ONLINE EDUCATION IN POSTMODERNISM BETWEEN BENEFITS AND DRAWBACKS

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ABSTRACT: Online Education in Postmodernism between Benefits and Drawbacks.
New technologies have transformed society in recent decades, positioning it in a constantly changing environment. Both positive and negative influences, accelerated especially in the context of the pandemic generated by the COVID-19 virus, have been felt even in academia, found quite reluctant to align itself with the trend proposed by the new technological tendencies. This article aims to capture some of the benefits and drawbacks of online learning in postmodernism, and to outline some solutions that could be relevant to remedy the problems encountered, as well as some proposals for improving the teaching-learning-assessment process.

Keywords: *digitization, education, COVID-19, generation Z, digital natives, benefits and drawbacks of online learning, online teaching-learning-assessment, e-learning.*

Introduction

The rapid development of new technologies has brought about significant changes in all areas of society, creating an unequivocal sense in postmodern man that he lives in a world of technology and that its presence in his life is inevitable. From the mid-20th century to the present day, technology has transformed society into an ever-changing environment that has permanently reshaped interpersonal communication, professional activities, and social relations. Widespread access to new and increasingly powerful work tools, as well as high-speed and wireless internet connections, has led to the emergence of new research topics and, above all, to innovative practices in

all areas of life. The directions of change are somewhat clear: „Looking back over the last 30 years, we can say that technology has had a major impact, but going forward, we can say that the changes will be faster and much more far-reaching."[1]

Thus, in the light of these changes imposed by new technologies, the German sociologist Karl Mannheim,s statement made as early as 1928 that „the question of generations is important enough to merit consideration"[2], is more than ever worthy of consideration. Therefore, after the *baby boomers* (those born between 1946 and 1964), after generations *X* (those born between 1965 and 1980) and *Y* (millennials – those born between 1980 and 1995), generation *Z* (those born after 1995 to the present) is a generation whose members live in a virtually connected world and have the best skills in using new technologies. Some research even shows that there are changes in the brains of the members of this generation, which are structured differently because of the way they have had to respond to the challenges of external factors and stimuli.[3]

Studies also say that technology is driving the unprecedented boost in the way today's generations perceive the world. As early as 2001, building on claims that „our students have changed radically" and that they „are no longer the people our education system was prepared to teach", Mark Prensky introduced the phrases „digital natives" and „digital immigrants".[4] For him, „digital natives" are the children who have already integrated electronic devices into their lives and are constantly connected to mobile phones, games consoles or mp3 players. These concepts do not define strictly the use of technology, but rather its role in their lives. For „digital natives", the digital world is an integral part of the real world, with the boundary between the two disappearing almost completely.[5] Prensky attributes the

1 Tiffany Prince, *Top of the Mountain Leadership: The Future of Performance and Productivity in a Technology Changing World, Sarasota, First Edition Design Publishing, 2019, p.27.*

2 Karl Mannheim, „The Problem of Generations," in *Essays on the Sociology of Knowledge*, P. Kecskemeti (ed.), London, Routledge and Kegan Paul, 1952, p.286.

3 Elizelle Juanee Cilliers, „The Challenge of Teaching Generation *Z*," *PEOPLE: International Journal of Social Sciences 3, nr. 1 (2017), pp.190 – 191.*

4 Mark Prensky, „Digital Natives, Digital Immigrants", *On the Horizon 9, nr. 5 (2001), pp. 1 – 6.*

5 Ion-Ovidiu Pânișoară, „Procesul de învățământ în perspectiva digitalizării," in *Educația digitală, Ciprian Ceobanu, Constantin Cucoș, Olimpius Istrate and Ion-Ovidiu Pânișoară (eds.), București, Polirom, 2020, p.104.*

term „digital immigrant" to those who are used to a way of life in which digital technology did not exist, having to adapt along the way, with a sustained effort and the need to overcome their reluctance or fear of using technology. Ion-Ovidiu Pânișoară points out that there are even „digital aliens", a phrase for those who never manage to get used to the digital world.[6]

Beyond all this, the pandemic generated by the COVID-19 virus, which brought the planet to its knees in just a few weeks, paralyzing many segments of contemporary society (such as business, etc.), has forced even educational establishments to adapt to the new context and find solutions[7] to ensure access to education for all pupils and students. Thus, in a context where school has moved 'home', new teaching strategies and approaches have been needed, with teachers having to look for different online tools, platforms, applications, and resources.

