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CULTURE OF EDUCATION IN THE AGE OF ARTIFICIAL INTELLIGENCE: NEW CHALLENGES

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Purpose: The article aims to present the main directions of changes in the Culture of Education determined by civilizational change.
Design/methodology/approach: The article reviews the literature, presenting the theoretical paradigm of contemporary Education and presents the possibilities of organizational solutions for Education using artificial intelligence.
Findings: The article presents solutions related to the organization of Education using artificial intelligence functioning in educational institutions in various countries, showing changes in the Culture of Education in the digital era.
Originality/value: The article is of an overview nature.
Keywords: digital civilization, Education, artificial intelligence.
Category of the paper: Literature review.

1. Introduction

Access to information is a prerequisite for human knowledge construction. The digital age has opened up new educational realms, driven by unlimited access to information, along with the ability to process and distribute it in various forms, facilitating and accelerating the learning process. Previous generations lacked this capability. Operating in an information society significantly facilitates the building of personal knowledge, supporting the learning process, but it also generates previously unknown dangers. New technological solutions have transformed the principles of information distribution and communication, and have also opened up new spaces for self-creation (OECD, 2019).

Harnessing the potential offered by the digital environment and engaging in activities within it permanently contributes to the development and refinement of personal learning strategies, simultaneously expanding and modifying existing knowledge. It is important to emphasize that the widespread use of artificial intelligence-based solutions has recently been a breakthrough in these activities. Contemporary educational Culture is changing. Knowledge of how people

construct their knowledge in the digital space and the conditions necessary for this process to proceed smoothly has become crucial for educators. Harnessing the potential of digital civilization to support this process has become a natural progression.

The contemporary constructivist paradigm, resulting from research conducted within cognitive psychology, provides a guide for those responsible for the organization of Education and its effects.

2. The Culture of Education in the face of civilizational change

The term "culture" is interpreted in a variety of ways by representatives of various fields of knowledge. Most often, "culture" refers to the entirety of a society's spiritual and material achievements, passed down from generation to generation. These are the products of human activity, both material and immaterial, symbolic and spiritual, encompassing patterns of thought and behavior. The concept encompasses values, norms, customs, beliefs, language, art, knowledge, techniques, law, and all other products of human activity that shape social and individual life. Definitions and analyses of Culture and its role in the social sciences and humanities are widely discussed in the scientific literature, including social science dictionaries and studies on cross-cultural research (Morańska, 2024).

Agata Świdzińska cites the definition provided by Antonina Kłoskowska, who defines Culture as: "A relatively integrated whole encompassing human behaviors that follow common patterns developed and acquired in the course of interactions within a social community, and containing the products of such behaviors". The author also cites E. Tylor, who connects the concept of Culture with the concept of civilization and with accepted models of behavior specific to a given society. According to Tylor, "Culture, or civilization, is a complex whole that encompasses knowledge, beliefs, art, morality, laws, customs, and other abilities and habits acquired by human beings as members of society". Culture is also associated with the concept of ethos, meaning patterns, norms of conduct, customs, and ways of life (Jasiński, 1992).

Educational Culture is a multidimensional concept, referring to the entire set of values, norms, patterns of behavior, relationships, and practices present in the educational environment. It encompasses both formal and informal aspects of the functioning of educational institutions such as schools and universities, as well as methods of communication, teaching styles, relationships between teachers and students, and school rituals. It encompasses "the beliefs, perceptions, attitudes, and relationships, and the written and unwritten rules, that shape every aspect of the school as an institution [...] and community" (Ward, Burke, 2004, p. 1).

In his book The Culture of Education, Bruner points out that school "is not an isolated institution, it is not an island, but part of a cultural continent" (Bruner, 2006, p. 31). The author notes that "learning, remembering, talking, imagining – all this is possible thanks to participation in culture" (Bruner, 2006, p. 5). Education is, therefore, one of the manifestations of Culture because it is its result. This statement determines the way we think about contemporary Education (as cited in Bobiński, 2019; Gałaś, 2017). According to Bruner, "culture shapes the mind, that is, it provides us with the tools with which we control not only our worlds, but also our concept of ourselves and our possibilities" (Bruner, 2006, p. 4). Therefore, all Education should be viewed "in its situational cultural context," without which it essentially does not exist. It is therefore evident that Education must adapt to civilizational changes and follow them.

