

МІНІСТЕРСТВО ОСВІТИ І НАУКИ УКРАЇНИ

НАУКОВИЙ ВІСНИК

МУКАЧІВСЬКОГО ДЕРЖАВНОГО
УНІВЕРСИТЕТУ

СЕРІЯ
«ПЕДАГОГІКА ТА ПСИХОЛОГІЯ»

Науковий журнал

ТОМ 9, № 3
2023

МУКАЧЕВО
2023

ISSN 2413-3329
E-ISSN 2520-6788

*Рекомендовано до друку та поширення
через мережу «Інтернет» Вченою радою
Мукачівського державного університету
(протокол № 1 від 30 серпня 2023 р.)*

**Свідоцтво про державну реєстрацію
друкованого засобу масової інформації**
Серія: КВ № 24709-14649 ПР від 17.02.2021 р.

Свідоцтво суб'єкта видавничої справи
Серія: ДК № 6984 від 20.11.2019 р.

Журнал включено
до Переліку наукових фахових видань України (Категорія «Б»)
з педагогічних наук (наказ МОН України № 1643 від 28 грудня 2019 р.),
психологічних наук (наказ МОН України № 409 від 17 березня 2020 р.)

Журнал представлено
в таких наукометричних базах:
Research Bib (Японія), Index Copernicus (Польща), Cite Factor,
DOAJ, ERIH PLUS (Норвегія), SJIFactor, Google Scholar

Науковий вісник Мукачівського державного університету. Серія «Педагогіка та психологія» / Ред. кол.:
В. Й. Бочелюк та ін. Мукачево : Вид-во МДУ, 2023. Т. 9, № 3. 103 с.

Засновник і видавець:
Мукачівський державний університет
89600, вул. Ужгородська, 26, м. Мукачево, Україна
E-mail: info@pp-msu.com.ua
<https://pp-msu.com.ua>

MINISTRY OF EDUCATION AND SCIENCE OF UKRAINE

SCIENTIFIC BULLETIN
OF MUKACHEVO STATE UNIVERSITY

**SERIES “PEDAGOGY
AND PSYCHOLOGY”**

Scientific Journal

VOL. 9 No. 3
2023

MUKACHEVO
2023

ISSN 2413-3329
E-ISSN 2520-6788

*Recommended for printing and distribution via the Internet
by the Academic Council of Mukachevo State University
(Minutes No. 1 of August 30, 2023)*

Certificate of state registration of the print media

Series: KV No. 24709-14649 PR dated 17.02.2021

Certificate of the publishing subject

Series: DK No. 6984 dated November 20, 2019

**Journal included in List of Professional Scientific
Publications of Ukraine (Category “B”)**

in pedagogical sciences (order of the Ministry of Education and Science
of Ukraine No. 1643 of December 28, 2019),
psychological sciences (order of the Ministry of Education and Science
of Ukraine No. 409 of March 17, 2020)

The journal is presented in the following scientometric databases:

Research Bib (Japan), Index Copernicus (Poland), Cite Factor,
DOAJ, ERIH PLUS (Norway), SJIFactor, Google Scholar

Scientific Bulletin of Mukachevo State University. Series “Pedagogy and Psychology” / Editorial Board:
V. Bocheliuk et al. Mukachevo : MSU Publishing House, 2023. Vol. 9, No. 3. 103 p.

Founder and Publisher:

Mukachevo State University
89600, 26 Uzhhorodska Str., Mukachevo, Ukraine
E-mail: info@pp-msu.com.ua
<https://pp-msu.com.ua/en>

Головний редактор

Заступник головного редактора

Члени редакційної колегії
Леся Михайлівна Височан

Ігор Васильович Гевко

Тетяна Ігорівна Горпініч

Василь Іванович Кобаль
Інокентій Олексійович Корнієнко
Тамара Іванівна Бондар
Ірина Миколаївна Мельничук

Наталія Олександрівна Михальчук

Рената Оросова

Ганна Василівна Товканець
Надія Орестівна Федчишин

Нуржан Сартбекова

Ніна Михайлівна Стукаленко

Наталія Валентинівна Пазюра
Наталія Валеріївна Бахмат

Фаділь Ельменфі
Санія Нургалієва
Філіп Сандберг

Віталій Йосипович Бочелюк – д-р психол. наук, професор, Національний університет «Запорізька політехніка», Україна

Тетяна Дмитрівна Щербан – д-р психол. наук, професор, Мукачівський державний університет, Україна

канд. пед. наук, доцент, Прикарпатський національний університет імені Василя Стефаника, Україна

д-р пед. наук, професор, Тернопільський національний педагогічний університет імені Володимира Гнатюка, Україна

канд. пед. наук, доцент, Тернопільський державний медичний університет імені І. Горбачевського, Україна

канд. пед. наук, доцент, Мукачівський державний університет, Україна
д-р психол. наук, доцент, Мукачівський державний університет, Україна

д-р пед. наук, доцент, Мукачівський державний університет, Україна
д-р пед. наук, професор, Тернопільський державний медичний університет імені І. Горбачевського, Україна

д-р психол. наук, професор, Рівненський державний гуманітарний університет, Україна

PhD, Університет ім. Павола Йозефа Сафаріка в Косицеді, Словачка Республіка

д-р пед. наук, професор, Мукачівський державний університет, Україна
д-р пед. наук, професор, Тернопільський державний медичний університет імені І. Горбачевського, Україна

д-р пед. наук, професор, Міжнародний університет інноваційних технологій, Киргизька Республіка

д-р пед. наук, директор філіалу, АТ «Національний центр підвищення кваліфікації “Орлеу”» Інститут підвищення кваліфікації, Республіка Казахстан

д-р пед. наук, професор, Національний авіаційний університет, Україна
д-р пед. наук, професор, Кам’янець-Подільський національний університет імені Івана Огієнка, Україна

доцент, Університет Атіліма, Туреччина

доцент, Університет Агри імені Ібрагіма Чечена, Туреччина
д-р психол. наук, професор, Лундський університет, Швеція

Editor-in-Chief	Vitalii Bocheliuk – Doctor of Psychological Sciences, Professor, “Zaporizhzhia Polytechnic” National University, Ukraine
Deputy Editors-in-Chief	Tetiana Shcherban – Doctor of Psychological Sciences, Mukachevo State University, Ukraine
Editorial Board	
Lesia Vysochan	PhD in Pedagogical Sciences, Associate Professor, Vasyl Stefanyk Precarpathian National University, Ukraine
Ihor Hevko	Doctor of Pedagogical Sciences, Professor, Ternopil Volodymyr Hnatiuk National Pedagogical University, Ukraine
Tetiana Horpinich	PhD in Pedagogical Sciences, Associate Professor, I. Horbachevsky Ternopil State Medical University, Ukraine
Vasyl Kobal	PhD in Pedagogical Sciences, Associate Professor, Mukachevo State University, Ukraine
Inokentiy Kornienko	Doctor of Psychological Sciences, Associate Professor, Mukachevo State University, Ukraine
Tamara Bondar	Doctor of Pedagogical Sciences, Associate Professor, Mukachevo State University, Ukraine
Iryna Melnychuk	Doctor of Pedagogical Sciences, Professor, I. Horbachevsky Ternopil State Medical University, Ukraine
Nataliia Mykhalchuk	Doctor of Psychological Sciences, Professor, Rivne State University of the Humanities, Ukraine
Renata Orosova	PhD, Pavol Jozef Šafárik University in Košice, Slovakia
Hanna Tovkanets	Doctor of Pedagogical Sciences, Professor, Mukachevo State University, Ukraine
Nadiya Fedchyshyn	Doctor of Pedagogical Sciences, Professor, I. Horbachevsky Ternopil State Medical University, Ukraine
Nurjan Sartbekova	Doctor of Pedagogical Sciences, Professor, International University of Innovative Technologies, Kyrgyzstan
Nina Stukalenko	Doctor of Pedagogical Sciences, Director of the branch, JSC “NCPD ‘Orleu’ Institute of Professional Development of Pedagogical Workers in Akmola region”, Kazakhstan
Nataliia Paziura	Doctor of Pedagogical Sciences, Professor, National Aviation University, Ukraine
Nataliia Bakhmat	Doctor of Pedagogical Sciences, Professor, Kamianets-Podilskyi Ivan Ohienko National University, Ukraine
Fadil Elmenfi	Associate Professor, Atilim University, Turkey
Saniya Nurgaliyeva	Associate Professor, Ağrı İbrahim Çeçen Üniversitesi, Turkey
Filip Sandberg	Doctor of Psychological Sciences, Professor, Lunds Universitet, Sweden

ЗМІСТ

В. А. Дуфинець, Т. Д. Щербан, І. І. Брецько

Основні тенденції фізичного та психоемоційного здоров'я дітей дошкільного віку в Україні 9

О. М. Кас'яненко

Напрями використання ІКТ у закладах освіти України

в навчальному процесі з дітьми з особливими освітніми потребами: огляд літератури17

Ю. Т. Гармаш, Е. Л. Тімлін, А. О. Химич

Оволодіння сучасними технологіями в закладах вищої освіти

як основа діяльності майбутнього фахівця медіасфери27

Н. В. Дерев'янка, О. Ю. Залевська

Порівняльний аналіз нейронних мереж Midjourney,

Stable Diffusion та DALL-E та способи їх упровадження

в навчальний процес студентів дизайнерських спеціальностей36

О. С. Дягілева, А. Ю. Юрженко, О. Ю. Кононова

Створення перевернутого класу в освітньому електронному середовищі

морських вищих навчальних закладів45

Л. Л. Сванідзе, В. О. Левицький, О. М. Венгер

Використання основ режисерської майстерності Леся Курбаса

під час підготовки майбутніх спеціалістів у вузах54

О. І. Пушкар, Є. М. Грабовський

Розробка інформаційної моделі розвитку персоналу

в процесі навчання на робочому місці63

Б. Г. Калман, Н. Н. Пойда-Носик

Роль взаємин між викладачем і студентом в інноваційній освіті:

міждисциплінарний огляд питання72

Л. В. Спицька

Психологічна травма та її вплив на життєві перспективи людини82

Т. М. Яблонська, Л. Юаньцзе

Психологічні особливості юнаків з проявами інтернет-залежності:

крос-культурне дослідження91

CONTENTS

V. Dufynets, T. Shcherban, I. Bretsko

Main trends in physical and psycho-emotional health of preschool children in Ukraine 9

O. Kasianenko

Directions of ICT use in Ukrainian educational institutions
in the educational process with children with special educational needs: A literature review 17

Yu. Harmash, E. Timlin, A. Khymych

Mastery of modern technologies in higher education institutions
as a basis for the work of a future media specialist 27

N. Derevyanko, O. Zalevska

Comparative analysis of neural networks Midjourney, Stable Diffusion,
and DALL-E and ways of their implementation in the educational process
of students of design specialties 36

O. Diahyleva, A. Yurzhenko, O. Kononova

Design of flipped classroom lesson in educational electronic environment
of maritime higher education institutions 45

L. Svanidze, V. Levytskyi, O. Venher

Using the basics of Les Kurbas's directing skills
in the training of future specialists in higher education 54

O. Pushkar, Ye. Hrabovskyi

Development of an information model of personnel development
in the process of training at the workplace 63

B. G. Kálmán, N. Poyda-Nosyk

The role of the teacher-student relationship in the innovation of education:
Interdisciplinary review of the issue 72

L. Spytska

Psychological trauma and its impact on a person's life prospects 82

T. Yablonska, L. Yuanjie

Psychological characteristics of young men with Internet addiction:
A cross-cultural study 91

UDC 613.954
DOI: 10.52534/msu-pp3.2023.09

Vasyl Dufynets*

Doctor of Medical Sciences, Associate Professor
Mukachevo State University
89600, 26 Uzhhorodska Str., Mukachevo, Ukraine
<https://orcid.org/0000-0001-6813-4724>

Tetiana Shcherban

Doctor of Psychological Sciences, Professor
Mukachevo State University
89600, 26 Uzhhorodska Str., Mukachevo, Ukraine
<https://orcid.org/0000-0002-3702-8029>

Iryna Bretsko

PhD in Psychology, Associate Professor
Mukachevo State University
89600, 26 Uzhhorodska Str., Mukachevo, Ukraine
<https://orcid.org/0000-0002-1321-7351>

Main trends in physical and psycho-emotional health of preschool children in Ukraine

Article's History:

Received: 10.05.23
Revised: 02.08.23
Accepted: 30.08.23

Suggested Citation:

Dufynets, V., Shcherban, T., & Bretsko, I. (2023). Main trends in physical and psycho-emotional health of preschool children in Ukraine. *Scientific Bulletin of Mukachevo State University. Series "Pedagogy and Psychology"*, 9(3), 9-16. doi: 10.52534/msu-pp3.2023.09.

Abstract. Children are increasingly at risk of various diseases, which has a rather negative impact on their intellectual development and can slow down social development in general, and therefore there is a need to address this issue. The main purpose of this study was to examine and analyse the state of physical, psychological, and social health of children in Ukraine based on preschool educational institutions in Mukachevo. The study used the Sensorimotor technique and the computer programme Efecton Studio 2009 to investigate preschool children's visual-motor reactions. The Rufier-Dixon and Henchy tests were used to assess the cardiovascular and respiratory systems. It was found that every third child has problems in physical or intellectual development. It was substantiated that the tense sanitary and epidemiological situation in the country, environmental pollution, lower living standards of most families and access to medical care, insufficient physical activity, as well as environmental problems contribute to the deterioration of the psychophysical state of preschool children. It was emphasised that maintaining a healthy physical condition is an important element for the normal functioning and growth of a young organism. It was emphasised that the period of adaptation to school, which current preschoolers will go through in the future, depends considerably on the child's health, as healthy children can better cope with mental and physical stress. It was found that most preschoolers have limited knowledge about healthy lifestyles. Only 28% of children understand what food is healthy, and 18% know the importance of eating fresh food. This indicates the need for more active work with children on healthy eating and lifestyles in general. It was found that many adults also do not have a holistic understanding of the principles of proper nutrition and do not discuss these issues with children, and therefore it is important to pay attention to adult education in the field of health and nutrition. The

*Corresponding author



practical significance of the study is that all the theoretical provisions, conclusions and recommendations can be used by teachers and students of educational institutions to improve knowledge about the trends in the health status of preschoolers and schoolchildren in Ukraine, as well as by other scientists for in-depth study of the problem

Keywords: young organism; physical development; psychophysical state; medical and demographic situation; sanitary and hygienic skills in children; emotional needs of preschoolers; adaptation to the educational process

INTRODUCTION

Children's health is one of the most serious medical and social problems in Ukraine. Human health problems are caused by poor childhood health and have a detrimental impact on the level of socio-economic development of the nation. According to O. Voloshyn (2022), during the war and the post-pandemic period, Ukraine has seen a deterioration in the medical and demographic situation, namely a high level of morbidity, prevalence of various diseases, and disability among the child population. The relevance of studying this problem lies in the fact that this situation is of great national importance. Due to the demographic problem caused by the depopulation observed in Ukraine (State Statistical Service of Ukraine, 2022), it is vital for the country to protect the life and health of every child. The issue of the physical and psychological health of preschool children is also relevant because they are preparing to become schoolchildren in the coming years, and the transition from kindergarten to school will considerably change their living conditions: daily routine, interaction with parents and teachers, mental load, etc. There will be new responsibilities and requirements for behaviour and communication with peers. The degree of responsibility and independence will increase significantly. Factors related to the health of preschoolers affect the child's subsequent adaptation at school, and therefore, from kindergarten onwards, it is necessary to explain the importance of and teach basic rules of hygiene, nutrition, and behaviour. Getting used to school life requires a child to strain all body systems, and it is vital that during this difficult period, the child has as much stress resistance and physical endurance as possible.

The state of health of Ukrainian citizens substantially affects the development of their intellectual and labour activities. According to C. Ochoa-Avilés *et al.* (2020), the lack of sanitary and hygiene skills in children, as well as the motivation to live a healthy lifestyle, is causing a deterioration in the health of the population. These factors also include socio-economic instability, environmental problems, insufficient material and technical resources, and the imperfect structure of the healthcare system.

The main indicators that determine the level of health among children are physical development, morbidity, disability, and mortality. According to O. Prachenko and T. Khanetska (2023), functional disorders, acute and chronic somatic diseases, maladaptation syndrome, congenital malformations, morphological and functional anomalies, disability, mental and behavioural disorders are now increasing in number, which is a cause for grave concern. Changes in childhood include an increase in the number

of medical problems associated with chronic nonepidemic diseases and functional disorders, an increase in gastroenterological, allergic, and neuropsychiatric pathology, metabolic disorders, blood, vision and musculoskeletal diseases, and dental caries. These changes are characterised by a decrease in the incidence of infectious diseases. As noted by R. Marushko *et al.* (2020), the most common diseases among older preschool children are chronic diseases of the ENT organs, neurological and cardiovascular systems, as well as the digestive system.

I. Kryvykh *et al.* (2021) note that this situation is influenced by a range of factors, including environmental degradation, a decrease in social protection and medical culture of the population, as well as the lack of generally accepted methods of assessing children's health to identify pathological abnormalities at an early age. The creation of new and improvement of modern technologies to preserve the health of children is a priority for modern paediatrics. First of all, this is due to the fact that the chance to avoid deterioration of children's health in the current conditions is lost without a thorough investigation of their unique characteristics.

Thus, pre-school educational institutions are the first educational link in the social upbringing of children, contributing to the formation and development of the foundation of an educated, creative personality, and influencing the physical, mental, spiritual, and social health of the individual. The issue of psychophysical health has become a fundamental problem around the world and is considered as a threat to human development, both in the personal and social spheres. By creating a long-term need to improve psychophysical health, starting in early childhood, which is a complex and integral process that requires the joint efforts of many people (family members, educational institutions, the media), and, above all, scientific programmes and technologies, the potential danger can be avoided.

Given the above, the main purpose of this study was to analyse the current state of physical and psycho-emotional health of preschool children in Ukraine and to determine the relationship between pedagogical practices and the health of this age group. Particular attention was paid to the impact of the educational process on the formation and development of preschool children's health. The main objectives of the study include analysing the impact of pedagogical methods and educational environment on the state of physical and psycho-emotional health of preschool children. Additionally, the study aimed to identify the main factors that influence the development of children's psyche,

specifically, pedagogical approaches and methods used in preschool institutions.

MATERIALS AND METHODS

To investigate the issue in greater detail, theoretical research methods were used, namely: analysis, generalisation, synthesis, as well as dialectical, structural and functional methods. The structural and functional method of research was fundamental to this study. It was used to identify the basis of the study, namely: the term “health” was investigated, the criteria for assessing the state of health of the population were investigated, the factors that affect the physical and psychological state of the population were identified, and the factors that directly affect the development of preschool children were separately identified. Using the dialectical method, the research and views on the problem of other scientists were analysed and a holistic view of the state of health of preschool children in Ukraine was formed.

Logical methods, such as analysis and synthesis, play a vital role in the research process. To explore the issue of morbidity more fully among the younger generation, the object of this study was divided into several parts. Separately, the authors investigated what should be understood by the term “health”, analysed the state of health of the entire population of Ukraine and what criteria for determining such a state are relevant in modern medicine. The second part of the study examined the health status of preschool children, which diseases are most common among this population, and identified the factors that influence this situation. The second method, synthesis, was used to form all the information received into a logically structured study. The following important methods should be highlighted: generalisation and comparative analysis. The above two methods were used to develop recommendations for parents and preschools.

Within the framework of the study of this issue, research of the visual-motor reaction of children of senior preschool age was conducted at Kindergarten No. 33, Mukachevo Preschool No. 29 and Mukachevo Preschool No. 9. To study the time of a simple visual-motor reaction, the Sensorimotor technique was used, as well as a special computer program “Efecton Studio 2009”, namely the “Shooting Range” test. The test consisted of releasing the bowstring (Enter button) as quickly as possible when the target was illuminated. Each participant was given 10 attempts. The Taxi test was used to determine the time of a complex visual-motor reaction. The test consisted of pressing Enter on the keyboard as quickly as possible when a yellow car appeared on the monitor screen, without taking any action when a green, grey, or red car appeared, the so-called choice reaction. The participant was given 30 attempts.

The study was conducted with the participation of a physical education instructor, group educators, a methodologist, and one of the child's parents. A total of 112 preschoolers took part, including 52 boys and 60 girls. The average age of the children was 5-6 years old. The purpose of this study was to determine the specific features of the

child's physical and psychological structure. The Ruffier-Dixon test and the Genchi test were used to study the cardiovascular and respiratory systems. The Ruffier-Dixon test is performed as follows: first, the subject spends five minutes sitting or lying still during the assessment, then the pulse rate is determined for the next 15 seconds (P1). Then, in 45 seconds, the person performs 30 squats (a metronome can be used for this). Then, during the first 15 seconds (P2) and the last 15 seconds (P3) of the first minute after the end of the exercise, the resting heart rate is recorded. The Genchi test is performed in the supine position. The person exhales normally (but not excessively), then holds their breath. A stopwatch is used to measure the duration of the breathing pause. At the exact moment of inhalation, the stopwatch stops and the result is checked. Healthy, untrained people can hold breath for 25 to 40 seconds for men and 15 to 30 seconds for women.

To ensure accurate planning of physical education work, a teacher needs to have data on children's physical development, health, and physical fitness. The data obtained is the basis for making appropriate adjustments to the educational process in physical education. The children were examined together with a physical education instructor, group teachers and a kindergarten teacher, as well as in the presence of one of their parents. The physical development of children was assessed using an anthropometric study methodology, which involves determining human parameters (measuring height, body weight, chest circumference). The height was measured using a special device – a height meter. Body weight was measured on special medical scales that were properly installed and adjusted. The chest circumference was measured with a soft centimetre tape, in front along the IV rib, and behind under the shoulder blades. The arms were in the lowered position. The chest circumference was measured during maximum inhalation and exhalation, as well as during calm breathing.

Survey method was also used in this study. The main purpose of the survey was to determine the level of children's awareness of healthy lifestyles. This study was conducted individually with each child with at least one parent involved. This stage of the experiment took 5 hours in total.

When working with children, their age specifics were considered and the study followed the recommendations on the ethical aspect of conducting pedagogical research developed by reputable organisations, including the American Educational Research Association (2011) and the British Educational Research Association (2018).

RESULTS

H.E. Sigerist (1941) (USA) gave the first official definition of the term in early 1940: “Health is not merely the absence of disease: it is something positive, such as the joy of life or the cheerful perception of all the duties assigned to man”. According to the scientist, health should be considered as a social phenomenon and as a psychophysical state of a person.

Currently, about 20% of newborns are completely healthy, over 80% of children have one or more disorders,

and every third child has problems in physical or mental development (Bortiuk, 2023). The tense sanitary and epidemiological situation in the country, environmental pollution, declining living standards for most families and access to healthcare, and insufficient physical activity contribute to the deterioration of children's health (Denysova *et al.*, 2023). This is a cause for concern, as intensive musculoskeletal development in preschool children forms the basis for synchronising physical growth and functional capabilities. According to researchers, there is a close connection between the physical condition of a person and the level of health (Prachenko & Khanetska, 2023). Maintaining a healthy physical condition is a necessary element for the normal functioning of organs, growth of the whole organism, increasing the physical performance of children and preserving their health.

There is an ongoing debate among paediatricians about the standards used to assess child health (Malagón-Rojas *et al.*, 2020). A thorough examination of the child is an integral indicator of the impact of both good and negative variables on the body. According to the Institute of Paediatrics, Obstetrics and Gynaecology of the National Academy of Medical Sciences of Ukraine, the key factors determining individual and group health of children are adequate functional and social adaptation of the child; high level of resistance to adverse effects with optimal immunological response and rapid recovery from stressful situations; absence of signs of chronic diseases in the child; sufficient physical, neuropsychological and intellectual development of the child that corresponds to their chronological age (Imran *et al.*, 2020). Due to their young age and exposure to harmful environmental factors, children are very vulnerable to colds and infectious diseases. The development of children's psychophysical qualities (strength of nervous processes, latency period of simple and complex visual-motor reactions) is the main criterion for the effectiveness of learning activities (Stillman *et al.*, 2020).

As a result, it was found that boys and girls have low latency periods for simple and complex visual-motor reactions. According to the analysis of the results, the majority of participants (50.89%) had weak or moderately weak neu-

rological systems. In 27.58% of children, simple visual-motor reaction corresponds to a below average level of development, in 28.73% – to a low level. 17.24% of children have an average duration of the study process, and 13.79% have an above-average duration. Only 12.66% of preschoolers have a high latency period for the development of a simple visual-motor reaction.

The results of the children's survey show that preschoolers have a basic understanding of the components of a healthy lifestyle. The study found that most children have a good understanding of table manners. More than 30% of preschoolers answered: "I don't know". Proper nutrition is essential for maintaining human health. The children were asked the question: "What foods are healthy?" to see if older preschoolers understood this. Almost 28% of children know what proper nutrition is and can distinguish between foods that are healthy and those that are not. The survey showed that 18% of preschoolers are aware of the need to eat freshly prepared, varied food, including vegetables and fruit, which are a source of vitamins, even though the school curriculum does not provide for such knowledge. Having analysed the results of the interviews with children, most preschoolers lack in-depth information. The main sources of information for preschool children are their parents, teachers, and educators. During the dialogue with physical education instructors, educators, and parents, it was found that insufficient work with children in this area is due to the fact that the elders themselves do not understand the importance of the principles of rational nutrition for children's health and do not communicate with them on this topic.

Most of the examined children had average data on normal body weight, 24.14% were underweight and 25% were overweight (Table 1). It was found that in 41.76% of the examined, the chest girth corresponds to the average age norm. The Ruffier test, which measures the cardiovascular system, showed that 35.51% of children have limited functional reserves. One of the simplest methods of determining how well the body's respiratory system is functioning is the Genchi test. A study of the results of the Genchi test shows that this indicator averages 38.75 ± 8.12 .

Table 1. Anthropometric characteristics

Criterion	Girls	Boys
Body weight (kg)	20.4 ± 1.46	21.2 ± 1.22
Height (cm)	116.8 ± 2.64	117.1 ± 2.31
Sitting height (cm)	64.7 ± 1.73	65.7 ± 1.44
Chest circumference (cm)	64.6 ± 1.12	68.4 ± 1.08

Source: compiled by the authors of this study

Scientists are focusing on the problem of adaptation of children and young people to the conditions of study in preschool, school and higher education institutions due to the deterioration of the health status of this population in most countries of the world, as evidenced by screening data (Chorna, 2020). The process of obtaining

education can be attributed to a special type of activity, as it involves a prominent level of mental and physical stress, time pressure, the need for intensive assimilation of a large amount of information, increased requirements for solving problem situations, strict control and regulation of daily routines.

Thus, today it is impossible to assess the state of health of a child without considering the adaptive mechanisms of the body, which create the best plan of the living system to maintain homeostasis. The purpose of modern medicine should be to assess the child's adaptation to the environment and the educational process, identify early signs of maladjustment and make the necessary targeted adjustments (Denysova *et al.*, 2023).

Harmful changes in the body can lead to the development of various diseases. The most considerable changes occur due to insufficient physical activity. As a result, all body systems begin to function chaotically, which disrupts its interaction with the outside world. According to physiologists, structural changes in the muscles and associated nerve centres at the segmental level of the brain occur as a result of physical activity, as opposed to functional activity (Volosovets *et al.*, 2021). All types of exercise stimulate the morphological, functional, and energetic capabilities of muscle tissue, which cause muscle contractions. On this basis, the range of the body's response is expanded.

Scientists have found that the health of the younger generation is negatively affected by various harmful environmental elements (Ochoa-Avilés *et al.*, 2020). A child's body is the most sensitive indicator of the severity of environmental problems. To draw attention to the problem of the harmful effects of environmental pollution on children's health, it is advisable to emphasise that regardless of the impact of these factors, the mucous membranes of the respiratory and digestive tracts are usually affected, leading to the development of various ecopathologies and complications.

Notably, nutrition is now influencing the development of the most common somatic diseases in children, including inflammatory bowel disorders, which are growing globally and affecting increasingly more people every year. The clinical signs of inflammatory bowel disease, which include ulcerative colitis, Crohn's disease and undifferentiated colitis, include chronic recurrent or persistent relapsing course, damage to other organs and systems (skin, joints, eyes, liver), severe complications requiring surgery, elevated risk of colorectal cancer and early disability (Perrin *et al.*, 2020). The main causes of these disorders, which have been established by clinical and experimental studies, despite the fact that their aetiology has not yet been established, are hereditary predisposition, defects in immune regulation, intestinal epithelial barrier disorders and external factors, among which increasingly more attention is paid to the nutritional profile before the onset of the disease (Krynychko, 2020; Voloshyn, 2022). Nutrition is important for the full physical and cognitive development of a child, as well as the functional development of organs and systems from the first years of life.

DISCUSSION

The basis of the spiritual and moral health of preschool children is the system of values, motivations and behavioural attitudes in the social environment. A. Charach *et al.* (2020) note that children aged 3 to 7 learn about health

through a variety of activities and use them to control their behaviour. The preschool and family should create an environment that promotes healthy development, transmits cultural knowledge and life lessons, protects independence, promotes socialisation, provides comfort and safety, and instils a love of life and resilience. The scientists' conclusions should be agreed with, as the state and mindset of the environment affects this aspect of children's health.

The value orientation of health, according to B.M. Gustafsson *et al.* (2021), is the level of humanisation and science, the state of material, cultural, and social life of a person. All disciplines that define the body of modern knowledge can contribute to solving health-related problems. Due to its essential nature, science's emphasis on healthcare contributes to the integration of several disciplines and the promotion of scientific solutions to health problems. General health means the ability of the human body to adapt to changes in the environment and interact freely with them, depending on its biological, mental, and social composition. The fact that health is a value, both formally and in content, can be observed by comparing the definition of health with the category of values.

The study by E. Hards *et al.* (2022) should be agreed with, which shows the negative impact of stressful events on a child's mental health. These elements are the root cause of the relatively high proportion of neurotic manifestations in preschool children's behaviour. Children who experience a lack of communication with adults or their antagonistic attitude, or who experience family difficulties, are more likely to demonstrate neurotic behaviour as they grow up. The mental health of preschool children is harmed by the information overload of television programmes about thefts, robberies, and exposure of scenes of adult intimate life.

