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The Usage of Modern Platforms and Online-Services for Organizing of the Distance Educational Process in the Context of Modern Neuroscience

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Abstract: *The paper is focused on the question of remote learning a foreign language in the context of neuroscience. The notions of "distance training", "neuropsychology", and "pedagogic technologies of remote teaching " have been cleared up. It has been emphasized that an educational institution is free to choose its own model of the organizing of remote training. It has been pointed out that neuropsychology is based on experimental and clinical neuropsychology and that the first neuropsychological research had been carried out by L. S. Vygotskyi (1956) and A. Luriya (1965). The articles of domestic and overseas scholars, which contain critical analysis of remote teaching a foreign language, have been reviewed. The survey of different countries scientists' publications, concerning foreign language distance teaching's directions of the study, has been clarified. The advantages of the distance teaching have been defined. It has been pointed out that autonomic activities of a student cannot be passively organized. The advantages and disadvantages of home-schooling have been clarified. The accent has been made on the usage of modern platforms and online-services, particularly Moodle and Google Classroom. The influence of neuropsychology on higher mental processes has been explored. It has been noted that the lack of "live" social relationship is finally dangerous, especially for children, and emphasized that while organizing remote training process cognitive exercises should be used to boost children's brain functioning. The accent has been made on the necessity of cognitive activities for enhancing children's concern for studying. The unique example of the usage of A. Luriya's (1964) and M. Rosenzweig's (2009) methodologies has been given. The well-known master on school psychology B. Arrowsmith-Young's study (2012) on remedial work with children, who have problems in learning, has been analyzed.*

Keywords: *Distance training, neuropsychology, home-schooling, higher mental processes, neuroplasticity, cognitive exercises, Moodle, Google Classroom.*

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Introduction

Today educational system modernization in the country is more and more often being linked to the development of distance education, which is seen as one of the most important factors of the enhance of the educational services market's competitiveness. The main issues worth tackling for teachers of educational institutions are not only implementation of distance education system but also providing favourable influence of the new technologies on educational process.

First the meaning of the notions of "distance training", "neuropsychology", and "pedagogic technologies of distant training" should be clarified.

In accordance with the Regulation of the ministry of education (Tabachnyk, 2013), the distance form of education is a form of organizing of educational process in educational institutions (tertiary institutions, general out-of-school education, vocational educational institutions, general educational establishments). It provides realization of remote education and envisages for the possibility for graduates of receiving a State standard document on the relevant educational and qualification level.

As N. Zhevakina (2009) points out, distance training is a focused interactive process of a teacher's and a student's engagement, based on usage of modern information an telecommunication technologies that allow to provide training on distance. Distance education is regarded as a process that has been realized on the base of special pedagogic technologies. Pedagogic technologies of remote training are technologies of mediated active communication between teachers and students with usage of telecommunication connection and methodology of students' individual work with structured training material that is represented in the electronic form. They have a pronounced personally oriented focus and are able to provide intensification of the students' cognitive activities, feedback, qualified tutorial support and students' integration into specially created educational space.

The option of a model of distance training entirely depends on an educational institution, namely, on: educational process participants' digital competence; availability of efficient information and educational environment that provides not only dissemination of information but also online interaction between students and teachers, including distance online-lessons (for example, a distant platform); existence of the references to qualitative digital educational and methodological resources and to the

Mediatheque of the teacher's own developments (Vorotnikova, 2020; Onishchuk, 2020).

New discoveries in psychology, neurophysiology and medicine have prepared by the beginning of the 20th century the ground for a new science's appearance, that is, neuropsychology (Demchenko, 2021; Prots, 2021; Kosholap, 2021).

As clinical neuropsychology encyclopedia purports (Stringer, 2011), the term of "neuropsychology" means a science, studying interconnection between the brain and behavior, and widely encompasses research on lateralization and localization of cognitive, emotional, and behavioral phenomena; neuro-development; aging and brain; neuroplasticity and related spheres. Both experimental psychology (focusing on animals or controlled studying neurologically balanced people, using such methods as a dichotic listening and a tachistoscopic submission) and clinical neuropsychology (exploration of behavioral consequences of brain damage or dysfunction) have contributed towards neuropsychology science.

The first neuropsychological research was carried out by L. S. Vygotskyi (1956) but A. Luriya (1965) is the one considered to be the founder of neuropsychology after all. L. S. Vygotskyi's (1956) works in the realm of neuropsychology continued his general psychological studies. Exploring different forms of psychological activities, he was able to lay down the guidelines:

- about the development of higher psychic functions;
- about the consciousness structure system.