Considering the civilizational shift and the subsequent digital revolution triggered by the widespread use of AI, corresponding changes in the Culture of Education should be expected. It seems natural for the Culture of Education to keep pace with digital Culture, or even to synergize these cultures, to prepare young people for efficient and conscious use of civilization's achievements during formal Education. Crucial here are: significant expansion of access to information, new methods and tools for information management, ease of information sharing, the multitude and availability of tools that improve communication and information exchange, and the recent development of remote and hybrid forms of Education. All of these factors significantly influence communication between participants in the educational process, the modification of teaching and learning styles, the relationships between teachers and students, and the aforementioned school rituals. In recent years, increasing importance has been attributed to educational solutions using artificial intelligence algorithms, which, when properly implemented, can significantly improve and personalize educational processes.

The increasing autonomy in accessing information requires a new approach to the role of the modern educator. This challenge applies to teachers at all levels of Education, from preschool to higher Education.

Identifying directions and strategies based on new paradigms has become crucial. Research indicates that one of the most important issues related to the Culture of Education in the digital world is equipping those carrying out educational tasks with knowledge about the mechanisms of human learning. This knowledge helps in consciously and intentionally organizing practical educational activities that take into account the contemporary digital teaching and learning environment. The changes taking place in Education under the influence of civilizational changes are best captured by the SAMR model developed by Ruben Puentedura.

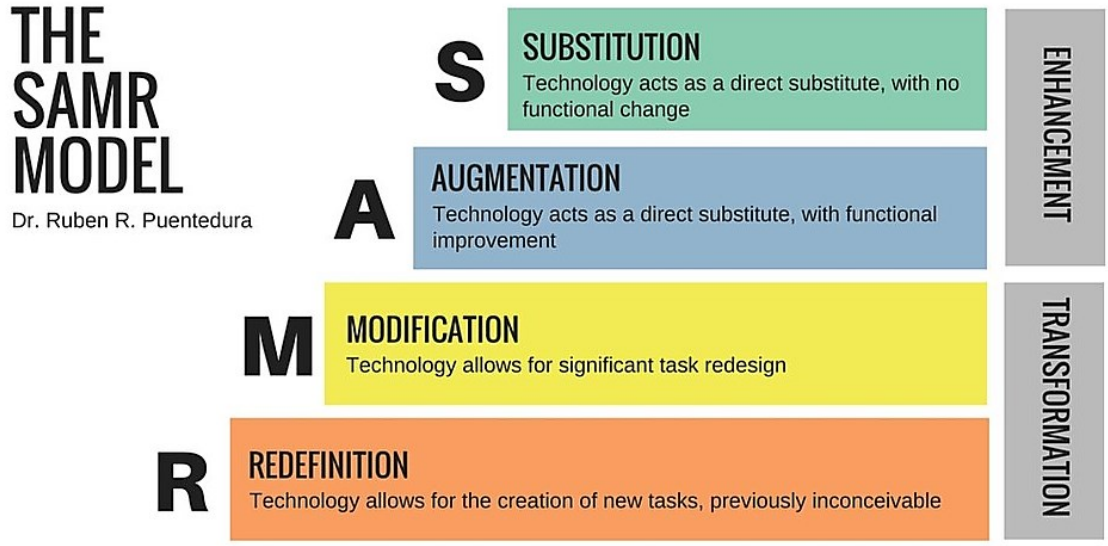

Figure 1. Puentedura RR, SAMR, A contextualized introduction, 2014.

Source: http://www.hippasus.com/rrpweblog/archives/2014/01/15/SAMRABriefContextualizedIntroduction.pdf

Ruben Puentedura presented a four-stage approach to integrating technology in Education. This model assesses and plans the use of digital tools in teaching, helping teachers consciously improve the quality and effectiveness of their teaching through the use of digital technologies.

Substitution Level

At this level, technology replaces a traditional tool without significantly changing its functionality. An example is using a word processor instead of a traditional notebook. At this stage, technology does not introduce new capabilities; it merely replaces existing solutions.