All these changes and influences (whether positive or negative) that I mentioned, which are found at different levels and on different levels of the social life, have proposed a series of transformations that have also influenced education and have found the academic environment rather reluctant to take up the changes proposed by technology. If in a traditional approach, learning can be seen as "a continuous, logical and reasoned progression on a clear, well-defined subject"[8], whose basic function is "the formation-development of the personality with a view to the permanent psychosocial integration"[9] of the pupil/student, in the digital technology plan learning proposes the creation of a favorable environment that has moved from a focus on teaching and the teacher to a learner-centered learning environment.[10] However, the general attitude of schools to the avalanche of changes proposed by technology is one of reluctance, with a tendency to be cumbersome and to act in a conservative manner.[11]

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6 *Ibidem.*

7 Ioan-Gheorghe Rotaru, "Spiritual Lessons observed through the Coronavirus Crisis," *Dialogo. Issue of Modern Man 6*, nr.2 (2020), pp.71-82.

8 Ciprian Ceobanu, „Reconfigurări educaționale în era tehnologiei digitale," in *Educația digitală, Ciprian Ceobanu, Constantin Cucoș, Olimpius Istrate and Ion-Ovidiu Pânișoară (eds.), București, Polirom, 2020, p.30.*

9 Sorin Cristea, *Fundamentele pedagogiei, Iași, Polirom, 2010, p.153.*

10 Cătălin Glava, „Platforme de învățare online. Premise, categorii, caracteristici esențiale," in *Educația digitală, Ciprian Ceobanu, Constantin Cucoș, Olimpius Istrate and Ion-Ovidiu Pânișoară (eds.), București, Polirom, 2020, p.191.*

11 Ion-Ovidiu Pânișoară, „Procesul de învățământ în perspectiva digitalizării", p.99.

In the Romanian space, the approaches to carry out educational activities with the help of digital tools and resources are not new, the Ministry of Education and its subordinate institutions promoting, in the last decades, several initiatives and programs with a digital component. The COVID-19 pandemic has put enormous pressure on society in general and on the education system in particular, requiring the exclusive use of distance media for education. Thus, beyond a host of logistical, technical, pedagogical and content-related impediments in the field of school subjects, which have been both barriers and challenges, education decision-makers, teachers, pupils and parents have shown, in varying proportions, interest, willingness, inventiveness and pedagogical mastery so that the act of education can be ensured.[12]

Thus, alongside classical learning, which involves physical presence in a chronologically and spatially well designated setting, the online learning environment, due to new information and communication technologies, has come to designate that "educational reality achieved through electronic networks and the involvement of new communication and multimedia technologies".[13] Thus the term "e-learning" ("e" referring to electronic, online) has come to mean "an innovative, interactive, learner-centered approach that makes the information environment a first-class ally".[14]

In what follows, I will capture some of the benefits and drawbacks of online learning in postmodernism, nuancing some solutions to remedy the problems encountered, as well as some proposals for improving the teaching-learning-assessment process.

1. Benefits of online learning

Following some studies I have researched, I have identified several advantages of online learning, which I will try to present briefly.

From the perspective of communication in the virtual environment, according to a study conducted by Mariana Vârlan, the advantages in the

12 Petre Botnariuc, *et. all.*, Școala Online. Elemente pentru inovarea educației. *Raport de cercetare evaluativă*, București, Editura Universității din București, 2020, pp.7 – 8.

13 Constantin Cucoș,„Generarea conținuturilor școlare/suporturilor de învățare de tip elearning. Caracteristici și criterii de calitate," in *Educația digitală, Ciprian Ceobanu, Constantin Cucoş, Olimpius Istrate and Ion-Ovidiu Pânișoară (eds.), București, Polirom, 2020, p.258.*

14 *Ibidem.*

field of online education are related to the tendency to simplify language, which conforms to the principle of economy in language, but without compromising on the rules of correct writing, the rapid possibility of accessing information, the transmission of messages to several recipients at the same time and the manifestation of a certain type of socialization, with a certain frequency among young people.[15]

Claudia Florina Pop is also of the opinion that the positive effects of online learning include the possibility of continuing classes regardless of the epidemiological situation or other catastrophic situations, the use of digital materials preferred by students (clips, PowerPoint presentations, images, audio materials) and the automatic recording of grades in online catalogues.[16]

