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Cultural Reflections on the use of Technology in Education in the Case of Serbia: Does National Culture Limit the Expansion of Digital Education?

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Abstract

Intensive changes in the implementation of information and communication technology in education bring numerous opportunities for learning. Although current discussions on the potential of digital education within academic and expert circles tend to support the thesis that it will take precedence over traditional forms of education, its development and expansion are influenced by various factors—one of the most significant being national culture. The primary aim of this paper is to explore the issue of further development and use of digital technology in education from a cultural perspective. The main premise of this work is that the development of digital education should not be viewed solely through the lens of technological advancement and its application, but also in the context of culturally conditioned structures of need. Technology changes the way we learn, access knowledge, share and apply it; however, on the other hand, culture influences how and to what extent these new technologies are accepted and used. Therefore, the central goal of this paper is to reflect on the interdependence between national culture and the application of digital technologies in education in Serbia.

Keywords: technologies, digital education, digital learning, national culture, values, motives, preferences

Introduction

Digital education is transforming the traditional approach to learning and teaching by enriching it through the application and use of new technologies (e-learning, applications, artificial intelligence, virtual classrooms, online educa-

tional institutions, etc.), which offer previously unimaginable possibilities, as well as their own requirements regarding the organization, design, and implementation of the learning process. One important indicator of an individual's ability to use digital technology in formal education to enhance the quality of their education (in addition to the adequacy of the educational content itself) is the level of digital maturity. This includes the readiness and motivation to improve digital competencies and to use technologies for acquiring and applying knowledge in practice.

The main focus of this paper is to highlight the influence of national culture on the application and use of modern technology in education, and the level of digital maturity. Culture, as a set of values, beliefs, and behavioral patterns that a group (such as a national community) has adopted as acceptable and useful for solving the problems of its survival, exerts a strong social influence on individual behavior and on life choices and decisions. Through values, culture determines the motivational structure that influences the direction and intensity of human activities (Janićijević, 2008). This, of course, also applies to digital learning and education.

Based on the understanding that the expansion of digital education depends not only on the development and implementation of technology but also on dominant national values and characteristics of national culture which influence how and to what extent these technologies are used in learning this paper focuses on analyzing the interdependence between national culture and digital education in the case of Serbia, specifically addressing the question of whether there are cultural barriers to the development of digital education.

Digital Education

A major challenge for the world of modern education is the need to more rapidly adapt to the demands of the digital economy by reducing the gap between job requirements and formal education (Đorđević, 2007). The digital economy requires new knowledge and a new approach to learning. In previous periods, regardless of profession, it was important for people to be literate and to possess basic knowledge of natural sciences. Today, they must be digitally literate that is, capable of using computers. In this sense, it can be confidently stated that one of the main tasks of education is digital literacy, or raising the level of digital maturity (Hilčenko, Nikolić, 2023).

Traditional teaching tools (chalk and blackboard) are being replaced by a new generation of teaching aids through an e-learning system that, in practice, takes the form of modern technologies: learning via mobile phone applications, mobile learning (M-Learning), learning based on web technologies (Web-Based Learning), Distributed Learning, Distance Learning, Remote Learning, Online Learning, Virtual Classrooms, Virtual Laboratories, etc. (Bazić, 2017).

Technology has become so applicable that every aspect of our lives and functioning now depends on it. Through the use of information and communication technologies, knowledge becomes more accessible and easier to acquire for everyone. The boundary between knowledge and ignorance is narrowing, providing everyone the opportunity to access and use necessary information in a simpler, faster, and more efficient way (Hilčenko, Nikolić, 2024). On the other hand, knowledge spreads more rapidly, but it also becomes outdated more quickly, creating a constant need for the generation of new and innovative knowledge. From this arises the need to enhance learning through digital technology, as traditional learning methods are becoming a less acceptable link between knowledge and the application of knowledge (Hasić, Zejnelagić, 2022). By introducing digital technologies into education, the barriers and shortcomings of traditional learning are overcome. The roles of teachers and students change students shift from being passive recipients of knowledge (where the teacher is the main authority and knowledge is simply transferred and reproduced) to becoming active participants who construct their own knowledge, with the teacher acting as a guide and support. The introduction of technology into the classroom also changes relationships and interactions. In the teacher–student dynamic, technology becomes an equal participant in the educational process. The teacher still supervises and evaluates the learning process, but now does so with the assistance of technology, receiving feedback both from the digital tools used and from the students themselves. It is precisely from this shared responsibility for the learning process that the need arises to develop collaborative relationships between teachers and students, emphasizing the role of the teacher as a mentor who empowers students to approach modern technologies critically (Danilović, 1996).

