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Influence of digital technologies of distance education on the mental health of a child in the conditions of wartime realities

Influencia de las tecnologías digitales de la educación a distancia en la salud mental de un niño en las condiciones de las realidades de la guerra

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Abstract

Russian aggression against Ukraine has caused considerable damage not only to the Ukrainian economy and infrastructure but also to the mental health of the nation. The highest risk group includes schoolchildren who have experienced traumatic experiences and, in some cases, physical injuries. The purpose of the article is to analyze the impact of digital technologies of distance education on the mental health of children in the conditions of military operations. Methods of analysis, synthesis, structural-functional, prognostic were used. In the results, the general problems of children's mental health formation in Ukraine were determined, peculiarities of the implementation of the recommendations of the World Health Organization regarding the observance of mental health were traced, and the effects of an aggressive digital environment, which were intensified by military actions, were determined. Special attention is paid to the recommendations

Resumen

La agresión rusa contra Ucrania ha causado un daño considerable no sólo a la economía e infraestructura ucranianas, sino también a la salud mental de la nación. El grupo de mayor riesgo incluye a los escolares que han sufrido experiencias traumáticas y, en algunos casos, lesiones físicas. El propósito del artículo es analizar el impacto de las tecnologías digitales de educación a distancia en la salud mental de los niños en las condiciones de las operaciones militares. Se utilizaron métodos de análisis, síntesis, estructural-funcional, pronóstico. En los resultados se determinaron los problemas generales de la formación de la salud mental de los niños en Ucrania, se trazaron las peculiaridades de la aplicación de las recomendaciones de la Organización Mundial de la Salud en relación con la observancia de la salud mental y se determinaron los efectos de un entorno digital agresivo, intensificados por las acciones militares. Se presta especial atención a las recomendaciones dirigidas

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to teachers regarding the continued use of digital technologies and distance education in wartime conditions. In the conclusions, it was noted that military challenges impose additional obligations on teachers and parents, because in the conditions of martial law, protecting children's psyche from additional stress is extremely important. For this, a system of methodological recommendations has been developed, which will be relevant for this process.

Keywords: psychological safety, Russian aggression, distance learning, Ukraine, digital aggression.

Introduction

The introduction of distance education and quarantine restrictions as a result of the COVID-19 pandemic has had its positive and negative sides. Among the latter, problems with the social adaptability of schoolchildren and psychological health stand out unambiguously. In Ukrainian realities, the negative consequences of distance learning using modern digital technologies have been combined with the destructive war started by the Kremlin's Russian regime in February 2022. The horrors of war, rocket and artillery fire, and destruction caused tangible damage to the psyche of all those affected, but especially children. The continuation of distance learning in Ukraine was primarily due to military motives, internal and external migration of the population. At the same time, experts are actively exploring the possibility of returning to traditional education, as the impact of digital technology on students under constant stress as a result of military action is increasing. Relevant such proposals will require more detailed consideration, the relevance of such research is not in doubt, although the final results may be adjusted according to the situation in the theater of war.

Therefore, the purpose of the article is to analyze the impact of digital distance education technologies on the psyche of schoolchildren during hostilities in Ukraine. As a result of the implementation of the goal other aspects were investigated: the peculiarities of the formation of mental health of schoolchildren in Ukraine, the recommendations of the World Health Organization (hereinafter - WHO), determined the impact of distance education and aggressive digital environment under martial law on the children's psyche.

a los profesores sobre el uso continuado de las tecnologías digitales y la educación a distancia en condiciones de guerra. En las conclusiones, se señaló que los desafíos militares imponen obligaciones adicionales a los profesores y a los padres, porque en las condiciones de la ley marcial, proteger la psique de los niños del estrés adicional es extremadamente importante. Para ello, se ha elaborado un sistema de recomendaciones metodológicas, que será relevante para este proceso.

Palabras clave: seguridad psicológica, agresión rusa, aprendizaje a distancia, Ucrania, agresión digital.

