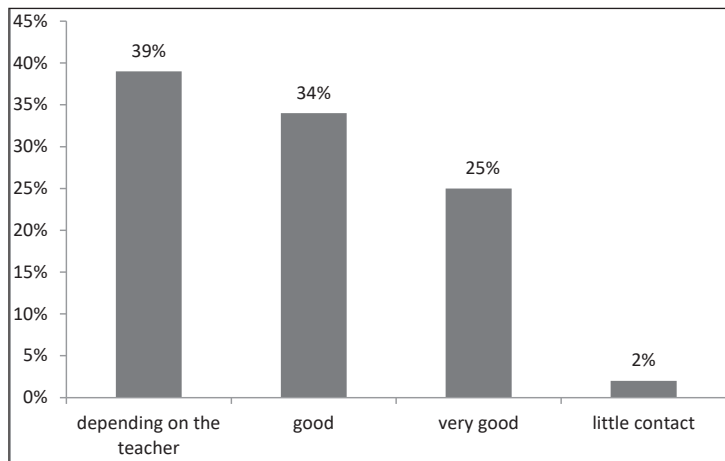

Fig. 3. Contact with teachers during remote teaching

In the past time of forced remote education, the main means of teaching was the Internet, offering a multitude of media, information and interaction. Thus, the role of the teacher from the "provider" of knowledge was turned into the organizer of the education process. Replacing the traditional "teacher-pupil" model with the "computer-pupil" model proved to be much more interesting than the stationary school reality. More than 80% of respondents described their activity during classes as very good or good. However, their opinion on the attractiveness of classes (often affecting their effectiveness) presented in Table 1 for different subjects ranges from 3.6–4.01.

Table 1. Evaluation of attractiveness of remote classes in the scale 1–5 in the opinion of students

Group of subjects	Evaluation of the attractiveness of classes
Strict	4.01
Language	3.96
Humanistic	3.74
Artistic – music/plastic/physical education	3.6

Perhaps this average result was influenced by a lack of experience and preparation of teachers in conducting remote classes, or the proper use of online resources, or the appropriate portioning of content, which sometimes exceeded the possibilities and discouraged students from working. Although, according to the survey, in the majority of cases (55%), students determined a comparable range of processed material within the framework of home classes, with that carried out in the

stationary mode. According to 16% of respondents, it was very extensive. A similar percentage of respondents assessed the scope of homework as sufficient. The others considered it insufficient or had no opinion about it.

The majority of students were cheered on by their parents, while the main motivating factor was the marks. In the opinion of 69% of the respondents, the overall assessment of school achievements in the remote mode was correct and deserved, in the opinion of 13% – it was overestimated, while 4% of the respondents considered it understated (Fig. 4).
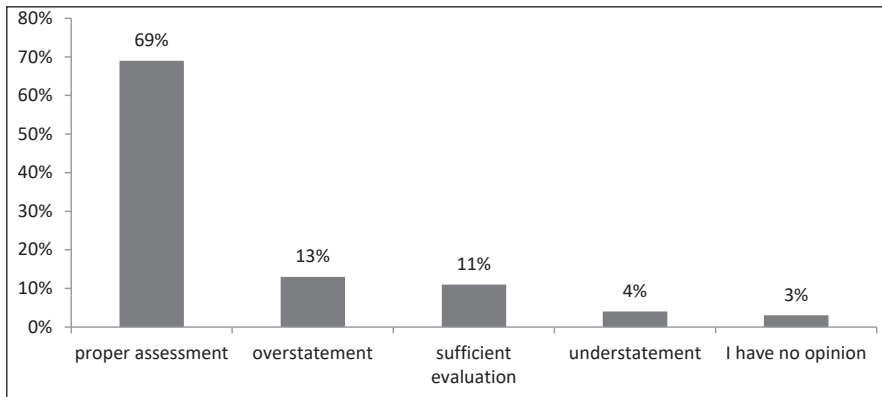

Fig. 4. Students' opinion on the assessment of remote school performance

Despite the relatively good marks received in the remote learning mode, 50% of the respondents were critical of this form of teaching, while 28% of the respondents were of the opposite opinion, and 22% of the respondents had no opinion on the subject. According to the survey, most of the respondents (over 60%) would not want to continue remote learning in the next school year. In their opinion, the main barriers are: big amount of teaching material, lack of interaction with the teacher, lack of proper equipment, insufficient skills and lack or limited contact with peers.

