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IMPACT OF DIGITAL SOCIALIZATION ON SCHOOL EDUCATION: PROBLEMS AND SOLUTIONS

IMPACTO DE LA SOCIALIZACIÓN DIGITAL EN LA EDUCACIÓN ESCOLAR: PROBLEMAS Y SOLUCIONES

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ABSTRACT

The current context of child socialization is predominantly conditioned by the digitalization of society, in which the age at which children begin to interact with digital technology is constantly lowering. The purpose of the study is to define and thoroughly describe the main problems of school education in the era of digital socialization. The authors analyze the major problems facing today's school education, such as the technological divide between the generations of students and teachers, the individualization of education, the divide between the visual and textual cultures in education, digital inequality, gamification, and information noise. The context for the analysis is the need to develop new strategies for the education of modern school students, whose worldview is formed amid the accelerated development of digital technology. The authors conclude that the leading form of socialization for today's generation of school students is digital socialization, which forms network identities. This generation independently forms and controls their informal educational strategies aimed at the formation and development of a "digital human". For this reason, when constructing education for the new generation, it is vital to look for educational practices that meet the requirements and demands of the digital socialization era.

Keywords:

Digital socialization, school education, technological divide, individualization of education, digital inequality.

RESUMEN

El contexto actual de socialización infantil está predominantemente condicionado por la digitalización de la sociedad, en la que la edad en la que los niños comienzan a interactuar con la tecnología digital es cada vez más baja. El propósito del estudio es definir y describir detalladamente los principales problemas de la educación escolar en la era de la socialización digital. Los autores analizan los grandes problemas a los que se enfrenta la educación escolar actual, como la brecha tecnológica entre las generaciones de alumnos y profesores, la individualización de la educación, la brecha entre las culturas visual y textual en la educación, la desigualdad digital, la gamificación y el ruido informativo. El contexto para el análisis es la necesidad de desarrollar nuevas estrategias para la educación de los estudiantes de la escuela moderna, cuya cosmovisión se forma en medio del desarrollo acelerado de la tecnología digital. Los autores concluyen que la principal forma de socialización para la generación actual de escolares es la socialización digital, que forma identidades en red. Esta generación forma y controla de manera independiente sus estrategias educativas informales encaminadas a la formación y desarrollo de un "humano digital". Por ello, a la hora de construir la educación de las nuevas generaciones, es vital buscar prácticas educativas que respondan a los requerimientos y exigencias de la era de la socialización digital.

Palabras clave:

Socialización digital, educación escolar, brecha tecnológica, individualización de la educación, desigualdad digital.

INTRODUCTION

The development of modern technology suggests intellectual forecasts that promise the accessibility and openness of education to more people, the globalization of education, and increased efficiency of interaction between the participants in educational processes (Siliutina et al., 2022).

Technological innovations put modern teachers before social (crisis of educational content, loss of trust and authority by educational institutions, uncertainty of educational strategies (Etherington, 2019), psychological (digital addiction, the spread of attention deficit and hyperactivity disorder, gaming addiction (Mai Hoa, 2022), technical (in the digital era most educational institutions remain analog – technology is developing faster than schools (Solas & Sutton, 2018), and ethical (digital inequality (Budiharso & Tarman, 2020) challenges.

Contemporary educational strategies need to be revised with consideration of potential problems and dangers stemming from the digital transformations of society. Therefore, it is a topical task to determine the key problems facing education in the digital age.

In an era of technological optimism, there are many hopes for the development of digital technology, as it is believed that the Internet will make education accessible, and the globalization of education will bridge the social gaps between different segments of the population (Belenkova et al., 2022). Yet together with positive aspects, the evolution of digital technology entails several problems, which need to be analyzed.

Literature review

Numerous contemporary studies examine the features of the education of today's school students, the influence of the social environment on the pedagogical conditions of socialization given the crisis of education in the context of individualization of society and the problems of digital inequality, the problem of development of visual educational culture as opposed to the textual and visual literacy perspectives, as well as the issues of digital socialization.

In particular, Prensky (2001), investigates the problems of school education in the context of the digitalization of a generation called the Digital Natives. This generation, born and educated after the digital revolution, has grown up with constant access to computers and the Internet.