Literature Review

The article is based on a thorough review of current pedagogical literature. In particular, Demiray (2017) described the role of distance learning in the context of the global transformation of education. The scholar addresses the popular question, "Is the digital age really a 'tsunami' for the field of distance education and distance educators?" (Demiray, 2017, p. 179). Demiray (2017) notes that distance education with extensive use of modern digital technology is used at all levels of the educational and learning environment, forming a limitless platform of possibilities better than in-person instruction at any level of the learning environment (p. 179).

At the same time, Rajab (2018) characterized the key aspects of distance learning applications against the backdrop of warfare. His study is shaped by an analysis of learning platforms at Najran University. Note that this institution conducted distance learning through the military confrontation between Saudi Arabia, Yemeni rebel groups, and the Arab coalition. Ritter (2022) explored the problem of using individual Internet platforms and characterized the importance of digital games in improving the educational process in distance schools. Safonov et al. (2022) analyzed the main directions of digitalization policy in education and science in Ukraine and abroad. Prokopenko (2021) examined the key challenges of the digitalization of education of the future. At the same time, Ali (2022) identified the impact of immersive technologies on the transformation of the learning system as a whole.

The methodological basis of this article is also formed by the works of those authors who have studied certain aspects of the Russian-Ukrainian war. For example, Martz (2022) described the

main transformations in the phenomenon of the national identity of Ukrainians against the background of the Russian-Ukrainian confrontation. At the same time, Almäng (2019) outlined the main factors of the hybrid war, characterized its impact on economic, social, and political aspects. For our study, the work of Bîñă & Dragomir (2020) is valuable, in which, the basic mechanisms of information warfare are analyzed. Based on their work, it is possible to identify the methods of information warfare, which are used in the digital education industry and affect the mental state of the child. Dijkstra et al. (2022) outlined the key political and socio-economic changes (local and global levels) against the background of a large-scale war in Ukraine.

Ukrainian researchers have developed basic principles for providing social and psychological assistance to different categories of people affected by war. In particular, Klochko (2020) characterized the peculiarities of social assistance to the population of Ukraine in the context of military realities.

However, the problem of definitive mechanisms of overcoming threats to the mental health of children in the context of military realities remains unexplored, as military operations in Ukraine are still ongoing. Separately important is the topic of the influence of digital technologies on children's mental health in the context of the Russian-Ukrainian war.

Methodology

The study is built on the use of systems analysis, based on which the fundamental subject of the study is divided into smaller elements. Based on synthesis these elements are combined and formed their judgments. The study also used the structural-functional method, which provides an explanation of the impact of individual technologies and tools of distance education on

the mental health of the child, while investigating the individual manifestations and dependencies between them within a single whole. With the help of the predictive method of research, recommendations that may be useful for educators were identified. Based on the axiological method of research it was possible to move from general statements to our own conclusions.

The work is also based on the use of some empirical materials, in particular, the official Ukrainian legislative acts.

Note that the study is formed on the principles of scholarship and objectivity.

Results and Discussion

Mental Health under Quarantine Restrictions and Military Operations: General and Ukrainian Contexts

In the current realities, researchers are drawing attention to the growth of various problems associated with an increase in physical and mental strain. As a result, frequent cases of insecurity, confusion, and frustration are revealed, intensified during the COVID-19 pandemic. The devastating effect of quarantine restrictions, as repeatedly noted by experts, has a negative impact on the physical and mental health of people in general, despite the disease transference and its consequences (Klochko, 2020).

WHO experts have defined mental health as a state of absolute well-being in physical, mental, and social terms, not just physical health. It is also characterized by the ability to discover personal potential, the ability to cope with life's turmoil, and the prospect of productive and fruitful work (Rajab, 2018). In particular, further characterizing the state of mental health, modern scientists turn to some parameters (See Table 1).

Table 1.

