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Virtual school

Szkoła wirtualna

The widespread use of information technology has become not just a symbol, but a hallmark of the modern age. Undoubtedly, the increase in the dynamics of this process was, is and probably will be significantly influenced by the COVID-19 pandemic which has already been around for over a year.

Education being one of the most important areas of social activity is also subject to systematic transformations in terms of civilization and information technology. One of the most spectacular manifestations of the full entry of information technology into the process of teaching and learning is the virtual school introduced since the 1990s in many countries with a high level of economic (and thus technological) development, such as Canada, the United States, Australia, Japan and South Korea. Educational activity involving the use of virtual schools in these countries provides an alternative to the traditional schools based on face-to-face teaching.

The process of educating in a virtual system is a specific variety of programmed teaching where the role of the programme is fulfilled by the so-called virtual reality. The term virtual reality itself is a relatively new concept

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as it was introduced to IT terminology in the late 1980s by programmer Jaron Z. Lanier (Heim, 1998).

As far as the definition of virtual reality is concerned, quite significant differences can be observed in the distribution of emphasis. In fact, some authors claim that virtual reality is visual, auditory and tactile sensations being generated by means of computerised audio and video equipment and special software (Encyklopedia PWN, 2004), thus emphasising the person perceiving the stimuli generated by the computer system. However, virtual reality is an entity that can also exist outside of the recipient because it is a phenomenon itself. Hence, it seems that more convincing is the statement that virtual reality is a computer-simulated three-dimensional and 360-degree environment, a 'cybernetic space' that gives the impression of a real world (Pisarek, 2006). In simple terms, it can be assumed that virtual reality is a 'world' ('environment') generated by a computer system into which an individual is 'immersed'. This means that in direct contact with virtual reality we experience a kind of illusion that we are in a different environment. As mentioned earlier, virtual school was created as a result of combining programmed teaching with information technologies (IT).

Let us then recall that in the mid-1950s, in the United States, Harvard University professor Burrhaus Skinner proposed an educational strategy in which the teacher's activity was reduced to a minimum, or even eliminated altogether. The traditional relationship in the process of teaching and learning between a student and a teacher (human vs human) was replaced by a relation between a student and a teaching machine with software (human vs machine), which clearly revolutionised the teaching and learning process and its theoretical foundations. Thus, it is worth emphasising once again that the far-reaching innovation of this form of teaching process involved the total or partial elimination of the teacher from the process of knowledge transfer from the source to the learner.

The idea of programmed teaching came to Poland over a decade later, mainly due to Tadeusz Nowacki, Czesław Kupisiewicz and Wicenty Okoń. However, despite many theoretical and methodical studies that emerged, programmed teaching did not find practical application in our system of education (or in the educational systems of other countries).

Only the advent of the computer (and its many peripheral devices), which in addition to a countless number of functions can replace the teaching

machine in a much more perfect way, gave rise to the possibility of combining the principles of programmed teaching with modern information technologies and the development of a new teaching system, conventionally called virtual school. This type of school may in the near future become an alternative to the process of teaching and learning in the classroom system in physical schools.

One of the possibilities created by virtual school is that each pupil can have access to materials covered by the curriculum in the form of printed materials or materials uploaded on a specific website.

Based on an analysis of the virtual school systems that are already present in many countries, the following types can be distinguished:

I. Virtual school based on a computer network system(s) with a central computer operated by the virtual teacher and with terminal devices which are workstations for the learners. The learning process in such a system takes place simultaneously for all learners, which gives opportunities for interactive behaviour. So, we are dealing with a typical distance learning, which is commonly called e-learning and is used on a mass scale in the pandemic period by the educational system including the higher education. This type of virtual school is not very effective relative to the traditional school based on face-to-face teaching.

II. The next type of virtual school is also web-based, but the information (learning content) provided in this way is available to the learner at any time. They can also turn for help or additional explanations to the virtual teacher who is 'on duty' and can be reached by email. In this situation there are some components of programmed teaching in place as the structure and scope of the learning content acquired by the learner (and available online) that are designed according to the principles of this kind of teaching.

The advantages of a virtual school of this type include the following:

1) the moment at which the learner starts to master the learning content uploaded to the website is arbitrary;
2) the learner is free to choose any extent of the curriculum content to be mastered;
3) freedom of choice of the place of learning;
4) the option of immediate consultation with a virtual teacher in the event of any difficulties in mastering the curriculum, and such a consultation takes place on a partnership basis;

5) the obligation for the learner to submit to an immediate evaluation of the effects of their work in a system of adequately prepared testing procedure.