According to the findings of C. Li *et al.* (2020), the emotional needs of preschoolers are primarily concerned with the need for love and protection. Children who do not receive adequate satisfaction of this desire are more likely to develop both short-term and long-term adverse mental conditions. A child interprets almost all cases when their sense of self-worth is humiliated. These conclusions should be accepted, as the requirement for respect in children is crucial. When this need is met, the child's mental health improves. With the growth of unpleasant experiences, the child's mental health gradually declines: the ability to joy, surprise, delight, and trust is lost and replaced by unreasonable anxiety, difficulties sleeping and anxiety. Physical education is described as the most effective way to teach children the importance of health. As explained by R. Marushko *et al.* (2020), this is due to the fact that the biological urge for mobility prevails at this age and has a positive impact on the child's intellectual and emotional development, as well as on their daily routine and behaviour.

However, according to N.A. Ponce (2020), on the other hand, this need is in harmony with the need to enjoy physical activity, which gives children the opportunity to take part in social interactions, learn to negotiate, plan joint mo-

tor activities, express their independence and self-esteem. In most cases, it is advisable to form good life habits and motivation for health through preschoolers' enthusiasm for physical activity. The best time to develop a conscious understanding of the environment, as well as intellectual and practical abilities of a child, is in the upper preschool years. However, to make a programme created by adults easier for a child to master, it is important to include the development of their knowledge, skills, and talents in exciting activities. In the pre-school, children are engaged in systematic physical activity within the framework of various physical education and health programmes. These activities should be aimed at helping children develop a positive attitude towards their own and other people's health.

It is worth agreeing with the opinion of C.M. Stillman *et al.* (2020): now, more than ever, preschoolers need to intensify motor activity, and this requirement is becoming increasingly more urgent. A child really spends half of their active life in a preschool. It needs to move because it satisfies its innate desire to explore the outside world. Observations and knowledge of educators strongly suggest that movement improves a child's physical and spiritual health. By doing a variety of outdoor activities, sports, training, planning children's trips, and other events, the movement pattern is optimised. Parents and caregivers can encourage children to be active by carefully planning their daily routine.

Deterioration of children's health and problems with adaptation to an educational institution often arise due to various socio-economic factors. These factors act against the background of genetic characteristics, the child's biological age and possible minimal brain dysfunctions, some of which can be controlled. According to M. Kahn *et al.* (2021), these include socially unfavourable family circumstances, changes in eating habits and unhealthy diet, an increase in acute respiratory diseases (due to a significant increase in contact with sick children) and, as a result, absenteeism, poor sanitary and hygienic conditions in kindergartens, excessive workload during classes, insufficient medical supervision of children, and the virtual absence of a psychological support system.

According to J.N. Malagón-Rojas *et al.* (2020), preschools are the first educational level of social upbringing of children, where they contribute to the formation of an educated, creative personality, influence physical, mental, spiritual and social health, which is necessary for the primary growth of the individual. To fulfil this responsibility, it is vital to seek fresh perspectives on the topics covered in early childhood and preschool education. In general, after analysing the research of scientists, it can be determined that the idea of lifelong learning implies that the implementation of tasks related to the formation, preservation, and promotion of health should be an obligatory element of the new national education system.

Following the ideas of J.M. Perrin *et al.* (2020), it can be concluded that, together with parents as role models, educators should strive to promote a healthy lifestyle in preschoolers. Parents should systematically explain the specific features of mental health development in an accessible

form, familiarise them with the psychological characteristics of the child's psyche, raise the topic of their joint health and physical well-being, and discuss how to spend their free time with their children. Parents should ensure proper living conditions, eat environmentally friendly foods rich in proteins, vitamins, and minerals, keep the house clean and hygienic, take baths often, exercise, and spend more time outdoors with their children.

It is vital to notice deviations in the behaviour of preschoolers in time and immediately provide the necessary psychological support. The ability of a caregiver to quickly observe, accurately understand, and correct the emotional manifestations of a child, managing their play and mental activity, is crucial for the further growth of the individual. The same purpose should guide educational and training strategies that protect children's mental health from the harmful effects of negative emotional elements that pose a serious threat to their ability to lead a normal life in the future.

CONCLUSIONS

The study analysed the visual-motor reactions of preschool children and investigated their perceptions of a healthy lifestyle. The study was aimed at determining the state of health and adaptation of children to the educational process, specifically at studying the factors that affect these processes. The analysis revealed that most children have low latency periods for simple and complex visual-motor reactions. Most of the participants have weaknesses in their neurological systems, and many children's simple visual and motor reactions do not reach the average level. This indicates the need to improve the health of children and their adaptation to the educational process.

As for children's knowledge about healthy lifestyles, it was found that most preschoolers have only a superficial understanding of this concept. Only 28% of children have an idea of what food is healthy, and 18% know the importance of eating fresh food. This points to the need to strengthen work with children on healthy eating and healthy lifestyles in general. The results of communication with adults suggest that many of them do not understand the principles of proper nutrition and do not communicate with children on this topic. This highlights the importance of adult education on health and nutrition.

The study points to problems with children's health and adaptation to the educational process. It was found that more than a quarter of children have weight problems, and some of them have limited functional reserves of the cardiovascular system. The purpose of this study was fulfilled: the children's visual-motor reactions and perceptions of a healthy lifestyle were analysed. However, it is necessary to conduct a more detailed analysis of the factors that affect children's adaptation to the educational process and develop particular measures to improve the level of health and adaptation of children to the educational process. This will help improve children's health and quality of life.

This study is the first to investigate the physical development, health status, visual-motor reaction of children in detail, as well as awareness of the components of

a healthy lifestyle on the example of preschool educational institutions in Mukachevo. In further research, scientists need to pay more attention to the development of special technologies and scientific programmes for the prevention of diseases of children, depending on their preschool age, as well as to improve their psychophysical state.

None.

ACKNOWLEDGEMENTS

CONFLICT OF INTEREST

The authors of this study declare no conflict of interest.

REFERENCES

- [1] American Educational Research Association. (2011). Code of ethics. *Educational Researcher*, 40(3), 145-156. doi: 10.3102/0013189X11410403.
- [2] Bortniuk, O.S. (2023). [Problems of forming a healthy lifestyle of schoolchildren](#). In *Actual problems of the development of education in the field of tourism, of physical culture and sports: Materials of the VI All-Ukrainian science and practice conferences* (pp. 120-122). Khmelnytskyi: Khmelnytskyi Humanitarian-Pedagogical Academy.
- [3] British Educational Research Association. (2018). [Ethical guidelines for educational research](#) (4th ed.). London: British Educational Research Association.
- [4] Charach, A., Mohammadzadeh, F., Belanger, S.A., Easson, A., Lipman, E.L., McLennan, J.D., Parkin, P., & Szatmari, P. (2020). [Identification of preschool children with mental health problems in primary care: Systematic review and meta-analysis](#). *Journal of the Canadian Academy of Child and Adolescent Psychiatry*, 29(2), 76-105.
- [5] Chorna, V.V. (2020). Determination of mental health of the population in Ukraine and EU countries. *Environment & Health*, 2, 47-53. doi: 10.32402/dovkil2020.02.047.
- [6] Denysova, M.F., Gorban, N.E., Muzyka, N.M., & Bukulova, N.Yu. (2023). To the relevance of the problem of alimentary diseases in children. *Ukrainian Journal of Perinatology and Pediatrics*, 1, 113-117. doi: 10.15574/PP.2023.93.113.
- [7] Gustafsson, B.M., Gustafsson, P.A., Granlund, M., Proczkowska, M., & Almqvist, L. (2021). Longitudinal pathways of engagement, social interaction skills, hyperactivity and conduct problems in preschool children. *Scandinavian Journal of Psychology*, 62(2), 170-184. doi: 10.1111/sjop.12700.
- [8] Hards, E., Loades, M.E., Higson-Sweeney, N., Shafran, R., Serafimova, T., Brigden, A., Reynolds, S., Crawley, E., Chatburn, E., Linney, C., McManus, M., & Borwick, C. (2022). Loneliness and mental health in children and adolescents with pre-existing mental health problems: A rapid systematic review. *British Journal of Clinical Psychology*, 61(2), 313-334. doi: 10.1111/bjc.12331.
- [9] Imran, N., Zeshan, M., & Pervaiz, Z. (2020). Mental health considerations for children & adolescents in COVID-19 Pandemic. *Pakistan Journal of Medical Sciences*, 36, 67-72. doi: 10.12669/pjms.36.COVID19-S4.2759.
- [10] Kahn, M., Schnabel, O., Gradisar, M., Rozen, G.S., Slone, M., Atzaba-Poria, N., Tikotzy, L., & Sadeh, A. (2021). Sleep, screen time and behaviour problems in preschool children: An actigraphy study. *European Child & Adolescent Psychiatry*, 30, 1793-1802. doi: 10.1007/s00787-020-01654-w.
- [11] Krynychko, L.R. (2020). [Assessment of the current state of health of the population of Ukraine](#). *Economics, Management and Administration*, 4(94), 142-149.
- [12] Kryvykh, I.P., Chumak, Yu.Yu., & Gusieva, H.M. (2021). Modern state of health of the population of Ukraine. *Environment and Health*, 3, 4-12. doi: 10.32402/dovkil2021.03.004.
- [13] Li, C., Cheng, G., Sha, T., Cheng, W., & Yan, Y. (2020). The relationships between screen use and health indicators among infants, toddlers, and preschoolers: A meta-analysis and systematic review. *International Journal of Environmental Research and Public Health*, 17(19), article number 7324. doi: 10.3390/ijerph17197324.
- [14] Malagón-Rojas, J.N., Mantziari, A., Salminen, S., & Szajewska, H. (2020). Postbiotics for preventing and treating common infectious diseases in children: A systematic review. *Nutrients*, 12(2), article number 389. doi: 10.3390/nu12020389.
- [15] Marushko, R.V., Dudina, O.O., & Marushko, T.L. (2020). [Analysis of the health status of children of the first year of life](#). *Modern Pediatrics. Ukraine*, 5, 24-32.
- [16] Ochoa-Avilés, C., Morillo, D., Rodriguez, A., Cooper, P.J., Andrade, S., Molina, M., Parra, M., Parra-Ullauri, A., Mejia, D., Neira, A., Rhodes-Espinoza, C., & Ochoa-Avilés, A. (2020). Prevalence and risk factors for asthma, rhinitis, eczema, and atopy among preschool children in an Andean city. *PLoS ONE*, 15(7), article number e0234633. doi: 10.1371/journal.pone.0234633.
- [17] Perrin, J.M., Lu, M.C., Geller, A., & DeVoe, J.E. (2020). Vibrant and healthy kids: Aligning science, practice, and policy to advance health equity. *Academic Pediatrics*, 20(2), 160-162. doi: 10.1016/j.acap.2019.11.019.
- [18] Ponce, N.A. (2020). Centering health equity in population health surveys. *JAMA Health Forum*, 1(12), article number e201429. doi: 10.1001/jamahealthforum.2020.1429.
- [19] Prachenko, O., & Khanetska, T. (2023). The attitude of the mother towards the child as a factor in the occurrence of psychosomatic diseases in preschool children. *Věda a Perspektivy*, 1(20), 298-309. doi: 10.52058/2695-1592-2023-1(20)-298-309.
- [20] Sigerist, H.E. (1941). *Medicine and human welfare*. New Haven: Yale University Press.
- [21] State Statistic Service of Ukraine. (2022). *Formation of population growth (decrease) in regions*. Retrieved from https://ukrstat.gov.ua/operativ/operativ2022/ds/fp/arh_fp2022_u.html.

- [22] Stillman, C.M., Esteban-Cornejo, I., Brown, B., Bender, C.M., & Erickson, K.I. (2020). Effects of exercise on brain and cognition across age groups and health states. *Trends in Neurosciences*, 43(7), 533-543. doi: 10.1016/j.tins.2020.04.010.
- [23] Voloshyn, O.R. (2022). Current issues in the practice of physical education of preschool children. *Rehabilitation and Recreation*, 10, 71-77. doi: 10.32782/2522-1795.2022.10.9.
- [24] Volosovets, O.P., Bolbot, Y.K., Volosovets, A.O., Trachuk, L.E., Kryvopustov, S.P., Beketova, G.V., & Kuzmenko, A.Ya. (2021). Dynamics of incidence of mental and behavior disorders in children of Ukraine: A 25-years' observation experience. *Medicni Perspektivi*, 25(2), 48-54. doi: 10.26641/2307-0404.2020.2.206352.

Василь Андрійович Дуфинець

Доктор медичних наук, доцент
Мукачівський державний університет
89600, вул. Ужгородська, 26, м. Мукачево, Україна
<https://orcid.org/0000-0001-6813-4724>

Тетяна Дмитрівна Щербан

Доктор психологічних наук, професор
Мукачівський державний університет
89600, вул. Ужгородська, 26, м. Мукачево, Україна
<https://orcid.org/0000-0002-3702-8029>

Ірина Іванівна Брецько

Кандидат психологічних наук, доцент
Мукачівський державний університет
89600, вул. Ужгородська, 26, м. Мукачево, Україна
<https://orcid.org/0000-0002-1321-7351>

Основні тенденції фізичного та психоемоційного здоров'я дітей дошкільного віку в Україні

Анотація. Діти все частіше потрапляють у зону ризику щодо різних хвороб, що доволі негативно впливає на інтелектуальний розвиток особистості й може гальмувати суспільний розвиток загалом, тому виникла потреба розв'язати цю проблему. Основна мета дослідження – вивчити та проаналізувати стан фізичного, психологічного та соціального здоров'я дітей в Україні на матеріалі дошкільних навчальних закладів міста Мукачево. У дослідженні було використано методику «Сенсомоторика» та комп'ютерну програму Efecton Studio 2009 для вивчення зорово-моторних реакцій дошкільників. Для оцінки діяльності серцево-судинної та дихальної систем застосовувалися проби Руф'є – Діксона та Генчі. Установлено, що кожна третя дитина має проблеми у фізичному або інтелектуальному розвитку. Обґрунтовано, що напружений санітарно-епідемічний стан країни, забруднення навколишнього середовища, зниження рівня життя більшості сімей і доступу до медичної допомоги, недостатня фізична активність, а також екологічні проблеми сприяють погіршенню психофізичного стану дошкільнят. Наголошено, що підтримання здорового фізичного стану – важливий елемент для нормального функціонування та росту молодого організму. Підкреслено, що період адаптації до школи, через проходитимуть у майбутньому нинішні дошкільнята, значно залежить від здоров'я дитини, адже з розумовими та фізичними навантаженнями краще справляються саме здорові діти. З'ясовано, що більшість дошкільників мають обмежені знання про здоровий спосіб життя. Тільки 28% дітей розуміють, яка їжа корисна для здоров'я, а 18% знають про важливість споживання свіжих продуктів. Це свідчить про необхідність активнішої роботи з дітьми на тему здорового харчування і способу життя загалом. Виявлено, що багато дорослих також не мають цілісного уявлення про принципи правильного харчування та не обговорюють ці питання з дітьми, а тому важливо звернути увагу на освіту дорослих у сфері здоров'я та харчування. Практичне значення роботи полягає в тому, що всі теоретичні положення, висновки та рекомендації можуть використати викладачі та студенти навчальних закладів для вдосконалення знань про тенденції стану здоров'я дошкільнят та школярів в Україні, а також інші науковці для поглибленого вивчення порушеної проблеми

Ключові слова: молодий організм; фізичний розвиток; психофізичний стан; медико-демографічна ситуація; санітарно-гігієнічні навички в дітей; емоційні потреби дошкільнят; адаптація до навчального процесу

UDC 37.04:51(477)
DOI: 10.52534/msu-pp3.2023.17

Oksana Kasianenko*

PhD in Pedagogy, Associate Professor
Mukachevo State University
89600, 26 Uzhhorodska Str., Mukachevo, Ukraine
<https://orcid.org/0000-0001-6730-447X>

Directions of ICT use in Ukrainian educational institutions in the educational process with children with special educational needs: A literature review

Article's History:

Received: 26.04.23

Revised: 29.07.23

Accepted: 30.08.23

Suggested Citation:

Kasianenko, O. (2023). Directions of ICT use in Ukrainian educational institutions in the educational process with children with special educational needs: A literature review. *Scientific Bulletin of Mukachevo State University. Series "Pedagogy and Psychology"*, 9(3), 17-26. doi: 10.52534/msu-pp3.2023.17.

Abstract. The organisation of the educational process with children with special educational needs requires the implementation of special approaches to their education. Therefore, it is important to consider the relevant foreign experience, explain the features of distance learning using information and communication technologies and develop recommendations for the use of such technologies in the educational process with children with special needs. The purpose of this study was to investigate the specific features of using information and communication technologies in preschool education institutions in teaching children with special educational needs and to cover the areas of their implementation. The methodological framework of this study included an interdisciplinary approach to the analysis of a scientific problem in combination with theoretical and empirical methods, among which the priority was given to induction, deduction, analysis, synthesis, generalisation, study of scientific literature and pedagogical observation. It was found that information and communication technologies are a set of methods, educational and methodological materials, technical means of teaching and software. It was found that they increase the effectiveness of the educational process and help to unite its participants. The study proved that the use of information and communication technologies involves the application of three approaches: technocentric, holistic, and combined. It was found that the combined approach creates a subject-object model of teaching children with special needs and demonstrates the greatest effectiveness. The study presented several classifications of information and communication technologies. The classification of information and communication technologies was presented. It was found that they are divided into main and auxiliary; standard and auxiliary; virtual. The advantages of using information and communication technologies in the educational process with children with special educational needs were considered in detail, which confirmed the need for their use in preschool education institutions in the context of distance learning. The practical significance of this study is that its results, specifically recommendations for the introduction of special approaches to the education and upbringing of preschool children with special educational needs, can be used in organising an effective educational process for such children

Keywords: preschool child; preschool education institution; digitalisation; barrier-free educational environment; distance learning; special educational needs

*Corresponding author



Copyright © The Author(s). This is an open access article distributed under the terms of the Creative Commons Attribution License 4.0 (<https://creativecommons.org/licenses/by/4.0/>)

INTRODUCTION

At the current stage of modernisation of preschool education in Ukraine, the priority areas are to improve its quality, meet the cognitive needs of all pupils according to their individual characteristics and engage children in diverse types of developmental activities. The organisation of the educational process with children with special educational needs requires the introduction of special approaches to their education and upbringing, as well as the creation of special psychological and pedagogical conditions for successful learning activities. The introduction of inclusive education allows preschool educational institutions (PEIs) to consolidate a new philosophy of special education and implement new aspects of teaching children with special educational needs or supporting them in the educational process. In this regard, inclusive education, and psychological and pedagogical support for students with special educational needs as fundamental conditions for the development of education are among the most pressing issues.

In the current context of global digital transformation, which researchers have unanimously recognised as the Fourth Industrial Revolution, or Industry 4.0, it is crucial to ensure the right to education for all participants in the educational process based on equal opportunities and to guarantee them safe learning (Mustafa *et al.*, 2022). Digitalisation, which means the introduction of modern information and communication technologies (ICT) into the educational process, focuses primarily on effective interaction in learning activities, helps children to unlock their potential and ensures their active involvement in various activities (cognitive, educational, creative, developmental), promotes the development of abilities and talents, helps to communicate and overcome social and psychological barriers to learning (Carrim & Bekker, 2022; Liza *et al.*, 2023).

The development of inclusive learning and digital education has been going on in parallel, and the restructuring of educational systems has intensified during the COVID-19 pandemic, which has led to a reassessment of the functions of social institutions, resulting in an urgent need to develop digital educational technologies that involve the widespread use of ICT and the introduction of distance learning for children with special needs (Narvekar, 2020; Mete Yesil *et al.*, 2022).

At the same time, the preschool education system of Ukraine has faced many challenges related to the armed aggression of the Russian Federation, the conduct of hostilities, and the introduction of martial law. Moreover, a considerable number of educational institutions have been destroyed or damaged by bombing and shelling (Ministry of Education and Science of Ukraine, 2022). The functioning of PEI under martial law and the use of distance and face-to-face (blended) forms of education is characterised by an intensive search for novel approaches to learning and innovative forms of organisation (Resolution of the Cabinet of Ministers of Ukraine No. 530..., 2019). In such circumstances, the problem of using ICT in teaching children with special educational needs is of particular importance,

as the spread of digital transformations in education objectively leads to qualitative changes.

Notably, most scientific papers are investigate the problem of ICT use in inclusive classrooms of general secondary education institutions (Molina Roldan *et al.*, 2021, Triviño-Amigo *et al.*, 2022), as it is believed that it is here that children undergo intensive socialisation and develop into individuals, learning values, ideals, and standards of behaviour. However, the full inclusion of a child with special needs in society requires the development of preschool inclusion, which will enable children to interact positively with the external environment and ensure the active development of their cognitive capabilities (Iskrenovic-Momcilovic & Momcilovic, 2022; Gallud *et al.*, 2023). In this context, modern pedagogical science requires research that would provide a fundamental analysis of the use of ICT in Ukrainian PEIs in the educational process with children with special educational needs.

The purpose of this study was to consider the foreign practices of using ICT in the educational process with children with special educational needs and to analyse possible areas of its implementation in Ukraine. Its tasks include explaining the discourse of the issue, investigating the specific features of organising preschoolers' education in the conditions of distance learning, and developing recommendations on the use of ICT in Ukrainian PEIs in the educational process with children with special educational needs based on the results obtained.

The interdisciplinary approach to the analysis of the discourse of the scientific and pedagogical problem and its characteristics formed the methodological framework of the study of the problem. Specifically, a combination of many theoretical and empirical methods was used, among which induction, deduction, analysis, synthesis, generalisation, study of scientific literature and pedagogical observation were prioritised. The study is presented in a deductive manner: from a more general study of the use of ICT in the educational process with children with special educational needs to the analysis of particular solutions and responses to existing challenges, considering the implementation of foreign practices in improving inclusive education through ICT. The method of analysis was applied when studying the use of ICT in educational institutions of Ukraine in the educational process with children with special educational needs. The application of the synthesis involved the hypothesis that the correct use of ICT in educational institutions will help to increase the effectiveness of the educational process with children with special educational needs. Generalisation as a method of scientific and pedagogical research is used to obtain the sum of pedagogical knowledge about the problem of using ICT in educational institutions.

The study analysed a considerable number of Ukrainian and foreign literary sources related to the use of ICT in the educational process with children with special educational needs and identifies trends in the introduction of inclusive education in PEIs the context of distance learning.

For an objective analysis of current realities, the study was based on sources published over the past five years. The theoretical framework of this study was based on a range of foreign and Ukrainian scientific and pedagogical studies on the outlined problem. The results of scientific research make it possible to analyse in detail the areas of ICT use in the educational process with children with special educational needs and to develop recommendations for the use of ICT in distance learning.

THE USE OF ICT IN THE EDUCATIONAL PROCESS OF PRESCHOOL EDUCATION INSTITUTIONS AS A PEDAGOGICAL PROBLEM

ICTs in the context of distance learning in the PEI can become an effective means of uniting all participants in the educational process. Such technologies are especially relevant for teaching children with special educational needs. An analysis of certain provisions of the use of ICT in the educational process with children with special educational needs can be found in the studies of N.A. Mustafa *et al.* (2022) and L.O. Liza *et al.* (2023). N. Carrim and T. Bekker (2022) carried out a detailed analysis of the use of ICT in the educational process with children with special educational needs and described the requirements for their implementation for preschoolers. H.N. Narvekar (2020), A. Mete Yesil *et al.* (2022) analysed the specific features of using ICT in the educational process with children with special needs during the COVID-19 pandemic.

S. Molina Roldan *et al.* (2021), M. Medina-García *et al.* (2021), N. Carrim and T. Bekker (2022) outlined the functions of ICT in the online environment and found out the benefits of using ICT in the educational process with children with special needs. O. Iskrenovic-Momcilovic and A. Momcilovic (2022), C. Chairunnisa and R. Rismita (2022), and N. Kaur (2022) proved that ICT increases the effectiveness of inclusive education and helps to build an innovative learning process.

Scientific research I. Chaidi *et al.* (2021), V. Krasniqi *et al.* (2022), M.J. Lohmann *et al.* (2019) are devoted to the classification of types of ICT used in inclusive education and focused on improving its effectiveness. The results of these studies helped to develop a classification of ICTs used in Ukrainian PEIs and outline the specifics of each group.

When considering the use of ICT in PEIs of Ukraine in the educational process with children with special educational needs, it is necessary to note the research of H. Nazarenko and T. Andriushchenko (2019), which outlined the features of the implementation of digital tools and determined their advantages for inclusive education. The findings of Ukrainian scientists have contributed to a detailed comparative analysis of the use of ICT in the educational process with children with special educational needs.

A detailed analysis of the recommendations for the effective implementation of ICT in the educational process with children with special educational needs in PEIs was conducted by N. Kaur (2022), P. Lynch *et al.*,

Hantira (2022). R.J. Campado *et al.* (2023) focused on the development of an algorithm for creating a barrier-free educational environment, which is an urgent problem of modern pedagogical science. The above recommendations should be implemented in Ukrainian PEIs to increase the effectiveness of ICT use in the educational process with children with special educational needs in distance learning and to create a safe educational environment during martial law.

To describe in detail the ways in which ICTs can be used in the educational process of PEIs, it is first necessary to clarify the main scientific categories and concepts. The term ICT in special education refers to technologies for processing and transmitting information through various forms of presentation (visual image, sound, video, symbols), as they are the tools for communicating messages (Chaidi *et al.*, 2021). J.A. Gallud *et al.* (2023) provide an analogous definition, arguing that ICT is used to refer to the role of telecommunications equipment or computer software that helps users receive, transmit, or process information. Furthermore, ICTs are interpreted as an interactive multichannel tool for cognitive activity (Nazarenko & Andriushchenko, 2019).

According to other studies (Chairunnisa & Rismita, 2022), ICT is a set of educational and methodological materials, technical learning tools and software used in the educational process to improve the effectiveness of teachers in PEIs and provide students with quality education. To summarise the interpretation of the scientific and pedagogical category of ICT, it is special equipment or computer software that ensures effective interaction between participants in the educational process.

The introduction of ICTs into the educational process with children with special educational needs has its own specifics, which has become the subject of research by many scholars. Thus, some pedagogical studies by foreign researchers focus on the implementation of compensatory, communicative and didactic functions by means of ICT (Triviño-Amigo *et al.*, 2022). Ukrainian educators H. Nazarenko and T. Andriushchenko (2019) argue that ICTs perform educational and playful functions. For instance, the educational function concerns the acquisition of knowledge, skills, and abilities according to the set rules, while the gaming function is about the child's reward and the ability to use entertainment content for educational purposes.

ICT is a key factor when it comes to children with special needs due to a range of benefits (Chaidi *et al.*, 2021). The widespread use of ICTs in distance learning for children with special educational needs requires a revised understanding of this pedagogical phenomenon and awareness of its features by all participants in the educational process: students, educators, parents, and representatives of educational authorities – as a tool that turns conventional learning into an interesting process and the classroom into an open learning space where children can maximise their potential (Carrim & Bekker, 2022). It is worth agreeing with the conclusions of some scientific

studies that have shown that ICT is also an effective means of individualised learning (Iskrenovic-Momcilovic & Momcilovic, 2022). This objectively implies personally oriented assistance to children during learning and entertainment, creating favourable conditions for the free realisation of the creative potential of students, supporting the abilities and capabilities of students, as well as increasing motivation for learning activities (Mete Yesil *et al.*, 2022), which makes it possible to create a barrier-free educational environment for children with special needs, to unlock their intellectual and emotional potential.

According to M. Medina-García *et al.* (2021), ICTs serve as an effective tool for the social inclusion of children with special educational needs, and the introduction

of these technologies into the educational process means incorporating a “culture of accessibility” and helps students achieve the planned learning outcomes and thus positively affects learning, improving its quality.

The use of ICTs in the educational process of PEIs involves the introduction of three approaches: technocentric, holistic, and combined (Chaidi *et al.*, 2021). These approaches are also relevant for Ukrainian PEIs, which are focused on improving the efficiency of the educational process and creating a barrier-free educational environment for all students. It is especially advisable to implement approaches to the use of ICT in distance learning. Figure 1 shows approaches to using ICT in the educational process with children with special needs.

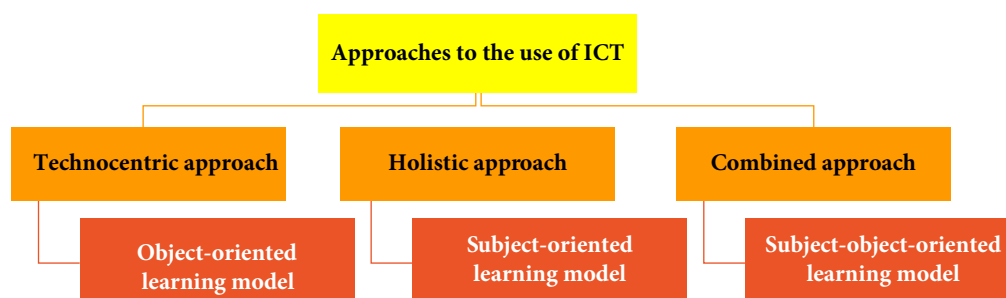


Figure 1. Approaches to the use of ICT in the educational process in PEIs

Source: developed by the author based on research by I. Chaidi *et al.* (2021)

A technocentric approach means focusing the learning process on technology and software that involves collecting, storing, and processing data. Based on them, the educator can adjust the learning activities of the students and help them overcome difficulties that have arisen during the training. The technocentric approach involves the introduction of an object-oriented model of teaching children with special educational needs. A holistic approach means creating an educational process that focuses on the integrity of a child's perception of information through a combination of different sources of perception (physical, aesthetic, emotional, audio-visual, etc.). The holistic approach contributes to the implementation of a subject-oriented model of education in PEIs. The combined approach involves combining the capabilities of technology with the specifics of children's perception of information. This approach creates a subject-object model of teaching children with special needs and demonstrates the greatest effectiveness in organising the educational process.

TYPES OF ICT AND ADVANTAGES OF THEIR USE IN THE EDUCATIONAL PROCESS WITH CHILDREN WITH SPECIAL EDUCATIONAL NEEDS

Various ICTs are used to tutor children with special educational needs. The scientific and pedagogical literature presents several approaches to their classification. Thus, according to the analysis of sources (Lohmann *et al.*, 2019; Krasniqi *et al.*, 2022), they are primary and secondary. The main ones are technologies that operate based on a personal

computer or tablet in the form of special settings according to the personal needs of the learners. One can zoom in on the picture, change its brightness, adjust the volume, etc. Assistive technologies are those that function as specialised devices for working with information (e.g., a built-in Braille notebook, voice assistant, alternative keyboard, etc.).