Basic parameters of mental health

Parameters of the state of certainty of the state of mental health

- 1) an understanding of the constancy, the identity of one's own physical and mental situation;
 - 2) constantly identical experiences, which are a reaction to the same type of situations;
 - 3) a real and critical assessment of one's own personality and one's own acts;
 - 4) mental equilibrium and adequate reaction to the influence of the environment;
 - 5) the ability to control one's own behavior, to conform to generally accepted norms and rules
 - 6) ability to plan one's life and to carry out one's plans
 - 7) ability to adjust one's own behavior according to the challenges of time
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According to research by scholars, mental alertness has increased due to the introduction of distance education, the adoption of digital technology in everyday use, the growth of unfavorable environmental, economic conditions, asociality, etc. (Pereira & Pereira, 2013). All these challenges needed a response from the participants of the educational process. Distance learning in Ukraine was introduced on March 16, 2020 - for the period of quarantine, which since then has been interrupted several times for short periods, the use of distance learning methods was recommended. The most vulnerable and unprotected children, including temporarily displaced persons who were forced to leave their homes with their parents as a result of Russian aggression in Crimea and eastern Ukraine in 2014, were in a special risk group (Bînă & Dragomir, 2020).

After the deployment of large-scale military aggression by Russian forces against Ukraine on February 24, 2022, children's mental health problems became much more complicated and deepened (Martz, 2022).

Russian bombardment, ostensible violence, and aggression have caused profound trauma to children's psyches, the real extent of which still needs to be understood (as hostilities continue and many populated areas are occupied) (Dijkstra et al., 2022). At the same time, according to the proposed WHO criteria, aspects of mental health compliance, in general, are lost under martial law and actual hostilities (Klochko, 2020). In particular, the lack of uniform situations during firing provokes unbalanced reactions and completely different experiences, inability to control one's actions, extreme cases of hysteria or stupor, etc. The aggression of the Russian troops has also greatly reduced the ability to manage one's life, to plan, by making involuntary reactions dependent on external circumstances.

During martial law, there is a direct threat to children's physical health and lives. Accordingly, this situation itself is detrimental to their mental state, keeping them in constant tension. The introduction of distance education, on the one hand, was a response to the inability to provide the usual educational process and, on the other hand, compliance with quarantine measures against the background of the spread of new strains of COVID-19 (Demchenko et al., 2021). As of September 2022, all educational institutions in Ukraine in the regions not adjacent to the line of contact have switched to the normal mode of operation. Other reasons include, above

all, the possibility of better socialization for students as the war continues to unfold, in particular for internally displaced persons (hereinafter IDPs) who need additional attention amidst their deteriorating mental health (Almäng, 2019). Educators note wariness, fear of unusual sounds, depression, etc. among the category of such students. Communication with peers is designed to improve their overall condition.

Distance Education and the Digital Aggressive Environment under Martial Law

According to research by contemporary sociologists and psychologists, it is a proven fact that before school-age children can be quite satisfied with the information about the world and social life presented to them by parents, caregivers, teachers, or close adults. However, as children's social connections and contacts expand as they enter the outside world, it is a natural fact that there is an urgent need for a variety of information (Anggraini & Handayani, 2022). According to research by sociologists, books as a source of information are used by only 29% of schoolchildren, the vast majority obtain knowledge from digital sources of information (various Internet resources and digital platforms, television) (Demiray, 2017). The audiovisual size of digital sources of information corresponds well to the properties of children's vision and perception, and the availability of the Internet and its functions produces suitable conditions for excessive fascination.

Today's children, who spend a large amount of time near the computer, lose specific interest in other forms of perception of reality, including reading (Jena et al., 2021). Consequently, this is one of the important losses that due to excessive digital fascination, not only each individual child but all generations of children as they grow up in a digital society (Jena et al., 2021). This transformation of priorities cannot but affect the quality of children's intellectual and cognitive activities, their social communication, the quality of their leisure time, etc.