Augmentation Level

Technology continues to replace traditional tools, but it introduces specific functional improvements. Examples include using a word processor with a spell-checking function or a teacher commenting. The teaching process is more effective, but its essence remains unchanged.

Modification Level:

Technology enables significant changes in the way tasks are accomplished. For example, learners can work collaboratively on a single online document, enabling immediate collaboration and feedback. At this level, technology allows for a reorganization of the teaching and learning process.

Redefinition Level

Technology allows for the creation of entirely new tasks that were previously impossible. Learners can create multimedia projects, publish them online, and collaborate with teams from other countries. That is a stage where technology opens up new educational perspectives and transforms traditional approaches to teaching.

The SAMR model is widely used in educational practice, including implementing distance learning, hybrid learning, and integrating digital tools in foreign language and science learning. It allows teachers to analyze their current level of technology use and plan further development of digital competencies. It also optimizes the learning process by engaging learners in more active and creative activities using digital tools.

The SAMR model is a practical tool that supports teachers in effectively and consciously integrating technology into Education. Its four levels—Substitution, Augmentation, Modification, and Redefinition—help teachers gradually move from simply replacing traditional methods to creating entirely new, innovative learning experiences.

As can be seen, the presented model indicates a gradual shift from Education based on traditional assumptions to Education that supports the learning process. In this approach, contemporary studies on education draw on the work of cognitive psychologists, who have explored human learning processes at various stages of development, in the context of sociocultural influences. Witold Bobiński discusses this issue extensively (Bobiński, 2019). The author refers to research conducted by cognitive psychologists and constructivists such as Jean Piaget, Lev Vygotsky, and Jerome Bruner. These researchers were interested in how people learn about the surrounding reality and how they construct their knowledge. Their research identified the necessary conditions for effective learning. The authors of the concept focused on how to organize Education so that learning is both satisfying and intentional.

Reflecting on the issues raised, it is worth considering the Culture of Education in Polish schools. Does our education system meet the expectations of the information society? Does the educational Culture resulting from the analysis of past educational experiences influence the contemporary vision of Education operating in the digital world? In what direction should changes be heading?

3. Changing the way we think about Education

Living in a digital civilization has significantly influenced the learning strategies of modern people. Significant changes in learning culture are being observed, most evident in non-formal Education. In this respect, the perception of the tasks of contemporary Education has changed. These circumstances are of key importance, especially for those responsible for organizing the education system and determining the functioning of young people in educational institutions. Undoubtedly, in seeking answers to the above questions, and bearing in mind the ongoing nature of learning, it should be assumed that contemporary Education, as one of the manifestations of Culture, should strive to meet human needs, connect with a sense of satisfaction, contentment, and meaning. It should be a part of real life, not its imagined

representation. Therefore, teachers must have an eye for the future and knowledge of cognitive processes, so that they can create opportunities for self-improvement for young people (Morańska, 2004a).

In the realities of a changing world, a priority challenge is to make educational institutions places that shape and support learners' cognitive development. Knowledge of how people construct their knowledge and the determinants of this process should constitute the foundational knowledge of every educator. According to Bruner, the awareness that Education is a vital cultural tool, enriching intellectual skills, has a fundamental impact on the organization of educational space for individual cognitive development. According to the author, schools should provide every learner with the opportunity to develop intellectual competencies and refine their cognitive strategies, essential for learning, understood "as the human ability to acquire, store, and transform knowledge for one's purposes" (Bruner, 1978, p. 526). Bruner believed that learners build personal knowledge through participation in Culture. Education plays a highly responsible role here, providing the opportunity to discover knowledge in a social environment (as cited in Bobiński, 2019; Gałaś, 2017).