Other researchers divide ICTs into educational and auxiliary (Chaidi *et al.*, 2021; Kaur, 2022). Educational ICTs are integrated digital tools that provide knowledge transfer to children with special educational needs and create conditions for transforming the conventional learning process into a cognitive online environment where students can actively interact with each other and their educator. Educational ICTs are divided into software (games, multimedia programmes), analytical programmes to explain certain phenomena, information retrieval programmes (web games), and information exchange tools (portal, function screen).

Depending on their functionality, assistive ICTs are divided into cognitive devices (alternative browsers, a switch to control gaming activities, text-to-speech software, digital audio books); mobility aids (such as a wheelchair or functional chair); and alternative communication aids (communication boards, electronic communication boards, hearing aids); means of monitoring the educational environment (monitor for displaying student engagement, motion detectors, eye tracking technology, hand or foot switches for transmitting information, special devices for entering information, including a keyless and programmable keyboard, voice and mood recognition tools).

Furthermore, ICTs are divided into standard and assistive (Chairunnisa & Rismita, 2022). Standard ICT is used to format information and process it for further use in the learning process. And assistive ICT creates a favourable learning environment and enables children with special educational needs to improve their functional performance. Researchers separately highlight virtual ICTs, the use of which helps in conducting individual lessons for each child separately (Kaur, 2022).

Classification of ICT, determination of the type of technology to be used in the classroom with children with special educational needs, will help the teacher to develop the correct algorithm for its implementation in the educa-

tional process and maximise its pedagogical effect. Several pedagogical studies have analysed the benefits of using ICT in educational institutions in the educational process with children with special educational needs and in organising an effective environment for distance education. Thus, it was found that ICT helps to improve the learning outcomes of children with special needs and creates favourable conditions for their active involvement in the educational process. Table 1 presents a detailed analysis of the benefits of using ICT in the educational process with children with special educational needs, which can be divided into four groups, namely: pedagogical, psychological and pedagogical, social, and cognitive.

Table 1. Advantages of using ICT in the educational process with children with special educational needs

Group of advantages	Benefits of using ICT
Pedagogical	Possibility of providing quality education for children with special educational needs (Nazarenko & Andriushchenko, 2019; Chairunnisa & Rismita, 2022; Kaur, 2022; Campado <i>et al.</i> , 2023)
	Implementation of individualised learning (Chaidi <i>et al.</i> , 2021; Chairunnisa & Rismita, 2022; Kaur, 2022; Rajan & Balaji, 2022)
	Development of communication skills (Chao, 2019; Kaur, 2022; Rajan & Balaji, 2022; Rizk & Hillier, 2022)
	Creating a barrier-free educational environment (Ládiné Szabó & Lengyel Molnár, 2020; Chairunnisa & Rismita, 2022; Kaur, 2022; Singh & Hanspal, 2023)
	Qualitative monitoring of children's learning activities (Chairunnisa & Rismita, 2022; Rajan & Balaji, 2022)
	Building digital competence (Chao, 2019; Chairunnisa & Rismita, 2022; Kaur, 2022)
	Ability to combine individual and group forms of work (Nazarenko & Andriushchenko, 2019; Campado <i>et al.</i> , 2023; Singh & Hanspal, 2023)
	The ability to build individual educational trajectories (Nazarenko & Andriushchenko, 2019)
Psychological and pedagogical	Ensuring equal participation of children in learning activities (Anagnostopoulou <i>et al.</i> , 2021)
	Inclusion of an entertainment component (Nazarenko & Andriushchenko, 2019; Chaidi <i>et al.</i> , 2021)
	Providing psychological and social support during the educational process (Kaur, 2022; Campado <i>et al.</i> , 2023)
	Increasing children's motivation for learning (Kaur, 2022; Singh & Hanspal, 2023)
	Development of psychomotor functions (Chairunnisa, & Rismita, 2022)
Social	Development of imagination, attention, and self-control (Ládiné Szabó & Lengyel Molnár, 2020; Anagnostopoulou <i>et al.</i> , 2021; Rizk & Hillier, 2022)
	Creating positive interactions (Kramarenko <i>et al.</i> , 2020; Chaidi <i>et al.</i> , 2021; Rajan & Balaji, 2022; Singh & Hanspal, 2023)
	Social integration of pupils (Nazarenko & Andriushchenko, 2019; Chairunnisa & Rismita, 2022; Kaur, 2022; Jayousi <i>et al.</i> , 2023)
	Providing students with opportunities to demonstrate learning achievements (Kaur, 2022; Campado <i>et al.</i> , 2023)
	Ensuring personal development of students (Chairunnisa & Rismita, 2022; Rajan & Balaji, 2022; Jayousi <i>et al.</i> , 2023)
	Providing opportunities for creativity (Chairunnisa & Rismita, 2022)
Cognitive	Ensuring effective interaction with parents of students (Denysiuk <i>et al.</i> , 2021)
	Ensuring access to and understanding of information (Nazarenko & Andriushchenko, 2019; Chaidi <i>et al.</i> , 2021; Chairunnisa & Rismita, 2022; Kaur, 2022; Campado <i>et al.</i> , 2023)
	Monitoring and control of children's cognitive functions (Chaidi <i>et al.</i> , 2021)
	Developing skills to implement self-education in the future (Campado <i>et al.</i> , 2023)
	Increasing the cognitive activity of students (Liang <i>et al.</i> , 2023).

Source: development by the authors of this study based on the analysis of scientific literature (Anagnostopoulou *et al.*, 2021; Nazarenko & Andriushchenko, 2019; Chaidi *et al.*, 2021; Chairunnisa & Rismita, 2022; Kaur, 2022; Liang *et al.*, 2023; Campado *et al.*, 2023)

Thus, ICTs contribute to improving the efficiency of the educational process in PEIs, positively influencing its intensity and creating conditions for children with special needs to fully learn, specifically in the context of distance education. However, the use of ICT requires certain guidelines to be followed to achieve maximum results.

The analysis of scientific and pedagogical sources strongly suggests that the use of ICT in Ukrainian educational institutions in the educational process with children with special educational needs requires compliance with certain recommendations. Table 2 presents a list of such recommendations.

Table 2. Recommendations on the use of ICT in the educational process with children with special educational needs

Researchers	Recommendations
Carrim & Bekker, 2022; Peruzzo & Allan, 2022	Create access to technology and consider the sources of information for children; Ensure effective communication with the community and the management of PEIs to address current issues.
Narvekar, 2020; Peruzzo & Allan, 2022	Consider the specific features of the educational environment.
Peruzzo & Allan, 2022	Create favourable conditions for children to interact with each other, engage them in cooperation and horizontal learning.
Carrim & Bekker, 2022	Improve the regulatory framework for the use of ICTs in PEIs and bring it closer to international standards.
Lynch <i>et al.</i> , 2022	Increase the level of professional competence of educators in the use of ICT in the context of distance learning for children with special educational needs, organise in-service training for teachers of PEIs; Monitor the development of modern ICTs and the introduction of innovative approaches based on foreign practices; Consider children's preferences regarding the form of information they receive; Establish effective cooperation with parents or guardians of students, ensure that the environment understands the importance of using ICT and involving parents in the learning process (through chats or educational platforms).
Narvekar, 2020; Lynch <i>et al.</i> , 2022	Change activities during the learning process to increase children's motivation to complete tasks
Khalil & Hantira, 2022	Increasing the motivation of teachers to effectively use various types of ICT in distance learning; Developing standards of ethical behaviour for participants in the educational process in the online environment.
Das, 2020; Khalil & Hantira, 2022	Carefully plan the educational process, considering the characteristics of children and their preferences; Provide regular technical support for the equipment.
Nazarenko & Andriushchenko, 2019	To create creative groups of teachers in the main areas of ICT use to improve the quality of teaching, upbringing, and development of preschoolers.
Chaidi <i>et al.</i> , 2021	Outline the role of the companion caregiver, animator, and helper; Define educational goals for students before performing tasks using ICT, inform them about the rules for using the equipment; If children have difficulties, change the algorithm or use a different technology; To promote the development of learning autonomy skills in children with special educational needs; Use high-quality didactic material.
Anagnostopoulou <i>et al.</i> , 2021	Develop a flexible class schedule; Use game methods; Pay attention to the emotions of the pupils; Use ICT to monitor children's learning activities.
Ahmad <i>et al.</i> , 2019	To develop an algorithm for using games in the educational process of PEIs.
Chao, 2019; Sujarwanto <i>et al.</i> , 2019; Atanga <i>et al.</i> , 2020; Garzon Artacho <i>et al.</i> , 2020; Katsarou, 2020; Boychuk & Kazachiner, 2021	To promote the development of inclusive competence among educators of PEIs.
O'Kane <i>et al.</i> , 2019	Organise the study of foreign practices in the use of ICT in the educational process with children with special needs; Conducting theoretical and empirical research on the issue.

Source: developed by the authors of this study based on the analysis of scientific literature (Chao, 2019; Nazarenko & Andriushchenko, 2019; Sujarwanto *et al.*, 2020; Das, 2020; Garzon Artacho *et al.*, 2020; Katsarou, 2020; Narvekar, 2020; Boychuk & Kazachiner, 2021; Chaidi *et al.*, 2021; Carrim & Bekker, 2022; Khalil & Hantira, 2022; Lynch *et al.*, 2022; Peruzzo & Allan, 2022)

Thus, the use of ICT in the educational process with children with special educational needs is an important condition for creating a barrier-free educational environment in PEIs. The introduction of foreign pedagogical practices in the use of ICTs will increase the effectiveness of the educational process, namely: it will help to avoid negative stereotypes and attitudes about inclusive education, build individual educational trajectories for pupils of PEIs and achieve the maximum level of development of skills of children with special needs.

CONCLUSIONS

The study noted that at the current stage of modernisation of preschool education in Ukraine, the priority areas are to improve its quality and meet the cognitive needs of all pupils according to their individual characteristics. In this context, the organisation of the educational process with children with special educational needs requires the introduction of special approaches to their education and upbringing, including the use of ICTs aimed at improving the efficiency of the educational process, creating a barrier-free educational environment and ensuring safe learning conditions during martial law.

According to the purpose and objectives of the study, the paper examined the foreign practices of using ICT in the educational process with children with special educational needs and analysed possible areas for its implementation in Ukraine. Furthermore, the discourse of the scientific problem was explained, and based on the findings, recommendations were made on the use of ICT in Ukrainian PEIs in the educational process with children with special educational needs.

The study examined in detail the approaches to the interpretation of the term ICT and found that in special pedagogy it is, first of all, technologies for processing and transmitting information through various forms of presentation, since they are the tools for transmitting messages, as well as a set of educational and methodological materials, technical teaching aids and software used in the educational process to increase the effectiveness of

the work of teachers of PEIs and provide students with quality education. The study found that in the context of distance learning in PEIs, ICTs can be an effective means of uniting all participants in the educational process and ensuring its continuity. The introduction of ICT in the educational process with children with special educational needs focuses on the implementation of compensatory, communicative, and didactic functions. At the same time, it was found that ICTs perform educational and gaming functions, where the educational function concerns the acquisition of knowledge, skills, and abilities according to the given rules, while the gaming function involves the use of entertainment content for educational purposes.

It was proved that the use of ICT in the educational process of PEIs involves the introduction of three approaches: technocentric, holistic, and combined. It was experimentally found that the combined approach creates a subject-object model of teaching children with special needs and demonstrates the greatest effectiveness in organising the educational process. The study presented several approaches to the classification of ICTs. Thus, there is a distinction between: main and auxiliary; standard and auxiliary; and virtual ICT. Furthermore, based on the analysis of scientific literature, the advantages of using ICT in the educational process with children with special educational needs were considered in detail, which strongly suggests the need to use ICT in PEIs in the context of distance learning.

Prospects for further research in the field of inclusive education include outlining the achievements and problems of teaching children with special educational needs using ICT, as well as a detailed development and justification of a general model of organising an educational environment for students with special needs using ICT.

ACKNOWLEDGEMENTS

None.

CONFLICT OF INTEREST

None.

REFERENCES

- [1] Ahmad, I.S., Parhizkar, B., & Pillay, S.O. (2019). [Engaging children with ADHD using mobile based games](#). *International Journal of Communication and Networking System*, 6(1), 11-15.
- [2] Anagnostopoulou, P., Lorentzou, G., & Drigas, A.S. (2021). ICTs in inclusive education for learning disabilities. *Research, Society and Development*, 10(9), article number e43410918230. [doi: 10.33448/rsd-v10i9.18230](#).
- [3] Atanga, C., Jones, B.A., Krueger, L.E., & Lu, S. (2020). Teachers of students with learning disabilities: Assistive technology knowledge, perceptions, interests, and barriers. *Journal of Special Education Technology*, 35(4), 236-248. [doi: 10.1177/0162643419864858](#).
- [4] Boychuk, Yu.D., & Kazachiner, O.S. (2021). Developing teachers' inclusive competence by means of ICT in postgraduate education. *Revista Romaneasca Pentru Educatie Multidimensionala*, 13(1), 373-397. [doi: 10.18662/rrem/13.1/377](#).
- [5] Campado, R.J., Toquero, C.M.D., & Ulanday, D.M. (2023). Integration of assistive technology in teaching learners with special educational needs and disabilities in the Philippines. *International Journal of Professional Development, Learners and Learning*, 5(1), article number ep2308. [doi: 10.30935/ijpdl/13062](#).
- [6] Carrim, N., & Bekker, T. (2022). Placing inclusive education in conversation with digital education. *South African Computer Journal*, 34(2), 18-34. [doi: 10.18489/sacj.v34i2.1084](#).
- [7] Chaidi, I., Drigas, A., & Karagiannidis, C. (2021). ICT in special education. *Technium Social Sciences Journal*, 23, 187-198. [doi: 10.47577/tssj.v23i1.4277](#).

- [8] Chairunnisa, C., & Rismita, R. (2022). Educational challenges for children with special needs in inclusive primary schools. *Jurnal Ilmiah Sekolah Dasar*, 6(1), 48-56. doi: [10.23887/jisd.v6i1.39722](https://doi.org/10.23887/jisd.v6i1.39722).
- [9] Chao, C.T.M. (2019). Information and communication technologies in inclusive education: Selected practices in Asia. *Journal of Education and Learning*, 8(6), 159-168. doi: [10.5539/jel.v8n6p159](https://doi.org/10.5539/jel.v8n6p159).
- [10] Das, G. (2020). [Challenges of using ICT for inclusive education in North East India](https://doi.org/10.23887/jisd.v6i1.39722). *The Online Journal of Distance Education and e-Learning*, 8(3), 133-141.
- [11] Denysiuk, O., Lohvytska, L., Martovytska, N., & Petrochko, Zh. (2021). The ethical aspects of ICT usage in intercommunication with parents of preschoolers with special educational needs. *E-learning*, 13, 210-224. doi: [10.34916/el.2021.13.18](https://doi.org/10.34916/el.2021.13.18).
- [12] Gallud, J.A., Carreño, M., Tesoriero, R., Sandoval, A., Lozano, M.D., Durán, I., Penichet V.M.R., & Cosio, R. (2023). Technology-enhanced and game based learning for children with special needs: A systematic mapping study. *Universal Access in Information Society*, 22, 227-240. doi: [10.1007/s10209-021-00824-0](https://doi.org/10.1007/s10209-021-00824-0).
- [13] Garzon Artacho, E., Martínez, T.S., Ortega Martin, J.L., Marin Marin, J.A., & Gomez Garcia, G. (2020). Teacher training in lifelong learning – the importance of digital competence in the encouragement of teaching innovation. *Sustainability*, 12(7), article number 2852. doi: [10.3390/su12072852](https://doi.org/10.3390/su12072852).
- [14] Iskrenovic-Momcilovic, O., & Momcilovic, A. (2022). ICT in teaching for children with intellectual disabilities. *Journal of Intellectual Disabilities*, 26(2), 365-374. doi: [10.1177/1744629521995376](https://doi.org/10.1177/1744629521995376).
- [15] Jayousi, S., Martinelli, A., Lucattini, P., & Mucchi, L. (2023). ICT framework for supporting applied behavior analysis in the social inclusion of children with neurodevelopmental disorders. *Sensors*, 23(15), article number 6914. doi: [10.3390/s23156914](https://doi.org/10.3390/s23156914).
- [16] Katsarou, D. (2020). Views and perceptions of teachers in special education in Greece regarding ICT. *European Journal of Special Education Research*, 5(3), 40-59. doi: [10.5281/zenodo.3633838](https://doi.org/10.5281/zenodo.3633838).
- [17] Kaur, H. (2022). Information and communication technology (ICT) for children with special needs (CWSN). *Electronic Journal of Education, Social Economics and Technology*, 3(2), 70-74. doi: [10.33122/ejeset.v3i2.96](https://doi.org/10.33122/ejeset.v3i2.96).
- [18] Khalil, A., & Hantira, N. (2022). Special education teachers' knowledge and attitudes toward the use of assistive technology for disabled children management: Impact of an educational intervention. *Creative Education*, 13(3), 821-845. doi: [10.4236/ce.2022.133054](https://doi.org/10.4236/ce.2022.133054).
- [19] Kramarenko, T., Bondar, K., & Shestopalova, O. (2020). The ICT usage in teaching mathematics to students with special educational needs. *Journal of Physics: Conference Series*, 1840, article number 012009. doi: [10.1088/1742-6596/1840/1/012009](https://doi.org/10.1088/1742-6596/1840/1/012009).
- [20] Krasniqi, V., Zdravkova, K., & Dalipi, F. (2022). Impact of assistive technologies to inclusive education and independent life of down syndrome persons: A systematic literature review and research agenda. *Sustainability*, 14(8), article number 4630. doi: [10.3390/su14084630](https://doi.org/10.3390/su14084630).
- [21] Ládiné Szabó, T.J., & Lengyelne Molnár, T. (2020). ICT-supported methodological opportunities among children in need of special attention. *Pro&Contra*, 4(2), 51-87. doi: [10.33033/pc.2020.2.51](https://doi.org/10.33033/pc.2020.2.51).
- [22] Liang, M., Lim, C.P., Park, J., & Mendoza, N.B. (2023). A review of ICT-enabled learning for schoolgirls in Asia and its impacts on education equity. *Educational Technology Research and Development*, 71, 267-293. doi: [10.1007/s11423-022-10178-w](https://doi.org/10.1007/s11423-022-10178-w).
- [23] Liza, L.O., Rusandi, M.A., & Junaidi, J. (2023). Digital intervention in inclusive education: Is it necessary? *Journal of Public Health*, 45(2), e370-e371. doi: [10.1093/pubmed/fdac143](https://doi.org/10.1093/pubmed/fdac143).
- [24] Lohmann, M.J., Hovey, K.A., Gauvreau, A.N., & Higgins, J.P. (2019). Using assistive technology tools to support learning in the inclusive preschool classroom. *The Journal of Special Education Apprenticeship*, 8(2). Retrieved from <https://files.eric.ed.gov/fulltext/EJ1231819.pdf>.
- [25] Lynch, P., Singal, N., & Francis, G.A. (2022). Educational technology for learners with disabilities in primary school settings in low- and middle-income countries: A systematic literature review. *Educational Review*. Retrieved from <https://eprints.whiterose.ac.uk/185675>.
- [26] Medina-García, M., Higuera-Rodríguez, L., García-Vita, M.D.M., & Doña-Toledo, L. (2021). ICT, disability, and motivation: Validation of a measurement scale and consequence model for inclusive digital knowledge. *International Journal of Environmental Research and Public Health*, 18(13), article number 6770. doi: [10.3390/ijerph18136770](https://doi.org/10.3390/ijerph18136770).
- [27] Mete Yesil, A., Sencan, B., Omercioglu, E., & Ozmert, E.N. (2022). The impact of the COVID-19 pandemic on children with special needs: A descriptive study. *Clinical Pediatrics*, 61(2), 141-149. doi: [10.1177/00099228211050223](https://doi.org/10.1177/00099228211050223).
- [28] Ministry of Education and Science of Ukraine. (2022). *2400 educational institutions faced bombardments and shelling, 269 institutions destroyed completely, - says Serhii Shkarlet*. Retrieved from <https://mon.gov.ua/ua/news/2400-zakladiv-osviti-postrazhdali-vid-bombarduvan-ta-obstriliv-269-z-nih-zrujnovani-povnistyu-sergij-shkarlet>.
- [29] Molina Roldan, S., Marauri, J., Aubert, A., & Flecha, R. (2021). How inclusive interactive learning environments benefit students without special needs. *Frontiers in Psychology*, 12, article number 661427. doi: [10.3389/fpsyg.2021.661427](https://doi.org/10.3389/fpsyg.2021.661427).

- [30] Mustafa, N.A., Mohamed Shah, N., Hashim, N.W., & Desa, M. (2022). [An overview of STEM education and Industry 4.0 for early childhood education in Malaysia](#). *Journal of Positive School Psychology*, 6(4), 53-62.
- [31] Narvekar, H.N. (2020). Educational concerns of children with disabilities during COVID-19 pandemic. *Indian Journal of Psychiatry*, 62(5), 603-604. doi: [10.4103/psychiatry.IndianJPsychiatry.585.20](#).
- [32] Nazarenko, H.A., & Andriushchenko, T.K. (2019). Information and communication technologies as instrument of enhancement of quality of preschool education. *Information Technologies and Educational Means*, 69(1), 21-36. doi: [10.33407/itlt.v69i1.2688](#).
- [33] O’Kane, P., Smith, A., & Lerman, M.P. (2021). Building transparency and trustworthiness in inductive research through computer-aided qualitative data analysis software. *Organizational Research Methods*, 24(1), 104-139. doi: [10.1177/1094428119865016](#).
- [34] Peruzzo, F., & Allan, J. (2022). Rethinking inclusive (digital) education: Lessons from the pandemic to reconceptualise inclusion through convivial technologies. *Learning, Media and Technology*. Retrieved from http://pure-oai.bham.ac.uk/ws/files/179147647/Rethinking_inclusive_digital_education_lessons_from_the_pandemic_to_reconceptualise_inclusion_through_convivial_technologies.pdf.
- [35] Rajan, V., & Balaji, K. (2022). ICT-Supported Learning and Its Benefits for the Inclusion of People with Special Needs. *Technoarete Transactions on Application of Information and Communication Technology (ICT) in Education (TTAICTE)*, 1(2). Retrieved from <https://technoaretepublication.org/information-communication-technology/article/ict-supported-learning.pdf>.
- [36] Resolution of the Cabinet of Ministers of Ukraine No. 530 “On Approval of the Procedure for Organizing Inclusive Education in Preschool Education Institutions”. (2019, April). Retrieved from <https://zakon.rada.gov.ua/laws/show/530-2019-%D0%BF#Text>.
- [37] Rizk, J., & Hillier, C. (2022). Digital technology and increasing engagement among students with disabilities: Interaction rituals and digital capital. *Computers and Education Open*, 3, article number 100099. doi: [10.1016/j.caeo.2022.100099](#).
- [38] Singh, H., & Hanspal, G. (2023). [Understanding the advantages and disadvantages of ICT in the inclusive education](#). *Iconic Research and Engineering Journals*, 6(8), 230-235.
- [39] Sujarwanto, Rianto, Y., & Rofiah, K. (2019). [Teacher’s attitude towards using ICT for children with disabilities in Inclusive classrooms in Indonesia](#). *Global Conferences Series: Sciences and Technology (GCSST)*, 2, 404-409.
- [40] Triviño-Amigo, N., Mendoza-Muñoz, D.M., Mayordomo-Pinilla, N., Barrios-Fernández, S., Contreras-Barraza, N., Gil-Marín, M., Castillo, D., Galán-Arroyo, C., & Rojo-Ramos, J. (2022). Inclusive education in primary and secondary school: Perception of teacher training. *International Journal of Environmental Research and Public Health*, 19(23), article number 15451. doi: [10.3390/ijerph192315451](#).

Оксана Миколаївна Кас'яненко

Кандидат педагогічних наук, доцент

Мукачівський державний університет

89600, вул. Ужгородська, 26, м. Мукачево, Україна

<https://orcid.org/0000-0001-6730-447X>

Напрями використання ІКТ у закладах освіти України в навчальному процесі з дітьми з особливими освітніми потребами: огляд літератури

Анотація. Організація освітнього процесу з дітьми з особливими освітніми потребами потребує реалізації особливих підходів до їх навчання, тому актуально розглянути відповідний зарубіжний досвід, пояснити особливості дистанційного навчання з використанням засобів інформаційно-комунікаційних технологій та розробити рекомендацій щодо застосування таких технологій в навчальному процесі з дітьми з особливими потребами. Метою статті є вивчення особливостей використання інформаційно-комунікаційних технологій в закладі дошкільної освіти під час навчання дітей з особливими освітніми потребами та розкриття напрямів їх імплементації. Методологічну основу дослідження склав інтердисциплінарний підхід щодо аналізу наукової проблеми в поєднанні з теоретичними та емпіричними методами, серед яких пріоритетними стали індукція, дедукція, аналіз, синтез, узагальнення, вивчення наукової літератури та педагогічне спостереження. З'ясовано, що інформаційно-комунікаційні технології – це сукупністю методів, навчальних і методичних матеріалів, технічних засобів навчання та програмного забезпечення. З'ясовано, що вони підвищують ефективність освітнього процесу та сприяють об'єднанню його учасників. Доведено, що використання інформаційно-комунікаційних технологій передбачає застосування трьох підходів: техноцентричного, холістичного та комбінованого. З'ясовано, що комбінований підхід створює суб'єкт-об'єктну модель навчання дітей з особливими потребами і демонструє найбільшу ефективність. У статті представлено кілька класифікацій інформаційно-комунікаційних технологій. Представлено класифікацію інформаційно-комунікаційних технологій. Виявлено, що вони поділяються на основні та допоміжні; стандартні та допоміжні; віртуальні. Детально розглянуто переваги використання інформаційно-комунікаційних технологій у навчальному процесі з дітьми з особливими освітніми потребами, що підтверджує необхідність їх використання в закладах дошкільної освіти в умовах дистанційного навчання. Практичне значення дослідження полягає в тому, що його результати, зокрема рекомендації щодо запровадження спеціальних підходів до навчання та виховання дошкільників з особливими освітніми потребами, можна використати в організації ефективного навчального процесу для таких дітей

Ключові слова: дитина дошкільного віку; заклад дошкільної освіти; цифровізація; безбар'єрне освітнє середовище; дистанційне навчання; особливі освітні потреби

UDC 378:791.6.792
DOI: 10.52534/msu-pp3.2023.27

Yurii Harmash*

Associate Professor
Kyiv National University of Culture and Arts
01601, 36 Yevhen Konovalets Str., Kyiv, Ukraine
<https://orcid.org/0000-0003-0646-575X>

Eduard Timlin

Professor
Kyiv National University of Culture and Arts
01601, 36 Yevhen Konovalets Str., Kyiv, Ukraine
<https://orcid.org/0000-0002-4254-778X>

Anatolii Khymych

Lecturer
Kyiv National University of Culture and Arts
01601, 36 Yevhen Konovalets Str., Kyiv, Ukraine
<https://orcid.org/0000-0002-7576-0093>

Mastery of modern technologies in higher education institutions as a basis for the work of a future media specialist

Article's History:

Received: 07.05.23
Revised: 04.08.23
Accepted: 30.08.23

Suggested Citation:

Harmash, Yu., Timlin, E., & Khymych, A. (2023). Mastery of modern technologies in higher education institutions as a basis for the work of a future media specialist. *Scientific Bulletin of Mukachevo State University. Series "Pedagogy and Psychology"*, 9(3), 27-35. doi: 10.52534/msu-pp3.2023.27.

Abstract. In the era of modernisation, mastering modern technologies and innovative working methods is an important aspect of any business. Modern technologies are no less relevant in the work of future directors, because, having mastered them, a specialist can adapt to modern professional trends and improve the quality of their projects. The purpose of this study was to cover the aspects of the use of modern technologies in the training of future directors and to prove that mastering them is necessary for successful professional activity. To fulfil this purpose, the methods of analysis and synthesis, comparison, generalisation, induction and deduction were used. The study revealed the need to use innovative technologies in the work of modern specialists, namely in the activities of future directors. The paper described the specific features of preparing future directors for professional activity in higher education institutions. The study analysed aspects of directing activity in the era of modernisation. The authors described modern technologies and the possibilities of their application in filmmaking. The importance of modern technologies for future specialists in terms of distance education and blended education was covered. The authors described the prospects for the development of film and theatre art if future directors use modern technologies. Positive and negative aspects of the use of modern technologies in filmmaking were covered. Recommendations for improving the process of mastering modern technologies in higher education institutions were provided. It was concluded that future directors need to master modern technologies to develop Ukrainian theatre and cinema. The results of this study can be used by the management of art higher education institutions to develop curricula, by teachers to improve the educational process, and by students when studying and preparing for professional activities

Keywords: innovative methods; educational process; film education; multimedia; theatre education

*Corresponding author



INTRODUCTION

One of the requirements for a modern specialist is fluency in innovative technologies and the ability to apply them effectively in their professional activities. The use of modern technology is equally important for future filmmakers, especially due to the COVID-19 pandemic and martial law in Ukraine. These processes determine the need for future directors to use modern technologies, both in the educational process and in their professional activities, because due to the transition of most industries, including the arts, to the online space, the development of Ukrainian theatre and cinema should not stop, which indicates the importance of researching this issue.

V. Marchenko and Yu. Pomazkov (2020), who covered the aspects of training modern directors in higher education institutions, note that contemporary cinema and theatre require qualified professionals who, apart from creative talent and creative thinking, are motivated to master modern technologies and can actively use them in their activities. However, recent studies of this problem suggest that higher education institutions do not have sufficient technical and methodological facilities to enable students to master modern technologies. Thus, H. Lahunova (2021), who investigated the use of modern technologies in the performing arts, concluded that there are currently no professional textbooks, teaching materials and research on the use of innovations in artistic activity, which limits the creative potential of students. O. Savchuk (2022), in her study of the training of a modern opera director, noted that Ukrainian directors have a high-quality technical base for fulfilling their creative potential, but it is not always represented in higher education institutions, and in their professional activities it is used mainly for creating television shows, not for preparing theatre performances or films.