Neural plasticity is used as an argument by both proponents of the positive impact of technology in terms of cognitive development and learning efficiency and by pessimistic authors. Both perspectives support the idea that the extent of exposure to technology can profoundly and irreversibly influence brain development, which is highly plastic at young ages. From an optimistic perspective, the influence of technology in education is seen as beneficial because it facilitates the higher-level development of visual skills (visualization, spatial scanning), hand-eye co-ordination, the ability to act quickly on spontaneous, unexpected events, and the ability to process large amounts of information in a short time.[17]

From the perspective of the act of learning, Cornelia Măirean made a comparison between the classical profile and the learning profile in the digital age. From her perspective, exposing children and teenagers to the online environment has taught them to crave interaction and immediate response to their requests, with real-time conversations on social networks

15 Mariana Vârlan, „Câteva aspecte privind limbajul internetului și influența acestuia asupra comunicării," in *Limba Română: direcții actuale în cercetarea lingvistică. Actele celui de-al 11-lea Colocviu Internațional al Departamentului de Lingvistică, Rodica Zafiu, Adina Dragomirescu, Alexandru Nicolae (eds.), București, Editura Universității din București, 2012, p.326.*

See also Eugenio Coseriu, Introducere în lingvistică, Cluj: Editura Echinox, 1995, p. 88. Claudia Coja, *Particularități lingvistice ale conversației de tip „chat",* București, Editura Universitară, 2010, p.24.

16 Claudia Florina Pop, *Metode și tehnici de comunicare în mediul educațional*, Cluj-Napoca, Presa Universitară Clujeană, 2021, p.108.

17 Mark Prensky, *Digital game-based learning, New York, McGraw-Hill, 2001.*

and online games contributing to their need for speed. In the act of learning, these characteristics facilitate the ability to process information quickly and lead to a fast pace of work and an extended working memory for processing large amounts of information quickly.

Also, according to the author mentioned above, today's students and learners have a self-regulating capacity to engage in multi-tasking behavior (having various windows open on the internet/study, communicating on social media while listening to music on headphones), reducing their volume when they feel the need for increased concentration on a single task. Related to this is the particularity of today's children and young people to access information randomly and not in a linear, step-by-step way as previous generations did. The advantage of this is that it allows a concept to be processed from multiple perspectives, establishing complex interconnections between different views.

At the same time, digital natives' preference for images over written text has led to a development of visual processing skills for various materials. Therefore, the advantage of this particular learning profile is the possibility to obtain more information in a shorter time. Also worth mentioning is the mechanism of social learning, whereby technology allows for the collective realization of projects combined with various discussions related to the learning activity. This leads to an expansion of available resources and improved teamwork.

Cornelia Măirean's also opinionates that digital natives' leisure activities (especially video games) contribute to the development of complex cognitive skills and blur the boundary between work and play. Closely related to this is the immediate feedback and rewards offered by the online environment for effort.[18]

Other studies find that, used effectively, digital tools help to build students' collaborative skills and develop critical thinking. They can also improve learning experiences, save time resources, help teaching adapt more quickly to students' needs, monitor school progress, and make the teaching process more transparent..[19]

18 Cornelia Măirean, „Modificarea profilului învățării individuale în era tehnologiilor digitale," in *Educația digitală, Ciprian Ceobanu, Constantin Cucoș, Olimpius Istrate and Ion-Ovidiu Pânișoară (eds.), București, Polirom, 2020, pp.140 – 143.*

19 Horațiu Catalano, Maria Scuturici and Oana Moldovan, „Metodica resurselor și a instrumentelor digitale utilizate în procesul de instruire online," in *e-Didactica. Procesul de*

Ion-Ovidiu Pânișoară believes that the use of technology in schools can facilitate learning, open new horizons of knowledge and lead to the understanding that technology is not limited to the recreational space. Schools need to provide pupils and students with the „first steps of technological self-control", helping them to become good „digital citizens".[20] In this context, Mike Ribble notes that „as the use of technology in education increases, there is a growing need for programs that help students focus on positive technology use and carefully discern decisions about what they post, comment and discuss when using digital technologies".[21]

From the perspective of the teacher-student relationship, Ion-Ovidiu Pânișoară suggests that technology can provide the teacher with the levers for a better individualization of learning, and the student can provide a better picture of his possibilities and increase objectivity. In his view,„above technology is the pedagogy behind it, and the teacher remains the magician who makes it all possible". Thus, he does not propose the disappearance of the role of the teacher, as many consider and for which he refuses to be part of online education, but a transformation of this role in the context of postmodern social dynamics.[22]