Self-esteem, a belief in one's abilities, is paramount for self-development and self-determination. According to Bruner, this requires considering two fundamental aspects: "The first is a sense of agency, which, in the opinion of most researchers, stems from the belief that one can independently initiate and execute actions" (Bruner, 2006, p. 58). A sense of influence is an important element in making responsible decisions. The second is self-assessment. "We not only experience ourselves as acting subjects, but also assess our effectiveness in carrying out what we intended or what we were instructed to do" (Bruner, 2006, p. 60). For contemporary Education, it is crucial to pay attention to aspects that influence the achieved learning outcomes, such as a sense of purpose in educational activities, satisfying the need for knowledge, awareness of self-efficacy, and achieving satisfaction with achieved successes. These premises constitute a guidepost enabling teachers to understand the direction of improving the students' education process (after Bobiński, 2019; Gałaś, 2017).

Learners value self-determination, autonomy, and real influence over their learning activities. A sense of purpose in participating in the educational process increases their engagement. That is confirmed by research conducted by John Hattie, who believes that meeting student expectations is the most important factor in achieving educational success. Research shows that these expectations dominate other factors such as teacher credibility, receiving feedback, and sharing knowledge (Hattie, 2015, p. 367). The belief that something is interesting, important, useful, and meaningful can be achieved through Education. This belief determines young people's attitudes toward learning and, consequently, toward the educational institution. The essence of a modern teacher's work is to arouse cognitive curiosity, create a kind of cognitive dissonance that serves as a source of internal motivation, and support students on their path to academic success, which in turn influences their sense of satisfaction, which in turn contributes to high self-esteem (Hattie, 2015, p. 40). To ensure optimal learning

conditions for students, it is essential to provide support to each of them. Furthermore, Education is obligated to provide all students with adequate learning conditions, taking into account their unique, individual potential and personal learning strategy (as cited in Bobiński, 2019), which today broadly incorporates the use of digital technology tools.

As mentioned, building high self-esteem and taking on new challenges requires achieving success. Every failure is discouraging. Education should not be associated with failure and the fear of its consequences. It is a space in which everyone should experience the pleasure of achieving personal and exceptional educational success, within their capabilities. This opportunity is created, among other things, by the use of modern educational methods and resources.

According to Hüther (Hüther, Hauser, 2014), young people have a natural, uninhibited need to engage in cognitive activities, which are nothing other than learning (as cited in Bobiński, 2019). The ability to use tools that allow for the uninhibited search of diverse information sources fosters these activities. Responsibility can only be learned by providing space for independent decision-making and bearing the consequences. A sense of agency plays a decisive role here. Otherwise, there is a danger of developing a passive, externally driven individual who obediently listens and reproduces, as opposed to a "curious," critically and creatively thinking, engaged, internally driven individual who wants to know, for whom achieving a goal becomes a reward, brings satisfaction, and favors taking on further challenges. Students' co-deciding on the scope and manner of the educational process is linked to introducing a culture of conscious student participation and a culture of creativity into schools. No one questions the fact that in a world with unlimited access to information, constructing knowledge requires learners to be independent and have critical thinking skills.

To provide learners with the conditions to develop the necessary competencies, schools shaped by contemporary educational Culture must embrace the idea of student agency, enabling active, multi-sensory learning using modern information processing methods. They must sustain students' interest in learning and help them refine their cognitive strategies. One option is to use activating methods that require attention and intellect, including creating conditions for project implementation, teaching responsibility, self-control, and independent learning, while also fostering the development of collaborative skills and design thinking. Despite their undeniable advantages, these methods are rarely used in Polish Education.

According to Bruner (Bruner, 2006), if we want to educate people for self-determination, we should allow them to make decisions for themselves, take on challenges, make mistakes, bear the consequences of their decisions, and draw conclusions from them. In this way, we teach them responsibility. After all, we want them to be agents, capable of independently taking responsible initiatives. That, after all, is in our human nature (as cited in Bobiński, 2019; Gałaś, 2017).

It is important to emphasize that teacher-learner relationships play a crucial role in the educational process, and these relationships should be redefined in the modern era. Who is a teacher today, and what role do they play? How should we understand teaching today to take into account the autonomy and uniqueness of the student? How can we organize learning situations to create a space for students to explore the world actively? It is worth noting that Bruner particularly emphasized the importance of building teacher-learner relationships. According to the author, this relationship is fundamental in Education.