The principles, formulated by L. S. Vygotskyi (1956), became significant in the history of neuropsychology. They triggered the beginning of focused studying of the consequences of local brain damages, carried out by A. Luriya (1965) together with colleagues. They also defined forming of the domestic neuropsychological school that nowadays still occupies one of the leading positions in the world.

Distance training involvement in the process of learning foreign languages

Particular attention has been paid to the problem of remote education in scientific literature lately. Distance training system is a central concern of scholar circles and modern tendencies witness further activation of the exploration in this sphere.

Attention should be drawn to the article (White, 2006) where a critical review of the sphere of distance teaching of a language has been made. Its appearance is interpreted as a sign of technological possibilities' development. The author concentrates on the questions of conception, definition, and also on theoretical and pedagogic perspectives in the sphere. The specific accent is made on obvious changings in the range from the concern of organization problems to the focusing on questions of the possibilities of teaching within the framework of the new paradigms of languages distance training. Besides, problems, caused by "low-tech" technologies has been considered. The author gives a number of conclusions, concerning the practice of languages distance teaching and also makes propositions about the directions of distance education improvement.

Over time C. White (2014) emphasizes the relevance of explorations on distance training of languages since this issue has been recognized as one of the most important directions of learning languages. The author analyses important directions of the research on distance learning and teaching of languages in order to indicate new and new gaps and also to clear up research questions, methodologies and instruments, focused on the knowledge of pedagogics, usage of technologies, students' actions, innovations. In the study the assignments for a synchronous education has been developed, the role of tutoring has been disclosed, multimodal educational environment has been described, emotional condition of the students has been analyzed.

Attention should be paid to Serbian scientists' project (Trajanovic, 2010). They were the first who implemented distance learning system in Serbia, proposed academic programs, began to carry out and improve English language academic courses on the Information Technologies Faculty. The authors cleared up the technological aspect of the system of electronic education, discussed the main features of foreign languages' teaching. They started from the general design of the course, selection of training materials, technological and pedagogical processing of the course materials, the role of a teacher, support and motivation of the students, the assessment of the work results. The professors pointed out drawbacks and difficulties of technological and pedagogic character and also indicated the problems and new steps on the English language courses' improvement during the distance teaching and the teaching of foreign languages.

In A. Bollinger's study (2017) the differences between the level of anxiety in the process of learning foreign languages (high, moderate, low)

and students' achievements in different educational environment (traditional or distance education) have been explored. In an educational institution in Georgia Spanish and French are taught. The foreign language academic performance was measured by the course final grades. The results of the experiment showed that there were no pronounced differences between students' achievements within traditional and distance educational forms of teaching foreign languages but there were big differences in achievements between the students with different level of anxiety. The study's conclusions help teachers to make pedagogic decisions, concerning satisfying of the demands of the students with different characteristics in their classes.

D. Altunay's research is an appropriate confirmation of the distant education's usefulness (2010). The author insists that remote education is an advantage for those who would like to get educated but cannot do that for some reasons. Moreover, it removes physical barriers between students and professors and gives students a possibility to study when and where they want. Today, thanks to the development of information and communication technologies (ICT), plenty of technological instruments are being used in distance education. As for learning languages through distance training, the distance learning may become a good support for those who cannot attend language courses and schools because of the lack of time or money. For instance, usage of computers may be considered as an ideal thing for doing repeatable exercises and for immediate feedback, and the Internet allows students to interact with other fellow students and native speakers in a synchronous or asynchronous way and any time they like. Different Internet-recourses could be used to provide high level of knowledge. They give a possibility to get acquainted with genuine manner of speaking, and they make the process of learning language more interesting as they comprise pictures, interactive forms, animation, colors, sounds and digital video-clips. Furthermore, synchronic and asynchrony education services enable interaction and shared education. In addition, visual conspicuousness of linguistic forms during a text chat can help students confirm or not confirm their hypotheses about a certain thought. But, unfortunately, students can have problems with access, equipment and compatibility. Usage of damaged discs without backup may result in losing of the work done and panic.