E-readiness and Motivation for the Use of Digital Technologies in Education

In the literature, a large number of studies can be found on the changes brought about by the implementation of technology in education. Despite the evident positive effects of applying digital technology in education, some authors still emphasize that technologies alone will not improve the quality of education; however, when used appropriately, they certainly contribute to positive results in specific areas of educational work (Stojanović, Delić, Ilić, 2021). In a paper analyzing the most common misconceptions about information and communication technologies in education, author Pešikan (2016) highlights several fallacies: it is not enough to simply equip schools with technology – teachers, students, and pupils must also be trained to use that technology; it is not true that today's children, often referred to as the Google generation, possess innate digital skills and competencies – they are merely more interested in technology, which does not mean they are adequately digitally literate; everything necessary can be found on the Internet, and artificial intelligence can answer all our questions – students enjoy

searching for information online and using AI, but acquiring certain knowledge requires understanding and the ability to critically interpret and select what is found online; and finally, the misconception that technology will replace teachers – technology alone cannot teach without a teacher, but it can greatly assist in delivering lessons and provide students with an inexhaustible source of information. The biggest challenge in digital education is to stimulate students to use technology as a means of acquiring knowledge and to participate actively. The vast amount of available content and information can demotivate students, making it harder for them to navigate meaningfully through such abundance. They often stray from the assigned topic and use technologies for non-educational purposes. In the early stages of applying digital technology in education, the dropout rate was over 60% (Hasić, Zejnelagić, 2022). There are numerous reasons for such a high dropout rate, and one significant issue is the cultural specificity of motivation for using digital technology.

As one of the strongest determinants of behavior, motivation is among the most extensively studied phenomena in the field of human behavior. The need for knowledge, learning, and development is certainly one of the most important human needs. However, at the core of learning, other significant needs are often present, such as social needs, the need for achievement, and the need for security. These needs trigger specific motivational structures and determine the choice of a learning model that best suits the dominant need. It is well known that merely having a need is not enough to initiate a motivational process–expectations that a certain activity will fulfill the need, as well as the perceived value of the outcome, are equally important. Values, however, are one of the key cultural elements, meaning that learning, motivation, and culture are in constant interaction (Vemić, Đurković, Jotić, Lovre, 2012).

Motivation and digital maturity are often linked to individual needs. Maslow's hierarchy of needs, Alderfer's ERG model of needs, and Herzberg's two-factor theory of motivation identify and explain the key needs that influence individuals to behave in certain ways. The reasons for insufficient engagement and lack of motivation to use digital technologies in education – taking into account the main assumptions of these motivational theories – can be sought in the answer to the question: to what extent can digital education meet the needs for achievement and personal development?

Achievement motivation is based on the need for excellence, prestige, and the challenge posed by the tasks themselves. It relies on the individual's desire to demonstrate knowledge, receive positive feedback, and earn praise. On the other hand, the needs for achievement and development require a high level of commitment, self-discipline, and persistence in goal attainment. Since digital technologies provide vast access to information and content, individuals often struggle to maintain focus and self-discipline. The use of digital technologies frequently involves working independently, which does not favor the need to showcase success

or receive public praise. Traditional education, in contrast, offers more opportunities in this regard – from more frequent testing to teacher support and encouragement. Group learning allows for mutual respect and acknowledgment, which can enhance self-esteem and the sense of achievement.