There is a lively debate in the pedagogical community about the nature of 21st-century Education, recognizing the need for schools to focus on creating conditions for all learners to develop their potential. Therefore, it is the responsibility of educational institutions to individualize Education, which is currently implemented through differentiated and inclusive Education. Modern Education aims to enable effective learning in a social environment. This concept enables teachers to be prepared for independent learning and to take responsibility for their outcomes, according to A. Normore (2017), we are talking here about Education based on the belief in the uniqueness of all students (as cited in Bobiński, 2019). This approach continues to evoke strong emotions among teachers, particularly those trained in traditional Education.

It is worth quoting Jere Brophy, who stated that "it would be more realistic to strive to develop and maintain in your students the motivation to learn by working on the material—the tendency to perceive this work as meaningful and valuable and as a means of achieving the intended cognitive benefits" (Brophy, 2004, p. 25). To achieve this, it becomes necessary to incorporate the achievements of digital civilization into Education.

When planning their Education, do they consider the educational needs of young people living in the digital age? How do they perceive preparing students for an unknown future that requires self-determination, proactivity, critical and creative thinking, and responsibility for their decisions?

4. AI in Education – directions of change

Artificial intelligence (AI) is effectively transforming the way we obtain information. How can its application help support learners? What solutions can be implemented?

Among the various educational innovations, applications of artificial intelligence are considered among the most revolutionary. It is predicted that AI will transform the way we teach and learn, completely shifting the paradigm away from traditional Education. In many countries, the incredibly rapid evolution of artificial intelligence in recent years has initiated a process of change in schools, universities, and other educational institutions, prompting a reassessment of traditional approaches.

AI has created the opportunity to personalize learning on a scale never before possible. AI-powered tools can tailor educational content to individual student needs, offering personalized support in real time. They can also automate administrative tasks, analyze large amounts of educational data to gain deeper insights, and create interactive and engaging learning environments.

These capabilities not only increase the efficiency of education systems but also allow teachers to focus on teaching and supporting learners. Artificial intelligence can primarily relieve teachers of the burden of providing information, allowing for greater individualization of the teaching process.

Artificial intelligence can also transform how we assess student performance. Automated grading systems can provide immediate feedback, helping students quickly identify and correct errors. That not only improves the learning process but also allows for a continuous and formative approach to assessment, rather than relying solely on final exams.

For teachers, AI can be a valuable tool for planning and delivering lessons. AI-powered planning assistants can help create lesson plans tailored to the class's profile, and classroom analytics can provide insight into student engagement and progress. These features allow teachers to modify and adapt teaching strategies in real time, creating a more dynamic and responsive learning environment.

A revolution in learning is beginning, and it is time to accept the changes that artificial intelligence is bringing to the world of Education.

The challenge for contemporary pedagogy is to explore and define how artificial intelligence is impacting Education and how it is changing the Culture of Education. That requires a comprehensive perspective on the future of this transformation.

The main directions of AI application in Education are expected to include *intelligent learning systems* (ITS), which represent one of the most promising applications of artificial intelligence (AI) in Education. Intelligent learning systems aim to provide personalized learning by adapting to the individual needs of each student. Their use allows for personalization in the context of diverse learning styles and paces—that is, personal learning strategies. These systems are capable of creating detailed profiles of learners, recording their progress and difficulties over time (Guardelli, 2024, p. 31). This adaptability has revolutionized the educational landscape, offering a personalized and learner-centered approach. These tools utilize advanced algorithms that automatically adjust the content and pace of learning to individual needs. Based on these profiles, the complexity of tasks can be adjusted, appropriate advice can be provided, and even teaching strategies can be modified to optimize learning effectiveness (Morańska, 2004b). The use of ITS provides immediate and relevant feedback that helps maintain learners' attention and motivation (Guardelli, 2024, p. 33).

Another key advantage is their ability to support inclusive learning. These systems can be configured to meet a wide range of special educational needs, adapting to learners' varying cognitive and physical abilities. The flexibility these platforms offer is particularly beneficial

in heterogeneous learning environments where student skill levels can vary significantly. Furthermore, adaptive platforms promote greater student engagement because content is tailored to be challenging yet achievable.