O. Moskvych and T. Prygoda (2020), exploring transformations in contemporary theatre culture and event technology, noted that the era of online space should contribute to the development of theatre art and its actualisation, which can be implemented using modern technologies in stage activities. V.V. Bugaiova (2022), studying the transformation of the modern director's activity, noted that a qualified specialist can successfully combine modern technologies with traditional theatrical forms and thus influence the emotions of the audience and improve the quality of their work. O. Venher and M. Kotskyi (2023), who described the technical means of implementing a director's idea, believe that a modern director can generally implement all their creative ideas only by mastering modern methods and technologies, because only by using them in their work can a specialist influence a modern audience and fully convey the main idea of a performance and/or film.

The analysed scientific sources indicate that modern technologies and the era of online space can and should contribute to the development of Ukrainian art. However, these scientific studies do not reveal the possibility of using modern technologies in the professional activities of future directors, nor do they provide specific recommendations

for future directors to master modern technologies. Therefore, the purpose of this study is to outline the value of using modern technologies in the professional activities of future directors. The objectives of this study were to reveal the possibilities of using modern technologies in the professional activity of future directors, to outline the prospects of Ukrainian theatre and cinema in case directors use innovative methods in their activities, and to provide recommendations for improving the process of mastering modern technologies by future directors in the educational process.

MATERIALS AND METHODS

To fulfil this purpose, theoretical research methods were used, including methods of analysis and synthesis, comparison, generalisation, induction and deduction.

The methods of analysis and synthesis helped to comprehensively analyse the problem of the need for future directors to master modern technologies, to combine the opinions of scientists on the research problem into a single whole. Specifically, the method of analysis describes the role of innovative technologies in the activities of modern specialists, namely in the activities of directors. The method of analysis also helped to reveal the role of modern technologies in the era of modernisation, to form an idea of the current state of directing education in Ukraine and the relevance of the technical and methodological base of artistic higher education institutions, to cover the specific features of preparing future directors for professional activity and to substantiate the importance of modern technologies for the development of Ukrainian theatre and cinema. The synthesis covered the specific features of the use of modern technologies in filmmaking. This method also helped to cover aspects of the use of modern technologies directly in the educational process and how their use by teachers will affect students' mastery of innovative methods of work and their ability to use them in their future activities.

The comparison method helped to compare modern technologies, determine which ones will be most effective in the theatre and film industry and contribute to their further development. The comparison method also correlates the existing forms and methods of work used in the film and theatre industries with the methods and forms of work modified by the use of modern technologies. The method of generalisation helped to cover the general aspects of the use of modern technologies in the stage sphere, and allowed taking a closer look at the changes that may occur in the film and theatre industries if future directors use modern technologies in their work. This method also helped to identify the role of modern technologies and the possibilities of mastering them in distance education and blended education. This method revealed positive and negative aspects of the use of modern technologies in the educational process and in the professional activities of future directors. Using the methods of induction and deduction, conclusions were drawn about the feasibility of using modern technologies in the training of future directors and how each method can be used in directing.

The induction method reveals the main innovative methods and technologies that can be used in the preparation of theatre performances or films and draws conclusions about the development of theatre and film industry if future directors use modern technologies in their professional activities. The method of deduction helped to draw general conclusions about the specific features of mastering modern technologies and innovative methods of work by future directors and was also used to provide recommendations for improving the process of mastering modern technologies within a higher education institution.

RESULTS

Specialists should be trained in line with current trends. Future professionals, when preparing for their professional activities, should consider the needs of modern society and adapt their activities and products to these needs. When preparing a future director, it is important to consider that contemporary theatre and cinema require specialists who have not only acquired theoretical and practical knowledge, but also understand all the subtleties of their profession and are capable of flexibility – quick adaptation to changes in society and art, including the use of innovations in their own activities (Dats, 2021). Future directors should consider that the modern audience, apart from the profound meaning of the play and/or film, the skilful combination of cultural elements with contemporary themes and issues, wants to see a beautiful picture, which may include high-quality visual effects, audio and video effects. Therefore, to provide the audience with a product that is adapted to its needs and can attract its attention, a modern director must be proficient in modern technologies and pay special attention to those innovations that are inherent in modern society and well received by the modern consumer (Schlomann *et al.*, 2020). However, to be able to create such a product, a specialist must have a high-quality training, which can be obtained in a higher education institution.

High-quality training of future directors in higher education institutions can be achieved using modern technologies in the educational process. Their use develops certain technological skills in students that they can use in their activities and increases the importance of innovative technologies in their perception of their activities. There is a study that has shown that a teacher's skill, their ability to apply modern technologies in the educational process, determines the quality of students' skills in using these technologies (Englund *et al.*, 2017). However, apart from advanced skills in the use of modern technologies, there are basic digital skills that a modern specialist must master, namely basic computer skills and standard computer programmes (e.g., Microsoft Office suite), skills to find and manipulate information, digital communication skills (namely, using software such as Webex, Microsoft Teams, Zoom, or digital communication via social networks and messengers, e.g., Instagram, TikTok, Twitter, Viber, Telegram) (Aris *et al.*, 2022).

In the era of active development of online interaction and active inclusion of modern technologies in all work processes, these digital skills are important for the future director. Thanks to Microsoft Office suite, the future director can make presentations (PowerPoint) that will be useful for demonstrating (including remotely) projects, key ideas, tasks, and the process of preparing a performance or filming; develop a schedule for rehearsals, filming or meetings with the team (Excel or Word), which will facilitate the process of planning their time, both for the director, actors and other team members; make notes of their ideas (OneNote); store photos, videos and audio materials necessary for the preparation of projects (OneDrive); finalise existing scripts, write reviews and edit text files (Word), communicate with the team and actors about the workflow online via email or video conferencing (Outlook, Microsoft Teams), even when in another city or country. As for digital communication, the video conferencing format is convenient and should be mastered by a future director to communicate effectively with their team. Video conferencing enables not only online communication, but also the sharing of photos, video and audio materials, presentations and documents, which makes the communication process as close to real as possible and allows the director and the team to effectively solve urgent problems, brainstorm and considerably improve the quality of filmmaking activities and projects (She & Cetinic, 2022). Social media are also effective in the era of modern technology, as a director can use them to develop their personal directing brand, promote their performances or films, and receive feedback from the audience, which is important in directing and will help to correct or replace certain elements that are not well received by the audience.

Modern theatres and cinemas are also introducing innovative technologies into their activities, including intelligent lighting, visual effects, various projectors for different theatrical purposes, clip-on microphones, modern moving scenery, controlled scenes, various soundtracks, computer graphics, video correction in films (Bassey, 2022). Virtual reality can be actively used to improve the process of preparing for a performance or preparing for filming. Thanks to the use of virtual reality in preparing a performance, one can observe how the stage will look with certain scenery, or actors in certain costumes, how the audience will see certain actions of the actors on stage and how certain elements will look. However, there are studies that indicate that there are prospects for using virtual reality in the performance process, where it can be a way to “transfer” the audience to the stage to create a sense of closeness to the actors, to watch the performance in the first person, which will affect the audience's emotions and impressions (Srinivasan & Schott, 2020).

Modern technologies can help to influence the emotions of the audience, model the position of actors on stage or on set, project the possible consequences of their actions, which will greatly facilitate the process of preparing a performance or filming, improve the quality of

performances and films, but to use innovations in the work process, a director must master modern technologies at the stage of their studies at a higher education institution. No less interesting are the technologies that can be used in the training of future directors (Zerbi & Mikolajewska, 2021). Apart from standard computer programs, standard software, and established methodological and technical tools, innovative technologies such as artificial intelligence can be used in training specialists. In the higher education system, the use of artificial intelligence has the following advantages: personalised learning (the ability to create a curriculum tailored to the needs of each individual student and their creative pursuits), increasing student efficiency (by quickly finding the information necessary for the learning process), improving the student assessment system, high potential for the development of this technology and, as a result, the continuous development of knowledge and skills of future professionals who will use it (Abgaryan *et al.*, 2023). Having mastered the use of artificial intelligence to improve the efficiency of their educational process, future specialists will be able to

use it in their professional activities, namely to generate new ideas, understand current trends, search for information that will help improve their skills, which can be realised due to the high potential of artificial intelligence development.

Today, there are terms that describe theatre that uses all of the described modern technologies in its activities and is easily adaptable to the online format, including: cyber performance, digital performance, online theatre, virtual theatre, and internet performance (Aliyev, 2021). Modern technologies really provide directors, theatre and film industry with a wide scope for creativity, realisation of ideas, and influence on the audience, which in turn will contribute to the development of Ukrainian art and its popularisation in society. Having analysed scientific sources and specific features of the use of modern technologies by directors in the theatre and film industry, the conclusions were drawn on the prospects for the development of the stage sphere if future directors use modern technologies in their professional activities and the positive changes that await stage processes (Fig. 1).

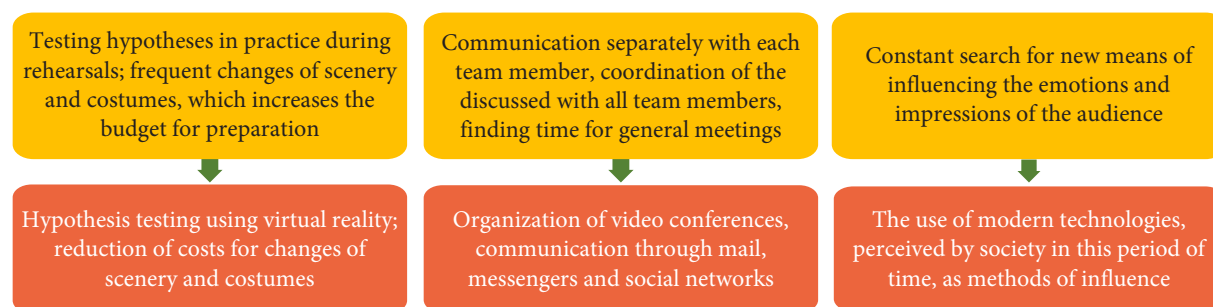


Figure 1. Prospects for the development of Ukrainian theatre and cinema if directors use modern technologies in their work

Source: compiled by the authors of this study

Therefore, the use of modern technologies can underlie the professional activity of future directors and will contribute to the development and modernisation of Ukrainian theatre. The use of modern technologies will help directors save time (interact with the team online without waiting for the moment when the whole team has the opportunity to gather and discuss important issues, fast communication through messengers and social networks); save the budget allocated for a particular project (virtual reality or computer graphics will help to understand at the stage of preparation how the scene will look like with certain scenery, how the actors will look in certain costumes and what their actions will lead to, which will allow not to spend money on replacing scenery, costumes and other elements if they do not match the director's intention); influence the audience's emotions (through modern special effects, moving sets, controlled stages and platforms, and in the future – through virtual reality during the performance, which will help the audience to fully experience the atmosphere and the director's intention); automate activities (by using remote methods of stage and light control, as well as by using software that will send messages at a specified time to

specified contacts or automatically generate answers to frequently asked questions in messengers or social networks); promote creative work (by actively managing their social media, developing their personal brand on social media, and demonstrating elements of their work that may be of interest to potential audience) (Cantero *et al.*, 2020).

However, future filmmakers are only able to effectively apply modern technologies in their professional work after mastering them within the framework of the educational process under the guidance of qualified teachers. Given the above, recommendations were made to improve the mastery of modern technologies by future directors in the educational process, including:

1. Providing students with tasks that require the use of modern technologies. These can be both individual tasks and group projects. In the first case, apart from technical skills, students will develop the ability to find solutions unassisted, while in the second case, students will additionally develop communication and teamwork skills, which is useful for the future professional activity of a director. Individual assignments may include creating presentations in which the student will demonstrate the key elements of

their project, explain its value and contribution to Ukrainian theatre and cinema, creating videos for social media that will help attract Ukrainian youth to contemporary theatre and cinema, completing theoretical tasks that will involve a quick search for information on the Internet. Group projects can include tasks to prepare for a performance or filming online, e.g., using Microsoft Office suite. It is advisable to conduct a mini quest for future directors. For instance, divide the students into two groups: the first group should leave hints for the other group in the form of notes in OneNote, video, photos and audio materials in OneDrive, text files in Word; the second group, based on these hints, should use PowerPoint to demonstrate what idea of the performance the first group proposed to implement, if possible, implement this idea using computer graphics or virtual reality. It is advisable to discuss the project in Microsoft Teams to develop digital communication skills (Martin *et al.*, 2020). This quest will help future specialists develop their skills in working with modern technologies, as well as logical thinking, creativity, and teamwork skills.

2. Establishment of special technical laboratories within the educational institution. Such laboratories can have different content, including virtual reality technologies, technical support for creating various light or sound effects on stage, or film effects, such as imitation of fog, rain, fire, etc. The ability to use these technologies and basic knowledge of their functionality is important for the professional activity of a future director, as it will help to understand the possibilities of their use in the preparation of performances and filming and will help to develop Ukrainian theatre and cinema in line with current trends and the needs of the modern audience.

3. Introduction of a special course on modern technologies into the educational programme. Such a special course should include lectures thoroughly explaining the theory of working with modern technologies, and practical classes where future directors will be able to apply the knowledge gained and develop basic skills in computer technology and technical support that can be used in the preparation of performances, filming and in the course of professional activity. Within the framework of the special course, there are meetings with specialists who actively use modern technologies in their work (including foreign specialists), excursions to theatres and film sets, where future directors can observe the use of modern technologies directly in their professional activities.

DISCUSSION

As for modern technologies, it was found that their use in professional activities of any industry is necessary. It is no less important for a contemporary director, because creating performances and films that will captivate the audience and evoke the necessary emotions is possible only by adapting to the requirements of modern society, in which innovative methods play a significant role. B. Wang (2022), studying the use of modern computer technologies in teaching fine arts, agrees with the assumption and notes

that the modern education system is undergoing certain changes due to modernisation processes, and the existing methods and forms of teaching future art professionals need to be changed, and the essence of training future professionals should be updated following the requirements of modern society. The researcher also notes that modern computer technologies have a significant impact on art education and the role of the teacher in its process. This study notes that the possession and use of innovative methods of work and technologies in the educational process by a modern teacher determines the degree of students' mastery of these methods and technologies. Teachers should not only be proficient in modern technologies, but also support the development of future specialists, their innovative ideas, and diversify tasks, which echoes the recommendation to provide students with interesting tasks that require the use of modern technologies. However, according to B. Wang (2022), some teachers do not know the specific features of modern art education and, moreover, cannot combine its development with the development of modern technologies, teachers cannot adapt to them and slow down the development of modern art education and, as a result, the development of students in this direction.

At the same time, modern technologies really give the director a great field for self-development in their professional activity and contribute to the development of their professional competence. Chinese researchers Y. Jing and J. Wu (2022), who investigated the role of modern information technologies in the development of higher education and concluded that mastering modern technologies increases the effectiveness of future professionals in their professional activities, develops their leadership skills, and considerably increases the rating of an educational institution and determines the direction in which this educational institution will develop in the coming years. Given that modernisation and innovative technologies are developing every day and will continue to do so, mastering modern skills by graduates of higher education institutions will improve the system of work of educational institutions in general.

In terms of the work of educational structures and individual higher education institutions, it is assumed that higher education institutions currently lack the necessary methodological and technical support, and those that have the necessary basis for students to master modern technologies are not using them for their intended purpose. K. Yadav (2019), who investigated disruptive innovative technologies in higher education, notes that the technical base of an educational institution is important for the educational process, but only teachers and students can assess the effectiveness of certain modern technologies in the educational process and in professional activities, and it is their opinion that the university and state authorities should rely on when introducing modern technologies into the educational process or educational programmes. Therefore, teachers and students should have access to the full range of methodological and technical tools in the educational process, and in using them, future specialists and teachers

should decide which of these tools are most effective in their activities and require more detailed study and active practical application.

The active study of modern technologies and their use in directing has a number of advantages, including saving time and money, automating many directing processes, influencing the audience's emotions, which will help convey the main idea of a play or film, and advertising oneself and one's work on social media. Scientists R.R. Chowdhury and A.K. Singha (2023) studied the use of innovative technologies in higher education and also agreed with the many advantages of using modern technologies and noted that the advantages of modern technologies in the educational process can also be a wide range of their application, the development of skills of future specialists, as well as the transfer of their experience in using modern technologies in their own professional activities, which will affect the development of art. According to N.B. Mavengere *et al.* (2021), given the COVID-19 pandemic, modern technologies have had a favourable impact on the educational process, increased student motivation to learn and facilitated the acquisition of knowledge and skills. Given the dynamic modern world, new challenges and fast-moving trends, online education and modern technologies will stay one of the most effective methods of training future professionals and improving their professional performance for a long time to come.

However, according to scholars, the use of modern technologies by directors in their professional activities has some drawbacks. S. Criollo-C *et al.* (2023), who studied the integration of modern technologies into the higher education system, believe that technologies should not be used without an appropriate methodology for their application, because the thoughtless use of modern technologies can cause distraction, overwork and stress, and scientists have concerns about cybersecurity when using social networks and software in the educational process and professional activities of specialists. It is believed that in the age of social media and software, it is very easy to gain access to confidential information about a person and their professional activities. E. Aliyev (2021) investigated the use of multimedia technologies in the theatrical sphere and concluded that a negative aspect of the introduction of modern technologies into theatrical activities can be a low level of readiness for this: to apply modern technologies in the preparation of performances or films, the stage and premises theatre or film set must be well equipped with all the necessary technical means, the entire team must be well prepared to implement the most daring directorial ideas and have a sufficient level of qualification for their implementation, which is not always possible.

P. Bassey (2022), exploring the experience of different countries in the use of modern technologies in theatre, agrees with the assumption made in this study that universities are not equipped with modern technologies that can be used in training and that students can master. Therefore, there are still discussions concerning the feasibility of using modern technologies both in the educational process

and in the performing arts, because apart from the issue of the placement of this technical equipment, the possibility of using them in theatres and film sets, the availability of qualified personnel who can use this technical equipment qualitatively, the question of the cost of using modern technologies and the safety of their use is still open.

Thus, scientists agree that the use of modern technologies in the educational process and in the professional activities of future specialists is mandatory in modern society. It is noted that future directors should master the methods and forms of work that are inherent in modern society and will be well received by it. Mastery of modern technologies is useful not only for the professional activity of a specialist, but also for their personality, specifically, mastery of innovative methods develops logical thinking, creativity, leadership qualities, which positively affects the development of a director as a specialist. The mastery of modern technologies by graduates of higher education institutions affects the rating of the institution and shapes its future development. However, the review of scientific opinions confirmed that most educational institutions currently lack sufficient technical support to master innovative methods of work, and modern technologies are poorly perceived by teachers, as some teachers are unable to adapt to them and hinder the development of students' creative potential. Furthermore, the negative aspects of using modern technologies in professional activities include the possibility of their thoughtless use, which can lead to fatigue and distraction; lack of equipment in educational institutions, as well as on stages and film sets for the active use of modern technologies; high cost of their use and the open issue of cybersecurity when working with social networks and software. Positive aspects of using modern technologies in the professional activities of directors include a large scope for creativity and self-development, the ability to save time, money and automate certain work processes, the ability to more effectively convey the idea of their project to the audience, to influence their emotions and impressions, which will affect the development of Ukrainian theatre and cinema and popularise it among young people and future generations.

CONCLUSIONS

This paper revealed the need to apply modern technologies in the professional activities of future directors. It was found that modern specialists should use in their activities those forms and methods of work that are inherent in modern society, including modern technologies. To improve the effectiveness of their professional activities, directors can use computer technology (e.g., the Microsoft Office suite, which includes such programs as PowerPoint, Excel, Word, OneNote, OneDrive, Outlook, Microsoft Teams), the Internet, including social networks (Instagram, TikTok, X) and messengers (Telegram, Viber). These technologies will help directors save time, communicate with their team online, promote themselves and their work, and receive feedback from the audience. During performances and filming, such modern technologies as computer graphics,

video correction, virtual reality, intelligent lighting, visual effects, projectors, clip microphones, moving scenery, and controlled scenes can be used. In the educational process, apart from these technologies, future specialists can master such modern technology as artificial intelligence, which will not only improve the educational process but also influence the further development of the director as a specialist.

It was found that it is during the educational process that future specialists acquire the skills and abilities that they will subsequently use in their own activities. Therefore, higher education institutions should provide students with opportunities to use modern technologies and acquire the skills to apply them. However, researchers have found that most educational institutions do not currently have the necessary technical support, and some teachers are not ready to introduce modern technologies into the educational process. Proceeding from this, recommendations were made to improve the mastery of modern technologies in the educational process as follows: the inclusion in the educational process of tasks involving the use of modern technologies, individual and group assignments, mini-quests, the creation of special technical laboratories in educational institutions, and the conclusion of a special course in which students will master theoretical knowledge and practical skills in the use of modern technologies.

The negative aspects of using modern technologies in professional activities include the excessive cost of their

use, deterioration of concentration and emotional state in case of their thoughtless use, and discussions on cybersecurity when working with social networks and software. Despite some negative aspects, modern technologies in the professional activities of directors can help save time and budget, influence the emotions of the audience, and convey the main idea of the director, automate directing activities and promote the specialist and their work. Furthermore, it was found that modern technologies provide a great scope for creativity and self-development of the director, as well as popularise Ukrainian theatre and cinema among young people, which affects the perception of art by future generations. Therefore, modern technologies, admittedly, underlie the basis of professional activity for a contemporary director who aims to develop not only himself as a specialist, but also Ukrainian art in general.

Prospects for further research are to cover the specific features of training teachers to develop future directors' skills in modern technologies and to experimentally confirm the effectiveness of modern technologies in the educational process and professional activities of future directors.

None.

ACKNOWLEDGEMENTS

CONFLICT OF INTEREST

None.

REFERENCES

- [1] Abgaryan, H., Asatryan, S., & Matevosyan, A. (2023). Revolutionary changes in higher education with artificial intelligence. *Main Issues of Pedagogy and Psychology*, 10(1), 76-86. [doi: 10.24234/miopap.v10i1.454](https://doi.org/10.24234/miopap.v10i1.454).
- [2] Aliyev, E. (2021). The application problem of internet and multimedia technologies in modern theatre in Azerbaijan. *Journal of Arts*, 4(2), 59-65. [doi: 10.31566/arts.4.2.01](https://doi.org/10.31566/arts.4.2.01).
- [3] Aris, S.R.S., Teoh, S.H., Deni, S.M., Nadzri, F.A., & Dalim, S.F. (2022). Digital skills framework in higher education. *Proceedings*, 82(1), article number 61. [doi: 10.3390/proceedings2022082061](https://doi.org/10.3390/proceedings2022082061).
- [4] Bassey, P. (2022). [Scenography and new technologies in Nigerian theatre practice: An overview of different deployment experiences](https://doi.org/10.3390/su15076055). *Calabar Journal of Liberal Studies-Cajolis*, 20(2), 203-215.
- [5] Bugaiova, V. (2022). Ukrainian resistance to Russian aggression in the context of "directing of action". *Culture of Ukraine*, 78, 87-93. [doi: 10.31516/2410-5325.078.11](https://doi.org/10.31516/2410-5325.078.11).
- [6] Cantero, C.L., Oviedo, G.B., Balboa, W.F., & Fera, M.V. (2020). Emerging technologies in the teaching-learning process: Towards the critical thinking development. *Interuniversity Electronic Journal of Teacher Formation*, 23(3), 83-98. [doi: 10.6018/reifop.435611](https://doi.org/10.6018/reifop.435611).
- [7] Chowdhury, R.R., & Singha, A.K. (2023). Importance of integration modern technology in higher education. *Knowledgeable Research: A Multidisciplinary Journal*, 1(09), 71-82. [doi: 10.57067/kr.v1i09.78](https://doi.org/10.57067/kr.v1i09.78).
- [8] Criollo-C, S., Govea, J., Játiva, W., Pierrottet, J., Guerrero-Arias, A., Jaramillo-Alcázar, Á., & Luján-Mora, S. (2023). Towards the integration of emerging technologies as support for the teaching and learning model in higher education. *Sustainability*, 15(7), article number 6055. [doi: 10.3390/su15076055](https://doi.org/10.3390/su15076055).
- [9] Dats, I. (2021). Format of musical theatre director's training in socio-cultural realities of independent Ukraine. *Journal of the National Music Academy of Ukraine named after P.I. Tchaikovsky*, 3-4, 181-202. [doi: 10.31318/2414-052X.3-4\(52-53\).2021.251821](https://doi.org/10.31318/2414-052X.3-4(52-53).2021.251821).
- [10] Englund, C., Olofsson, A.D., & Price, L. (2017). Teaching with technology in higher education: Understanding conceptual change and development in practice. *Higher Education Research & Development*, 36(1), 73-87. [doi: 10.1080/07294360.2016.1171300](https://doi.org/10.1080/07294360.2016.1171300).
- [11] Jing, Y., & Wu, J. (2022). Research on the role of modern information technology in promoting the leadership of informationization of higher education. *MATEC Web of Conferences*, 365, article number 01053. [doi: 10.1051/mateconf/202236501053](https://doi.org/10.1051/mateconf/202236501053).

- [12] Lahunova, H.V. (2021). Modern technologies in performing art as a component of professional formation cultures of theater artists. *Kyiv Scientific and Pedagogical Bulletin*, 22, 53-58.
- [13] Marchenko, V.M., & Pomazkov, Yu.V. (2020). Modern look on teaching of film direction as disciplines. *Academic Bulletin of Kyiv National Karpenko-Karyi University of Theatre, Cinema and Television*, 26, 105-108. [doi: 10.34026/1997-4264.26.2020.202611](https://doi.org/10.34026/1997-4264.26.2020.202611).
- [14] Martin, F., Dennen, V.P., & Bonk, C.J. (2020). A synthesis of systematic review research on emerging learning environments and technologies. *Educational Technology Research and Development*, 68, 1613-1633. [doi: 10.1007/s11423-020-09812-2](https://doi.org/10.1007/s11423-020-09812-2).
- [15] Mavengere, N.B., Pondiwa, S., Matiyenga, T.C., Manzira, F., & Mutanga, A. (2021). The “new normal” in higher education: Innovative teaching and learning technologies and practices during a crisis. *Journal of Advances in Computing and Engineering*, 1(2), 37-46. [doi: 10.21622/ace.2021.01.2.037](https://doi.org/10.21622/ace.2021.01.2.037).
- [16] Moskvych, O., & Prygoda, T. (2020). Media transformations and event technologies in modern theatrical culture: Ukrainian context. *Ukrainian Culture: The Past, Modern Ways of Development*, 35, 115-122. [doi: 10.35619/ucpmk.v35i0.371](https://doi.org/10.35619/ucpmk.v35i0.371).
- [17] Savchuk, O. (2022). Opera and modern technologies. Challenges of time before the profession of opera director. *Humanities Science Current Issues*, 49 (Vol. 2), 28-33. [doi: 10.24919/2308-4863/49-2-5](https://doi.org/10.24919/2308-4863/49-2-5).
- [18] Schlomann, A., Seifert, A., Zank, S., Woopen, C., & Rietz, C. (2020). Use of information and communication technology (ICT) devices among the oldest-old: Loneliness, anomie, and autonomy. *Innovation in Aging*, 4(2), article number igz050. [doi: 10.1093/geroni/igz050](https://doi.org/10.1093/geroni/igz050).
- [19] She, J., & Cetinic, E. (2022). Understanding and creating art with AI: Review and outlook. *ACM Transactions on Multimedia Computing, Communications, and Applications*, 18(2), article number 66. [doi: 10.1145/3475799](https://doi.org/10.1145/3475799).
- [20] Srinivasan, S., & Schott, G. (2020). Virtual teleportation of a theatre audience onto the stage: VR as an assistive technology. In K. Arai, S. Kapoor, & R. Bhatia (Eds.), *Advances in information and communication: Proceedings of the 2020 future of information and communication conference (FICC)* (Vol. 1; pp. 477-487). Cham: Springer. [doi: 10.1007/978-3-030-39445-5_36](https://doi.org/10.1007/978-3-030-39445-5_36).
- [21] Venher, O., & Kotskyi, M. (2023). Artistic and technical means of realizing the director's idea in the modern film industry. *Bulletin of Kyiv National University of Culture and Arts. Series in Audiovisual Arts and Production*, 6(1), 83-91. [doi: 10.31866/2617-2674.6.1.2023.279247](https://doi.org/10.31866/2617-2674.6.1.2023.279247).
- [22] Wang, B. (2022). The application of modern computer-aided technology in fine art education. *Security And Communication Networks*, 2022, article number 8038178. [doi: 10.1155/2022/8038178](https://doi.org/10.1155/2022/8038178).
- [23] Yadav, K. (2019). [Disruptive innovative technologies in higher education](https://doi.org/10.1155/2019/2019123). *International Journal of Advanced Education and Research*, 4(1), 49-54.
- [24] Zerbi, A., & Mikolajewska, S. (2021). Digital technologies for the virtual reconstruction and projection of lost decorations: The case of the proscenium of the Farnese Theatre in Parma. *Disegnarecon*, 14(27), 5.1-5.11. [doi: 10.20365/disegnarecon.27.2021.5](https://doi.org/10.20365/disegnarecon.27.2021.5).