Studying the problem above-mentioned, it's worth to pay attention to the article (Hohol, 2020) where foreign languages' distance teaching has been characterized as one of the newest forms of education, complementing

effectively face-to-face training and remote learning in tertiary institutions. The author emphasizes that quality and efficiency of a foreign language distant course mostly depends on how good it has been organized; on pedagogic professionalism of the teachers, taking part in educational process; on qualitative methodical content, used in the course. In the study the key principles of foreign languages distance teaching in tertiary institutions has been clarified; the ways of enhancing quality and effectiveness of this form of education have been defined, the main conceptual guidelines have been outlined. Besides, a model of organizing of distance teaching foreign languages' course has been proposed; the system of control and knowledge monitoring on all types of language activities has been represented. It has been accentuated that autonomic learning must not be passive. On the contrary, students should have been involved into active cognitive activity, which is not confined by acquisition of the knowledge of a foreign language but implies necessarily its practical usage. It has been emphasized in the recommendations, concerning efficient organizing of a foreign languages' distance course in tertiary institutions, the necessity of careful selection of training material; good planning of academic groups' work; regular individual and collective reporting; systematic consultations, provided by the teacher, etc. Certainly, in the process of the course's organizing, apart from didactic characteristics and functions of multimedia devices and telecommunications as a technological basis of education, it is also necessary to take into consideration conceptual tendencies of didactic organizing of the distance learning as a component of the general contemporary educational system.

B. Isiguzel's exploration (2014), where the results of experimental students groups' research have been represented, also merits attention. The first group, which attended German lessons in mixed educational environment, was comparatively more successful and higher motivated, than the control group, which did it in traditional educational environment. The research data were collected through the German language courses' achievement tests, according to the German language learning motivation scale.

T. Kameneva's article (2020), focused on remote education, is worth interest as well. The author argues that so called home-schooling becomes more and more current in Ukraine lately. Online education's emergence revitalized in a great measure the development of home-schooling and gave new possibilities and pathways to various knowledge. Therefore it's

impossible to overrate usefulness of distance learning for disabled children and for those who live in remote regions. Online formats allowed to expand considerably the spectrum of subjects, available for learning, and made the process of learning more comfortable. Despite the fact that remote school education has been popularized actively and presented as a world-wide trend in Ukraine, the monitoring of its spread in the developed countries demonstrates rather moderate indicators: the number of home-schoolers doesn't excel 2–3 %. The USA is a record holder on home-schooling. According to various data, in the United States from 4-10% of all the schoolchildren are home-schoolers. On the contrary, in half of the EU countries, including Germany, Netherland and Sweden, distance education is banned. At the same time psychologists point out a number of widespread issues, facing children who learn in individual way. For the absolute majority of contemporary children digital reality becomes a ground zero. They perceive the actual reality in their peripheral vision as if being distracted by it from the exciting process of swallowing of primitive content of gadgets. Low communicative ability, introversion, ADHD, loss of emotional resilience and of the level of empathy, irritability and aggression are often characteristic of schoolchildren, as a result of such a disbalance. Eventually these traits turn into bitter heritage in their adult lives.

The usage of modern platforms and online-services for organizing of the distance educational process

There are commercial and free platforms of distance learning and online-services. In particular, commercial platforms have a range of advantages, namely: functionality, security, appropriate level of users' support, systematic update and new versions' development, possibility of setting, tech-support. ATutor, Claroline, Dokeos, LAMS, Sakai, Moodle, ILIAS, GoogleClassroom and others are free platforms of distant education. Indisputable advantages of such platforms are free setup and usage, considerable geography of their spread over the world, possibility of modification. The shortcomings, indicated by explorers (Romaniuk, S., 2016), include: complexity in maintenance and technical support, and sometimes an entire absence of the support said. But still the benefits are greater. It's impossible not to mention here the platform Moodle (Modular Object-Oriented Dynamic Learning Environment). This system, developed by Australian computer scientist Martin Dougiamas, is one of the most popular in the world. It is exploited in more than 100 countries by more

than 18 billion users. In addition, it may be easily downloaded from the Internet. The platform enables creating of qualitative online courses; moreover, it can be adapted to the demands of certain educational project and completed by new services. Moodle has been projected with due account of modern pedagogic achievements, and the main accent is being made on the interaction among students and wide using of discussion. The interface of the program is simple, suitable and efficient, the design has modular structure, which is easily modified, and language packs, which can be connected, allow to achieve entire localization. Students can edit their accounts, add photos and change numerous personal data, get acquainted with reminder of the events in the course, load up the assignments done, view the results of the tests and courses, communicate with the professor through personal messages, form and chat.