Ultimately, as Guardelli (2024, p. 39) emphasizes, incorporating ITS into the curriculum can significantly contribute to the development of 21st-century skills such as critical thinking, creativity, communication, and collaboration.

The main advantage of these platforms is their ability to continuously monitor student performance and dynamically adapt, offering a more efficient and effective learning environment. These platforms can create detailed student profiles based on their interactions and performance. These profiles help identify areas of difficulty and provide specific support materials, ensuring each student receives the support they need to overcome difficulties and progress at their own pace. This dynamic adjustment ensures students feel constantly challenged, but not overwhelmed. AI can tailor educational content to different learning styles.

Another feature of AI-based educational support systems is *educational data analytics*. It is a valuable tool contributing to the transformation of teaching and learning (Guardelli, 2024, p. 40). Thanks to its ability to process and analyze large amounts of data, it provides information that can facilitate decision-making at all educational levels. That allows for a better understanding of learners' interactions with educational content, facilitating the identification of patterns and trends that can lead to more effective pedagogical interventions (Guardelli, 2024, p. 44). This data-driven approach enables early and targeted pedagogical intervention, helping to improve academic performance and prevent academic failure. Predictive analytics, for example, can predict dropout patterns and enable the implementation of preventive strategies.

Furthermore, educational data analytics can *support administrative operations*. AI can process large amounts of administrative data, such as enrollment rates, attendance, and academic performance, to optimize school management. These insights can help administrators identify areas for improvement, allocate resources more effectively, and make informed decisions that benefit the entire school community.

Finally, educational data analysis can contribute to educational research by providing a solid empirical basis for the development of new pedagogical theories and practices. The availability of large amounts of educational data allows researchers to test hypotheses and explore new teaching approaches with increased precision (Guardelli, 2024, p. 33).

Virtual assistants and chatbots are already handy, becoming essential tools in Education, offering automated support to both students and teachers. Using artificial intelligence, these systems can interact naturally and efficiently, providing fast and accurate answers to a wide range of questions and meeting diverse educational needs. These technologies not only improve the effectiveness of the educational process but also increase student engagement by providing personalized and ongoing support (Guardelli, 2024, p. 45). One of the main advantages of virtual assistants and chatbots is the ability to provide 24/7 support. Virtual

assistants can help personalize the learning process. AI-based systems can tailor their responses and suggestions based on individual student profiles and needs. In addition to supporting students, virtual assistants can help teachers manage their activities. These systems can automate administrative tasks such as organizing schedules, sending reminders, and collecting student feedback. That allows teachers to focus on developing pedagogical strategies and direct interactions with students, improving the quality of instruction. The teacher serves as both a facilitator of the learning environment and a student assistant. Finally, the implementation of virtual assistants and chatbots can significantly contribute to educational innovation. These technologies have the potential to transform the way Education is delivered and perceived. The continuous and personalized interaction offered by chatbots can create a more dynamic and interactive learning environment, promoting a more engaging and practical learning experience. Duolingo is an example of a highly popular application.

Another interesting application of AI in Education is *competency mapping*, which involves identifying student skills. AI can analyze learners' strengths and weaknesses, enabling more effective and personalized educational interventions. One of the main functions of AI tools in competency mapping is the continuous analysis of learning outcomes across various activities. Competency mapping using AI can contribute to inclusive Education, ensuring access to high-quality Education for all learners, regardless of their abilities or limitations (Guardelli, 2024, p. 56).

Automated assessment using artificial intelligence is expected to revolutionize the process of grading exams and student papers, offering solutions that provide faster, more accurate, and more objective assessments by introducing automated methods that uniformly analyze responses, eliminating bias and inconsistency. This technological advancement reduces the administrative burden on teachers and improves the efficiency and consistency of assessments. AI-based assessments can also employ uniform grading criteria, ensuring that all learners are assessed according to the same standards (Morańska, 2003). Advanced automated assessment systems can analyze essays and other types of discursive responses, assessing aspects such as coherence, argumentation, and appropriate use of language. These systems can use natural language processing techniques to interpret and analyze the quality of learners' text, offering detailed feedback on various aspects of writing. Based on this, they can generate comprehensive reports that analyze progress by comparing it with previous class results and generate personalized suggestions for further learning. By combining artificial intelligence systems that continuously analyze learners' achievements, it is possible to tailor teaching materials and learning activities to the individual needs of each student (Guardelli, 2024, p. 68). Implementing such solutions can significantly improve the implementation of formative assessment strategies.