From the assessment perspective, Sue Timmis and her collaborators suggest that technology should be the strongest pretext for innovation in school assessment, which is often oriented towards grading at the expense of checking and feedback relevant to learning. Technology-enriched assessment can open up the following directions for teachers, students and pupils alike: Valuing multimodal expression (text, image, sound, movement), stimulating metacognitive skills by supporting self- and cross-assessment, increased flexibility (spatial, temporal, collaborative), assessment of complex problem-solving ability, continuous feedback (synchronous and asynchronous), innovations in storing information obtained through assessment and diversifying data about student and learner behavior during learning and assessment.[23]

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instruire în mediul online, Ion Albulescu and Horațiu Catalano (eds.), București, Didactica Publishing House, 2021, pp.341 – 342.

20 Ion-Ovidiu Pânișoară,„Procesul de învățământ în perspectiva digitalizării", p.101.

21 Mike Ribble, *Digital Citizenship in Schools: Nine Elements All Students Should Know*, Arlington, International Society for Technology in Educatioan, 2015, p.38.

22 Ion-Ovidiu Pânișoară,„Procesul de învățământ în perspectiva digitalizării", pp.100 – 104.

23 Sue Timmis, Patricia Broadfoot, Rosamund Sutherlan and Alison Oldfield, „Rethinking assessment in a digital age: oportunities, challenges and risks," *British Educational Research Journal 42, nr. 3 (2016),* pp. 459 – 463.

Advantages of online computer-based testing include time flexibility and accessibility (instant administration, automatic marking and scoring at any time), randomization of test structure, opportunity to review items and answers, individualized feedback, and easy links to relevant learning materials for item resolution.[24]

Also, from a teacher's perspective, the online e-catalogue can have possible positive effects on the relationship with students, but especially with parents. Such a tool can facilitate complementary communication between teachers and parents, which tends to replace telephone messages or e-mails. By giving parents direct access to their pupils' school situation, updated on a permanent basis, they can become co-responsible for implementing corrective strategies or strategies to optimize school performance.[25]

On a personal level, I believe that online learning has particular advantages in offering global accessibility to education, great flexibility in the curriculum and personalized content, constantly updated and adapted to the individual needs of pupils/students. The variety of resources (videos, e-books, interactive tests, multimedia materials) allows online interaction and collaboration, even saving time and money. In addition, one-to-one learning offers the opportunity to improve technological skills and familiarity with different online platforms and tools.

2. Drawbacks of online learning

Alongside the benefits of online learning, studies also speak of certain drawbacks, which I will try to detail below.

As mentioned earlier, from the perspective of communication in the virtual environment, according to the same study conducted by Mariana Vârlan, the drawbacks in the field of online education are related to the

24 Eros DeSouza și Mattew Fleming, „A comparison of in-class and online quizzes on student exam performance," *Journal of Computing in Higher Education 14 (2003),* pp. 121 – 134.

25 Roxanne Geitz Miller, John Brady and Jared T. Izumi, „Stripping the Wizard's Curtain: Examining the Practice of Online Grade Booking in K–12 Schools," *School Community Journal* 26, nr. 2 (2016), pp. 45 – 70. See also Laura Bardoff Zieger and Jennifer Tan, „Improving Parent Involvement in Secondary Schools through Communication Technology," *Journal of Literacy and Technology* 13, nr. 1 (2012), pp. 30 – 54.

coded language, based on abbreviations and symbolism (which can only be understood by users or „insiders"), the transmission of information in an erroneous form, the lack of censorship that makes it possible for vulgar words and expressions to appear. She also believes that the online environment reduces the intensity of the experience of face-to-face expression and that the lack of handwriting leads to problems of spelling, punctuation and even expression.[26]

From Cornelia Măirean's perspective, the need for increased speed among children and young people leads to a decrease in patience for the slow and careful reading that is typical of the classical learning profile, limiting reflective thinking and the ability to solve tasks that require abstraction and depth. Their involvement in multiple tasks is also associated with poor learning outcomes, with the ability to retain less information in a given time and to retain it for a shorter time and longer time needed to complete a task. At the same time, increased interest in technology and all the visuals it provides can lead to decreased interest in reading traditional text and reading in general.