Юрій Тимофійович Гармаш

Доцент

Київський національний університет культури і мистецтв

01601, вул. Євгена Коновальця, 36, м. Київ, Україна

<https://orcid.org/0000-0003-0646-575X>**Едуард Леонідович Тімлін**

Професор

Київський національний університет культури і мистецтв

01601, вул. Євгена Коновальця, 36, м. Київ, Україна

<https://orcid.org/0000-0002-4254-778X>**Анатолій Олександрович Химич**

Викладач

Київський національний університет культури і мистецтв

01601, вул. Євгена Коновальця, 36, м. Київ, Україна

<https://orcid.org/0000-0002-7576-0093>**Оволодіння сучасними технологіями в закладах вищої освіти
як основа діяльності майбутнього фахівця медіасфери**

Анотація. В епоху модернізації оволодіння сучасними технологіями, інноваційними методами роботи – важливий аспект будь-якої діяльності. Не менш актуальні сучасні технології і в діяльності майбутніх режисерів, адже, володіючи ними, фахівець здатен підлаштовуватися під сучасні професійні тенденції та підвищувати якість своїх проєктів. Мета цієї роботи – розкрити аспекти використання сучасних технологій у навчанні майбутніх режисерів та довести, що оволодіння ними необхідне для успішної професійної діяльності. Для досягнення мети використано методи аналізу та синтезу, порівняння, узагальнення, індукції та дедукції. У статті розкрито необхідність використовувати інноваційні технології в роботі сучасних фахівців, зокрема в діяльності майбутніх режисерів. Описано особливості підготовки майбутніх режисерів до професійної діяльності у вищих навчальних закладах. Проаналізовано аспекти режисерської діяльності в епоху модернізації. Описано сучасні технології та можливості їх застосування в режисерській діяльності. Розкрито важливість сучасних технологій для майбутніх спеціалістів в аспекті дистанційної освіти та змішаної освіти. Описано перспективи розвитку кіномистецтва та театрального мистецтва, у разі якщо майбутні режисери використовуватимуть сучасні технології. Розкрито позитивні та негативні аспекти використання сучасних технологій у режисерській діяльності. Надано рекомендації щодо вдосконалення процесу оволодіння сучасними технологіями у вищих навчальних закладах. Зроблено висновок про необхідність для майбутніх режисерів оволодіти сучасними технологіями задля розвитку українського театру та кіно. Результати проведеної роботи може використати керівництво мистецьких вищих навчальних закладів для розробки навчальних планів, педагоги задля покращення освітнього процесу, а також студенти в процесі навчання та підготовки до професійної діяльності

Ключові слова: інноваційні методи; освітній процес; кіноосвіта; мультимедійні засоби; театральна освіта

UDC 004.7:378

DOI: 10.52534/msu-pp3.2023.36

Nataliya Derevyanko*

PhD in Pedagogy, Associate Professor

Khortytsia National Educational and Rehabilitation Academy

69017, 59 Naukove Mistechko Str., Zaporizhzhia, Ukraine

<https://orcid.org/0000-0003-1172-3282>

Olena Zalevska

PhD in Arts, Associate Professor

Khortytsia National Educational and Rehabilitation Academy

69017, 59 Naukove Mistechko Str., Zaporizhzhia, Ukraine

<https://orcid.org/0000-0002-5728-1195>

Comparative analysis of neural networks Midjourney, Stable Diffusion, and DALL-E and ways of their implementation in the educational process of students of design specialities

Article's History:

Received: 22.04.23

Revised: 26.07.23

Accepted: 30.08.23

Suggested Citation:

Derevyanko, N., & Zalevska, O. (2023). Comparative analysis of neural networks Midjourney, Stable Diffusion, and DALL-E and ways of their implementation in the educational process of students of design specialities. *Scientific Bulletin of Mukachevo State University. Series "Pedagogy and Psychology"*, 9(3), 36-44. doi: 10.52534/msu-pp3.2023.36.

Abstract. The implementation of neural networks in the creative design process enables original and innovative results and increased efficiency in creating a visual art product, and therefore it is important to explore how various interactive tools can contribute to the development of the creative abilities of future design professionals. The purpose of this study was to investigate the capabilities and characteristics of Midjourney, Stable Diffusion, and DALL-E neural networks in the context of their use in teaching design students. The study used the analytical method, comparison, generalisation, and systematisation methods. The study found that the neural networks Midjourney, Stable Diffusion and DALL-E have prospects for implementation in the educational process for students of design specialities. The authors of this paper revealed the significant potential of artificial intelligence, namely neural networks, in design, namely for creating fonts, typographic elements, posters, banners, graphics, and illustrations. By comparing the capabilities of the Midjourney, Stable Diffusion, and DALL-E neural networks, it was found that each of them has a specific purpose and architecture that is effective for performing various design tasks. The findings of the study demonstrate the potential of neural networks to improve the education of students of design-related specialities. It was substantiated that the introduction of suitable methods and techniques can help expand the creative spectrum, ensure stability and control in generating images, and lead to a more effective implementation of ideas in visual realities. The results of this study can be useful as tools for developing educational approaches in the field of design and introducing modern technologies into the educational process

Keywords: visual image; idea generation; software; modern education; artificial intelligence

*Corresponding author



INTRODUCTION

Amid the rapid development of technology, the role of neural networks and artificial intelligence in various spheres of life is growing significantly. This trend is not lost on design, an industry where aesthetics, functionality, and innovation combine to create unique visual solutions. Today, information technology is being actively implemented in the educational process around the world, and artificial intelligence is one of the key areas. Therefore, the study of the use of neural networks, namely Stable Diffusion, Midjourney, and DALL-E in the training of designers will help to confirm the potential of these technologies in the creative educational process. This study aims to determine how the use of neural networks can improve the effectiveness of teaching design students. It is important to establish whether these technologies can contribute to better learning and the development of creative skills.

Neural networks, namely Stable Diffusion, Midjourney, and DALL-E 2, have been investigated by A. Borji (2022), who draws attention to their ability to generate face images in real-world conditions. The scientist emphasises that each of these networks has unique characteristics and approaches to image creation. Stable Diffusion, according to the scientist, is noted for its high stability and visual accuracy in generating faces, while Midjourney stands out for its ability to create images that match text descriptions, adding style and design elements to images. The scientist also notes that the DALL-E 2 is distinguished by its creativity in generating new images by combining different elements and concepts, which expands the possibilities for visual expression. The researcher is convinced that each of these networks has its advantages and limitations, but they can be effectively used for various tasks in the field of visual design and creativity. Therefore, it is worth exploring the potential of neural networks in education.

Ukrainian researchers M. Marienko and V. Kovalenko (2023) focus on the role of artificial intelligence in modern education. Scientists note that artificial intelligence can influence the learning process, providing students and teachers with new opportunities to improve productivity and learning efficiency. The researchers are convinced that artificial intelligence can be used in educational technologies such as individualised learning, data analysis, and student performance forecasting. Furthermore, M. Marienko and V. Kovalenko (2023) emphasise the importance of integrating artificial intelligence and open science into the educational process, which contributes to the development of students, improves the quality of education and ensures the availability of scientific information for all stakeholders. It is necessary to investigate these innovative approaches in greater detail, specifically the introduction of neural networks in the educational process to help students prepare for modern reality and develop their scientific potential.

O. Romaniuk and V. Naidiuk (2021) note the use of neural networks as an effective tool for image processing and analysis. Scientists emphasise that neural networks allow achieving exceptional results in pattern recognition and

detecting patterns in images. The authors suggest that this technology has a wide range of applications. It is worthwhile to study this topic more thoroughly, including the analysis of specific neural networks, namely Midjourney, Stable Diffusion and DALL-E, as tools in modern art education.

Using text and image queries, N. Dehouche and K. Dehouche (2023) explore the potential of the Stable Diffusion neural network for visual arts learning. Scientists argue that the use of this network can positively affect the learning process, as a response to text queries that will initiate the creation of visual works. The researchers emphasise the possibility of using this tool to create experimental works, allowing students to unleash their creativity and use innovative approaches in visual art. It is worth comparing the capabilities of Stable Diffusion with other similar neural networks to highlight the differences from other methods of using artificial intelligence in visual arts education, including image generation tools.

I. Lugova and D. Panchenko (2023) address the importance and prospects of using artificial intelligence in the field of architectural drawing. They emphasise that artificial intelligence can significantly expand the capabilities of architects and designers in the creative process, facilitating the rapid creation and optimisation of drawings. The authors consider the possibilities of using machine learning algorithms to generate innovative ideas, analyse and improve architectural forms and compositions. It is necessary to study in greater detail the prospects for introducing neural networks into education, which can lead to new opportunities and expand the horizons of creativity.

The purpose of this study was to investigate the use of Midjourney, Stable Diffusion, and DALL-E neural networks in teaching design students.

MATERIALS AND METHODS

The study uses the methods of analysis, comparison, generalisation, and systematisation to conduct a thorough research of ways to implement neural networks such as Midjourney, Stable Diffusion, and DALL-E in the educational process of students of design specialities. The application of the analytical method in the study contributed to the investigation of the sphere of influence of Midjourney, Stable Diffusion, and DALL-E neural networks in the modern digital world. The analytical method of allowed investigating the functional characteristics, strengths, and weaknesses, as well as potential areas of implementation in the educational process. This method helped to analyse in greater detail the various properties of each network, their ability to generate images, and use them to improve students' practical design skills. Additionally, this method helped to find the optimal strategies for implementing neural networks in education, considering the specifics of design specialities and the needs of students.

The comparison method made it possible to compare the capabilities of Midjourney, DALL-E, and Stable Diffusion neural networks, their functionality and efficiency in

the context of design education. The comparison helped to show the areas where each network was most effective, including visual content creation and image generation and processing. The advantages and disadvantages of each network were shown through a comparison method, which helped to understand how they can be used in the educational process for future designers. The comparison also revealed which aspects of each network could be integrated into the curriculum to enrich students' knowledge and skills. This method helped find potential applications for each network, such as creating interactive visuals, generating design concepts, or implementing creative projects.

Using the method of generalisation, the researchers managed to achieve an in-depth understanding of the essence of each of the neural networks under study. This method made it possible to identify general trends and define the main principles of their operation. The method of generalisation helped to find the key characteristics of each neural network, their role in the educational process and their potential for improving design education. This method has helped to identify general strategies for implementing neural networks in education, namely, to identify the benefits of using them to improve students' creativity, increase productivity, and improve the quality of design products. The method of generalisation helped to build a holistic picture of the impact of neural networks on the educational process and find ways to optimally use their potential to improve the learning of students of design-related specialities.

The use of the systematisation method facilitated the organisation of information in the scientific study about each of the neural networks under study. This method made it possible to divide the key aspects and characteristics of each network into logical groups, creating a comparison system. The systematisation helped to find the common and distinctive features of networks, their advantages and disadvantages in terms of their use in education. Through systematic analysis and comparison, it was possible to set priorities for the implementation of networks, develop strategies for their use, and identify key aspects that should be considered when teaching design students. This method helped to structure the knowledge gained to improve the effectiveness of training and ensure optimal use of the potential of neural networks in the training of future designers.

RESULTS

The modern world is undergoing changes due to the rapid development of digital technologies, among which artificial intelligence occupies a prominent place. This innovative tool has long since gone beyond science fiction, becoming an integral part of everyday and professional life, particularly for artists. The integration of artificial intelligence into design opens unlimited potential for creative experimentation, innovative approaches and revolutionary solutions.

Artists and designers appreciate the considerable progress in the use of artificial intelligence. These neural networks allow concepts and ideas to be instantly transformed into visual representations, providing a ready-made raster

product for use or further work (Cetinic & She, 2022). Artificial intelligence and neural networks are opening new opportunities for artists and designers, simplifying, and accelerating the creative process. Thanks to them, concepts and ideas can be transformed into visual embodiments in a truly brief time, making the creative process more dynamic and efficient. This is especially useful for creating visual materials such as graphic design or artwork. Furthermore, the use of neural networks in the creative process allows artists to experiment with stylistic solutions and visual effects. They can create unique images with their own style using a variety of neural network settings and parameters, which is especially important for training future design professionals. Artificial intelligence is used in many areas of design, which requires young design professionals to be proficient in these technologies (Fig. 1).

It is worth considering the most common neural networks used to create a design product. The Midjourney neural network, which appeared in 2022, is of relatively high quality, which makes it attractive to designers and artists who find inspiration in fantasy or science fiction. This neural network creates exceptional works of art by visualising images with a surreal touch. The features of Midjourney reflect the rapid progress of new technical capabilities of artificial intelligence and its widespread use in creative practices. This trend supports the need for scientific research into this phenomenon. According to Wired, back in 2018, the Benjamin neural network created its first sci-fi short film without direct human involvement. The neural network has scripting skills, processing hundreds of real-life scenarios. In 2020, artificial intelligence was used in the creative work of the artist Roman Lipskyi (Kolisnyk *et al.*, 2023).

Midjourney, as a neural network, demonstrates the ability to perform deep analysis and generate visual images. This software was used to visualise Ambergris as an organism in the novel *Perfume* by P. Süskind. Midjourney depicted Ambergris, which in the novel symbolises Constantinople, a city with a long history and cultural significance (Alışık, 2022). Using Midjourney, Ambergris was portrayed as an essential element of historical and cultural heritage, which adds to the versatility and depth of understanding of the text. Midjourney can play a leading role in visualising literary images and concepts, helping to recreate the visual context and emotional depth of a text. It can be a valuable tool for analysing and interpreting texts that contain a visual component and allows opening new ways of understanding literary works through the lens of images and emotions (Byrne, 2023).

In the education of future designers, Midjourney technology can help develop creative and design skills, as well as increase efficiency in the creative process. With Midjourney, students can quickly turn their ideas into visuals, which helps them better understand what their concepts look like in practice. Furthermore, Midjourney can stimulate students' creativity. It helps experiment with assorted styles, shapes, and colours, opening new avenues for creative expression. Midjourney also helps to thoroughly

analyse designs, their details and relationships, which contributes to a better understanding of design principles and its impact on perception. Students can work with realistic designs and scenarios, which helps prepare them for practical tasks in a real design environment. In general,

the use of Midjourney in design education can help students develop creativity, analytical and practical skills, improve their preparation for the challenges of the modern design industry and contribute to their personal and professional growth.

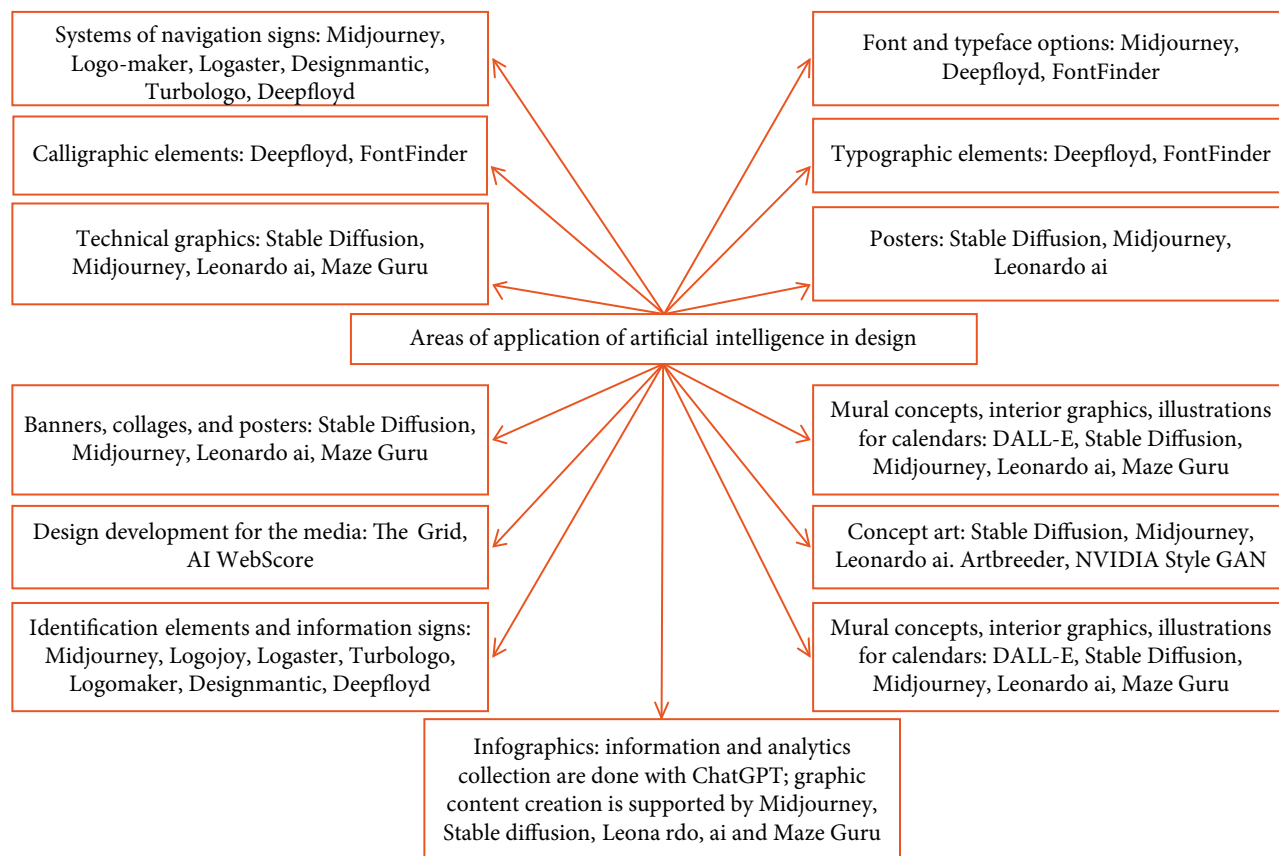


Figure 1. Areas of application of artificial intelligence in design

Source: compiled by the authors of this study based on T. Bozhko and V. Arefiev (2023)

The Stable Diffusion neural network has a considerable potential in design. Stable Diffusion technology is a method of generating visual images based on a text description. Its main principle is to transform textual information into concrete graphical images using neural networks and computer visual modelling (Lee *et al.*, 2023). This technology helps to create visual content corresponding to a given text, which can be useful in educational processes for students of design specialities.

The network can be useful for solving various tasks in product development, from conceptual design to optimisation and improvement of finished designs. Stable Diffusion helps automate the process of generating and refining designs, making it more efficient and convenient for designers. This approach can increase the creative potential of industrial designers, as well as speed up the development of new products and improve the quality of the results (Liu & Hu, 2023). Technology can help students unleash their creativity and take their design skills to a new level. Applications include concept and prototyping,

design improvement, creative process support, workflow optimisation, and active learning.

Thanks to the Stable Diffusion neural network, students can experiment with distinctive designs and ideas effortlessly. It provides the ability to automatically enrich parts, visualise alternatives and introduce innovative elements. It helps to improve the creative process and find the best design solutions. Workflow optimisation is also an important advantage of using a neural network. It reduces the time required to develop concepts and designs, which is important in today's fast-paced work environment. Furthermore, students can learn how to work with artificial intelligence and use its capabilities in design. Using modern tools, students can communicate with artificial intelligence and achieve design goals. Students are given more opportunities to create innovative and creative designs thanks to Stable Diffusion, which also improves their workflow and prepares them for today's design challenges.

Another popular neural network, DALL-E, is a new innovative technology in the field of deep learning and image

generation. DALL-E is an evolutionary development in the field of artificial intelligence that can change the approach to creating visual content. This network can generate unique images by combining concepts and structures that would not have been physically possible before (Marcus *et al.*, 2022). One of the key features of DALL-E is the ability to generate creative images based on text descriptions. This enables designers, artists, and creative professionals to use the network to translate even the most unconventional ideas into visual form. However, along with the immense potential of DALL-E, ethical questions arise regarding the use of the generated images, as the network can affect authorship, authenticity, and the concept of intellectual property.

The prospects for using DALL-E in education, particularly in design programmes, are significant, as it can serve as a tool for learning concepts, styles, and visual expressions through the creation of visual artefacts, giving students the

opportunity not only to observe but also to experiment with various design options on their own. DALL-E is not only a technology, but also a powerful tool for creativity, education, and the expression of ideas in visual form, but it also requires attention to the ethical and legal aspects of its use.

The use of artificial intelligence in education has considerable potential to transform conventional teaching methods and improve the efficiency of the learning process. There are significant opportunities to use intelligent systems to individualise learning, adapt to students' needs and ensure deeper learning. This approach can help create a more encouraging and dynamic learning environment where students can develop the skills needed for future challenges in design and other fields (Wang *et al.*, 2019). Based on the results of the study, a comparative analysis of the Midjourney, Stable Diffusion, and DALL-E neural networks was performed (Table 1).

Table 1. Comparison of the potential of using Midjourney, Stable Diffusion, and DALL-E neural networks in training

Aspects	Midjourney	Stable Diffusion	DALL-E
Purpose	Generate images from text descriptions and reproduce picture styles.	Generating content for design and visualising ideas.	Creative generation of new images based on text descriptions.
Architecture and features	Uses transformative architecture for text and image processing.	Based on variational autoencoders to generate stable images.	Uses deep convolutional and transformational networks for images and text.
Training and datasets	Uses datasets with text descriptions and corresponding images.	Uses datasets of design and visual concepts.	Trained on a large dataset of text descriptions and images.
Use in education	Can be used to illustrate concepts and stylised visual expression.	Helps students create visualisations for projects and work with images.	Helps to expand the creative potential of students through the generation of innovative ideas.
Main differences	Focuses on generating images from a text description regarding styles.	Focuses on generating stable images for design.	Specialises in creative combination of images and text.

Source: compiled by the authors of this study

The mentioned neural networks, namely Midjourney, Stable Diffusion, and DALL-E, have excellent characteristics that can be used in the educational process of students of design specialities. Each of these networks has a specific purpose and architecture that allows them to perform different tasks in the field of image generation and visualisation. Midjourney focuses on creating images based on textual descriptions with a style guide, which can be useful for illustrating concepts and thematic expressions. Stable Diffusion is aimed at generating stable images for design, which can help work with visual concepts and projects. DALL-E offers a creative approach that allows generating new ideas and combining text and images in unusual ways. The use of these networks can have a positive impact on students' learning, expanding their capabilities in the field of design and visual creativity.

Using Stable Diffusion, Midjourney, and DALL-E, an image with the same description was generated – a highly detailed surrealistic photograph of a ninja fighting a fire-spitting dragon (Fig. 2).

The images show that despite the same query for each neural network, the result is different. Looking at each picture, one can see a clear reflection of the individuality and uniqueness of each network. Colour schemes vary from one image to the next, creating a palette that expresses different moods and emotions. Not only the shades differ, but also the position of the objects in each painting. This helps to understand that each neural network makes a unique contribution to the creation of visual content, giving it a distinctive character and expressiveness. This demonstrates the powerful potential of neural networks in the creative process, opening endless possibilities for the implementation of creative ideas and individual approaches to design.

Innovation-oriented neural networks, including Midjourney, Stable Diffusion, and DALL-E, stand out as powerful tools that can change design education. Their potential opportunities intersect with the needs of students and professionals in this field, helping them to acquire new skills and expand their creative horizons. Capable of

generating exceptional and surreal images, Midjourney can be an excellent tool for visualising ideas and concepts, giving students the opportunity to explore a variety of styles and expressions. Stable Diffusion, based on stable diffusion,

can help students analyse and understand the complexity of processes and structures in design. Specialising in generating images from textual descriptions, DALL-E paves the way for creative expression and experimentation.



Figure 2. Generated images

Note: created with a) DALL-E 2; b) Midjourney; c) Stable Diffusion

Source: A.S. Perera (2022)

There are several ways to effectively implement neural networks in the educational process of design students:

1. Interactive workshops and projects. Students can take part in hands-on activities where they will interact with neural networks to create their works. This can include image generation, designing stylish or unique fonts, creating graphic concepts, etc.

2. Virtual workshops and platforms. Online platforms or software tools that allow students to try their hand at creating designs using neural networks. They can offer tasks of varying complexity and direction, which will help develop creative and technical skills.

3. Integration into design courses. Neural networks can be integrated into the curriculum as an integral part of certain courses. Students can explore the power of networks in particular aspects of design, such as infographics, mock-ups, animations, etc.

4. Cooperation with specialised platforms. Collaborating with platforms that specialise in neural network design and development can give students access to powerful tools and resources for learning and creativity.

5. Training resources and materials. Teachers can create educational materials that explain how neural networks work and teach students how to use them for design. This can be educational material in the form of video tutorials, manuals, etc.

6. Research projects. Students can take part in research projects related to the development and application of neural networks in design. This will allow them to delve deeper into the topic and discover new opportunities.

In general, the introduction of neural networks into the educational process can make learning more engaging and relevant, helping students develop the necessary skills for the modern design industry. The latest technologies can provide students with the opportunity to apply learning material in a practical way, enhancing their ability to think

innovatively and solve real-world problems. At the same time, they are designed to expand the boundaries of learning, allowing students to immerse themselves in the world of future technologies and create images that previously seemed impossible. However, along with the advantages, it is important to consider the ethical aspects of using these technologies, as well as to explore their possible limitations and impact on the creative process. Overall, Midjourney, Stable Diffusion, and DALL-E neural networks can substantially enrich the learning experience of design students by introducing them to the world of modern technology and creative improvement.

DISCUSSION

The development of artificial intelligence, namely neural networks, opens new opportunities for modern education. These technologies can have a considerable impact on the educational environment and expand the knowledge of design students. Neural networks, including Midjourney, Stable Diffusion, and DALL-E, are recognised as promising tools for educational purposes. Their image analysis and generation capabilities help to individualise learning, develop creative skills and provide access to virtual workshops. The interactivity of the learning process, thanks to these technologies, increases student engagement and allows them to learn complex concepts more effectively. It is worth considering the views of researchers from different countries on the introduction of neural networks in the educational process, which will help to understand how this technology affects various aspects of learning, cultural identity, and other aspects of the modern world.

Researchers P. Fortuna and A. Modliński (2021) note that the public perceives art created by artificial intelligence as less valuable than art created by humans, especially if the author of the work is known. According to scientists, the impact of the information that the painting was created

by artificial intelligence is offset by the level of the author's skill and the overall impression it makes on the viewers. Researchers have found that people use contextual cues when evaluating paintings created by both humans and artificial intelligence. According to researchers, if it is pointed out that the artistic value of a painting created by artificial intelligence is provided as a contextual clue that highlights the difference between art created by humans and machines, the perceived value of this painting increases (Fortuna & Modliński, 2021). Comparing the results of this study, the use of neural networks in design education may prove to be a significant area in the development of education, preventing the devaluation of skills and abilities of future specialists.

L. Justice (2019), and S. Davydova and N. Derevyanko (2022) highlight the importance of digital technologies and artificial intelligence for education. Scientists emphasise that such technologies can considerably improve the learning process by providing an individualised approach to learning, meeting the needs of different students and contributing to more effective knowledge acquisition. Researchers also emphasise that the use of artificial intelligence can help improve the assessment process and provide convenience for teachers in monitoring student progress (Justice, 2019; Davydova & Derevyanko, 2022). Comparing the results of this study, it is worth noting that the use of artificial intelligence in the field of design education has significant potential and is available for implementation in the educational process.

Researchers at UNESCO Education Sector (2019) are convinced that the use of artificial intelligence in education opens both great opportunities and challenges for humanity. The study emphasises that a rational combination of innovative technologies and sustainable development can lead to improved access to education, higher quality of education, and development of individual abilities of students. However, at the same time, challenges arise related to the ethical, social, and technical aspects of introducing intelligent systems into the educational process. The UNESCO Education Sector (2019) is convinced that it is important to ensure a balanced approach that considers both the positive aspects of innovation and its possible consequences for society and the individual. It is worth agreeing with this position, since, if compared with the results of this study, the use of a balanced approach in teaching design students can effectively help integrate neural networks into the educational process. This will facilitate the development of this industry, considering the conventional elements of education in universities and higher education institutions.

M. Kahng *et al.* (2018) concluded that understanding and learning complex deep generative models can be simplified through interactive visual experiments. The researchers believe that GAN Lab, the first interactive visualisation tool designed to help understand and experiment with complex deep learning models such as Generative Adversarial Networks (GANs), enables unknown users to get to know these models. With GAN Lab, users can interactively train generative models and visualise the results of

training in real time. This tool combines an overview graph of the GAN model with a multi-level distribution to help understand the interaction between model components. The researchers emphasise that GAN Lab offers interactive opportunities to explore complex deep learning models, including stepwise training at various levels of abstraction to gain a more profound understanding of learning dynamics (Kahng *et al.*, 2019). The tool is implemented using TensorFlow.js and can be accessed via web browsers without the need to install specialised hardware, which helps to overcome practical limitations in the implementation of interactive deep learning tools. In comparison with the results of this study, it is worth noting that more modern neural networks, such as Midjourney, Stable Diffusion, and DALL-E are more promising tools for teaching students design skills and abilities and are more in line with the current requirements of design education.

According to a study by K.Q. Zhou and H. Nabus (2023), the development and use of the DALL-E deep learning system for image generation presents both opportunities and challenges from an ethical perspective. Scientists note that DALL-E can generate realistic images that closely resemble human art. The researchers emphasise that DALL-E's ability to generate realistic images of various kinds opens the door to a variety of applications, including value, artistic, and deceptive, raising questions about the ethics of using such images, including in marketing, social media, and media. At the same time, it can raise controversy about the extent to which creativity based on this type of tool is authentic and original (Zhou & Nabus, 2023). However, when comparing the results of this study, it should be noted that the list of ethical aspects does not include the use of artificial intelligence in the education of future professionals as a tool for developing the creative skills of young design professionals.

Scientists X. Yuan *et al.* (2023) note the effectiveness of computer-based information design education in higher education institutions. Scientists note that this educational method helps to optimise the learning process, provides a more interactive approach to learning and improves the quality of students' learning. This approach also promotes ease of learning and can increase students' motivation to study information design (Yuan *et al.*, 2023). It is worth agreeing with this statement, as computer-assisted learning in today's digital environment is a promising element in the development of the design industry, encouraging young people to engage in an active learning process, namely using artificial intelligence and neural networks.

In a world where the role of technology is growing, neural networks can be a key tool for preparing students for the challenges of today. They not only help to develop design skills, but also provide an opportunity to master the latest approaches and technologies, which is important for training competitive specialists. Thus, neural networks are opening new perspectives for design education, changing the way people learn and developing the skills needed to succeed in the modern world.

CONCLUSIONS

The use of neural networks in design has a wide scope of influence on various aspects of the modern world. From creating identification and navigation signs to designing fonts, graphics, posters, animations and infographics, these technologies can help transform the learning experience for design students. The introduction of these innovative tools into the learning process is important as it fosters creativity, a more profound understanding of graphic design and enhances the ability to identify individual approaches.

The use of neural networks in design education is promising and can contribute to improvements and innovations in the industry, as the use of artificial intelligence allows for the development of individual approaches to students, considering their characteristics and needs. Understanding the principles of neural networks can make it easier to learn and create complex designs, speed up the workflow, and make it more efficient. The rapid development of artificial intelligence requires specialists to constantly learn and adapt to new opportunities. Therefore, it is important to take care of the ethical aspects of using artificial intelligence and ensure that the decisions it makes are appropriate. The integration of innovative technologies allows students to devote more time to creativity and improving their design skills. Learning modern technologies such as Midjourney, Stable Diffusion, and DALL-E can improve the quality of

graphic design and other skills of students. It is important to make technology accessible and understandable to everyone, so that every student can use it in their learning.

The study revealed that Midjourney, Stable Diffusion and DALL-E neural networks have considerable potential for implementation in the educational process for students of design specialties. An analysis of their characteristics and capabilities has made it clear that these networks can be useful tools for improving the training and creative development of young designers. Integrating neural networks into the learning process can help increase learning efficiency, save time, and improve the quality of projects created. However, the use of artificial intelligence in education requires a certain amount of time to familiarise with and adapt to, as well as to understand the limitations and opportunities of these technologies.