5. AI in Education – examples

Educational solutions involving the use of artificial intelligence systems have been implemented in several countries. Examples have demonstrated their effectiveness in achieving educational goals. A few examples are presented below (Guardelli, 2024, pp. 116-127).

Example 1. The use of artificial intelligence in the Baltimore Public Schools system in the United States involved the use of AI-powered virtual tutors in student education, that approach personalized learning for middle and high school students. Student achievement data was continuously analyzed throughout the learning process. The results were used to provide immediate feedback, which guided the selection of personalized learning content tailored to each student's needs. As a result, homework completion rates and academic achievement improved significantly, particularly for students with learning disabilities.

It is important to note that disparities in access to advanced technologies can exacerbate existing inequalities between students from different socioeconomic backgrounds. Therefore, equitable access to AI-based technologies should be ensured for all students. Equally important is the need to undertake initiatives to educate parents and students on the use of new technologies, ensuring that everyone can benefit equally from these innovations.

Example 2: At the University of Helsinki in Finland, artificial intelligence systems are being used to support teachers' ongoing professional development. The university has launched an AI-powered platform that offers personalized courses that update and develop pedagogical skills. The platform analyzes teachers' individual needs and recommends content tailored to their needs, facilitating continuous and practical learning. Furthermore, the platform enables collaboration between educators, allowing for the exchange of experiences and best practices. This use of artificial intelligence has contributed to the creation of a personalized learning environment. The university has invested in the necessary infrastructure and technical support systems to operate on a large scale.

Example 3: In Brazil, Colegio Bandeirantez de São Paulo is using artificial intelligence to improve administrative and pedagogical management. The school implemented an AI system to analyze large amounts of data related to student performance, attendance, and behavior. This system provides administrators and teachers with information to make informed decisions about pedagogical interventions and teaching strategies. Data analysis has particularly helped identify and support students at risk of academic failure. At Colegio Bandeirantez de São Paulo, the strategy adopted involved preparing teachers and administrators for AI implementation. Workshops and training sessions were organized to demonstrate the benefits of new technologies and train educators in the effective use of AI tools. Additionally, continuous feedback was offered, allowing users to report problems, express concerns, and make suggestions, which helped increase acceptance of the adopted solution.

Example 4: In Australia, the University of Melbourne is leveraging AI to advance the cause of social inclusion and equity. Implementations based on the AI system have been used to support students with special educational needs. The system utilizes machine learning algorithms to tailor learning content and provide personalized support in the form of video transcripts and real-time translation for students with hearing impairments. These initiatives have improved accessibility and academic achievement for students with special needs. The University of Melbourne has adopted a multifaceted approach to ensuring the security of student data. That includes using advanced encryption to protect sensitive information, implementing rigorous data access policies, and conducting privacy impact assessments. The university has also partnered with cybersecurity experts to monitor and protect its IT infrastructure from threats continuously. These examples demonstrate that practical and ethical implementations of AI in Education can positively transform Education, creating a new culture of Education in the age of AI. That involves personalizing learning, improving administrative efficiency, promoting equity, and supporting the continuous development of teachers and learners. However, it is important to continue to monitor and adapt these implementations to ensure that all potential benefits are fully realized.

6. Summary

Research conducted by Jean Piaget, Lev Vygotsky, and Jerome Bruner transformed the way we think about Education. The contemporary understanding of educational Culture draws on constructivist learning theory based on the concept of cognitive constructivism, and Bruner's emphasis on the crucial importance of needs, motivations, and expectations in the learning process is confirmed by research conducted by John Hattie.

Modern Education is understood as:

- a set of activities stimulating development through independent discovery,
- favoring teamwork among young people and developing cooperation skills,
- understanding learning as deep information processing,
- The effect of dialogue between teacher and student,
- posing challenges that require commitment but enable educational success,
- creating situations for students to take the initiative, developing a sense of agency, and providing feedback,
- viewing schools as "cultures of mutual learning".