It is also worth mentioning random access to information, which can lead to an incomplete understanding of a subject, by identifying divergent elements that cannot be put into a whole. Online learning can also lead to a situation where a person no longer wants to take responsibility for their own learning experience, being too distracted by social activities. While active learning can increase the effectiveness of learning under the right conditions, random discovery and multiple trials without a scientific basis can run the risk of missing the essence of a subject. Last but not least, while the need for constant feedback can stimulate learning, an unrealistic expectation of rewards and constant feedback can lead to difficulty in coping, lack of self-confidence and dissatisfaction in the absence of feedback.[27]

While digital technology may cause certain brain regions to overdevelop, at the same time it suppresses activity in the frontal lobe, the brain region responsible for planning, abstract thinking and forward thinking. Furthermore, high levels of digital stimulation may hinder the develop-

26 Mariana Vârlan, „Câteva aspecte privind limbajul internetului și influența acestuia asupra comunicării", p. 326.

27 Cornelia Măirean, „Modificarea profilului învățării individuale în era tehnologiilor digitale", pp.140 – 143.

ment of neural pathways involved in empathy and social skills. If we follow this line of thought, digital games and activities can cause or worsen Attention Deficit Disorder (ADD) or Attention Deficit Hyperactivity Disorder (ADHD) by stimulating the temporal lobe at the expense of frontal lobe activity in children and adolescents.[28] Therefore, the use of technology in everyday life can develop the temporal lobe at the expense of the frontal lobe, which leads to enhanced development of some cognitive skills (visual activities), but prevents the development of deep and reflective thinking, impulse control and the development of empathy and social skills. Beyond all this, neural circuits involved in rapid scanning of information are highly developed and become dominant, whereas those involved in deep and reflective reading of text remain underdeveloped.[29]

At the same time, a big disadvantage of online teaching is that the two‚actors' - the student and the teacher - have different rhythms and plans in terms of knowledge and use of technologies. While the student of the ‚touchscreen generation' uses digital technology intensively and is a heavy consumer of the internet, apps and games, the teacher, on the other hand, often retains that conservative streak or even stays within the comfort zone of the acquired training he or she teaches in the classroom.[30]

One of the most frequently mentioned drawbacks is the resistance of teachers to implementing the online catalogue, which is a valuable tool for communicating with the family. Reluctance is often associated with the fear that errors may occur during the recording of school results. This is compounded by inconsistent access to the online catalogue by pupils and parents, which dilutes the beneficial effects as well as the motivational impact.[31]

Claudia-Florina Pop believes that the disadvantages of online learning include the discontinuity of students' attendance in class, due to poor

28 Gary Small and Gigi Vorgan, *iBrain: Surviving the technological alteration of the modern mind, New York: Harper, 2008.*

29 Nicholas Carr, *The shallows: What the Internet is doing to our brains, New York, W. W. Norton & Company, 2010.*

30 Daniel Andronache and Marius Bănuț, „Conjuncția teoriilor învățării cu educația online: între metodologie și tehnilogie," in *e-Didactica. Procesul de instruire în mediul online, Ion Albulescu and Horațiu Catalano (eds.), București, Didactica Publishing House, 2021, p.138.*

31 Roxanne Geitz Miller, John Brady and Jared T. Izumi, „Stripping the Wizard's Curtain: Examining the Practice of Online Grade Booking in K–12 Schools", pp. 45 – 70.

internet signal (some children come from disadvantaged backgrounds), the possibility for them to avoid answers and interaction under the pretext of poor connection, students' inattention, and even subjective assessments (this last aspect is seen as the most serious from the author's perspective).[32]

One issue that hangs heavy on the downsides of online learning is the vulnerability in terms of data protection and security, which are fundamental building blocks of digital education. The European Commission pointed out back in 2018 that:

> Advances in the digital field bring with them new challenges for Europe's pupils, students, and teachers. Algorithms used by social media platforms and news portals can strongly amplify bias and fake news, and data protection has become a major concern in digital society. Both young people and adults are vulnerable to online bullying and harassment, predatory behavior or harmful online content.[33]

Last but not least, Ion-Ovidiu Pânișoară believes that a drawback, in the context of implementing technology in education, can be "the excess of technology, the addiction it creates", the "way" and "degree" in which technology is used makes the difference between "threat and opportunity".[34]

3. Proposals and solutions to improve the online teaching-learning-assessment process

The unprecedented dynamics of postmodern society have, whether intended or not, irrevocably influenced schooling, with the behavior of new generations being massively shaped by the virtual learning context.[35] Ion-Ovidiu Pânișoară believes that isolating schools „in an ivory tower where they are not affected by the noise" of societal change „can

32 Claudia Florina Pop, *Metode și tehnici de comunicare în mediul educațional*, p.108.

33 European Commission. „Commission Staff Working Document Accompanying the Document Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions on the Digital Education Action Plan, {COM (2018) 22 final}, 4. https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A52018SC0012 – June 23, 2023.