National Culture, Motivation, and Digital Technologies in Education in Serbia

Globalization of the world economy, the opening of borders and networking and business through the Internet, the flow of information, people, ideas, and products, increasing diversity in the environment, increasing workforce diversity, rapid dissemination of knowledge but also its obsolescence, and a paradigm shift in education driven by the rise of the digital economy represent key factors for the growing interest in researching the influence of national culture on behavior, education, and business. Numerous authors have addressed national culture and its characteristics (Hofstede, 1984; Venaik, Brewer, 2015; Gnoth, Zins, 2013; Strese, Adams, Flatten, Brettel, 2016; Ferreira, Serra, Pinto, 2014; Hallale, 2013; Hackert, Krumwiede, Tokle, Vokurka, 2012, etc.), explaining its significance in shaping the opinions and attitudes of individuals, social groups, and society as a whole. National culture is the collective programming of the mind that distinguishes the members of one nation from those of another. Hofstede (Hofstede, Hofstede, Minkov, 2010) is known for his theory of cultural dimensions and believes that national culture influences the behavior, thinking, and values of people in a given country. Janićijević (2008) defines national culture as a set of assumptions, beliefs, and values shared by members of a national community that significantly determines their understanding of the world and their behavior in it.

The influence of national culture on motivation plays a key role in education and the work environment. The way people are motivated to achieve goals, learn, or work depends on their cultural values, norms, and social expectations. It has been established that each culture may vary across dimensions that affect the behavior of its members. In this regard, the dimensions of national cultures can indicate universal characteristics or aspects of a given culture that can be measured and compared (Hofstede et al., 2010). These dimensions are also suitable for analyzing cultural barriers to the application of digital technologies in education in Serbia, as they provide insight into individual differences that may determine the perception and behavior of members of a particular culture, which can serve as the basis for designing digital education in accordance with the needs and values of Serbian culture. Hofstede defined dimensions by which cultures can differ. According to him, four dimensions applicable to cultures worldwide were conceptualized: power distance (the extent to which a society accepts inequalities among people); collectivism versus individualism (the extent to which a society functions more as a group than as individuals); masculine versus feminine values (whether masculine or feminine values are more prevalent in a society);

uncertainty avoidance (the extent to which a society tolerates risk and uncertainty) (Hofstede, 1984).

These dimensions serve as an analytical framework for the cultural reflection on the application of digital technologies in education in Serbia. Hofstede's research included many countries, including the Republic of Serbia. The results show that Serbian citizens score high on the power distance dimension, with a score of 86/100, indicating that unequal distribution of power is accepted as natural. Decision-making centralization is preferred, people respect authority and expect to be told exactly what to do. Serbian national culture is notably collectivist, scoring 75/100. Loyalty and self-sacrifice for the collective good are emphasized, best reflected in the well-known saying: "All for one, one for all." Serbian citizens are also more reflective of feminine values than masculine ones, which means equality, solidarity, family life quality, and a friendly work atmosphere are valued, while free time is a significant motivator. The highest-rated dimension in Serbia is uncertainty avoidance, with a score of 92/100. Serbian citizens have a pronounced aversion to risk, stick to written rules and standards, and feel a strong need to work hard (even when unnecessary) to be perceived as diligent and committed. For them, security is the most important source of motivation (Vasilić, Brković, 2017).

High power distance, as a feature of Serbian national culture, is not a favorable foundation for developing digital education. This type of culture is characterized by strict hierarchies between teachers and students, with teachers' authority rarely questioned and regarded as the primary source of knowledge. Student initiative is limited, and they are expected to follow instructions rather than explore independently. Teachers in high power distance cultures may avoid digital technologies out of fear of losing control or that students will surpass their knowledge. Digital education requires open communication (discussions, forums, feedback), which is difficult in systems that do not encourage opinion exchange between teachers and students. In traditional education, students interact with well-established teachers whose names often guarantee the quality of learning. In digital education, the teacher's role is significantly depersonalized, and teaching must be highly structured. In Serbia, as a society characterized by high power distance, the name and reputation of the teacher and the possibility of personal interaction remain important in education choices.

Collectivism, as a characteristic of Serbia's national culture, is not conducive to the expansion and development of digital technologies in education. It emphasizes group belonging, harmony, and shared values over personal goals and individuality. In collectivist societies, individuals rely on the group for work and learning, and personal initiative is often suppressed in favor of group unity. Changes introduced from outside, such as new digital technologies, may be seen as a threat to tradition. Students may avoid using digital tools if the rest of the

group does not, not wanting to stand out or appear overly ambitious. People in collectivist environments often wait for group consensus or approval from an authority figure before accepting changes, which slows the adoption of new technologies. Digital tools often require individual initiative, independent research, and personalized learning, which may clash with group-oriented learning approaches. Digital transformation can be perceived as something that disrupts traditional educational values. If the group views it negatively, individuals will avoid participating.