III. The essence of the third, an extremely interesting variety of virtual school, boils down to the process of learning in which various types of devices are used in addition to the computer, including virtual reality headsets, overalls, special gloves, suction cups with electronic terminals and other devices that enable the learner, on the one hand, to 'immerse' in the reality generated by the computer system (virtual reality) and, on the other hand, to be completely isolated from the real environment. This whole technical and IT infrastructure can be successfully placed in the learner's home, which means that the learning process can take place without the learner leaving home. In the case of this type of virtual school, contact with the teacher is not possible. Their role is completely taken over by the software, being the main component of the computer system, which is the essential equipment of the learning room. This software should enable verbal, motor and even tactile interaction during the teaching process. The content of this software is presented in the form of concrete situations in which the learner is seemingly involved. Seemingly, because by being isolated from the stimuli of the real world (as a result of wearing an overall, VR headset, etc.) they have the impression of staying in an environment generated by the computer system. Thus, the learners have a temporary, albeit apparent, conviction that they are witnesses to the events and direct participants in the situations presented by the program installed on the computer. 'Staying' in educating situations results not only in high cognitive efficiency, but also enables full implementation of the principle of knowledge durability.

For the implementation of the teaching and learning process in a virtual school, the following devices are necessary in addition to the previously mentioned overalls, VR headsets, gloves and goggles:

- a continuously running server the capacity of which should significantly exceed 50 GB (Pachciński, 1999);
- a computer network permanently connected to the server and high-speed Internet network;
- a scanner, laser printers, as well as devices, software and archiving media – as additional equipment.

The teaching process in a virtual school naturally takes place by means of various electronic devices that are part of the relevant IT networks. Therefore, in addition to the relevant skills and factual and pedagogical knowledge, the professional competencies of a virtual teacher (applies to Type I and Type II of virtual school) should include digital competencies the level of which is far above average. It can be quite safely asserted that such competences largely determine the effectiveness of virtual education.

The basic, as it seems, IT competencies of a virtual school teacher should include the following skills and abilities:

1. to express yourself in digital format;
2. to use electronic communication tools, in particular to be able to send multiple messages on different communication channels;
3. to structure the educational content in accordance with the principles of programmed teaching, taking into account the specificity of electronic communication;
4. to provide other educational resources (e.g. multimedia presentations, films, etc.) in various forms;
5. to utilise applications and social media in educational processes;
6. to use information technology to communicate with parents where the learners are children or young people of school age.

All in all, it can be assumed that the main areas of the professional competencies of virtual school teachers include:

1. Specialist competencies (subject-related, factual and related to the area of specialisation);
2. Pedagogical and psychological competencies (related to general pedagogy, teaching and methodology, and learning psychology);
3. IT competencies (as described above);
4. Key competencies in life-long learning;
5. Future-related competencies (working in virtual teams and information noise).

Teaching in a virtual school system can be evaluated mainly in terms of benefits, progress, and modernity. The main advantages are the learner's almost unlimited access to knowledge, the extraordinary flexibility of the educational process organised in this way, and the exceptionally high level of independence of the learner who, furthermore, has access to the content of teaching at any time and to any extent required.

Thus, it seems that the moment when the traditional model of education will be to a large extent replaced with m-learning (this is the name given to the reaching process in the virtual school system) is relatively close. This means that in the coming years more and more groups of students will take advantage of virtual learning, treating it as a form of complementing the learning process in a traditional school. However, as time goes by, the 'digital generation' (the next generation of the digital society, students of virtual schools) will stop 'wanting' to understand the language and ways of communication in the traditional sense. This will be the moment when the foundations of the current way of education will be shaken, and this will give rise to the need for profound systemic changes in educational activity. Perhaps, the classroom system will be at last (!) replaced with another system, based on virtual school.

Abstract: The article deals with the issue of virtual school as a kind of alternative to the traditional classroom system of teaching. The introduction attempts to clarify the meaning of several terms that are essential for this subject field, including the concept of virtual reality and, of course, virtual school. First of all, the essence and types of virtual schools are discussed, with an articulation of the advantages of virtual education. The professional competencies of a virtual school teacher have also been touched upon briefly.

Key words: classroom system, traditional school, virtual reality, virtual school, teachers' professional competencies, teachers' IT competencies

Streszczenie: W artykule podjęta została problematyka szkoły wirtualnej jako swoistej alternatywy wobec tradycyjnego klasowo-lekcyjnego systemu nauczania. Na wstępie starano się wyjaśnić znaczenie kilku zasadniczych dla tej tematyki terminów, w tym pojęć rzeczywistości wirtualnej i oczywiście szkoły wirtualnej. Przede wszystkim omówiono istotę i rodzaje szkół wirtualnych z wyartykułowaniem zalet wirtualnego kształcenia. Sygnalnie zostały również zaprezentowane kompetencje zawodowe nauczyciela szkoły wirtualnej.

Słowa kluczowe: system klasowo-lekcyjny, szkoła tradycyjna, rzeczywistość wirtualna, szkoła wirtualna, kompetencje zawodowe nauczyciela, kompetencje informatyczne nauczyciela

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