34 Ion-Ovidiu Pânișoară,„Procesul de învățământ în perspectiva digitalizării", p.100.

35 Sulayman K. Sowe, Athanasis Karoulis and Ioannis Stamelos, „A Constructivist View of Knowledge Management in Open Source Virtual Communities," in *Managing Learning in Virtual Settings: The Role of Context*, Antonio Dias Figueiredo and Ana Paula Afonso (eds.), Londra, Idea Group, 2006, p.298.

no longer continue". He believes that „school has an active role in the way society shapes the flow of development and must increase its role and place in the management of these changes", with the „digital world" being the main challenge schools must face. Like a „new world", the digital space must be „discovered", „conquered", „shaped", strengthening in the new generations they form „open minds, a passion for innovation and a deep understanding of all these mechanisms resulting from the impact of technology on life".[36] Therefore, such an approach requires adaptability and intentionality.

He also believes that education needs a redefinition of mentality that„builds into the profile of the teacher the need to understand the social dynamics of which he or she is part of". He therefore proposes a „transformational, modern perspective, in which teachers must be prepared to cope with a rapid transformation in the profile of the generations they face, to understand the changes in the way their pupils perceive reality and to adapt to these changes on an ongoing basis".[37]

Because there is a „tendency to see new things from the perspective of old paradigms"[38], which is not necessarily a bad thing, the school should always remain „a place of experimentation, regulation and reconsideration of technology", and the pedagogy behind the act of teaching should be „precisely the backbone that will provide stability to this construction".[39]

Lee and Gaffney propose an understanding of the nature and potential of digital technologies, with a view to incorporating them into the act of education in order to give the learner the respect and recognition due to them in the act of education (how they learn, how they are assessed, etc.). At the same time, they support the development of quality teaching practice and the development of digital resources to support teaching, as well as the redesign of school structures and the processes they propose.[40]

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36 Ion-Ovidiu Pânișoară,„Procesul de învățământ în perspectiva digitalizării", p.105.

37 Ibid. p.104.

38 Kieron Sheehy, Rebecca Ferguson & Gill Clough, *Augmented Education: Bringing Real and Virtua Learning Together, New York, Palgrave Macmillan, 2014, p.14.*

39 Ion-Ovidiu Pânișoară,„Procesul de învățământ în perspectiva digitalizării", p.106.

40 Mal Lee and Michael Gaffney, *Leading a Digital School: Principles and Practice, Camberwell, Australia: ACER Press, 2008, pp.3 – 4.*

From Cornelia Măirean's perspective, it is necessary to cultivate active learning, but also the orientation towards the valorization of learning experiences in classical learning environments.[41]

In the context of increasing talk of a „digital pedagogy' and ‚training engineering", a field that deals with the infusion of technology into educational contexts, Carolyn Rosé and her collaborators propose the creation of interdisciplinary teams to support this approach. These teams should comprise four categories of specialists: 1. Specialists in technical disciplines (computer scientists, specialists in artificial intelligence in machine learning, language technologies and statistics); 2. Specialists in social sciences (cognitive, educational, social, linguistic psychology, economics); 3. Specialists in education and educational research; and 4. Specialists in design (including human-device-art interaction).[42]

Marc Prensky believes that today's society should approach digital technology with „digital wisdom". Education is no exception to this challenge either. Today's technology allows instant access to information and data, develops the ability to analyze in depth, to plan and prioritize, increasing the ability to perceive and understand others, to see and accept perspectives and alternatives.[43]

Last but not least, the European Commission considers that the digital literacy strategy needs to be put into practice, which can be achieved if the right to personal data protection is respected, if the relevant elements of the national cyber security strategy, the national education strategy and the involvement of the National Supervisory Authority for Personal Data Processing are coherently combined.[44]

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41 Cornelia Măirean, „Modificarea profilului învățării individuale în era tehnologiilor digitale", p.142.

42 Carolyn P. Rosé, Elizabeth A. McLaughlin, Ran Liu and Kenneth R. Koedinger, „Explanatory learner models: Why machine learning (alone) is not the answer," *British Journal of Educational Technology 50, nr. 6 (2019): p.2955.*

43 Marc Prensky,„H. Sapiens Digital: From Digital Immigrants and Digital Natives to Digital Wisdom," *Innovate: Journal of Online Education 5, nr. 3 (2009): 1 și 6.*

44 European Commission. „Commission Staff Working Document Accompanying the Document Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions on the Digital Education Action Plan."