Future researchers should pay attention to the study, development, and optimisation of curricula for design specialties that include the use of neural networks, such as Midjourney, Stable Diffusion, and DALL-E.

ACKNOWLEDGEMENTS

None.

CONFLICT OF INTEREST

None.

REFERENCES

- [1] Alışık, E. (2022). "All compressed and rendered with a pathetic delicacy that astounds the eye": Midjourney renders ambergris as Constantinople. *CyberOrient*, 16(2), 76-88. [doi: 10.1002/cyo2.30](https://doi.org/10.1002/cyo2.30).
- [2] Borji, A. (2022). *Generated faces in the wild: Quantitative comparison of stable diffusion, Midjourney and DALL-e 2*. [doi: 10.48550/arXiv.2210.00586](https://doi.org/10.48550/arXiv.2210.00586).
- [3] Bozhko, T., & Arefiev, V. (2023). Neural networks as a graphic design tool. *Bulletin of KNUKiM. Series in Arts*, 48, 125-135. [doi: 10.31866/2410-1176.48.2023.282475](https://doi.org/10.31866/2410-1176.48.2023.282475).
- [4] Byrne, U. (2023). A parochial comment on Midjourney. *International Journal of Architectural Computing*, 21(2), 374-379. [doi: 10.1177/14780771231170271](https://doi.org/10.1177/14780771231170271).
- [5] Cetinic, E., & She, J. (2022). Understanding and creating art with AI: Review and outlook. *ACM Transactions on Multimedia Computing, Communications, and Applications (TOMM)*, 18(2), article number 66. [doi: 10.1145/3475799](https://doi.org/10.1145/3475799).
- [6] Davydova, S.V., & Derevyanko, N.V. (2022). Ethnic design in professional training of future clothing designers. *Pedagogical Sciences: Theory and Practice*, 1, 129-134. [doi: 10.26661/2786-5622-2022-1-19](https://doi.org/10.26661/2786-5622-2022-1-19).
- [7] Dehouche, N., & Dehouche, K. (2023). What's in a text-to-image prompt? The potential of stable diffusion in visual arts education. *Heliyon*, 9(6), article number e16757. [doi: 10.1016/j.heliyon.2023.e16757](https://doi.org/10.1016/j.heliyon.2023.e16757).
- [8] Fortuna, P., & Modliński, A. (2021). A(I)rtist or counterfeiter? Artificial intelligence as (d)evaluating factor on the art market. *The Journal of Arts Management, Law, and Society*, 51(3), 188-201. [doi: 10.1080/10632921.2021.1887032](https://doi.org/10.1080/10632921.2021.1887032).
- [9] Justice, L. (2019). The future of design education. *Design Management Review*, 30(1), 33-37. [doi: 10.1111/drev.12159](https://doi.org/10.1111/drev.12159).
- [10] Kahng, M., Thorat, N., Chau, D.H., Viégas, F.B., & Wattenberg, M. (2019). Gan lab: Understanding complex deep generative models using interactive visual experimentation. *IEEE Transactions on Visualization and Computer Graphics*, 25(1), 310-320. [doi: 10.1109/TVCG.2018.2864500](https://doi.org/10.1109/TVCG.2018.2864500).
- [11] Kolisnyk, O.V., Mykhailova, R.D., Beregovyi, O.S., Vlasiuk, V.V., & Kurovska, D.V. (2023). Midjourney Neural Network as a tool for generating design graphics. *Art and Design*, 1, 106-115. [doi: 10.30857/2617-0272.2023.1.10](https://doi.org/10.30857/2617-0272.2023.1.10).
- [12] Lee, S., Hoover, B., Strobelt, H., Wang, Z.J., Peng, S., Wright, A., Li, K., Park, H., Yang, H., & Chau, D.H. (2023). *Diffusion explainer: Visual explanation for text-to-image stable diffusion*. [doi: 10.48550/arXiv.2305.03509](https://doi.org/10.48550/arXiv.2305.03509).
- [13] Liu, M., & Hu, Y. (2023). Application potential of stable diffusion in different stages of industrial design. In H. Dehen, & S. Ntoa (Eds.), *Artificial Intelligence in HCI: 4th International Conference: Proceedings* (Pt 1; pp. 590-609). Cham: Springer. [doi: 10.1007/978-3-031-35891-3_37](https://doi.org/10.1007/978-3-031-35891-3_37).

- [14] Lugova, I.A., & Panchenko, D.D. (2023). Application of artificial intelligence in architectural drawing. In T.M. Zinenko (Ed.), *Collection of scientific papers based on the materials of the VI-VII All-Ukrainian scientific and practical conference of students, young scientists and scientific and pedagogical workers "Architectural drawing in the context of professional education"* (pp. 199-202). Poltava: National University "Yuri Kondratyuk Poltava Polytechnic".
- [15] Marcus, G., Davis, E., & Aaronson, S. (2022). A very preliminary analysis of DALL-E 2. [doi: 10.48550/arXiv.2204.13807](https://arxiv.org/abs/10.48550/arXiv.2204.13807).
- [16] Marienko, M., & Kovalenko, V. (2023). Artificial intelligence and open science in education. *Physical and Mathematical Education*, 38(1), 48-53. [doi: 10.31110/2413-1571-2023-038-1-007](https://doi.org/10.31110/2413-1571-2023-038-1-007).
- [17] Perera, A.S. (2022). DALL-E 2 vs Midjourney vs Stable Diffusion: Comparison between most popular AI art generation tools. Retrieved from <https://medium.com/mlearning-ai/dall-e-2-vs-midjourney-vs-stable-diffusion-8eb9eb7d20be>.
- [18] Romaniuk, O., & Naidiuk, V. (2021). *Using neural networks for image processing and recognition*. In *Abstracts of the XII International Scientific and Technical Conference "Information and computer technologies – 2021 (ICT-2021)"* (pp. 72-73). Zhytomyr: Zhytomyr Polytechnic.
- [19] UNESCO Education Sector. (2019). *Artificial intelligence in education: Challenges and opportunities for sustainable development*. Paris: United Nations Educational, Scientific and Cultural Organization.
- [20] Wang, B., Liu, H., An, P., Li, Q., Li, K., Chen, L., Zhang, Q., Zhang, J., Zhang, X., & Gu, S. (2019). Artificial intelligence and education. In D. Jin (Ed.), *Reconstructing our orders: Artificial intelligence and human society* (pp. 129-161). Singapore: Springer. [doi: 10.1007/978-981-13-2209-9_5](https://doi.org/10.1007/978-981-13-2209-9_5).
- [21] Yuan, X., Bi, H., & Niu, X. (2023). Computer-aided teaching system design method for information design specialty. *Computer-Aided Design & Applications*, 20(S4), 44-55. [doi: 10.14733/cadaps.2023.S4.44-55](https://doi.org/10.14733/cadaps.2023.S4.44-55).
- [22] Zhou, K.-Q., & Nabus, H. (2023). The ethical implications of DALL-E: Opportunities and challenges. *Mesopotamian Journal of Computer Science*, 2023, 17-23. [doi: 10.58496/MJCSC/2023/003](https://doi.org/10.58496/MJCSC/2023/003).

Наталія Володимирівна Дерев'янюк

Кандидат педагогічних наук, доцент

Хортицька національна навчально-реабілітаційна академія

69017, вул. Наукового містечка, 59, м. Запоріжжя, Україна

<https://orcid.org/0000-0003-1172-3282>

Олена Юріївна Залевська

Кандидат мистецтвознавства, доцент

Хортицька національна навчально-реабілітаційна академія

69017, вул. Наукового містечка, 59, м. Запоріжжя, Україна

<https://orcid.org/0000-0002-5728-1195>

Порівняльний аналіз нейронних мереж Midjourney, Stable Diffusion та DALL-E та способи їх впровадження в навчальний процес студентів дизайнерських спеціальностей

Анотація. Впровадження нейронних мереж у процес творчого проектування дає змогу отримувати оригінальні новаторські результати та підвищувати ефективність у створенні візуального мистецького продукту, а тому актуально дослідити, як різноманітні інтерактивні інструменти можуть сприяти розвитку творчих здібностей майбутніх спеціалістів у сфері дизайну. Мета статті – дослідити можливості та характеристики нейронних мереж Midjourney, Stable Diffusion та DALL-E в контексті їх використання в навчанні студентів дизайнерських спеціальностей. У науково-дослідній роботі використано аналітичний метод, порівняння, узагальнення та метод систематизації. У результаті дослідження з'ясовано, що нейронні мережі Midjourney, Stable Diffusion та DALL-E мають перспективи впровадження у навчальний процес для студентів дизайнерських спеціальностей. Розкрито значний потенціал застосування штучного інтелекту, а саме нейронних мереж, у дизайні, зокрема для створення шрифтів, типографічних елементів, плакатів, банерів, розробки графіки й ілюстрацій. Шляхом порівняння можливостей нейронних мереж Midjourney, Stable Diffusion та DALL-E виявлено, що кожна з них володіє специфічним призначенням та архітектурою, що ефективно для виконання різних завдань в сфері дизайну. Результати дослідження свідчать про потенціал нейронних мереж для покращення навчання студентів спеціальностей, пов'язаних з дизайном. Обґрунтовано, що впровадження відповідних методик і технік може сприяти розширенню творчого спектру, забезпечити стабільність та контроль у процесі генерації образів та зумовити більш ефективне втілення ідей у візуальні реалії. Результати роботи можуть бути корисними як інструменти розвитку навчальних підходів у сфері дизайну та впровадження сучасних технологій у навчальний процес.

Ключові слова: візуальний образ; генерування ідей; програмне забезпечення; сучасна освіта; штучний інтелект

UDC 37.015.3:001.891

DOI: 10.52534/msu-pp3.2023.45

Olena Diahyleva

PhD in Pedagogy, Associate Professor
 Kherson State Maritime Academy
 73000, 20 Ushakov Ave., Kherson, Ukraine
<https://orcid.org/0000-0003-3741-4066>

Alona Yurzhenko*

PhD in Pedagogy, Senior Lecturer
 Kherson State Maritime Academy
 73000, 20 Ushakov Ave., Kherson, Ukraine
<https://orcid.org/0000-0002-6560-4601>

Olena Kononova

Lecturer
 Maritime Applied College of Kherson State Maritime Academy
 73000, 14 Ushakov Ave., Kherson, Ukraine
<https://orcid.org/0000-0003-0403-7292>

Design of flipped classroom lesson in educational electronic environment of maritime higher education institutions

Article's History:

Received: 09.05.23

Revised: 01.08.23

Accepted: 30.08.23

Suggested Citation:

Diahyleva, O., Yurzhenko, A., & Kononova, O.
 (2023). Design of flipped classroom lesson
 in educational electronic environment of
 maritime higher education institutions.
*Scientific Bulletin of Mukachevo State
 University. Series "Pedagogy and Psychology"*,
 9(3), 45-53. doi: 10.52534/msu-pp3.2023.45.

Abstract. Online classes (due to COVID, and then because of the war in Ukraine) require the teacher to make constant changes and to use new forms and methods of learning so that students feel free and more independent. Such a learning model as the flipped class is a type of mixed learning, the peculiarity of which is that students work on new educational material at home and consolidate what they have learned in class by performing practical tasks on the topic. The research aims to describe the process of creation and implementation of flipped classroom lessons for ship engineering cadets of a modern maritime higher education institution. The following methods were used in the research: observation, study of practical experience, verification of creative works and application of tests. The example of a flipped classroom lesson on the Learning Management System platform MOODLE is presented in the article. The priority of such lessons is to redesign the learning model so that the cadets are familiar with new material before class. The set of examples of activities that motivate cadets to get ready before class are given. Fourth-year cadets of the ship engineering department of Kherson State Maritime Academy, Ukraine are the main participants of the experiment. The formation of competence regarding Maritime English using a flipped classroom was analysed. The article presents and substantiates the results of the experiment, confirming the positive influence of flipped classrooms on the communicative competence of future ship engineers. It is shown that, using the flipped classroom the teacher gets the opportunity to work with each student individually and immediately focus on the performance of practical tasks; each student can independently, at the necessary pace, review the material, which is available at any time (for those who attended the class, and for those who were absent for some reason). The practical significance of the article is that it demonstrates how the new pedagogical model allows for increased active learning opportunities for cadets of the ship engineering department

Keywords: maritime establishments; personalized space; digital surroundings; LMS MOODLE; maritime English; flipped study

*Corresponding author



Copyright © The Author(s). This is an open access article distributed under the terms of the Creative Commons Attribution License 4.0 (<https://creativecommons.org/licenses/by/4.0/>)

INTRODUCTION

Language communication skills play an important role in the work of the modern seafarer. International Maritime Organization (IMO) demands a broad understanding of English to meet specific professional objectives from each specialist in the marine industry (Official website of the International..., n.d.). Though the created IMO courses don't intend the instructors to follow blindly the teaching packages there. The updating or supplementing of the materials is highly welcomed to improve the quality and effectiveness of the training courses.

In the age of progress and computer technology, people face something new every day. Gadgets improve every day and force us to develop as well. Many are confused by innovations and rapid modernization, but there is no doubt that progress makes our lives easier and more comfortable. English language teaching methodology is also modernizing and becoming more productive and diversified. In other words, language learning becomes easier and more fun. Each language school or course has a methodologist, and sometimes even a methodological department. The need for the methodologists is obvious – to control the quality of teaching and the work of teachers. It is common practice for teachers to conduct the lectures in the classroom, while a small portion of time is left for individual tasks. To apply all this in practice, usually, the student must find it out at home on his own. In such a way, it is difficult for many students to fully comprehend the material. A Flipped Lesson (classroom) is an approach in which the teacher provides material for self-study at home, and in the face-to-face class, practical consolidation of the material takes place. Flip learning is characterized by the use of vodcasts, podcasts, and pre-vodcasting. Flipped Classroom is also an approach in which doing homework includes, among other things, applying podcast or vodcast technologies: watching a video (the lecture can be pre-recorded by the teacher); reading the texts, considering explanatory pictures; and passing quizzes. The transition to this model opens the way to increase the teacher's role in learning. The flipped class is often confused with distance education. The difference lies on the surface – the time of face-to-face class work remains unchanged, only its content changes fundamentally.

There are many types of flipped classrooms:

- Typical Flipped Classroom, where students support homework, which involves watching a video lecture, and familiarization with materials related to the topic of the next lesson, during which the acquired theoretical knowledge is applied in practice, and teachers have additional time for individual work (Yi, 2022).
- The Discussion-Oriented Flipped Classroom, where students support the task of viewing certain videos or materials from Internet resources. The teacher organizes a discussion of the received information in the lessons (Pillai, 2019).
- The Demonstration-Focused Flipped Classroom. This form will be effective for those subjects that require the demonstration of materials and conducting visual studies. The teacher demonstrates the necessary activity,

and the students perceive and analyse it, and then provide certain actions at their own pace – as they are comfortable.

- The Group-Based Flipped Classroom. This model encourages students to learn from each other, explain answers to groupmates, effective ways of obtaining information, conduct scientific research, etc. How to use it? Before the lesson students should form groups and familiarize themselves with the relevant materials and then work together on a certain scientific problem (Kaur *et al.*, 2022).

- Flipping The Teacher. The teacher does not need to do all the work – prepare or search for video materials, form practical tasks, advise, or check works. Certain types of work can be performed by students, and the teacher will monitor how the learning process will be organized, and how information will be presented and will provide assistance if necessary.

No more than 25-30% of the time can be done during class work to analyse the difficult theoretical part. This time can also be devoted to answering the questions which arise while doing home tasks. Practical problems and research tasks can also be done in the class with the teacher. After this period of while-class time, the teacher gives students quizzes to check their knowledge (Kondratenko *et al.*, 2021).

Two teachers in Colorado Jonathan Bergman and Aaron Sams (2023) invented an inverted classroom in 2007. They were the first who started providing lectures for sportsmen who used to miss face-to-face classes. In addition to saving their time, teachers have received a lot of advantages from the introduction of the concept of “flipped lessons”.

The flipped class is considered an innovative, quite successful model of differentiated education in conditions of higher education. Students demonstrated better individualization than in a traditional classroom and showed an increased interest in joint learning with children of different cultures and educational levels (Striuk & Semerikov, 2022). However, the flipped model is still understudied, especially in the context of higher education, and only a limited number of studies exist.

The research aims to describe the current situation, theory, and practical experience in the field of the learning process, which uses the “flipped classroom model” as the main trajectory, particularly while Maritime English is studied by future ship engineers.

MATERIALS AND METHODS

The pedagogical experiment was conducted to prove or refute the hypothesis that English training of future ship engineers will be productive if flipped classroom technology is used in the educational process. Research participants included 79 ship engineering cadets of structural subdivision of Kherson State Maritime Academy (KSMA) – Maritime Applied College (male, 17-19 years old, pre-intermediate – intermediate level of English, same training conditions and curriculum).

The cadets were divided into two groups: control (40) and experimental (39). The two groups are mostly

the same. The experimental group includes cadets from K231 and K232, control group includes K233 and K234 cadets. Participants of the experimental group were studying English for special purposes using the LMS MOODLE e-course of two teachers. The materials of the e-course are from "Welcome Aboard: Course Book" (Kudryavtseva *et al.*, 2018). This course book consists of five modules: Maritime Education, Types of Ships, Types of Cargo, Crew, and its Tasks, and Personal Safety Aboard. Every module begins with objectives and essential competence (e.g., By the end of the module you should be able to explain the importance of maritime education and its components for a successful seafaring career). Each module also ends with a Sea story, which is an original text from maritime reports, news etc. The end of each module also includes a speaking activity assignment, which cadets need to pass.

LMS MOODLE course has the same number of modules as "Welcome Aboard: Course book", although it has additional gamified activities, forums, assignments, chats, quizzes etc. Every day students have two hours of Maritime English (10 hours per week).

The following methods were used during research: observation, studying the practical experience, examination of creative work and applying tests. Firstly, the terms "flipped classroom", "flipped class" and "flip learning" were defined (comprehensive literature review). The generalization of these concepts from the standpoint of different scientific approaches was then done. The model that used the flipped class for future ship engineers to study English for a special purpose was created (theoretical modelling). The observation of the state of MET of future seafarers for professional work was then done to identify the levels of the specified training. Experimental verification of the effectiveness of the results and statistical analysis were conducted.

All procedures performed in the study followed the ethical norms and did not violate the honour and dignity of the respondents; age characteristics were also considered. During the experiment, personal rights were not violated, and anonymity was preserved following the developed recommendations regarding the ethical aspect of conducting pedagogical research by authoritative organizations, including the American Educational Research Association (2011) and the British Educational Research Association (2018).

RESULTS AND DISCUSSION

The model or methodology of the educational process "inverted classroom" is blended learning – a combination of the traditional form of acquiring knowledge with elements of electronic distance learning (Learning Management System): modern information technologies. Research participants found an inverted classroom more engaging in the sense that it allowed for more differentiation in learning. They've also been more satisfied with Maritime English learning, the attendance of face-to-face classes has been improved, and students' learning efforts raised. Cadets demonstrated better individualization than in a traditional classroom and showed an increased interest in joint learning with children of different cultures and educational levels (Striuk & Semerikov, 2022). They participate in assimilating lectures' material more easily and also develop self-determining skills through the proposed approach.

To create a Flipped classroom, it was decided to divide the lesson into four parts: preparation, presentation, practice, and production. The materials of the first two stages were given on LMS MOODLE. The preparation consists of a starter. Starter (Figure 1) is a type of activity in which the teacher tries to direct the student's attention to the subject. The starter can be used both on the topic of the lesson and on a free topic (Semerikov *et al.*, 2020).

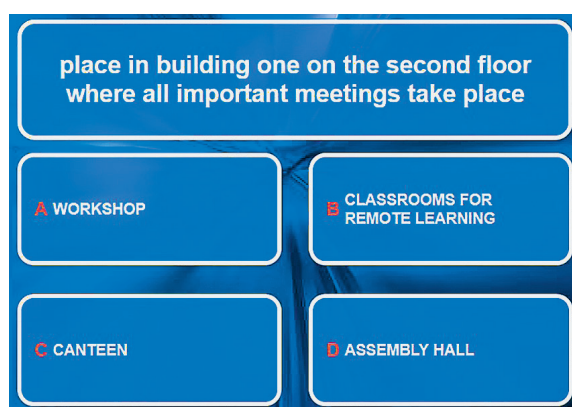


Figure 1. An example of a starter

Source: compiled by the authors based on LMS MOODLE of KSMA

The educator starts with an introduction to the context of a new language study, particularly English. It should focus the cadet's attention on how and when to use it. The presentation is created to engage the learners by showing

them situational context first (e.g. figures, videos, tables etc.). Example texts can also be used. The educator presents the new lexical units in context at the beginning. It is done to show how this lexical unit would be used naturally.

Then, the teacher suggests cadets hear a word at least three times and repeat after either after an educator, a cadet, or the whole group. Lastly, the teacher checks the comprehen-

sion of different meanings of a word (Fig. 2) to ensure that cadets understand the proper meaning of a new lexical unit (Valko *et al.*, 2021).

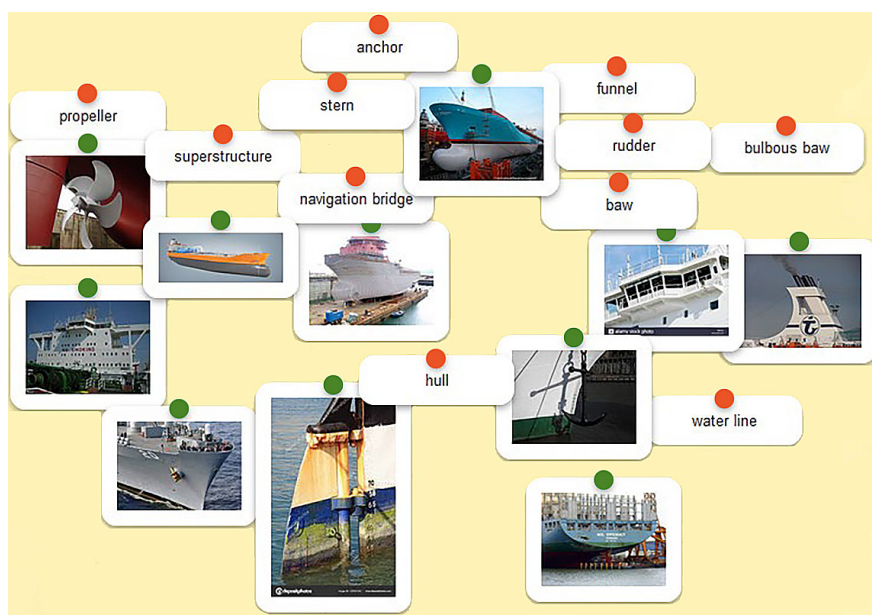


Figure 2. The task is to label the pictures

Source: Learningapps.org SCORM package added based on LMS MOODLE of KSMA (developed by the authors)

There are many exercises teachers can use to check the meaning: match the words with their definitions, match the synonyms/antonyms, complete the statements, fill in the gaps, etc. (Zaitseva *et al.*, 2022), it should be mentioned

that while performing the exercises, the student should explain why this lexical unit or grammatical form was chosen, which helps form the communicative competence of future specialists (Fig. 3).

2. Fill in the words from the box.

protuberances, ports, completed, bits, require

1. Please indicate how many spare parts you _____.
2. He read _____ of his work to me
3. He _____ his PhD (Doctor of Philosophy) in 1993.
4. Some dinosaurs evolved _____ on top of their heads.
5. 2- stroke engine has _____ which makes it's design simpler.

Model: What word did you use in the first sentence?
I _____ used _____

Figure 3. Checking the meaning

Source: PowerPoint Presentation added on LMS MOODLE of KSMA (compiled by the authors)

It is also possible to do pre-reading or pre-viewing tasks at this stage. Students complete different exercises. For example, the task may ask the student to look at the picture and get the gist of what it (text or video) is about, answer the questions, tick the true statements, study the pictures and write the title, find, and highlight the title of the text (word snake), scan the text (watch the video) and title the paragraphs, etc.

The next stage is practice. It is subdivided into two sub-stages: controlled and semi-controlled practice. Firstly, cadets need to focus on saying out loud (speaking skills) and writing the new lexical unit without any distracting difficulties (writing skills). The correct structure manipulation is the main goal at this stage. The teacher monitors the student's achievements. The next stage is semi-controlled practice. The tasks here are more complicated. The cadets will be

asked to use new language within a wider context. The educator should ensure that the cadets are using the new lexical units accurately while controlled and semi-controlled activities. Sometimes it is needed to come back to the presentation stage to repeat once again if any mistakes are made (especially if students are not too confident or only begin to learn).

After completing both the presentation and practice stages, students proceed to the production stage where they will demonstrate new skills in speaking or writing. This stage is crucial. Educators should not correct any mistakes in this stage, as students develop their fluency. Examples of such activities can be “make a poster, complete pie-chart, make an advert, role plays the dialogue, make group discussions according to the topic, debates” etc. (Hatmanti & Septianingrum, 2020).

The analysis of pedagogical practice shows the following disadvantages of the “flipped class”. Firstly, not all students are required. Some may not even watch the lectures at all. There is no guarantee that they will enjoy this form of education and that they will agree to learn this way. Teachers have to spend time learning new skills. For example, learning how to make videos or prepare for lessons that will consist entirely of discussions or dialogues. As a result, all this will be able to be integrated into the “inverted model”, but additional efforts will be required first (Mohan, 2018). Although teacher tries to provide students with additional materials, they still learn within a textbook. The textbooks are adapted to the minimum that the cadet needs to know. There are cases when the textbook was fully neglected in

the “flipped class” model. Sometimes some of the textbook parts are done while doing homework. The materials of the textbook can be used as the basis of video lectures in an online educational environment. There are different advantages and disadvantages of flipped classrooms. One of the disadvantages is that some topics can’t be “turned over”. Teachers should decide by themselves whether a flipped classroom is suitable for every situation, student’s knowledge, difficultness of new topics etc. should be considered. The usual classroom system cannot be fully removed. It all depends on what the teacher considers useful in the “flipped” teaching. If lessons are not substantively supplemented by this, then there is simply no great benefit from the “flipped class” (Schaffzin, 2021; Kurban, 2018).

By the end of each module, cadets have a quiz with 30 questions of three levels of complicity (easy, intermediate, and hard). Easy questions are 60% of a quiz and enough to get a positive mark, intermediate questions are the next 30% and help to get good and very good achievement levels. Hard questions are only 10% of a quiz and are needed to get excellent grades (Mezentseva, 2020). Quizzes are needed to test the effectiveness of the proposed teaching method. The grades of both control and experimental groups were analysed since all the groups had quizzes by the end of each module, regardless of which teaching method was used. Table 1 given below represents the quizzes’ results.

The graphical representation of the results of the last total communicative competency assessment is described in Figure 4 below.

Table 1. Quizzes’ results

Activity name	Group	Levels of communicative competence		
		high	intermediate	low
Quiz 1	Experimental group	13-33%	16-41%	10-26%
	Control group	10-25%	20-50%	10-25%
Quiz 2	Experimental group	9-23%	18-46%	12-31%
	Control group	7-17.5%	19-47.5%	14-35%
Quiz 3	Experimental group	12-31%	17-44%	10-25%
	Control group	9-22.5%	21-52.5%	10-25%
Quiz 4	Experimental group	15-38%	19-49%	5-13%
	Control group	10-25%	20-50%	10-25%

Source: compiled by the authors based on LMS MOODLE of KSMA

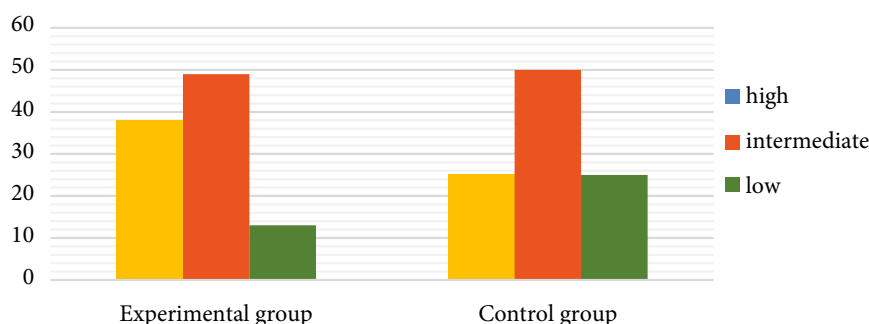


Figure 4. Comparison of results of the final quiz on LMS MOODLE

Source: compiled by the authors based on LMS MOODLE of KSMA

The figure shows a considerable increase in the high level of communicative competence while the number of cadets with intermediate levels both in experimental and control groups is nearly the same (Rasool & Dawood, 2021). However, the number of cadets with low levels of communicative competence is smaller in the experimental group (Sherman *et al.*, 2020).

To get feedback from cadets of the experimental group, the activity Survey was created based on the LMS MOO-

DLE e-course (Kaur *et al.*, 2022). This provides many tools needed to verify the survey. They can be used while assessing and stimulating learning on learning modular systems (Pillai, 2019). Each couple of the 24 questions in the survey asked cadets to compare their preferred and actual experience in the course. After the completion of a survey cadets of the experimental group proved the high level of interactivity of e-course based on Flipped classroom lessons. A graphical representation of the results is seen in the Figure 5 below.



Figure 5. Survey on the interactivity of Flipped classroom e-course “English for a special purpose”

Source: A. Yurzhenko (2018)

Flipped Classroom allows students to spend as much time studying the new topic as needed. The cadets should be ready for flipped learning: teachers can't just upload a new topic into the same video lectures, as this can cause a situation when most of the group simply does not do their home tasks and does not understand what is required. Recorded video lectures are less interesting than when cadets study new material on their own (Yi, 2022). The Flipped Network (FLN) online community, provides educators with a wide range of videos that can be used to flip, (links to FLM-related meetings, videos for the less experienced, archived webinars, and book descriptions associated with the “flipped” approach), the teacher's time freed up and can be spent on more complex professional tasks – consolidating and deepening the understanding gained by students on their own, to monitor student's activity during the lesson, and help those, who are not learning as fast.

It is of high importance for teachers and students to communicate, flipped learning needs motivation before, after and during MET. Flipped classrooms can be positively used in many courses (e.g., Maritime English, General English, and English for specific purposes). Educational activities can be different, but all aim to activate and optimize the educational process, introduce new methods and techniques, participate in debates or discussions about current events, and project-based learning (Lytvynova, 2015).