At the same time, the modern person, who is part of the so-called digital society, from childhood is under the influence of the digital environment and numerous Internet resources, which become her social everyday life (Lund & Aagaard, 2020). From them, she can get useful information, but irresponsible fascination can negatively affect the child's development, including her imagination (Demiray, 2017). Separately, some content seen in the digital space can create

anxiety fear in a child. In particular, currently in the context of the Russian-Ukrainian war, there are much violent footage of war realities freely available. Often children can accidentally come across them, some particularly violent materials can have a negative impact on the mental health of the child.

In military settings, teachers are engaging digital technology in the educational and learning process (Rajab, 2018). Note that the choice of digital tools, resources should be careful and very careful (Jena et al., 2021). Consequently, educators, educators who want to use a variety of digital resources in learning should be aware that individual platforms, resources, or Internet materials will negatively affect the development of young children (Lund & Aagaard, 2020).

Often it is up to the child to choose whether to watch a video or a movie, but it is not always easy for them to understand what they see on the

screen and draw the proper, correct conclusions. In military realities, this is especially true of various Telegram-channels, which often spread false (semi-true) information, which can have a negative impact on the child's psyche. Many of today's Telegram channels spread panic in society due to paid advertising opportunities. This has a negative effect on adults, not to mention children. There are also separate channels in Tik-Tok (the most popular network among teenagers, despite age restrictions, many children are registered on the platform), which spread information about the Russian-Ukrainian war, spread violent footage.

Modern scientists distinguish the concept of an "aggressive digital environment". It is what negatively affects the development of not only the child but also the adult (Jena et al., 2021). There are specific reasons to characterize a digital environment (or an individual resource) as aggressive (See Table 2).

Table 2.

The key foundations of the digital arena

Main bases of the aggressive digital environment	
1. Image of overtime aggression	Appears in various scenes of brutality and violence
2. High manipulative capacity	Is formed by different manipulative techniques and has a significant impact on the inner world of the person.
3. Unreliability of the resource or platform	It affects the formation of fear and frustration in a person

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Note that the outlined bases may overlap, and then it is difficult to recognize them, to separate them, to remove one from the other. Nevertheless, it is negative that they (together or each separately) especially exert psychological pressure on those categories of society that are in it.

Measures to improve the use of digital distance education technology for the education of children

Problems, in particular, the growth of the load on the children's psyche with the use of digital learning technologies, became an object for analysis. In particular, to overcome the additional mental load it is necessary to take into account the manifestations of children's lack of autonomy. We are talking about the fact that students are often not guided in time, have some difficulty in using online tools, need help to prepare learning materials, help to overcome the

motivational and behavioral unpreparedness to learn at home (Prokopenko, 2021).

On the other hand, working with students during distance education requires an increased effort from parents. They should be ready to stimulate, improve the organization of students' activities, establish communicative, artistic, speech, physical work, and communication with teachers and other peers. In addition, parents must communicate without barriers with their children, remembering that they also provide a sense of protection, crucial to building confidence and psychological peace (Demiray, 2017). Teachers (especially when referring to the synchronous use of distance learning in wartime settings) must maintain established communication with both students and their parents.

European researchers have pointed out that digitalization has revealed a lack of competence in many teachers, who must also learn how to

communicate with students' parents in the new environment (Lund & Aagaard, 2020). For a large number of teachers, establishing collaboration with children and adults through the use of digital technology proved problematic (Safonov et al., 2022). In particular, when using asynchronous learning modes, teachers also have to learn how to succinctly and accessibly shape messages for parents, maximize positive learning outcomes, and motivate and encourage them to learn together with their own children.

In digital distance education, educators need to demonstrate professional skills for both student and parent audiences (Jena et al., 2021). Specifically, it is important to use accessible, expressive, emotional, logical, and appropriate language and to use appropriate language. Psychological and sociolinguistic skills are also relevant—primarily an understanding of the importance of both oral and written communication, as these important professional tools are essential in a wartime distance learning environment. In a distance learning environment, there is a growing danger of a situation where parents will do the task for the child. Such manifestations need to be replaced by another - to help students perform tasks independently, to bring education closer to their interests and interests, to consider the opportunity to choose, creatively experiment, etc. (Safonov et al., 2022). The use of digital technology and distance education should not relieve parents of their responsibility for their children's education.