Conclusions

The confluence of education and technology has led to several obvious shifts in postmodern society and has revealed a number of roles for technology. In the field of education,[45] technology can be seen as a medium in which the act of education can take place, but also as a resource for education.[46] Technology can also effectively support educational management and, technology can play a facilitating role in the delivery of learning content.

In this context, perhaps the most important role of schools should be to help pupils and students to relate to new technologies wisely, helping them to bring to this virtual plan principles of morality and ethics, so that, in these times of unfettered freedom of expression in which they are bombarded with information, they can discern between right and wrong, between truth and lies. Without achieving this objective, schools will remain merely providers of information, which will most likely lose the battle with the new information content offered by the virtual environment.

References

- ANDRONACHE, Daniel and Marius Bănuț. „Conjuncția teoriilor învățării cu educația online: între metodologie și tehnologie." In *e-Didactica. Procesul de instruire în mediul online*, editată de Ion Albulescu and Horațiu Catalano, 137 – 176. București: Didactica Publishing House, 2021.
- BOTNARIUC, Petre *et. all.*. *Școala Online. Elemente pentru inovarea educației. Raport de cercetare evaluativă*. București: Editura Universității din București, 2020.
- CARR, Nicholas. *The shallows: What the Internet is doing to our brains*. New York: W. W. Norton & Company, 2010.
- CATALANO, Horațiu, Maria Scuturici and Oana Moldovan. „Metodica resurselor și a instrumentelor digitale utilizate în procesul de instruire online." In *e-Didactica. Procesul de instruire în mediul online*, edited by Ion Albulescu and Horațiu Catalano, 227 – 343. București: Didactica Publishing House, 2021.

45 Ioan-Gheorghe Rotaru, "Current Values of Education and Culture", in *Proceedings of the 24th International RAIS Conference on Social Sciences and Humanities, August 15-16, 2021, Princeton, NJ, United States of America, pp. 87-92.*

46 Ioan-Gheorghe Rotaru, "Valences of Education", in *Proceedings of the 24th International RAIS Conference on Social Sciences and Humanities, August 15-16, 2021, Princeton, NJ, United States of America, pp. 190-196.*

- CEOBANU, Ciprian. „Reconfigurări educaționale în era tehnologiei digitale." In *Educația digitală*, edited by Ciprian Ceobanu, Constantin Cucoș, Olimpius Istrate and Ion-Ovidiu Pânișoară, 21 – 36. București: Polirom, 2020.
- CILLIERS, Elizelle Juanee. „The Challenge of Teaching Generation Z." *PEOPLE: International Journal of Social Sciences* 3, nr. 1 (2017): 188 – 198.
- COJA, Claudia. *Particularități lingvistice ale conversației de tip „chat"*. București: Editura Universitară, 2010.
- COSERIU, Eugenio. *Introducere în lingvistică*. Cluj: Editura Echinox, 1995.
- CRISTEA, Sorin. *Fundamentele pedagogiei*. Iași: Polirom, 2010.
- CUCOȘ, Constantin. „Generarea conținuturilor școlare/suporturilor de învățare de tip elearning. Caracteristici și criterii de calitate." In *Educația digitală*, edited by Ciprian Ceobanu, Constantin Cucoș, Olimpius Istrate and Ion-Ovidiu Pânișoară, 256 – 272. București: Polirom, 2020.
- DESOUZA, Eros and Mattew Fleming. „A comparison of in-class and online quizzes on student exam performance." *Journal of Computing in Higher Education* 14 (2003): 121 – 134.
- EUROPEAN COMMISSION. „Commission Staff Working Document Accompanying the Document Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions on the Digital Education Action Plan, {COM (2018) 22 final}, 4. https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A52018SC0012 – June 23, 2023.
- GLAVA, Cătălin. „Platforme de învățare online. Premise, categorii, caracteristici esențiale." In *Educația digitală*, edited by Ciprian Ceobanu, Constantin Cucoș, Olimpius Istrate and Ion-Ovidiu Pânișoară, 191 – 200. București: Polirom, 2020.
- LEE, Mal and Michael Gaffney. *Leading a Digital School: Principles and Practice*. Camberwell, Australia: ACER Press, 2008.
- MANNHEIM, Karl. „The Problem of Generations." In *Essays on the Sociology of Knowledge*, edited by P. Kecskemeti, 276 – 320. London: Routledge and Kegan Paul, 1952.
- MĂIREAN, Cornelia. „Modificarea profilului învățării individuale în era tehnologiilor digitale." In *Educația digitală*, edited by Ciprian Ceobanu, Constantin Cucoș, Olimpius Istrate and Ion-Ovidiu Pânișoară, 136 – 147. București: Polirom, 2020.