The next platform, Classroom, is a new development of the Google company. It is expected to facilitate the work of the teachers and make it more effective. A teacher can organize communication with students, quickly prepare the assignments and hold classes through interactive service of Classroom. While developing assignments, the teacher can use an option of common access to the document or an option of automatic creating of a copy for each student, see who has finished the assignment and who hasn't, provide feedback and make questions to the student in real time both in and out of class. In the interactive regime students have a possibility to get acquainted with assignments and materials, emerging in Google Drive folders, and with notes in the test files. Immediate communication both with the teacher and the fellow students is another useful function of Google Classroom. All the possibilities mentioned are in favour of the choice of the said system, and its functionality, in spite of comparatively short period of existence, is not inferior to the actual market leaders.

The impact of neuropsychology on a child's higher psychic processes

Under terms of the existing education the amount of students who have problems with mastering of the school curricula or have emotional, cognitive, psycho-physical developmental disability, behavioral challenges increases dramatically. Such tendencies present society with new challenges, concerning finding optimal ways for organizing of effective atypical education and of qualitative bringing up the children with special needs in the process of their education, socialization and harmonic formation of personality.

Professor R. Dunbar (2010), an anthropologist, the head of the Social and Evolutionary Neuroscience Research Group in the Department of Experimental Psychology at the University of Oxford, discovered that default-system of the brain, answering for human's thinking capacity, forms in evolutionary way in the framework of real social relationships. That is, the lack of live, offline social relationships is particularly dangerous for children whose brain intensively forms and develops itself.

B. Richards (2017) disputes in his article a common opinion about memory as to which forgetting is a process of losing, gradual fading of critical information in spite of our endeavoring to keep it. As the author points out, the aim of the memory is not simply an exact keeping of information but "an optimizing of making decisions" in chaotic, rapidly changing conditions. In this cognitive model forgetting is an evolutionary strategy, a purposeful process that works in the background of the memory, assesses and discards information that doesn't contribute to the species survival.

S. Bernard (2010) argues that corresponding meaningful measures, evoking students' emotional interest and connecting a new information to their actual knowledge, help forming neural pathways and long-term keeping in memory. Long lists of dictionary words that don't correspond with the theme being learnt by a student can be blocked by affective (or emotional) filters of the brain. Schoolchildren have to add the new information to the old, otherwise it won't be memorized. As it's known, the brain stores information as neural paths. When a child gets new information that is not linked to what its brain already has it is difficult for this new information to take root. Efficient learning process help recipients of education discern regularities and place the new information into the context of the old one.

Certainly, as a help for teachers, neuropsychological exercises is recommended to make a remote educational process interesting and substantive. J. Henley's paper (2012) introduces the well-known Master of applied psychology Barbara Arrowsmith-Young, who, having realized that a part of her brain doesn't work properly, developed by herself a number of cognitive enhancing exercises. The results changed her life and now she has helped thousands of children with learning disabilities. Her mother, a teacher, developed a series of flash-cards with numbers and letters and, thanks to her hard work, she helped the daughter achieve high level in literacy and count. At school and later, at the university, she concealed her numerous learning difficulties, working 20 hours a day. Her health improved

when she became 26. Her fellow student gave her a book "The man with the broken world" by Russian neuropsychologist A. Luriya (1971) as a present. The book contains the author's research and his speculations over the works of a highly intelligent Russian soldier Liova Zazetsky who got shot in a brain in a battle under Smolensk in 1943 and whose state was described in detail. While reading the study, the girl noticed the similarity between the soldier's and her own disease and realized what particular part of her own brain didn't work from her birth. Then she read about Mark Rosenzweig's study (Anwar, Y., 2009), an American explorer, who discovered that lab rats in the rich and stimulating environment with toys and toy wheels developed a bigger brain, than those who grew in a bare cage. The scholar concluded that the brain continues its development, not "hardening" at the moment of the birth but constantly changing on the base of experience – the concept, known as a neuroplasticity. Barbara began to develop exercises to stimulate non-functioning parts of her brain. She drew 100 clocks with two hands, showing different time, and wrote that time on the back of each card. Then she tried to define the time on each of the cards, checking herself every time by turning over the card. She worked on it 8 to 10 hours a day. Eventually, she became more prompt and exact. Barbara developed more exercises for different parts of a brain and discovered that they are efficient, too. Her first school she established in Toronto in 1980. Now she has 35 of them in Canada and the USA. She and her collaborates developed cognitive exercises that proved to be very effective, stimulating 19 different functions, important for reading, writing, count, general understanding, logical thinking, visual memory or auditory processing. Thousands of children with delaying the development of mental processes, dyslexia or dysgraphia diagnosis, who are considered to have a learning disability, attend Arrowsmith's schools during three or four years then return to their educational institution and achieve success in learning and vocational activities. B. Arrowsmith-Young's dreams every child to choose for itself some cognitive work in order to reveal and remove potential difficulties.