This generation's early interaction with digital technology, as suggested by Zotova et al. (2022), generates a special attitude to obtaining an education. Sadvakassova et al. (2022) note the disinterest and inattention of today's students in school and their desire to take control of educational processes, as this generation uses sources of multimodal information from an early age. Butenko et al. (2021), believes that contemporary students are active conduits of information, possess advanced problem-solving skills, employ gaming strategies, and are effective communicators. Their interaction with the school has changed fundamentally, as they view it as only one of the many focal points in life. A study by Togaibayeva et al. (2022), points out that today's generation of school students considers schools as isolated institutions, irrelevant to their daily lives. In schools, they tend to be hyperactive and have a short attention span, but want to control the processes they are involved in and are unwilling to listen to the teacher's explanation of the world from their perspective. Effectively, today's students are digital while schools are analog (Vinichenko et al., 2022).

Due to the above-described aspects, generations born after the digital revolution, aside from other (analog) forms of socialization, are marked by digital socialization (Pereverzeva et al., 2021). These are children who use the Internet daily, often do not feel the difference between real and digital communication, solve their problems using digital technology, looking for quick solutions by communicating with friends on the Internet (Pernekulova et al., 2021). In this way, in the process of digital socialization, children are integrated into the social system of the information society.

Digital socialization creates a new type of student who prefers images and symbols and has difficulties perceiving text, easily adapts technology to their education, and cooperates with others in the educational process (Koreneva et al., 2022). Today's students, which are constantly exposed to a network of interpersonal connections, are not satisfied by the traditional disciplinary forms of education, as their skills in digital information exchange, as well as socialization processes, are drastically different (Rohling, 2022).

Representatives of the considered generation are distinguished by the following characteristics: 1) they are constantly caught up in some information flows, which the school does not teach them to manage or cope with (Ivanov et al., 2022); 2) school for them is not a place to receive educational services but a place to communicate with friends, and much of this communication takes place indirectly (in social networks) (Tolmachev et al., 2022); 3) they can solve problems in complex nonlinear information systems, which makes them capable of multitasking but does not foster the ability to concentrate on performing linear tasks sequentially (Kurgansky et al., 2022); 4) they are used to functioning in a complex audiovisual environment

– listening to music while doing their homework, watching videos, so information noise accompanies them almost constantly and everywhere (Sedykh et al., 2022); 5) they perceive and assimilate visual information more effectively than textual.

In connection with the above, the purpose of the paper is to identify and elaborate on the main problems of school education in the era of digital socialization.

MATERIALS AND METHODS

To solve the tasks set out in the paper a mixed type of research was chosen, including the use of qualitative and quantitative methods. The qualitative methods included the analysis of scientific sources on the research problem, and the quantitative methods included an expert survey with a measurement of the consistency of expert opinions with mathematical analysis. The study was conducted in three stages from July to October 2022.

At the first stage of the study scientific and analytical works on the problem under study were reviewed. The analysis of publications on the investigated issues identified the main problems of school education in the conditions of digital socialization. The selection of scientific sources was performed using the Russian scientific citation database RSCI, as well as the international databases Web of Science and Scopus by the keywords "digitalization", "school education", and "digital socialization", with the date of publication being limited to 5 years.

The second stage involved online communication with experts. The expert survey was conducted via e-mail. E-mails were sent to 48 experts in the field of school education (university teachers and employees of secondary education institutions). Responses were received from 43 experts. In connection with the problem of the study, the experts were tasked to rank the main problems of school education in the context of digital socialization listed in the letter, as well as, if necessary, to indicate problems that they believe exist that were not mentioned in the letter.

All participants of the survey were informed about its purpose and that the organizers of the study plan to publish its results in a summarized form.

For a more objective analysis of the data obtained in the expert survey, the third stage was to test the consistency of expert opinions using Kendall's coefficient of concordance (W):

$$W = 12S/n^2(m^3-m),$$

where S is the sum of square deviations of all the rank estimations of each problem from the mean value; n – number of experts; m – number of problems considered.

The information obtained in the expert survey was then processed to determine the weights of each problem to construct a rank transformation matrix and then calculate the arithmetic mean of the individual weights for each problem. The final values of the weights define the significance attributed to the problem by the experts.

RESULTS AND DISCUSSION

The conducted analysis of research literature and expert survey allows us to identify the main problems of school education in the context of digital socialization, as well as their importance (ranking and weighting) (Table 1).

Table 1. The main problems of school education in the context of digital socialization

No.	Problem	Rank	Weight
1	Technological divide between the generations of students and teachers	1	0.33
2	Individualization of education	2	0.22
3	Divide between visual and textual cultures in education	3	0.16
4	Digital inequality	4	0.14
5	Gamification	5	0.10
6	Information noise	6	0.05

Note: compiled from the analysis of scientific literature and an expert survey

Kendall's concordance coefficient (W) (W = 0.73) indicates that the expert opinions are consistent, as W > 0.5 testifies to the objectivity of survey results. This fact allows us to identify the weights of the main problems of school education in the context of digital socialization.