The experiment on the implementation of flipped learning, conducted at the College of KSMA, continues similar initiatives of other educational institutions and is fully in the context of the results obtained. Clinton Dale High School in Detroit City in the United States of America is the first “flipped” school which was fully transited to this teaching principle in 2010. MEF University from Istanbul city at Turkey was the first higher education establishment which adopt such a model of a flipped class throughout the university (How one school turned..., 2013). In 2016, The Reverse Approach to Higher Education (Shahin & Kurban, 2016) was published.

However, this model is still understudied in the context of high school and technical subjects the use of the flipped classroom has received less attention. The flipped model is still underexplored in the higher education context (Chen *et al.*, 2014), and only a limited number of studies exist (Kerr, 2015).

This study, based on the results of existing publications, as well as on a training experiment conducted at the Maritime College, confirmed, and enriched the theoretical and practical basis of the researched area of an innovative educational approach – flipped learning. Analysis of experiments of mixed and “flipped” learning allows us to draw the following conclusions about the advantages and disadvantages of the model.

Advantages of the “flipped classroom”:

1. Working on projects in a group allows students to foster a tolerant attitude towards each other, change their perception of other cultures for the better, and reveal social stereotypes.
2. Individual approach and feedback - the teacher can communicate separately with each student, helping adapt and select individual tasks that correspond to the level of education of the student. The model allows the student to view the same material as many times as needed.
3. There is an opportunity to break down a new topic in all its subtleties and nuances.
4. In the lesson, all complex issues can be sorted out.
5. The teacher can organize educational activities in such a way as to teach class students with different levels and abilities. It is also possible to organize the educational process for children and adults with disabilities.
6. Study hours can be used for joint practical work (laboratory work, seminars, etc.).
7. The flipped learning model can be applied in elementary, middle, and high levels.
8. Students who skip class have the opportunity to work through the material.

Disadvantages of the “Inverted” class model:

1. Converting a course to an inverted format entails high launch costs.
2. More attention needs to be paid to teacher training.
3. It takes time to change the attitude of students towards their role and move to more active participation in the learning process. In addition, teacher training itself should be more focused. It will take a lot of time to get the students accustomed to the new learning model.

There was also found to the lack of the following:

- Qualitative research to understand “flipped MET” in specific contexts, particularly while Maritime English learning by future ship engineers;
- Scientifically based research to examine different aspects of the implementation of the “flipped MET”;
- Working programs to implement “flipped MET”, and also various training materials for that;
- Methodological recommendations for teachers and other educators who implement “flipped MET” to create action plans.

As the problem of flipped classrooms was investigated by many modern scientists, most researchers have noted the undoubted advantages of inverted learning. This provides students with statistically significant benefits in the complex, application areas defined in the classroom. In addition, it was determined that the students who studied using a flipped classroom announced that they were more engaged than in a traditional classroom educational model. Gained experience in communicating with children from different cultures, which can be saved after the end of the course (Zinchenko *et al.*, 2022). While learning in a flipped classroom, students become actively evaluative and use received data, while the teacher goes from a non-personal

educator to an engaged teacher. The study also shows that the students need to stop being passive listeners to gain new knowledge, they need to learn independently. Students become more motivated, and a sense of responsibility is formed. The flipped lesson becomes not a place for students to copy the teacher’s words, but a space for individual and group work for possible debates and creative tasks as each student begins to be an interlocutor while working in pairs. For the “flipped” class, there is a rule to be ready and work in the classroom, each student must first work at home on the new material, and the teacher, using this time, can pay attention to weak students, implementing the requirements of an individual approach.

CONCLUSIONS

The “flipped” teaching approach has become more popular not only at schools but also in maritime higher education establishments. Flipped learning helps solve different pedagogical problems in MET.

The study concluded that interactive methods of teaching English are a precedence today. Using them in combination with traditional approaches is the key to the development of high-quality communicative competence of students of maritime institutions. The research revealed the meaning of the concept and described the process of creating and implementing a flipped classroom as a mixed form of education, which was used to determine its characteristics and distinctive features from other teaching methods. The study showed that the new model allows the expansion of the communicative opportunities (discussion, role play, interview) of students of the ship engineering faculty. Using this model of activity stimulates students to develop their English language skills in different professional situations and express themselves freely.

Investigation showed that the issues of “flipped” education are not sufficiently researched in the scientific and methodological literature. Nowadays, it is necessary to conduct further scientific research, studying various aspects of the practical implementation of long-term programs and educational materials for teaching students. The study proved the usefulness of such teaching. The results of a pedagogical experiment conducted at Kherson State Maritime Academy and Maritime College proved the positive impact of flipped classroom lessons on the communicative competence of future ship engineers.

Further investigation of the effective use of the flipped classroom and virtual communication in its pedagogical aspect study of student-centred methods can be done for MET using challenge-based activities, storytelling, and role-play.

ACKNOWLEDGEMENTS

None.

CONFLICT OF INTEREST

None.

REFERENCES

- [1] American Educational Research Association. (2011). *Code of ethics*. Retrieved from [https://www.aera.net/Portals/38/docs/About_AERA/CodeOfEthics\(1\).pdf](https://www.aera.net/Portals/38/docs/About_AERA/CodeOfEthics(1).pdf).
- [2] Bergmann, J., & Sams, A. (2023). *Flip your classroom: Reach every student in every class every day* (Revised ed.). International Society for Technology in Education.
- [3] British Educational Research Association. (2018). *Ethical guidelines for educational research* (4th ed.). London.
- [4] Chen, Yu., Wang, Yu., Kinshuk, & Chen, N.-S. (2014). Is FLIP enough? Or should we use the FLIPPED model instead? *Computers & Education*, 79, 16-27. doi: 10.1016/j.compedu.2014.07.004.
- [5] Hatmanti, N.M., & Septianingrum, Y. (2020). Flipped classroom applying flipped classroom based family nursing care learning model to learning outcome in nursing institution. *Journal of Health Sciences*, 13(2), 144-149. doi: 10.33086/jhs.v13i2.1405.
- [6] How one school turned homework on its head with “flipped” instruction. (2013). Retrieved from <https://www.pbs.org/newshour/education/what-does-a-flipped-classroom-look-like-2>.
- [7] Kaur, M., Manna, S., Ahluwalia, H., & Bhattacharjee, M. (2022). Flipped classroom (FCR) as an effective teaching-learning module for a large classroom: A mixed-method approach. *Cureus*, 14(8), article number e28173. doi: 10.7759/cureus.28173.
- [8] Kerr, B. (2015). The flipped classroom in engineering education: A survey of the research. In *Proceedings of 2015 International Conference on Interactive Collaborative Learning (ICL)* (pp. 815-818). Firenze: IEEE. doi: 10.1109/icl.2015.7318133.
- [9] Kondratenko, L.O., Samoylenko, H.T., Kiv, A.E., Selivanova, A.V., Pursky, O.I., Filimonova, T.O., & Buchatska, I.O. (2021). Computer simulation of processes that influence adolescent learning motivation. *CTE Workshop Proceedings*, 8, 495-506. doi: 10.55056/cte.303.
- [10] Kudryavtseva, V., Malakhivska, T., Moroz, O., Petrovska, Y., & Frolova O. (2018). *Welcome aboard: Coursebook* (2nd ed.). Kherson: STAR.
- [11] Kurban, C.F. (2018). Designing effective, contemporary assessment on a flipped educational sciences course. *Interactive Learning Environments*, 27(8), 1143-1159. doi: 10.1080/10494820.2018.1522650.
- [12] Lytvynova, S.H. (2015). All-Ukrainian project “Cloud services in education” as a factor of development of cloud-oriented educational environments in general educational institutions. *Cloud-Based Learning Environment*, 13, 16-23. doi: 10.55056/nocote.v13i0.878.
- [13] Mezentseva, S.V. (2020). A new culture of broadcasting knowledge in the conditions of the digital educational environment of an artistic university (about the experience of working in the Moodle and Moodle Music Systems). *ICONI*, 3, 80-86. doi: 10.33779/2658-4824.2020.3.080-086.
- [14] Mohan, D. (2018). Flipped classroom, flipped teaching and flipped learning in the foreign/second language post-secondary classroom. *Nouvelle Revue Synergies Canada*, 11. doi: 10.21083/nrsc.v0i11.4016.
- [15] Official website of the International Maritime Organization. (n.d.). Retrieved from <https://www.imo.org>.
- [16] Pillai, V.M. (2019). Pedagogical method using flipped classroom, E-learning tools and templated approaches. In *Proceedings of International Conference on Digital Pedagogies (ICDP) 2019*. doi: 10.2139/ssrn.3360244.
- [17] Rasool, J.A., & Dawood, S.S. (2021). Evaluate the use of Moodle Platforms for education in University of Duhok using online survey application. *International Journal of Machine Learning and Computing*, 11(2), 152-157. doi: 10.18178/ijmlc.2021.11.2.1028.
- [18] Schaffzin, K.T. (2016). Learning outcomes in a flipped classroom: A comparison of civil procedure ii test scores between students in a traditional class and a flipped class. *University of Memphis Law Review*, 46(3), 661-693. doi: 10.2139/ssrn.3956257.
- [19] Semerikov, S., Striuk, A., Striuk, L., Striuk, M., & Shalatska, H. (2020). Sustainability in software engineering education: A case of general professional competencies. *E3S Web of Conferences*, 166, article number 10036. doi: 10.1051/e3sconf/202016610036.
- [20] Shahin, M., & Kurban, C.F. (2016). *The flipped approach to higher education*. Bingley: Emerald Publishing Limited. doi: 10.1108/S2059-2841201603.
- [21] Sherman, M., Samchynska, Y., Sikelinda, M., & Yurzhenko, A. (2020). Formation of digital and research competences in the training of it professionals in a modern university. *Information Technologies in Education*, 44, 18-30. doi: 10.14308/ite000722.
- [22] Striuk, A.M., & Semerikov, S.O. (2022). Professional competencies of future software engineers in the software design: teaching techniques. *Journal of Physics: Conference Series*, 2288(1), article number 012012. doi: 10.1088/1742-6596/2288/1/012012.
- [23] Valko, N.V., Osadchyi, V.V., & Kruhlyk, V.S. (2021). Cloud resources use for students’ project activities. *CTE Workshop Proceedings*, 8, 304-317. doi: 10.55056/cte.240.

- [24] Yi, H.J. (2022). Instruction improvement based on flipped classroom method. *The International Journal of Humanities & Social Studies*, 10(7). doi: 10.24940/theijhss/2022/v10/i7/hs2207-013.
- [25] Yurzhenko, A. (2018). Pedagogical conditions for training of future ship engineers in the process of English for specific purpose learning. *Engineering and Educational Technologies*, 6(4), 48-57. doi: 10.30929/2307-9770.2018.06.04.05.
- [26] Zaitseva, N.V., Symonenko, S.V., & Osadchyi, V.V. (2022). A blended English for specific purposes course with the focus on critical thinking skills development for computer science students. *Journal of Physics: Conference Series*, 2288(1), article number 012037. doi: 10.1088/1742-6596/2288/1/012037.
- [27] Zinchenko, S., Tovstokoryi, O., Nosov, P., Popovych, I., & Kyrychenko, K. (2022). [Pivot Point position determination and its use for manoeuvring a vessel](#). *Ships and Offshore Structures*, 18(3), 358-364.

Олена Сергіївна Дягілева

Кандидат педагогічних наук, доцент
Херсонська державна морська академія
73000, просп. Ушакова, 20, м. Херсон, Україна
<https://orcid.org/0000-0003-3741-4066>

Альона Юріївна Юрженко

Кандидат педагогічних наук, старший викладач
Херсонська державна морська академія
73000, просп. Ушакова, 20, м. Херсон, Україна
<https://orcid.org/0000-0002-6560-4601>

Олена Юріївна Кононова

Викладач
Морський фаховий коледж Херсонської державної морської академії
73000, просп. Ушакова, 14, м. Херсон, Україна
<https://orcid.org/0000-0003-0403-7292>

Створення перевернутого класу в освітньому електронному середовищі морських вищих навчальних закладів

Анотація. Онлайн-заняття (через Covid, а потім воєнний стан в Україні) потребує від викладача постійних змін, застосування нових форм і методів навчання, щоб студенти почувалися більш вільними й самостійними. Модель навчання «перевернутий клас» – різновид змішаного навчання, особливість якого полягає в тому, що студенти опрацьовують новий навчальний матеріал удома, а закріплюють вивчене на занятті, виконуючи практичні завдання. Дослідження спрямоване на опис процесу створення та впровадження перевернутого класу для студентів судномеханіків сучасного морського вищого навчального закладу. Під час дослідження використано такі методи: спостереження, вивчення практичного досвіду, перевірка творчих робіт та застосування тестів. У статті наведено приклад перевернутого класу на LMS MOODLE. Пріоритет такого заняття – перебудова навчальної моделі так, щоб студенти ознайомилися з новим матеріалом до заняття. Наведено набір прикладів діяльності, яка спонукає студентів готуватися до занять. Основні учасники експерименту – студенти четвертого курсу судномеханічного факультету Херсонської державної морської академії, Україна. Він був присвячений формуванню компетентності щодо морської англійської мови з використанням перевернутого класу. У статті представлено та обґрунтовано результати експерименту, підтверджено позитивний вплив перевернутих аудиторних занять на комунікативну компетентність майбутніх судномеханіків. Показано, що, використовуючи перевернутий клас, викладач отримує можливість працювати з кожним студентом окремо та одразу зосередитися на виконанні практичних завдань; кожний студент може самостійно, у необхідному темпі передивлятися матеріал, який доступний у будь-який час (для тих, хто був на занятті, і для тих, хто з якоїсь причини був відсутній). Практичне значення статті полягає в тому, що вона демонструє, як нова педагогічна модель сприяє підвищенню навчальних можливостей студентів судномеханічного факультету

Ключові слова: морська освіта; персоналізований простір; електронне середовище; LMS MOODLE; морська англійська; перевернуте навчання

UDC 378:792

DOI: 10.52534/msu-pp3.2023.54

Lia Svanidze*

Lecturer

Kyiv National University of Culture and Arts

01601, 36 Evgen Konovalets Str., Kyiv, Ukraine

<https://orcid.org/0000-0003-4850-8412>

Volodymyr Levytskyi

Lecturer

Kyiv National University of Culture and Arts

01601, 36 Evgen Konovalets Str., Kyiv, Ukraine

<https://orcid.org/0000-0002-8857-7773>

Olena Venher

Lecturer

Kyiv National University of Culture and Arts

01601, 36 Evgen Konovalets Str., Kyiv, Ukraine

<https://orcid.org/0000-0002-8520-9369>

Using the basics of Les Kurbas's directing skills in the training of future specialists in higher education

Article's History:

Received: 21.04.23

Revised: 25.07.23

Accepted: 30.08.23

Suggested Citation:

Svanidze, L., Levytskyi, V., & Venher, O. (2023). Using the basics of Les Kurbas's directing skills in the training of future specialists in higher education. *Scientific Bulletin of Mukachevo State University. Series "Pedagogy and Psychology"*, 9(3), 54-62. doi: 10.52534/msu-pp3.2023.54.

Abstract. The training of specialists in artistic higher education institutions should be conducted using modern methods, technologies, and developments and be oriented towards a modern audience, but at the same time, training should be based on established principles and views that have been tested by time. Les Kurbas is a personality whose views and principles of acting and directing can be a guide for contemporary artists, and therefore they should be used in the professional training of students of theatre and film education. The purpose of this paper was to cover the aspects of training future specialists in higher education institutions based on Les Kurbas's directing craft. To fulfil this purpose, the following research methods were used: biographical method, methods of analysis and synthesis, method of comparison, method of abstraction, method of analogy, methods of deduction and induction. The paper covered the foundations of Les Kurbas's directing craft and its influence on the development of modern theatre and directing, compared his principles and views with those of contemporary artists. The paper revealed the role of Les Kurbas and his work in preserving the identity of Ukrainian theatre and cinema and in the development of Ukrainian culture. A parallel was drawn between modern approaches to training future specialists and the foundations of Les Kurbas's directing craft. The conclusion was made on the expediency of using the basics of Les Kurbas's directing craft in the educational process of higher educational institutions. The paper described the specific features of using the basics of Les Kurbas's directing craft in the preparation of future specialists for professional activity and provided recommendations for their implementation in the educational process. The results of this paper can be used by teachers of artistic higher education institutions when developing lecture materials and special courses, as well as by students for self-improvement and work on themselves and their professional skills, which underlies the successful development of Ukrainian theatre and cinema

Keywords: theatre art; acting skills; culture; higher education; creativity; film education

*Corresponding author



Copyright © The Author(s). This is an open access article distributed under the terms of the Creative Commons Attribution License 4.0 (<https://creativecommons.org/licenses/by/4.0/>)

INTRODUCTION

Ukrainian theatre and cinema form an integral part of Ukraine's cultural heritage, which must be preserved for future generations. Theatre art is distinguished by a special interaction between the actor and the audience, lively emotions, and the ability to show the realities of modern life and the realities of Ukrainian society in the 19th and 20th centuries. Skilfully prepared theatre performances can bring modern audiences back to Ukrainian culture, demonstrate its importance and help preserve the national identity of the Ukrainian people. Ukrainian cinema, as part of Ukrainian culture, is distinguished by its authenticity, symbolism, and visualisation of Ukrainian history, traditions, and important political events, which can also contribute to the preservation of Ukrainian culture and national identity. The success of Ukrainian theatre and film in the future will depend on those specialists who are currently preparing for their professional activities in artistic higher education institutions. It is advisable to use modern methods and practices in the training of future specialists, but it is possible to preserve Ukrainian culture, original Ukrainian theatre and authentic cinema only by understanding the established principles of theatre art that have been tested by time (Crawford, 2016). Les Kurbas was one of the personalities who made a significant contribution to Ukrainian theatre and embodied Ukrainian traditions, culture and national ideas in his performances. He was the founder of strong theatre teams, used the latest technology in his productions, and embodied directing approaches that are still relevant and used in contemporary theatre and film. By understanding Les Kurbas's approaches to directing and applying them to their professional path, future directors can develop Ukrainian theatre and film to a whole new level (Fowler, 2021).

Thus, in the study of stage direction, V. Pryz (2021) notes that understanding the development of directing in a historical context is an arduous process for students, but important, as it helps to consider the cultural and national characteristics of the stage sphere in preparation for professional activity. According to the researcher, the principles of directing are important for future professionals and are still relevant today. S. Hordieiev (2023), investigating the specific features of modern theatre education, noted that the views and ideas of Les Kurbas are a guideline for contemporary theatre art and an important part of the training of future actors and directors. Ye. Vodyakhin (2023), who studied the activities of Les Kurbas's Berezhil Theatre, notes that contemporary actors and directors need freedom of action and the inclusion of each team member in the creative process, which was evident in Les Kurbas's relationship with his team and which contemporary theatre should strive for.

When discussing Les Kurbas's work, O. Nastuk (2022), who revealed the musical and choreographic component in Les Kurbas's theatre and its influence on contemporary theatre, noted that the artist was an innovator, an experimenter, and felt the theatre as a holistic organism that can work effectively only by combining the

activities of all its participants and using all possible techniques that can interest the viewer. N. Babii (2020), studying actionism in the theatre of the twentieth century, also notes that Les Kurbas was an innovator who, in his theatrical performances, demonstrated atypical thinking, the uniqueness of each personality, but still retained elements of national identity. O. Rybchenko (2022) revealed in her study the role of folk traditions in Les Kurbas's production of "Haidamaky" (based on Taras Shevchenko's play) and emphasised that Les Kurbas skilfully conveyed the national identity of the Ukrainian people, its traditions and culture through the actors' play, which plays an important role in bringing Ukrainian creativity to the international space, and therefore should be used in the training of specialists.

The views and ideas of Les Kurbas can be a reference point for contemporary theatre and cinema. However, despite the wide possibilities of applying the basics of Les Kurbas's directing craft, their use in the training of future specialists has been understudied. Proceeding from the above, the purpose of this paper was to provide recommendations on the use of the basics of Les Kurbas's directing craft in the educational process.

MATERIALS AND METHODS

To fulfil this purpose, the following methods were used: biographical method, methods of analysis and synthesis, method of comparison, method of abstraction, method of analogy, methods of deduction and induction. The biographical method was used to reveal the personality of Les Kurbas, to investigate the specific features of his creative path, values, professional guidelines, as well as to cover the basic principles of Les Kurbas's directing craft and its influence on his professional activity; to understand the impact of his views on the theatre of the 20th century and on contemporary theatre. The biographical method helped to explore the opinions of Les Kurbas's colleagues, followers, and contemporaries on his work, professional principles and views, and his life path. The methods of analysis and synthesis were used for a more detailed consideration of the personality of Les Kurbas and his professional views; for analysing the state of modern art higher education; for analysing current methods of training specialists; for analysing the need to use the principles of directing craft in the system of higher art education. The methods of analysis and synthesis were also used to describe the role of future actors and directors in preserving the identity of Ukrainian theatre and cinema, as well as in preserving the national identity of Ukrainians. The method of comparison helped to compare the foundations of Les Kurbas's directing craft with the principles of contemporary theatre art and the views of contemporary artists on his directing principles. This method also helped to compare approaches to teaching future artists and identify the most effective ones.

The method of abstraction helped to highlight the aspects important for this study, specifically, to distinguish the foundations of Les Kurbas's directing craft from all

his professional principles, to cover the specific features of training future specialists for acting and/or directing; it helped to provide effective methods of using the foundations of Les Kurbas's directing craft in higher art education. Using the method of analogy, the study traced the similarities and differences between the methods used in contemporary art education and the established ones and covered the effectiveness of using the basics of Les Kurbas's directing craft. The method of analogy helped to trace the contradictions in the foundations of Les Kurbas's directing craft and its influence on his professional activity and on the theatrical performances he staged. Using the method of analogy, a parallel was drawn between the aspects of students' education and their preparation for future activities in modern higher education and the foundations of Les Kurbas's directing craft. Using the method of induction, it was concluded that the advantages of using the basics of Les Kurbas's directing craft in the training of future specialists over other views and methods are evident. The authors of this paper summarised the importance of the development of theatre and cinema for the preservation of Ukrainian culture, traditions, and national identity. The deduction method helped to draw general conclusions about the preparation of future specialists for their professional activities. This method also revealed recommendations for using the basics of Les Kurbas's directing craft in the training of future specialists in artistic higher education institutions.

RESULTS

Theatre and directing education in Ukraine is based on a combination of theoretical and practical mastery of the profession and is focused on the high-quality and comprehensive training of future specialists. The director is the organiser of the entire creative process, and the quality of their professional work depends on their skills and the knowledge acquired during training. However, the development of a director takes place throughout their entire life, not just while studying at a higher education institution, which is why one of the features of training future specialists is the cultivation of independence, the ability to self-reflection and the development of a desire for self-improvement. A modern student does not always understand the specifics of their work outside the educational institution and may sometimes not be ready to start an independent professional activity (Pryz, 2021), which is why the learning process should be comprehensive and encourage students to be independent and generate their own innovative ideas. The teacher's tasks in this process are to acquaint the student with the luminaries of directing, their formation and the

principles of their directing craft, which the future specialist will be able to rely on, and to provide feedback that will encourage students to find answers to their questions on their own. For instance, regardless of whether the student's performance on a task is successful or unsuccessful, the teacher should analyse it in detail and provide feedback so that the student can determine how to improve the task or correct their mistakes (Mainwaring *et al.*, 2010).

One of the professional qualities that a contemporary director should possess is the ability to adapt to the needs of a modern audience, to put into theatre performances and films the meaning that will meet the needs of modern society, which has a demand for a fresh understanding of Ukrainian culture and traditions. Only a trained specialist who can understand their audience, interact with them, and find modern and extraordinary solutions in the preparation of their performances can successfully harmonise contemporary theatre with folk traditions and culture (Kurbas, 2001). Equally important in this aspect is the director's interaction with the entire team. Thus, one part of preparing future professionals for directing and acting should be the development of the ability to work in a team, to conduct brainstorming sessions, which will help to find the exact idea or element that was missing for a complete picture. In the context of creative activity, teamwork is the most effective method of work, as it involves focusing on key problems and factors that can inhibit the creative process and finding solutions to these problems and factors (Cirella, 2021).

The standard educational process is not always enough for the comprehensive development of future directors and actors, for integrated teamwork and the development of independence and creative thinking. The training of future specialists can be more effective if extracurricular activities are available, special courses are introduced into the educational process, or separate drama groups are created where students can improve their knowledge and skills, work in teams and analyse the experience of their colleagues.

In terms of the described specific features of training modern specialists for theatre-directing activities, it is important to emphasise that the achievements of theatre art in the 20th century can underlie the curricula and special courses in artistic higher education institutions. A parallel can be drawn between the important principles of modern training of future specialists and the principles of famous artists. In the context of this study, it is advisable to correlate the features of modern training of future specialists with the principles of Les Kurbas, which he successfully used in his activities (Table 1).

Table 1. A parallel between modern views on the training of future specialists and the foundations of Les Kurbas's directing craft

Specific features of training of modern specialists for theatre and directing activities	Fundamentals of Les Kurbas's directing craft
Use of modern methods and technologies	Innovation, experiments with acting, performances, and audience emotions
Fostering flexibility, the ability to adapt to changing theatrical and social trends	The concept of a "smart harlequin" – an artist who adapts to modern conditions

Table 1. Continued

Specific features of training of modern specialists for theatre and directing activities	Fundamentals of Les Kurbas's directing craft
Teamwork, interaction of future specialists with all participants in the creative process	Collective creativity, involvement of the entire team in the creation of a theatre performance
Combining modern trends with Ukrainian culture and traditions	Preservation of the identity of Ukrainian theatre, active use of national and traditional elements
Improvement of personal knowledge and skills, work on oneself, search for new ideas and methods of directing	Development of acting technique
Relevance of the performance to the needs of the audience and modern society, understanding of the audience	Interaction between the actor and the audience, understanding the audience's reactions to the elements of the performance, receiving feedback
Introducing special courses into the educational process, conducting trainings, creating extracurricular drama groups	Creating theatre laboratories

Source: compiled by the authors of this study

Les Kurbas was not only an excellent actor, director, theatre innovator and reformer, but he was also a theatre teacher, under whose guidance such actors and directors as M. Holodniy, M. Zankovetska, I. Marianenko, L. Dubovyk, and others revealed their talents. The stage laboratories founded by Les Kurbas explored various acting techniques, expanded the view of directing and acting, and experimented with artistic techniques, music, light, emotions, and feelings of both actors and spectators. Les Kurbas's interaction with the actors can be compared to the relationship between a father and his children (Vodyakhin, 2023). He was a mentor and an expert for his students, inspiring them to work on themselves, and his principles and basics of directing became the basis for their future work and modern theatre training.

It was Les Kurbas who introduced the concept of a "smart harlequin" – an artist who adapts to modern conditions, challenges, and needs of the audience and can work "in the style of their time" (Labinskyi, 1988). Furthermore, Les Kurbas preferred to work with physically trained actors, emphasised that every actor's movement should be meaningful, worked with actors' choreography and rhythm, and training in his stage laboratories even included ballet classes, which indicates a comprehensive work on training future professionals (Nastiuk, 2022).

Les Kurbas successfully combined theatrical performances with cinematic effects, which was not typical for the theatre of that time. The skilful use of light during the performance, musical fragments that were successfully combined with the use of the screen, allowed conveying the atmosphere of the performance to the maximum, which caused a strong reaction from the audience. Most directors of the 20th century were not ready for such theatrical searches, which determined Les Kurbas's innovation, his willingness to experiment, and revealed a completely new theatre to the audience. Moreover, the artist considered the "dialogue" between the actors and the audience to be important (Lehman, 2006). According to the recollections of students and members of Les Kurbas's theatre team, he was interested in the audience's reactions to the elements of the performance, and during each performance there was a person who, having a copy of the play in their hands,

recorded the audience's reactions to a particular element of the play (Zubchenko, 2017). Les Kurbas did not change the elements of the performance based on the audience's reaction, but he believed that these reactions could show either the success of the innovative elements used or the need for more detailed work on them. The law of contrasts, chiaroscuro, which involves playing on the emotions of the audience, the impact on the visual perception of the performance, the use of national elements, and the disclosure of topics important to the society of the time, led to the influence of Les Kurbas and his views on all further theatrical development.

Kurbas had leadership qualities and a strategic type of thinking, he created new theatrical searches and tried to anticipate them, he followed the audience's reaction to the performances and understood what needed to be improved. Using Les Kurbas's directing foundations, future actors and directors can bring Ukrainian theatre and cinema to a new level, putting forward bold ideas and proposals that will transform contemporary theatre into the theatre of the future, just as Les Kurbas "created the theatre of tomorrow" (Kolomiets, 2020).

Drawing a parallel between Les Kurbas's views on the training of actors and directors and modern approaches to the training of future specialists, it is possible to provide recommendations for the implementation of the foundations of Les Kurbas's directing craft in the educational process.

1. Encouraging students to generate innovative ideas, think creatively, and improve themselves. Feedback from the teacher is an important and necessary part of the educational process, but it has been identified that after graduation, students are faced with the reality of directing and may not be ready for their professional activities. Les Kurbas believed that a future director should understand their uniqueness and individuality and create accordingly. Therefore, the teacher's task is to encourage students to search for mistakes and ways to correct them on their own, to constantly work on themselves and develop creative thinking. It is possible to train students' creative thinking and encourage future professionals to search for mistakes on their own by introducing theatre or film projects into the educational process, individual for each student (Stănescu

& Andronache, 2020). The teacher should provide feedback in such a way that the student understands possible mistakes, but finds and corrects them independently, using their own creative thinking, knowledge and skills acquired during the course of study.

2. Teamwork in the educational process. Les Kurbas believed that success in preparing a performance could only be achieved by involving the entire team in the preparation process. The artist believed that every idea was valuable, important, and could be used to improve the elements of the performance (Labinskyi, 1988). Therefore, teamwork should be included in training future professionals to improve the communication skills of future directors, develop the ability to work in a team and combine all ideas into a joint project. Teamwork can be implemented through joint projects, brainstorming sessions, conversations, and discussions.

3. The use of ethnic, cultural, and traditional elements combined with modern theatrical trends. Les Kurbas skillfully combined Ukrainian motifs with experimental methods and bold productions, demonstrated culture and traditions, using modern technologies such as the screen, while preserving the identity of Ukrainian theatre and the traditions of the Ukrainian people. To develop the skills to combine national elements with modern theatre trends, it is advisable to introduce tasks in the educational process that will involve working on modern scripts and performances and combining them with historical events, culture, and traditions of the Ukrainian people. The task will be considered fulfilled if the production has not lost its meaning, the future director has considered the needs of the audience and the current needs of society, and the script has been successfully combined with ethnic, cultural, and traditional elements.