- MILLER, Roxanne Geitz, John Brady and Jared T. Izumi. „Stripping the Wizard's Curtain: Examining the Practice of Online Grade Booking in K–12 Schools." *School Community Journal* 26, nr. 2 (2016): 45 – 70.
- PÂNIȘOARĂ, Ion-Ovidiu. „Procesul de învățământ în perspectiva digitalizării." In *Educația digitală*, edited by Ciprian Ceobanu, Constantin Cucoș, Olimpius Istrate and Ion-Ovidiu Pânișoară, 99 – 107. București: Polirom, 2020.
- POP, Claudia Florina. *Metode și tehnici de comunicare în mediul educațional*. Cluj-Napoca: Presa Universitară Clujeană, 2021.
- PRENZKY, Mark. „H. Sapiens Digital: From Digital Immigrants and Digital Natives to Digital Wisdom." *Innovate: Journal of Online Education* 5, nr. 3 (2009): 1 – 9.
- PRENSKY, Mark. „Digital Natives, Digital Immigrants." *On the Horizon* 9, nr. 5 (2001): 1 – 6.
- PRENSKY, Mark. *Digital game-based learning*. New York, McGraw-Hill, 2001.
- PRINCE, Tiffany. *Top of the Mountain Leadership: The Future of Performance and Productivity in a Technology Changing World*. Sarasota: First Edition Design Publishing, 2019.
- RIBBLE, Mike. *Digital Citizenship in Schools: Nine Elements All Students Should Know*. Arlington: International Society for Technology in Educatioan, 2015.
- ROTARU, Ioan-Gheorghe. "Spiritual Lessons observed through the Coronavirus Crisis." *Dialogo. Issue of Modern Man* 6, nr. 2 (2020): 71-82.
- ROTARU, Ioan-Gheorghe, "Current Values of Education and Culture". In *Proceedings of the 24th International RAIS Conference on Social Sciences and Humanities*. August 15-16, 2021: 87-92. Princeton, NJ, United States of America.
- ROTARU, Ioan-Gheorghe, "Valences of Education". In *Proceedings of the 24th International RAIS Conference on Social Sciences and Humanities*. August 15-16, 2021: 190-196. Princeton, NJ, United States of America.
- ROSÉ, Carolyn P., Elizabeth A. McLaughlin, Ran Liu and Kenneth R. Koedinger. „Explanatory learner models: Why machine learning (alone) is not the answer." *British Journal of Educational Technology 50*, nr. 6 (2019): 2943 – 2958.

- SHEEHY, Kieron, Rebecca Ferguson & Gill Clough. *Augmented Education: Bringing Real and Virtua Learning Together*. New York: Palgrave Macmillan, 2014.
- SMALL, Gary and Gigi Vorgan. *iBrain: Surviving the technological alteration of the modern mind*. New York: Harper, 2008.
- SOWE, Sulayman K., Athanasis Karoulis and Ioannis Stamelos. „A Constructivist View of Knowledge Management in Open Source Virtual Communities." In *Managing Learning in Virtual Settings: The Role of Context*, edited by Antonio Dias Figueiredo and Ana Paula Afonso, 290 – 308. Londra: Idea Group, 2006.
- TIMMIS, Sue, Patricia Broadfoot, Rosamund Sutherlan and Alison Oldfield. „Rethinking assessment in a digital age: oportunities, challenges and risks." *British Educational Research Journal 42*, nr. 3 (2016): 454 – 476.
- VÂRLAN, Mariana. „Câteva aspecte privind limbajul internetului și influența acestuia asupra comunicării." In *Limba Română: direcții actuale în cercetarea lingvistică. Actele celui de-al 11-lea Colocviu Internațional al Departamentului de Lingvistică*, edited by Rodica Zafiu, Adina Dragomirescu, Alexandru Nicolae, 325 – 329. București: Editura Universității din București, 2012.
- ZIEGER, Laura Bardoff and Jennifer Tan. „Improving Parent Involvement in Secondary Schools through Communication Technology." *Journal of Literacy and Technology* 13, nr. 1 (2012): 30 – 54.