According to the calculations, the most significant problems are the technological divide between the generations of students and teachers (0.33), the individualization of education (0.22), and the gap between the visual and textual cultures in education (0.14).

Considering the problem of the technological divide between the generations of students and teachers, it should be noted that the modern generation of school students is more advanced in the use of information compared to their predecessors (Zotova et al., 2022). They see their future in the digital world and therefore perceive analog education as inconsistent with the digital forms of interaction they are accustomed to. This new generation produces new educational styles. They favor the independent study of subjects, independent access to knowledge, and the chance to receive educational services at their own pace.

Research demonstrates that today's students prefer open communication and wish their teachers to act as facilitators to help them develop the skills they need, and to teach them how to work with large amounts of information (Prensky, 2001). In our view, the challenge facing education in this situation is the gap between the analog and digital generations, who have different views of the role and place of information technology in their own lives, different views on the forms and content of education, and different perspectives on the world in general.

Speaking about the individualization of education, researchers suggest that modern schools are educational institutions of the twentieth century (Siliutina et al., 2022), and the urgent question at the present stage is whether they will survive in the 21st century when the attitude to schools is constantly changing. In particular, it has already been argued that to modern children, schools are merely coordination centers (Sedykh et al., 2022), which do not meet the educational needs of the new generation in full. This has to do not only with the fact that schools are analog and employ educational methods that often disagree with the style and type of thinking of the generation raised on computers. Online communication is of great importance to children. Furthermore, they often expand their knowledge in other educational institutions aside from school, while distance and informal education are also developing and spreading. Society is gradually becoming more individualized, and so any classical educational institutions, including schools and universities, do not fully meet the educational needs of students anymore.

The emerging problem of individualization of education lies in the fact that institutions of all educational levels no longer have a monopoly on defining the criteria for professional skills and competencies. This is confirmed in a study by Rohling (2022), which indicates that when participants in the educational process (students and teachers) have equal access to the Internet where they obtain all the necessary up-to-date scientific knowledge that is adapted and explained appropriately, educational institutions lose their authority. They no longer shape the logic of learning, that is, the sequence in which scraps and fragments of knowledge can and should be assimilated by students. They lose the natural right to teach that they once possessed. As a result, the individualization of educational processes detaches students from educational institutions, leading to the gradual deinstitutionalization of education.

The deinstitutionalization of education also owes to the fact that any information a student may need can be found with modern online search engines. There are many websites offering distance education, and the digital generation learns practical skills by watching videos on YouTube.

They decide for themselves what knowledge is relevant to them.

On the one hand, a potential right of control over the educational services in such a situation may belong to the student. The Internet provides free access to educational courses from the world's leading universities, and major libraries and expertise become available in a few clicks. On the other hand, the dangers of such educational innovations are the fragmentation of acquired knowledge, the lack of competent assessment, and uncertainty regarding the formation of educational strategies (Vinichenko et al., 2022).

By becoming individualized, education loses its more ambitious goal of preparing for life, as it places the responsibility for preparation on the student. Education turns into a constant open process characterized by uncertainty, framework character, and the absence of clear results and the final goal (Kurgansky et al., 2022). Therefore, the questions of the final result of education and assessment of its efficiency with a growing degree of individualization remain open.

The gap between visual and textual culture, in our view, consists in the fact that before the digital revolution, education was text-based, and yet the digital generation perceives images more effectively, so the culture of text is gradually superseded by visual culture.

Analyzing the culture of the modern student in the educational process, researchers identify more than 30 basic "visualisms", i.e. key units of visual practices used in education. These include animation, advertising, chats, collages, comics, diagrams, dioramas, DVDs, graphic novels, graphs, icons, emoji, magazines, maps, memes, multimodal texts (electronic texts with different forms of information presentation – pictures, videos, texts, gifs, etc.), photos, pictograms, political posters, signs, slide shows, storyboards, symbols, timelines, tables, videos, websites, and more (Pernekulova et al., 2021). Hence, visualisms are part of multimedia screen speech, which substantially augments textual educational content with visual elements.