Teachers must use digital technology appropriately to improve students' mental well-being and learning performance (Ali, 2022). In particular, the use must be complemented by the teachers' oratory skills, instant response to change. Among the important is to know the subtleties of psychology, that is, to be able to anticipate hidden thoughts in the speech of children or adult parents, to have a good culture of speech, to know the rules of etiquette. Multicultural competence is extremely important since the territory of Ukraine has long been home to representatives of different peoples, including Muslims, Jews, etc. (Parshyn & Mereniuk, 2022). Therefore, the requirements regarding the ability to establish intercultural, mixed-age, and gender cooperation, to unite the team, to create an atmosphere of mutual respect and mutual assistance are relevant.

Researchers have drawn attention to the importance of proper communication and intonation, but we should additionally emphasize the use of exaggerated verbal and non-verbal

means - emotional and expressive speech - in online communication. Speaking should be clear, taking into account different modulations (joy, surprise, intrigue, sadness, despair; special timbres of voice, rising and falling speed of speech, intervals, etc.), actively use “sound masks” of the main characters when reading literary works, lively facial expressions (Armour et al., 2020). Open-ended questions and active listening (exclamations, head shaking, etc.) were also insufficiently evaluated.

Under martial law, displays of humanism and tolerance towards children and parents, providing needed psychological support came to the forefront of teaching (Rajab, 2018). Teachers are recommended with the active use of digital technology to prevent by all means the possibility of task both children and adults new mental trauma, to control the manifestations of aggression or disrespect in the team, to respond to lock-in, to form a positive and comfortable atmosphere, to promote peaceful communication and soft assessment. Among the features of the 2022 work are teachers' willingness to discuss war, talk about safety or danger, emotions, and planning for the future. Also relevant during a state of war are skills in working with various digital platforms and the ability to post instructional content on social media, since not everyone can attend online classes, especially under occupation.

Working under occupation requires special care from teachers. There are frequent cases when they formally perform their duties in schools occupied by Russian troops, while after hours they conduct classes online according to the Ukrainian curriculum. Protecting the mental health of children in such circumstances becomes of paramount importance.

Undoubtedly, mastering all of these skills is presented as an ideal model. Obviously, in real life, when there are certain nuances of ordinariness, it will be impossible to achieve the ideal, but it is necessary to strive for it, especially considering that we are talking about the psyche of children and the peculiarities of handling it.

Conclusions

Consequently, against the background of quarantine restrictions and the COVID-19 pandemic, children are threatened by frequent instances of insecurity, confusion, and frustration, as well as serious mental trauma associated with socialization problems. At the same time, in Ukraine, the negative

manifestations of digital technologies in distance education are intensified by active military actions. Russian aggression has caused considerable damage to the psychology of children, although, above all, the threat to the life and health of children is much greater in times of military action. Such a state automatically depresses the mental state. In addition, the influence of a digitally aggressive environment is important, which is especially harmful to those who suffered mental trauma during the occupation, evacuation, or wounding. Perhaps the prevention of the subsequent deterioration of students' well-being as a result of the active use of digital technology during distance learning has led to the fact that from September 2022, education in Ukraine is transferred to normal mode. We are talking about those regions that are not close to the direct line of contact.

Teachers are advised to follow the new rules of conduct when continuing distance learning. In particular, military operations do not remove the obligation to have a good command of modern teaching methods, to be well-versed in the possibilities of distance delivery of information. Among the main requirements are also the ability to communicate both with children and parents, because in a state of war such psychological support is extremely important, to treat students with tolerance, softly assess, etc.