The survey is only a fragment of the picture of remote education that has been faced in recent months. An excellent supplement to the full picture of the state of reality would be the results of surveys conducted among all educational entities, especially teachers and parents.

Summary

The sudden need to change the mode of education, dictated by concern for the health of students and teachers, forced schools to implement the curriculum remotely. Despite the earlier lack of preparation in terms of equipment, curriculum and methodology, as a result the school environment once again managed to meet the new challenge. Teachers, often those who criticize and oppose smartphones and computers, now had the opportunity to see that modern technologies can support education and can be used effectively.

Thanks to this situation, the Polish school may have a chance to become more creative. In 2011, the book *The End of the Cretaceous Epoch* by Aleksandra Pezda was published, but this end has not happened until today. It seems that it is worthwhile to introduce changes to e-learning solutions in schools in a thoughtful and controlled way, but through evolution, not a sudden revolution. Certainly, the process of traditional stationary learning cannot be eliminated, especially at the first and second level of education, but the changes should concern the change of school reality. Attention should be paid to moral changes, unlimited access to information, its dynamic growth and devaluation, or requirements of the changing labor market.

Today, we have passed the first stage of the exam providing students with the opportunity to continue learning in the new conditions, passing on the basic knowledge and skills to students, achieving the goals and tasks of the core curriculum as far as possible online. This is done by paying attention to safety and shaping socially desirable attitudes and values. This challenge has been faced even by teachers who have not yet used the opportunity to communicate with students remotely, but who have tried to create a learning environment that is conducive to learning, according to the individual needs of the students. The impulse for further changes in school education should be the reflection of the whole school community on the conclusions from the research data and analysis of the remote learning process.

In the future, it is worth taking care of, among others:

– ensuring proper infrastructure for the organization of remote education and thus counteracting the phenomenon of digital exclusion of children and teachers,
– a specific education plan adapted to the situation and capabilities of the students,
– the appropriate choice of content and the setting of new objectives and priorities for the programs and the core curriculum, also adapted to remote learning,
– adequate preparation of the teaching staff for the use of distance learning tools,
– the educational potential of new technologies that can be used in teaching work,
– motivating and supporting students in remote teaching and monitoring their learning achievements,
– guarantee of safety and development of the principles of the so-called net-label in the acquisition, exchange of information and contacts in the network,
– the psychophysical development of students who spend many hours in front of a computer monitor or a smartphone,
– supporting students in maintaining contacts and relationships with their peers.

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Remote Teaching – a Challenge for School Education

Abstract

The article deals with the challenges facing education in the 21st century. The current situation in Poland has obliged many teachers to use remote working tools. Concern for the health of students and teachers has forced the implementation of distance learning at all stages of education. The main aim of the article is to present the direction of changes, both in the technology and school education sectors, as well as the analysis of research conducted among primary school students on the implementation of remote education.

Will the distance learning experience gained in recent months change the attitude of teachers and students to the teaching and learning process, and will the use of digital technologies change the educational environment preparing students for the challenges of the 21st century? What steps should be taken in schools to use available technologies in a more innovative and creative way? The clues for further changes in education should be the reflection of the whole school community on the findings of research data and the analysis of remote learning.

Keywords: remote learning, information and communication technologies, Internet

dr Beata Kuźmińska-Sołśnia

Department of Transport, Electrical Engineering and Computer Science,
Kazimierz Pulaski University of Technology and Humanities in Radom
e-mail: beata.kuzminska-sols@uthrad.pl
ORCID 0600-0002-9715-932X