Conclusions

Undoubtedly, modernization of contemporary education links to the development of distance training. It has been clarified that remote education is the form of organizing of the educational process in educational institutions. It is based on distant interaction between a professor and a student with usage of information and tele-communicative technologies.

The literature review shows that today there are a lot of domestic and overseas works, concerning the research of distance teaching a foreign language. Among modern platforms for the organizing of distance learning process Moodle and Google Classroom are popular and easy to use.

As it is known, the first theoretical approaches in neuropsychology were developed by L. S. Vygotskyi (1956) but A. Luriya (1965) became the founder who carefully explored this sphere. The scholar proved that a child's psyche and brain, which are forming, are plastic and ready for the development of neuropsychological factors. It is a fundament for further improvement of cognitive and emotional processes. Without any doubt, neuropsychological methodologies in pedagogy are doomed to success in children's psyche correction.

Thus, using neuropsychological knowledge, pedagogues have a possibility to turn education into a more efficient process, evoking in children motivation for learning.

References

Altunay, D., Mutlu, M. (2010). Distance foreign language learning. *Distances et Savoirs*, *3*(8), 463-473. https://www.cairn.info/revue-distances-et-savoirs-2010-3-page-463.htm

Anwar, Y. (2009, August 3). *Mark Rosenzweig, Pioneer in Brain Plasticity, Learning and Hearing, Has Died at 86*. Berkeley News. https://www.berkeley.edu/news/media/releases/2009/08/03_rosenzweig.shtml

Bernard, S. (2010, December 1). *Science Shows Making Lessons Relevant Really Matters*. Edutopia. https://www.edutopia.org/neuroscience-brain-based-learning-relevance-improves-engagement

Bollinger, A. (2017). Foreign Language Anxiety in Traditional and Distance Learning Foreign Language Classrooms. *Doctoral Dissertations and Projects*, 1429. https://digitalcommons.liberty.edu/doctoral/1429

Demchenko, I., Maksymchuk, B., Bilan, V., Maksymchuk, I., & Kalynovska, I. (2021). Training Future Physical Education Teachers for Professional Activities under the Conditions of Inclusive Education. *BRAIN. Broad Research in Artificial Intelligence and Neuroscience, 12*(3), 191-213. https://doi.org/10.18662/brain/12.3/227

Dunbar, R. (2010). *How Many Friends Does One Person Need? Dunbar's Number and Other Evolutionary Quirks*. Faber and Faber. https://www.goodreads.com/book/show/7475690-how-many-friends-does-one-person-need

Henley, J. (2012, June 12). *How Barbara Arrowsmith-Young Rebuilt Her Own Brain*. The Guardian. https://www.theguardian.com/science/2012/jun/12/barbara-arrowsmith-young-rebuilt-brain

Hohol, I. (2020). Foreign Languages Distance Learning Course Organizing at a Higher Education Institution. *Problemy inzhenerno-pedahohichnoi osvity* [Problems of Engineering and Pedagogical Education], 68, 80-86. http://dspace.univd.edu.ua/xmlui/handle/123456789/10054

Isiguzel, B. (2014). The Blended Learning Environment On The Foreign Language Learning Process: A Balance For Motivation And Achievement. *Turkish Online Journal of Distance Education*, *15*, 108–121. https://dergipark.org.tr/en/pub/tojde/issue/16893/175970

Kameneva, T. (2020). Home-schooling ta online-navchannia: korotkostrokova neobkhidnist chy pryvablyva perspektyva? [Home-schooling and Online-training: a Short-term Necessity or Attractive Perspective?]. *Hromadska dumka pro pravotvorennia*, *7*(192), 13-16. http://nbuviap.gov.ua/images/dumka/2020/7.pdf

Kosholap, A., Maksymchuk, B., Branitska, T., Martynets, L., Boichenko, A., Stoliarenko, O., Matsuk, L., Surovov, O., Stoliarenko, O., & Maksymchuk, I. (2021). Neuropsychological Bases of Self-Improvement of Own Physical Health of Future Teachers in the Course of University Education. *BRAIN. Broad Research in Artificial Intelligence and Neuroscience, 12*(3), 171-190. https://doi.org/10.18662/brain/12.3/226