This approach to Education is the basis of the most modern and effective educational systems and is the basis of contemporary thinking about school (Hattie, 2009).

Hüther's views (Hüther, Hauser, 2014) also address the challenges of modern times, emphasizing that the most important and desirable competence of the modern individual is the ability to learn continuously. Therefore, a fundamental idea in contemporary schools should be to sustain students' intrinsic motivation, their desire to discover, explore, understand, and ultimately learn. Civilizational change forces a shift in thinking about contemporary Education. It requires the development of competencies essential in the digital world and the use of new technological solutions. Much hope for the implementation of these ideas lies in the use of information systems based on artificial intelligence.

In recent years, we have been hearing more and more about schools implementing a visionary approach to Education in the spirit of a new culture of Education. Many schools are taking initiatives to abandon traditional educational methods in favor of modern, constructivist Education, emphasizing the active construction of knowledge by students by the premise that "the world is changing, young people are changing, and therefore schools must change". The main principle of the new Culture of Education is learning through experimentation, experience, independent discovery, and experiencing the emotions associated with these processes. "(…) The learning process is most effective when areas in the brain responsible for emotions are activated, and as a result, neurotransmitters are released that promote the formation of new synaptic connections" (Hüther, Hauser, 2014, pp. 105-106).

Educational practice shows that such solutions are feasible in Polish schools. However, there are still too few of them to indicate that change is occurring.

Examples of this new educational Culture are evident in schools that provide young people with time and space for self-expression in various areas, depending on their predispositions (e.g., artistic, technical, athletic). It has been observed that this approach leads students to more often perceive Education as a natural, necessary, and supportive phenomenon. Implementing activities that foster creative thinking (writing, photography, staging, designing, constructing, filming, programming, etc.) fosters engagement, focus on the task at hand, and mobilizes resources and strengths toward achieving goals.

Contemporary educational Culture is undergoing a radical transformation. Digital civilization leaves no doubt about the need to modify the approach to implementing educational tasks in schools. This change is inevitable and significantly redefines our understanding of contemporary educational Culture. This change is underpinned not only by the civilizational transformations we are experiencing but also by advances in human sciences and cognitive processes. It could be said that the most important thing today is the well-being of the learner, their personal development in line with their predispositions. This new educational Culture requires profound mental shifts among those responsible for modern schools. There is a need to redefine the goals of systemic Education so that the focus of all educational endeavors is providing students with the conditions for development, taking into account the civilizational changes associated with functioning in the era of artificial intelligence (European Economic and Social Committee, 2020).

Artificial intelligence (AI) has the potential to revolutionize the education sector, introducing innovations that will profoundly change the Culture of Education.

As technology advances, several perspectives have emerged on how artificial intelligence (AI) might shape the future of Education in the coming years. AI-based personalization of learning may become even more sophisticated, enabling highly personalized curricula tailored to learners' specific learning styles, pace, and interests. Artificial intelligence has the potential to become a handy tool for supporting teachers. Solutions involving intelligent virtual assistants and AI tutors, when properly implemented, can provide learners with constant support by answering questions, clarifying concepts, and offering additional resources. Applied appropriately, these systems can free up teachers to focus on more complex and creative aspects of teaching, such as personalized support and student social-emotional development.

In summary, AI-based learning solutions have the potential to radically transform Education in the coming years, making it more personalized, inclusive, efficient, and collaborative. However, these technologies must be implemented ethically and responsibly, ensuring fair distribution of benefits and adequately addressing challenges such as privacy and algorithmic bias.

Through thoughtful, learner-centric approaches, AI can help create a brighter, more inclusive educational future for all, transforming existing approaches to Education and irrevocably changing the Culture of Education.

The lessons learned underscore the importance of a strategic and multifaceted approach to implementing AI in Education. Overcoming these challenges requires not only technological investments but also a commitment to training, equity, and transparency. By learning from these experiences, other institutions can adopt effective practices and avoid common mistakes, allowing AI to achieve its potential to transform Education positively.

Given the above, ideas limiting learners' access to mobile technologies in Polish schools raise surprise and concern.

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