Bibliographic references

- Ali, S. (2022). The effectiveness of immersive technologies for future professional education. *Futurity Education*, 2(2). <https://doi.org/10.57125/FED/2022.10.11.8>
- Almäng, J. (2019). War, vagueness and hybrid war. *Defence Studies*, 19(2), 189–204. doi: 10.1080/14702436.2019.1597631.
- Anggraini, R., & Handayani, Y. (2022). Digitalization in education. *Journal of Digital Education, Communication, and Arts (Deca)*, 5(01), 1–12. doi: 10.30871/deca.v5i01.2942
- Armour, K. M., Goodyear, V. A., & Sandford, R. (2020). The digital age challenge. In *School Physical Education and Teacher Education* (pp. 92–102). Routledge. doi: 10.4324/9780429330186-9
- Bină, M.-V., & Dragomir, C. (2020). Informative combat of the russian hybrid war. *Scientific Bulletin*, 25(1), 9–17. doi: 10.2478/bsaft-2020-0002
- Demiray, U. (2017). Is the digital age “A tsunami” for distance education? *Advances in Educational Technologies and Instructional Design*, 179-194. doi: 10.4018/978-1-5225-1692-7.ch009
- Demchenko, O., Lazarenko, N., & Liubchak L. (2021). Information and communication technologies in preparing future teachers to work with gifted children [Informatsiino-komunikatsiini tekhnolohii u pidhotovtsi maibutnikh pedagogic do roboty z obdarovanymy ditmy]. *Information technologies and teaching aids [Informatsiini tekhnolohii i zasoby navchannia]*, 86(6), 123-143. doi: <https://doi.org/10.33407/itlt.v86i6.4570>
- Dijkstra, H., Cavelti, M. D., Jenne, N., & Reykers, Y. (2022). War in Ukraine. *Contemporary Security Policy*, 43(3), 464–465. doi: <https://doi.org/10.1080/13523260.2022.2099085>. URL:
- Jena, B. M., Gupta, S. L., & Mishra, N. (2021). Effectiveness of online learning and face-to-face teaching pedagogy. In *Transforming higher education through digitalization* (pp. 21–43). Boca Raton: CRC Press. doi: <https://doi.org/10.1201/9781003132097-2>
- Klochko, O. O. (2020). Social assistance in Ukraine: Realities, prospects. *Perspectives. Socio-political Journal*, (4), 155-162. doi: <https://doi.org/10.24195/spj1561-1264.2020.4.22>
- Lund, A., & Aagaard, T. (2020). Digitalization of teacher education. *Nordic Journal of Comparative and International Education (NJCIE)*, 4(3-4), 56–71. doi: <https://doi.org/10.7577/njcie.3751>
- Martz, C. (2022). Russian war crimes against Ukraine: The breach of international humanitarian law by the Russian federation. *SSRN Electronic Journal*. doi: <https://doi.org/10.2139/ssrn.4106901>. URL: https://papers.ssrn.com/sol3/papers.cfm?abstract_id=4106901
- Parshyn, I., & Mereniuk, K. (2022). The Muslims in Medieval Lviv: linguistic, historical contexts. *Journal of Narrative and Language Studies*, 10(19), 138–149. URL: <https://nalans.com/index.php/nalans/article/view/498>
- Pereira, S., & Pereira, L. (2013). Digital Media in Primary Schools. *Educational Policy*, 29(2), 316–341. doi: <https://doi.org/10.1177/0895904813492378>
- Prokopenko, O. (2021). Technological challenges of our time in the digitalization of the education of the future. *Futurity Education*, 1(2). <https://doi.org/10.57125/FED/2022.10.11.3>



Rajab, K. D. (2018). The effectiveness and potential of E-learning in war zones: An empirical comparison of face-to-face and online education in Saudi Arabia. *IEEE Access*, 6, 6783-6794. doi: <https://doi.org/10.1109/access.2018.2800164>

Ritter, M. (2022). Digital Games in Primary School English Language Education. *English*

Studies [Anglistik], 33(1), 29–41. doi: <https://doi.org/10.33675/angl/2022/1/6>

Safonov, Y., Usyk, V., & Bazhenkov, I. (2022). Digital transformations of education policy. *Baltic Journal of Economic Studies*, 8(2), 127–136. doi: <https://doi.org/10.30525/2256-0742/2022-8-2-127-136>