Luriya, A. (1965). *Vosstanovitelnoe obuchenie i ego znachenie dlya psihologii i pedagogiki* [Remedial Training and Its Significance for Philosophy and Pedagogy]. Pedagogika. http://yanko.lib.ru/books/psycho/luriya=lekcii_po_ob_psc.pdf

Luriya, A. (1971). *Liudyna z rozbytym svitom* [The Man with the Broken World]. Redakcionno-izdatelskij sovet Moskovskogo universiteta. https://www.livelib.ru/book/1000494654-poteryannyj-i-vozvraschennyj-mir-aleksandr-romanovich-luriya

Onishchuk, I., Ikonnikova, M., Antonenko, T., Kharchenko, I., Shestakova, S., Kuzmenko, N., & Maksymchuk, B. (2020). Characteristics of Foreign Language Education in Foreign Countries and Ways of Applying Foreign Experience in Pedagogical Universities of Ukraine. *Revista Romaneasca Pentru Educatie Multidimensionala*, *12*(3), 44-65. https://doi.org/10.18662/rrem/12.3/308

Prots, R., Yakovliv, V., Medynskyi, S., Kharchenko, R., Hryb, T., Klymenchenko, T., Ihnatenko, S., Buzhyna, I., & Maksymchuk, B. (2021). Psychophysical Training of Young People for Homeland Defence Using means of Physical Culture and Sports. *BRAIN. Broad Research in Artificial Intelligence and Neuroscience, 12*(3), 149-171. https://doi.org/10.18662/brain/12.3/225

Richards, B. (2017). *The Persistence and Transience of Memory*. Neuron. https://www.researchgate.net/publication/317789595_The_Persistence_and_Transience_of_Memory

Romaniuk, S. (2016). *Dystantsiine navchannia inozemnoi movy: porivnialnyi analiz suchasnykh platform ta onlain-servisiv* [Distant Teaching of a Foreign Language: Comparative Analysis of Modern Platforms and Online-services]. *Visnyk Dnipropetrovskoho universytetu imeni Alfreda Nobelia*, 1, 318-325. https://dspace.nlu.edu.ua/bitstream/123456789/11141/1/Romanyk-318-325.pdf

Stringer, A. Y. (2011). Neuropsychology. In J. S. Kreutzer, J. De Luca, B. Caplan (Eds.), *Encyclopedia of Clinical Neuropsychology*. Springer. https://doi.org/10.1007/978-0-387-79948-3_671

Tabachnyk, D. V. (2013). *Polozhennia pro dystantsiine navchannia* [Regulation on Distant Education]. Verkhovna Rada Ukrainy. https://zakon.rada.gov.ua/laws/show/z0703-13#Text

Trajanovic, M., Domazet, S. D., Misic-Ilic, B. (2010, January). *Distance learning and Foreign Language Teaching*. ResearchGate. https://www.researchgate.net/publication/32231723_Distance_learning_and_foreign_language_teaching

Vorotnikova, I., Chajkovs`ka (2020). *Dystantsiine navchannia: vyklyky, rezultaty ta perspektyvy. Poradnyk. Z dosvidu roboty osvitian mista Kyieva* [Distant Training: Challenges, Results and Perspectives. From the Experience of Kyiv Educators]. B. Grinchenko University. https://don.kyivcity.gov.ua/files/2020/8/19/90.pdf

Vygotskyi, L. S. (1956). *Izbrannye psihologicheskie issledovaniya* [Selected psychological studies]. Pedagogika. https://core.ac.uk/download/pdf/76001762.pdf

White, C. (2006). Distance Learning of Foreign Languages. *Cambridge Core*, *39*, 247–264. https://www.cambridge.org/core/journals/language-teaching/article/abs/distance-learning-of-foreign-languages/1A77490B8EE03527FDC7B279660A96F5

White, C. (2014). The Distance Learning of Foreign Languages: A Research Agenda. *Cambridge Core*, *47*, 538–553. https://www.cambridge.org/core/journals/language-teaching/article/abs/distance-learning-of-foreign-languages-a-research-agenda/90CE8420CDEDFDE5178939491FBDEE8F

Zhevakina, N. (2009). *Pedahohichni umovy orhanizatsii dystantsiinoho navchannia studentiv humanitarnykh spetsialnostei u pedahohichnomu universyteti* [Pedagogical Conditions of Organizing Humanities Specialties Students' Distant Training in a Pedagogical University]. Luhansk. https://dspace.lgpu.org/xmlui/bitstream/handle/123456789/2973/Jevakina.pdf?sequence=2&isAllowed=y