According to Hofstede's theory, masculine and feminine values represent societal priorities. In Serbian culture, feminine values dominate, emphasizing modesty, cooperation, equality, and care for others, with less focus on competition and personal achievements. Social harmony is more valued than individual success. Digital technologies often promote personal advancement, independent learning, and self-promotion through online competitions, rankings, and rewards. In cultures with strong feminine values, competition can be undesirable. In digital learning, if someone advances quickly and uses tools others do not, it may create discomfort or a sense of unfairness in the group. Students may consciously slow their progress to maintain group balance. In feminine cultures, interpersonal relationships are more important than technical knowledge and innovation. Technology may be seen as cold, distant, and irrelevant for social progress. Digital education often involves individualization and personalization, which may conflict with the desire for collective advancement.

Uncertainty avoidance reflects how uncomfortable people feel with the unknown, unclear, and unpredictable situations. In cultures like Serbia's, which score high on this dimension, people prefer rules, routines, and security. Change is often perceived as a threat rather than an opportunity, and ambiguity and experimentation cause stress and resistance. Digital technologies often require experimenting, exploring, and accepting mistakes. In high uncertainty avoidance cultures, mistakes are viewed as failures rather than part of the learning process. Digital tools introduce new learning methods, such as online platforms, self-directed learning, and video lessons. People in these cultures tend to stick with familiar methods (books, classrooms, chalkboards). If digital environments lack clearly defined rules and instructions, students and teachers may lose motivation and feel insecure. Technology-assisted learning often involves testing new solutions, which can be stressful in cultures that value stability and the familiar.

Conclusion

In order to properly utilize the potential of digital technologies in education and ensure a path for their further development, it is necessary to view them from multiple perspectives, among which culture plays an important role. Therefore, the main significance and contribution of this work lies in analyzing the possibilities for using and further developing digital technologies in education from

a cultural perspective. The answer to the question – does national culture limit the expansion of digital education in Serbia – is provided in the work through an analysis of the impact of key characteristics (dimensions) of national culture on motivation to use and develop digital technology.

The main conclusion of the analysis is that the key features of Serbian national culture largely represent barriers to the expansion of digital education. In cultures with high power distance, digital education may face resistance and lower motivation, as it involves: greater independence for students, reduced control by teachers, open communication, and the exchange of ideas. In collectivist cultures, motivation to use digital technologies may be reduced because students do not want to stand out from the group, wait for group approval, and seek to preserve harmony and tradition, even if it means delaying the acceptance of innovations. In cultures that nurture feminine values, motivation to use digital technologies may be reduced due to the avoidance of individual distinction, the desire for social equality, the focus on relationships rather than technology, and the rejection of competitive and personalized aspects of digital learning. In cultures with strong uncertainty avoidance, motivation to use digital technologies may be reduced due to fear of mistakes and failure, resistance to change, the need for structure and rules, and unwillingness to experiment.

However, it would be wrong to speak of the dimensions of national culture as something permanent and unchanging. Although culture has a constant tendency to preserve the existing state, it is subject to changes influenced by numerous factors such as experience, technology, and the social and economic system. This means that the dominant motivational structure in a society is also subject to change. The significance of this reflection lies in emphasizing that the interdependence of national culture and digital education requires the adapted introduction of technologies to preserve values, because for digital education to develop successfully, its development must align with primary national values and needs. For digital education to be successful in cultures with high power distance, such as Serbian national culture, gradual changes in educational values are necessary, support for teachers, and the encouragement of independent learning among students. In collectivist national cultures, it is essential to involve the entire community (students, teachers, parents) in digital changes and promote technology as a group benefit rather than a personal initiative. In Serbian national culture, which nurtures feminine values, it is also important to design technology that encourages collaboration, sharing, and support, which aligns with feminine values. Avoidance of uncertainty, as a cultural dimension of Serbia's national culture, largely represents an obstacle to the development of digital education, and a solution could lie in the gradual introduction of technology, with clear rules, training, and support, to create a safe and predictable environment for students and teachers.

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