In relation to the gap between the visual and textual cultures of education, it should be noted that the issue of visual literacy – the ability to correctly understand the meanings of the visual – is relevant for modern educational tactics. The concept of visual literacy, according to Koreneva et al. (2022), refers to the ability to understand and use images, including the ability of a person to think, learn, and express thoughts in images. However, according to E. Barry, visual literacy no longer encompasses the totality of what can be described as significant cultural images. Modern people

require visual intelligence, which is a quality of mind that encompasses not only visual communication skills but an understanding of how the meaning-making elements in an image can change to distort reality, using the visual to think abstractly. Research suggests (Vinichenko et al., 2022), that visually skilled students have practical knowledge of creating or reproducing visual effects in electronic media, understand basic elements of visual design, technology, and media, and are aware of the emotional, psychological, and affective impact of visual effects on perception. These students are found to understand representational, explanatory, abstract, and symbolic images and apply knowledge of visual effects in electronic media. They are knowledgeable viewers, critics, and users of visual information; competent designers, creators, and producers of visual information; effective visual communicators; expressive and innovative visual thinkers who are successful at solving problems.

Consequently, visual literacy as a new educational competence implies the ability to understand not only visual images but also the so-called "screen language," and modern education begins to focus on new visual forms of educational services.

The problem of the digital divide is a social paradox in the context of education. On the one hand, the advent of the Internet has made information publicly available, open, and cheap. Education has expanded, becoming not only information-oriented, but also informal, informational, gamified, and global. On the other hand, with respect to digital inequality, the school system is completely out of step with the new digital technologies and their extremely rapid pace of development. First, because schools differ territorially and institutionally, there is a fundamental difference in the technology they possess. Second, Internet access requires the best teachers, and qualified faculty are distributed unevenly among schools. Third, in the absence of adequate teacher training in schools, much of the responsibility for providing educational services and helping students in the new technological world is taken on by families. Hence, the presence/absence of educated parents becomes a significant factor in inequality (Pereverzeva et al., 2021).

Hence, the digital divide is embedded in today's education system and manifests as inequality in access to digital technologies and educational opportunities.

When describing the contemporary generation of schoolchildren, sociologists note that it has been raised with computer games, so its representatives are trying to gamify almost every aspect of their lives (Rohling, 2022). The strategies of games on which they were raised provide the opportunity to create an infinite number of virtual identities, to divide any task into short steps, and expect psychological rewards for completing them, to focus not on success, but on engagement. These strategies are transferred to students' educational strategies: for them, knowledge is not a value in itself, because it is not associated with the results of education. They focus on the process rather than on the result. If the process of acquiring knowledge is uninteresting, attention is not focused on this knowledge (Rohling, 2022). The educational challenges arising from the gamification of this generation, therefore, are the non-self-sufficiency of knowledge as an educational goal and the greater importance of engagement and communication in educational practices. Some research also demonstrates that video games, in which children are engaged from an earlier age, change the structure of the brain and affect the way of thinking and learning, which is why similar strategies need to be used in educational processes (Butenko et al., 2021).

The problem of information noise as the last of the outlined issues, as suggested by research, consists in the fact that constant access to information on the Internet does not provide the skills of determining the quality of this information (Koreneva et al., 2022). Therefore, students need assistance in learning how to process this information correctly. The concepts of information and knowledge are not identical. The difference between them and their operation in processes has become a paradoxical problem of the information age.

CONCLUSIONS

In the current information era, the strategies of socialization of new generations rely on network communication, total informatization, virtualization, globalization, and gamification. One of the greatest challenges of today's education is overcoming the divide between the traditional analog school education and the new digital generation, for whom traditional educational institutions are no longer a form of preparation for life. Their lives are dominated by new technologies that satisfy the needs for communication and entertainment. These technologies are visualized, and thus the educational divide is simultaneously a divide between the text and the picture, the word and the image. This is a generation for which the leading form of socialization is digital socialization which forms network identities, that independently forms and controls their informal educational strategies aimed at the formation and development of a digital human.

When constructing education for the new generation, it is vital to look for educational practices that meet the requirements and demands of the digital socialization era. It is

essential to integrate active and problem-oriented educational services, help students find answers in the ocean of information and develop their creativity, and obtain constant feedback from students.

Investigation of the quality of these educational strategies in the educational processes of the digital generation constitutes a promising direction for further research.

REFERENCES

Belenkova, L. Y., Skudnyakova, Y. V., & Bosov, D. V. (2022). La pedagogía digital en el sistema de educación superior inclusiva. *Interacción y Perspectiva, 12*(1), 27-42.

Budiharso, T., & Tarman, B. (2020). Improving quality education through better working conditions of academic institutes. *Journal of Ethnic and Cultural Studies, 7*(1), 99-115.

Butenko, N. V., Galyant, I. G., Permyakova, N. E., Bekhtereva, E. N., & Galkina, L. N. (2021). Impacto das abordagens pedagógicas no resultado da socialização de crianças pré-escolares. *Nuances: Estudos Sobre Educação*, 32. https://revista.fct.unesp.br/index.php/Nuances/article/view/9211

Etherington, M. (2019). The challenge with educational transformation. Journal of Culture and Values in Education, 2(1), 96-112.

Ivanov, V. A., Tsarapkina, J. M., Zheltukhina, M. R., Nechay, Y. P., & Urakova, F. K. (2022). Social education of students in the conditions of electronic learning. Amazonia Investiga, 11(49), 175-181.

Koreneva, M., Yadrov, K., Vittenbek, V., Ivanova, G., & Kolesnik, N. (2022). Aprendizagem diferenciada para crianças com organização do cérebro hemisférico direito. *Revista on Line De Política e Gestão Educacional*, 26. https://periodicos.fclar.unesp.br/rpge/article/view/17332

Kurgansky, S. I., Kovalenko, E. V., & Sokolova, O. A. (2022). Cooperation of training individuals as a methodological basis for enriching the experience of social interaction in young students. Interacción y Perspectiva, 13(1), 39-49.

Mai Hoa, L. (2022). Habilidades digitais e adaptabilidade dos estudantes no contexto da transformação digital na universidade de tecnologia e educação da cidade de Ho Chi Minh. *Synesis, 14*(2), 49-61.

Pereverzeva, M., Anufrieva, N., Shcherbakova, A., Kuznetsova, E., & Zharkova, A. (2021). Analysis of research on active music teaching at primary education: The case of Russia. *Rast Müzikoloji Dergisi, 9*(2), 2739-2756.

Pernekulova, M. M., Sagikyzy, A., Ashirbekova, Z. B., Zhanabayeva, D. M., & Abdurazakova, G. A. (2021). Definition of virtual reality through creative act. *Academic Journal of Interdisciplinary Studies, 10*(2). https://www.researchgate.net/publication/349854257_Definition_of_Virtual_Reality_through_Creative_Act

Prensky, M. (2001). Digital natives, digital immigrants Part 1. On the Horizon, 9(5), 1-6.

Rohling, M. (2022). As bases normativas da educação: O lugar da educação na crítica comunitarista do liberalismo. *Synesis, 14*(1), 102-128.

Sadvakassova, N., Karmanova, Z., Bobrova, V., & Arbabayeva, A. (2022). Influence of parenting style on stressful states in preschool children who have experienced a traumatic event. *Journal of Educational and Social Research, 12*(5), 162.

Sedykh, A. P., Akimova, E. N., Skvortsov, K. V., Shcherbakov, A. V., & Zhukova, A. G. (2022). Global digitalization and linguistic aesthetics: Textology and linguistic identity. *Revista EntreLinguas, 8*(esp.2).

Siliutina, I., Marieiev, D., Marieieva, T., Hatsenko, H., & Smolina, O. (2022). Digital transformation of education and humanization of relationships in the educational environment: Some aspects of relationship and mutual influence. *Wisdom, 4*(3), 160-167.

Solas, E., & Sutton, F. (2018). Incorporating digital technology in the general education classroom. *Research in Social Sciences and Technology, 3*(1), 1-15.

Togaibayeva, A., Ramazanova, D., Yessengulova, M., Yergazina, A., Nurlin, A., & Shokanov, R. (2022). Effect of mobile learning on students' satisfaction, perceived usefulness, and academic performance when learning a foreign language. *Frontiers in Education*, 7. https://www.frontiersin.org/articles/10.3389/feduc.2022.946102/full

Tolmachev, M., Korotaeva, I., Zharov, A., & Beloglazova, L. (2022). Development of students' digital competence when using the "Oracle" electronic portal. *European Journal of Contemporary Education, 11*(4), 1261-1270.

Vinichenko, M. V., Nikiporets-Takigawa, G. Yu., Oseev, A. A., & Makushkin, S. A. (2022). Trust of the generation Z in artificial intelligence in the assessment of historical events. *Revista Relações Internacionais do Mundo Atual, 1*(34), 224-243.

Zotova, A., Rabadanova, R., Kolganov, S., Borodina, M., & Basmanova, A. (2022). Formação da comunicação digital na atividade organizacional e pedagógica da universidade. *Revista on Line De Política E Gestão Educacional*, 26. https://periodicos.fclar.unesp.br/rpge/article/view/17330