4. Interaction with the audience. Les Kurbas believed that a "dialogue" between the audience and the actors was important, he was interested in the audience's opinion, but did not change the performance based on this opinion but found opportunities to modify those elements that were not perceived by the audience. A modern director should receive feedback from the audience, interact with the audience through their performances, and improve the performance based on the audience's needs (Frost & Yarrow, 2015). Formation of interaction with the audience in the training of future professionals can be implemented through discussion meetings, where future directors will be able to discuss their scripts and ideas with potential viewers, receive feedback from them and improve their future performance based on it.

5. Creating special courses, conducting trainings, and forming extracurricular drama groups. Les Kurbas is remembered for his stage laboratories, where he trained future actors and directors using the latest methods and technologies, comprehensively developing them, and preparing them for an independent creative career. In the context of modern education, this principle can be implemented through directing workshops, where future professionals can communicate, share experiences, perform various creative exercises, and improve themselves. The formation of

extracurricular drama groups will not only improve professional skills but will also help students develop the independence necessary for a future director, form the ability to work in a team, practice, create their own mini-performances, and receive feedback from the audience. The creation of special courses based on Les Kurbas's directing craft will be most effective in the educational process of artistic higher education institutions, as it will help future specialists to comprehensively research, understand and practice the artist's principles, which will influence their future activities and the development of contemporary Ukrainian theatre and cinema.

The advantage of the described methods is the possibility of their adaptation to the distance education system, which has gained popularity in Ukraine first due to the COVID-19 pandemic and later due to the introduction of martial law. Thanks to the seamless adaptation of the described recommendations, they can be used both in the form of full online education and in a blended learning environment, when online lectures are combined with face-to-face practice, which is considered a more effective form of training for art professionals (Li *et al.*, 2021). Furthermore, modern information technologies open wide possibilities for applying the described foundations of Les Kurbas's directing craft.

Teamwork can be implemented through online conferences using applications such as Zoom, Webex, or Microsoft Teams. These applications will help students not only communicate online, but also demonstrate their projects to each other, share files, images, videos, and presentations. As for presentations, creating them can be useful when working on theatre or film projects. The online space also provides many opportunities to interact with viewers, from holding online conferences to receiving feedback by filling out online questionnaires (e.g., using Google Forms), by receiving feedback on online resources or on viewers' social networks (e.g., Instagram, TikTok).

Modern social networks can be a space for the creativity of future filmmakers. Among the methods of their use in implementing the basics of Les Kurbas's directing craft are blogging on Instagram or shooting a mini video on TikTok. These social networks can not only help future professionals unleash their creativity and generate innovative ideas faster, but also help them receive feedback from readers/viewers, understand current trends and how they can be combined with Ukrainian traditions and culture. All the applications and social networks described above can also be used for special courses, trainings, and drama groups. Furthermore, it may be interesting to create an online platform for artists of various disciplines, where online courses, online trainings, conferences with famous artists, drama clubs can be held, in fact, following the practice of theatre laboratories.

DISCUSSION

This study notes that by basing their professional activities on the approaches of Les Kurbas, future directors can

develop Ukrainian theatre and cinema to a new level, while preserving their identity. Understanding the historical origins of Ukrainian theatre and cinema, preserving the national identity of the Ukrainian people, and preserving traditions and culture are integral to the development of contemporary Ukrainian theatre and cinema. However, according to O. Klekovkin (2022), who investigated Ukrainian theatre and the leading Ukrainian theatre schools of the 19th and 20th centuries, the development of Ukrainian theatre and cinema is important not only for Ukraine but also for establishing international relations. In his opinion, the development of Ukrainian theatre should be considered in the geopolitical dimension.

Theatre and cinema are the link that can unite the culture of the Ukrainian people with the culture of other states and peoples, which will have a positive impact on the development of international relations and the world's knowledge of Ukraine's culture and history. For instance, Turkish researchers S. Baydar and Ö. Sayılğan (2018) revealed the details of the international cultural project "Tell your fairy tale, let it become a book", which improved the quality of intercultural interaction and helped representatives of different states and nationalities to better understand the culture of other countries and peoples. Such projects can reveal the specific features and identity of Ukrainian culture, traditions, and history. Theatre and cinema are one of the most effective ways to demonstrate to the world the historical and political events that the Ukrainian people have experienced and the impact this has had on people and the development of Ukrainian society (Makaryk & Tkacz, 2010).

Les Kurbas skilfully intertwined extraordinary solutions and the latest elements of theatre art with traditional Ukrainian theatre, revealed in his performances the then-relevant social problems, which not only met the needs of the audience, but also demonstrated the life of his people and the problems they faced. Indonesian specialists Y. Yudiaryani *et al.* (2022), who investigated the use of deconstruction in contemporary theatre, also believe that it is possible to create a modern, interesting performance only by exploring the culture of the people, comparing established traditions with modern views and approaches. The researchers also concluded that contemporary theatre cannot be separated from the historical context, because contemporary theatre is intricately linked to traditional principles, methods and views, which proves the importance of using established principles, specifically the basics of Les Kurbas's directing craft, in the training of future specialists.

It was found that it is the director who is the organiser of the entire theatrical process, who is responsible for the final result and impression of the theatrical performance, who determines the quality of interaction between actors, the quality of stage effects and the degree of transmission of the main idea of the performance, which determines the importance of their qualitative preparation for professional activity. Furthermore, the director must be an authority for the team, have creative thinking, and must quickly make decisions that will be successful for the performance. The

English researchers P. Ibbotson and L. Darsø (2008), who in their study of directing and its creative aspects, agree with the assumptions made and note that a competent director should be, first and foremost, a leader who can generate new ideas, experiment, and implement the most daring intentions. Moreover, an important part of preparing future professionals for professional activities is the ability to communicate with others and work in a team, listening to the opinions and ideas of each team member. M. Gavin and J. Lewis (2022), who investigated the phenomenon of the empathetic director, note that a competent director constantly interacts with their team, understands them, and has empathy traits that help to feel their team and their needs, which coincides with the principle of Les Kurbas's collective creativity and should be actively used by future directors in their professional activities. At the same time, according to M. Gavin and J. Lewis (2022), the director should have the ability to "emotionally disconnect", which will help to preserve their own emotional resource and direct it to generate innovative ideas.

This study suggests that the use of Les Kurbas's directing craft in higher education institutions can help students prepare for their future professional activities. Understanding the tenets of their profession, based on the views and principles of artists who have achieved success in theatre and cinema, students increase their own motivation to study and practice. G.B. Roege and K.H. Kim (2013) investigated the need for art education to develop the state and each individual and agree that the opportunity to draw on the experience of other artists in creative activities increases students' motivation to learn, and also note that studying in artistic higher education institutions develops students' creativity, creative thinking and the ability to generate new ideas, but also improves their well-being, mental, and emotional state, especially in the case of communication with like-minded people and joint creativity. This proves the importance of introducing special courses, trainings, and extracurricular drama clubs into the educational process, where future specialists will be able to work more actively in a team, as well as improve their emotional state, which will influence the generation of new ideas and their application in practice. As for special courses, the experience of the Canadian scholar B. Chen (2023), who investigated artistic training in the Canadian educational system, shows that the creation of special courses, programmes and even the introduction of special artistic disciplines in non-artistic faculties will help to maximise the development of the state's culture in the international space. Furthermore, according to the Spanish researcher J.L. Aróstegui (2019), who reviewed arts education policies, higher education in the arts helps students to change their experience, to transform along with the theatre performances they prepare or the roles they play.

D. Setyawan and F. Dopo (2020), who studied the formation of national identity through art education and art in general, note that it is through art education and in its process that students can form an understanding of the

importance of culture, traditions, explain the need to preserve national identity, which in the future can affect their professional activities. This is in line with the assumptions of this study, that the importance of theatre and film for Ukrainian culture can only be passed on to the next generations by understanding the historical origins of Ukrainian art and by constantly working on our skills and knowledge, the successful application of which will have a positive impact on the future of theatre and film. In this aspect, it is important to use the basics of Les Kurbas's directing craft in the educational process, because his views can underlie the successful training of future specialists.

Scholars unanimously agree that the development of contemporary theatre and film is impossible without understanding the history of its development and without knowing and using the fundamental theatrical and directing principles, which is especially important in the training of future artists. It was confirmed that it is only possible to create a performance that is interesting for the audience by understanding their needs and using elements of culture and traditions, because when watching a performance, the audience must first identify themselves and their feelings with the characters and their emotions. Scholars approve of the principles of Les Kurbas's directing craft and agree with the expediency of using them in the educational process, but point out the importance of periodic "emotional disconnection" of the director from the work issues and problems of the theatre team, because only under such conditions is it possible to generate new ideas and effective professional activity. The research also confirms the idea of the need for trainings, special courses and extracurricular drama groups based on Les Kurbas's directing principles, as their use will not only positively affect students' motivation to learn and develop their skills, but also improve their emotional state. The assumption was also confirmed that the use of Les Kurbas's directing craft will help preserve Ukrainian theatre, cinema, and the national identity of the Ukrainian people, as contemporary art is inseparable from its historical context.

CONCLUSIONS

The study revealed the personality of Les Kurbas as a famous director and theatre teacher, described his approaches to directing. The features of preparing future directors for professional activity and the importance of this preparation were considered. It was found that a modern director should possess the following traits: leadership qualities,

creative thinking, ability to self-reflection, self-development, ability to generate ideas, ability to preserve the identity of Ukrainian art, ability to work in a team and take responsibility for the results. It was determined that such qualities are developed throughout the entire directing activity, and future students can acquire them during their training in higher education institutions. The training will be especially effective if the educational process is based on the principles of Les Kurbas's directing craft, because contemporary theatre and cinema are inseparable from the history of their development. A parallel was drawn between the main aspects of training future specialists and the fundamentals of Les Kurbas's directing craft. Based on the parallels drawn, recommendations were given for using the principles of Les Kurbas's directing craft in the educational process, including encouraging students to find independent solutions through individual projects, teamwork through brainstorming, discussions and conversations, combining traditional elements with innovative ideas by performing special tasks, interaction with the audience by holding discussion meetings, introducing special courses, trainings, and extracurricular drama groups into the educational process, which will affect not only the acquisition of knowledge, skills and motivation to study, but also the emotional state of future specialists. These recommendations can be adapted to online or blended learning.

Kurbas's legacy has had a comprehensive impact on the development of theatre and directing in contemporary Ukraine and, despite his innovative ideas, has helped preserve the identity of Ukrainian theatre and bring it to the present day. The task of a contemporary director is similar: to develop Ukrainian theatre and cinema, to use modern methods, but to preserve the national identity of the Ukrainian people, the originality of Ukrainian theatre, and the authenticity of cinema. Prospects for further research are an experimental test of the effectiveness of using the fundamentals of Les Kurbas's directing craft in the training of future specialists, as well as the development of a special course for training students based on Kurbas's principles and foundations.

ACKNOWLEDGEMENTS

None.

CONFLICT OF INTEREST

None.

REFERENCES

- [1] Aróstegui, J.L. (2019). Evaluation, educational policy reforms, and their implications for arts education. *Arts Education Policy Review*, 120(3), 121-125. doi: 10.1080/10632913.2018.1532368.
- [2] Babii, N. (2020). Actionism in the theater practices of Western Ukraine of the end of the XX century. *Culture and Contemporaneity*, 2, 10-16. doi: 10.32461/2226-0285.2.2020.222203.
- [3] Baydar, S., & Sayilgan, Ö. (2018). A project-based learning process in art and design education: "Tell your fairytale, let it become a book". *Idil Journal of Art and Language*, 7(42), 145-150. doi: 10.7816/idil-07-42-05.
- [4] Chen, B. (2023). The significance of the arts in the Canadian education system. *Journal of Education, Humanities and Social Sciences*, 13, 383-387. doi: 10.54097/ehss.v13i.8187.

- [5] Cirella, S. (2021). Managing collective creativity: Organizational variables to support creative teamwork. *European Management Review*, 18(4), 404-417. doi: [10.1111/emre.12475](https://doi.org/10.1111/emre.12475).
- [6] Crawford, R. (2016). Rethinking teaching and learning pedagogy for education in the twenty-first century: Blended learning in music education. *Music Education Research*, 19(2), 195-213. doi: [10.1080/14613808.2016.1202223](https://doi.org/10.1080/14613808.2016.1202223).
- [7] Fowler, M. (2021). "Comrade Actress"? The everyday life of the theatrical avant-garde. *Ukraina Moderna*, 29, 289-312.
- [8] Frost, A., & Yarrow, R. (2015). *Improvisation in drama, theatre and performance: History, practice, theory*. London: Methuen Drama.
- [9] Gavin, M., & Lewis, J. (2022). The empathetic director as a catalyst for a resonant devising practice. *South African Theatre Journal*, 35(1), 1-16. doi: [10.1080/10137548.2022.2088609](https://doi.org/10.1080/10137548.2022.2088609).
- [10] Hordieiev, S. (2023). Pedagogy of modern Ukrainian theater: On the way to artistic synthesis. *Problems of Interaction of Art, Pedagogy and Theory and Practice of Education*, 63, 91-107. doi: [10.34064/khnum1-63.05](https://doi.org/10.34064/khnum1-63.05).
- [11] Ibbotson, P., & Darsø, L. (2008). Directing creativity: The art and craft of creative leadership. *Journal of Management & Organization*, 14(5), 548-559. doi: [10.5172/jmo.837.14.5.548](https://doi.org/10.5172/jmo.837.14.5.548).
- [12] Klekovkin, O. (2022). Ukrainian theatre: With and without Stanislavski. *Artistic Culture. Topical Issues*, 18(2), 62-66. doi: [10.31500/1992-5514.18\(2\).2022.269784](https://doi.org/10.31500/1992-5514.18(2).2022.269784).
- [13] Kolomiets, R. (2020). *Les Kurbas*. Kharkiv: Folio.
- [14] Kurbas, L. (2001). *Philosophy of theater*. Kyiv: Solomiya Pavlychko Publishing House "Osnovy".
- [15] Labinskyi, M.H. (Ed.). (1988). *Les Kurbas. Berezil: From creative heritage*. Kyiv: Dnipro.
- [16] Lehman, H.-T. (2006). *Postdramatic theatre*. London and New York: Routledge.
- [17] Li, Q., Li, Z., & Han, J. (2021). A hybrid learning pedagogy for surmounting the challenges of the COVID-19 pandemic in the performing arts education. *Education and Information Technologies*, 26(6), 7635-7655. doi: [10.1007/s10639-021-10612-1](https://doi.org/10.1007/s10639-021-10612-1).
- [18] Mainwaring, L.M., Pysch, C., & Krasnow, D.H. (2010). Teaching the dance class: Strategies to enhance skill acquisition, mastery and positive self-image. *Journal of Dance Education*, 10(1), 14-21. doi: [10.1080/15290824.2010.10387153](https://doi.org/10.1080/15290824.2010.10387153).
- [19] Makaryk, I.R., & Tkacz, V. (2010). *Modernism in Kyiv: Jubilant experimentation*. Toronto: University of Toronto Press. doi: [10.3138/9781442686373](https://doi.org/10.3138/9781442686373).
- [20] Nastiuk, O. (2022). Musical and choreographic component of the reformist theater of Les Kurbas. *Topical Issues of the Humanities*, 48 (Vol. 2), 17-22. doi: [10.24919/2308-4863/48-2-3](https://doi.org/10.24919/2308-4863/48-2-3).
- [21] Pryz, V. (2021). Stage and director education: Historical origins and ways of adaptation in modern conditions. *Grail of Science*, 4, 637-641. doi: [10.36074/grail-of-science.07.05.2021.119](https://doi.org/10.36074/grail-of-science.07.05.2021.119).
- [22] Roegel, G.B., & Kim, K.H. (2013). Why we need arts education. *Empirical Studies of the Arts*, 31(2), 121-130. doi: [10.2190/EM.31.2.EOV.1](https://doi.org/10.2190/EM.31.2.EOV.1).
- [23] Rybchenko, O. (2022). Folk traditions the lens of time and space in the stage production of Taras Shevchenko's "Haidamaky" by Les Kurbas. *Topical Issues of the Humanities*, 50, 128-133. doi: [10.24919/2308-4863/50-19](https://doi.org/10.24919/2308-4863/50-19).
- [24] Setyawan, D., & Dopo, F. (2020). Strengthening national identity through the learning of East culture-based art education. *Harmonia: Journal of Arts Research and Education*, 20(1), 39-46. doi: [10.15294/harmonia.v20i1.21711](https://doi.org/10.15294/harmonia.v20i1.21711).
- [25] Stănescu, M., & Andronache, D. (2020). The importance of theater pedagogy from a student's perspective. An empirical study in a German-speaking elementary school in Romania. *Educția 21 Journal*, 18, 109-118.
- [26] Vodyakhin, Ye. (2023). Areas of activity of the "Berezil" theater in the context of the institutionalization of cultural and artistic education. *Young Scientist*, 1, 64-69. doi: [10.32839/2304-5809/2023-1-113-14](https://doi.org/10.32839/2304-5809/2023-1-113-14).
- [27] Yudiaryani, Y., Kuardhani, H., & Purba, S. (2022). Implementation of deconstruction method ideas in the contemporary theatre of Pilihan Pembayun Yogyakarta. *Journal of Urban Society's Arts*, 9(1), 60-70. doi: [10.24821/jousa.v9i1.6694](https://doi.org/10.24821/jousa.v9i1.6694).
- [28] Zubchenko, I. (2017). *His heart belonged to the theater*. Retrieved from <https://nstdu.com.ua/publication/yogo-sertse-nalezhalo-teatru>.

Лія Леванівна Сванідзе

Викладач

Київський національний університет культури і мистецтв

01601, вул. Євгена Коновальця, 36, м. Київ, Україна

<https://orcid.org/0000-0003-4850-8412>

Володимир Олександрович Левицький

Викладач

Київський національний університет культури і мистецтв

01601, вул. Євгена Коновальця, 36, м. Київ, Україна

<https://orcid.org/0000-0002-8857-7773>

Олена Миколаївна Венгер

Викладач

Київський національний університет культури і мистецтв

01601, вул. Євгена Коновальця, 36, м. Київ, Україна

<https://orcid.org/0000-0002-8520-9369>

Використання основ режисерської майстерності Леся Курбаса під час підготовки майбутніх спеціалістів у вузах

Анотація. Підготовка спеціалістів у мистецьких вищих навчальних закладах має проходити з використанням сучасних методів, технологій та напрацювань і бути орієнтованою на сучасного глядача, проте водночас навчання має базуватися на усталених принципах та поглядах, які перевірені часом. Леся Курбас – особистість, чії погляди та принципи акторського мистецтва та режисури можуть бути орієнтиром для сучасних митців, а тому до них варто звертатися в професійній підготовці здобувачів театральної та кіноосвіти. Мета роботи – розкрити аспекти підготовки майбутніх спеціалістів у вищих навчальних закладах на засадах режисерської майстерності Леся Курбаса. Для досягнення мети використано такі методи досліджень: біографічний метод, методи аналізу та синтезу, метод порівняння, метод абстрагування, метод аналогії, методи дедукції та індукції. У роботі розкрито основи режисерської майстерності Леся Курбаса та її вплив на становлення сучасного театру та режисури, порівняно його принципи та погляди з принципами та поглядами сучасних митців. Розкрито роль Леся Курбаса та його творчості в збереженні самобутності українського театру та кінематографу та в розвитку української культури. Проведено паралель між сучасними підходами до підготовки майбутніх спеціалістів та основами режисерської майстерності Леся Курбаса. Зроблено висновок про доцільність використання основ режисерської майстерності Леся Курбаса у навчальному процесі вищих навчальних закладів. Описано особливості використання основ режисерської майстерності Леся Курбаса під час підготовки майбутніх спеціалістів до професійної діяльності і надано рекомендації щодо їх реалізації в освітньому процесі. Результати дослідження можуть використати педагоги мистецьких вищих навчальних закладів під час розробки лекційного матеріалу та спецкурсів, а також студенти для самовдосконалення та роботи над собою і своїми професійними навичками, що є підґрунтям успішного розвитку українського театру та кінематографу

Ключові слова: театральне мистецтво; акторські навички; культура; вища освіта; творчість, кіноосвіта

UDC 378.123:005.336.5
DOI: 10.52534/msu-pp3.2023.63

Oleksandr Pushkar

Doctor of Economic Sciences, Professor
Simon Kuznets Kharkiv National University of Economics
61166, 9A Nauka Ave., Kharkiv, Ukraine
<http://orcid.org/0000-0003-3592-3684>

Yevhen Hrabovskyi*

PhD in Economics, Associate Professor
Simon Kuznets Kharkiv National University of Economics
61166, 9A Nauka Ave., Kharkiv, Ukraine
<http://orcid.org/0000-0001-7799-7249>

Development of an information model of personnel development in the process of training at the workplace

Article's History:

Received: 03.05.23

Revised: 05.08.23

Accepted: 30.08.23

Suggested Citation:

Pushkar, O., & Hrabovskyi, Ye. (2023). Development of an information model of personnel development in the process of training at the workplace. *Scientific Bulletin of Mukachevo State University. Series "Pedagogy and Psychology"*, 9(3), 63-71. doi: 10.52534/msu-pp3.2023.63.

Abstract. The improvement of competences in relation to the solution of everyday tasks of production practice is best carried out in the process of training at the workplace due to the combination of acquired theoretical knowledge with practical experience. An urgent task of evaluating the effectiveness of training at the workplace is the diagnosis of the level of preparedness of the personnel of a multimedia company for scientific and technical activities, which can be carried out on the basis of the use of an appropriate information model of personnel development. The purpose of the article was to implement the development of a system model for the formation of professional skills in specialists of multimedia technologies of the polygraphic profile. The article proposes a method of informational support for personnel development through on-the-job training. As a framework that explains the knowledge and skills for the effective implementation of training in the workplace, the current content of competencies is considered. The key areas of personnel qualities related to multimedia technologies are systematized. As part of the conducted research, an information model was created and competence formation was tested within the framework of the relevant modules. The impact of engineering and organizational skills on improving the competencies of multimedia technology specialists is considered. The main components of success in the formation of professional skills of personnel as a result of training at the workplace are considered and analysed. As a result of the work carried out, recommendations were made on the diagnosis of the levels of training of personnel of multimedia and computer companies to improve their own scientific and technical activities, the choice of the content of professional training of specialists in the multimedia profile, the application of a systematic approach to the formation of relevant skills and abilities. A morphological matrix of the formation of technical creativity skills of the personnel of a multimedia company in the process of training at the workplace was created. With the help of Shannon's information system, a mathematical model of the formation of relevant special modules of competences was obtained. Emphasizing the technical component, the influence of engineering and organizational skills in the process of training at the workplace is considered. The entropy level of the learning system was calculated before and after receiving information. The dependence of entropy on the level of acquired knowledge was analysed. The practical

*Corresponding author



significance of the obtained results lies in the formation of practical recommendations for the management of computer and multimedia companies for the organization of training at the workplace, as a result of which employees receive positive incentives for the development of relevant competencies

Keywords: technical creativity; systematic approach; polygraphy; technical information; epistemological levels; multimedia technologies

INTRODUCTION

An important component of the development processes of computer and multimedia companies is the development of personnel competencies through on-the-job training. This is due to the change in information processing technologies and the improvement of software. On-the-job training in modern conditions is an integral part of the development processes of computer and multimedia companies, as a result of which the competencies of personnel are improved in relation to solving everyday tasks of production practice. Such training at the workplace can be provided both by the internal labour resources of the organization led by top management, and by involving dual education.

The practice of high-tech computer and multimedia companies involves the evaluation of the effectiveness of training at the workplace in order to diagnose the level of preparedness of personnel for scientific and technical activities. Optimizing the process of conducting such a diagnosis is possible based on the use of appropriate information support, which provides opportunities to assess the quality of the formation of professional skills in the process of mastering a special module of competencies.

K. Bhushan *et al.* (2023) consider innovative models of learning systems development. But their work lacks a description of the process of acquiring competency modules in the process of training at the workplace. Contemporary curriculum policies in the context of globalization, recontextualization, and hybridization of pedagogical models are analysed in a study by M. Cécile (2023). The content and form of the pedagogical models proposed in this study can be useful for improving the modules' competencies. However, this study does not take into account the specifics of workplace learning.

Training at the workplace is given in the scientific work by V.T. Dang *et al.* (2023). The developed system is focused on the publishing and printing industry. However, in this study, there is no mathematical model of the formation of the corresponding special modules competencies. The training of multimedia specialists should take into account the economic situation of the labour market at the end of training. The study of L. Grimal *et al.* (2020) illustrates localized pedagogical situations for enhancing global sustainable skills in engineering education and universities. However, this study does not allow providing a comprehensive view of the process of acquisition of competencies of personnel of computer and multimedia companies through on-the-job training. A pedagogical framework for the development of interactive virtual tools for teaching and learning dynamic systems in control

engineering is proposed in the work of E.E. Vidal Rosas and C. Galván Fernández (2022). But there is no description of specific modules' competencies in this work.

Research by Ye. Hrabovskyi *et al.* (2022) makes it possible to trace the influence of various economic factors on the effectiveness of the learning process. However, this study does not take into account the specifics of the technical creativity of the personnel of multimedia companies. The trends of modern smart mobile pedagogy for engineering education are systematized in the scientific work of P. Punithavathi and S. Geetha (2020). Relevant competences, which are achieved due to the implementation of mobile learning technologies, are analysed. But this study does not take into account the mechanisms of informational support for personnel development.

R. Sikström *et al.* (2022) conducted a two-stage systematic review of how pedagogical agents communicate with students. The analysis of these pedagogical aspects allows achieving a general idea of the mechanisms of information exchange in the modern pedagogical environment of learning processes at the workplace. However, this work does not provide an opportunity to highlight the main components in the haste of formation of professional skills of personnel as a result of training at the workplace. The study of the pedagogical experience of the learning process at the workplace is given in the scientific work of F. Norm (2023). This experience can be interesting for the formation of the appropriate content of competencies in the process of dual education. But this work does not take into account the key areas of personnel qualities related to multimedia technologies.

The analysis of literary sources showed that the study of modern problems of competence formation can be considered through the complex methodology of the system approach, which includes procedures at different epistemological levels (from the selection of an epistemic object to the construction of a real system in specific conditions). Despite the fact that aspects of modern trends in workplace training, as well as the creation and use of multimedia tools for dual education, have been studied in detail today, there is no systematic information model for the formation of professional competencies of personnel in the process of workplace training in the specialized literature.

The purpose of the work is to develop a system model of formation of professional skills among specialists of multimedia and computer companies in the process of training at the workplace.

MATERIALS AND METHODS

The competence development was considered using the method of generalization. Based on the use of the reproductive method of problem-based learning, an analysis of existing learning technologies at the workplace was conducted. The method of reproductive problem-based learning is based on the explanation of the material and its reproductive development.

Reproductive and research approaches were used to create an informational matrix of competence formation. These approaches develop individual qualities within the framework of the field studied by specialists of multimedia and computer companies in the process of training at the workplace. Special attention was paid to the optimal combination of reproductive and research elements and to reveal the maximum potential of the research approach to learning at the workplace. A number of laws apply in the learning process. The manifestation of each law represents certain requirements for the construction of the educational process. These requirements were taken into account for the formation of a model for the training of multimedia professionals.

With the help of the classification method, the key directions of the most important qualities of specialists were revealed. Also, this method was used to select competency modules in the process of creating a model of engineering and organizational skills of technical creativity. With the help of the deduction method, a study of personality qualities and components of each of the competence modules was carried out for the development of a model for the formation of engineering and organizational skills of technical creativity. Thanks to the use of the decomposition method, a morphological matrix of skill formation was created for each competency module.

The methods of expert assessments and statistical data processing were used to rank the relevant data sets in the process of filling the model of engineering and organizational skills of technical creativity. The introduction of quantitative evaluation points (by importance) for each of the qualities made it possible to evaluate an array of educational methods to rank them.

The calculation of the possible level of entropy by modules of competencies was carried out based on information theory. Information theory is widely used in technical and social systems, especially in the construction of optimal diagnostic processes. It originated as a mathematical theory of communication in the work of C.E. Shannon (1993). Information theory began to be applied in various fields of science as a general theory of the connection of statistical systems.

According to this theory, information is the difference in entropy of the system before and after receiving information:

$$\Delta I = H_0(A) - H_1(A), \quad (1)$$

where $H_0(A)$ is the initial entropy of the system; $H_1(A)$ is the entropy of the system after receiving information.

Information entropy was determined by the formula

$$H(A) = -\sum P_i \ln P_i, \quad (2)$$

where P_i is the probability of finding the system in the i -th state. All stages of the research, in which people were involved, were carried out with their consent and in compliance with ethical standards, in particular the recommendations of the European Commission (2021) on ethics and personal data protection.

RESULTS

To improve the qualities of a person in relation to the realization of his creative potential, a flexible methodology of the development process of multimedia companies by training personnel at the workplace is needed, based on the laws of the psychology of education and creativity, taking into account the historical approach to the development of science, technology, and technology. This requires changing and adjusting the concept of dual education and its substantive components.

A significant part of the research is devoted to the development of meaningful aspects of the development of multimedia companies through training of personnel at the workplace as a factor in increasing the creative potential of the personality of young specialists, in particular specialists in the multimedia direction.

Analysis of the natural foundations and components of the creative activity of an individual, a socio-psychological approach to the formation of motives for the creative activity of personnel, the study of aspects of the acquisition of special modules competences, the influence of interpersonal relations of participants in the learning process at the workplace on the development of creative activity of specialists of multimedia firms is also included in the scope of problem development.

During the study of the creative potential of specialists in multimedia technologies, the most important qualities of specialists in the following areas were identified:

- that characterize the attitude to work: diligence, attention to work, creative approach to the implementation of the tasks of production practice;
- that demonstrate the culture of production behaviour and performance of current work: diligence, independence, faithfulness to one's word, reliability, energy;
- technical, mathematical and physical knowledge in the field of specialization, general education, awareness of the goals of the company, its tasks and plans;
- the ability to overcome current routine problems, skills related to the processing of literary technical sources and reference books, skills of general vision of the problem, skills of research and operational orientation in tasks, practical experience, skills of optimizing the solution of routine tasks of production practice, skills of interacting with other departments, the ability to explain technical issues, competence in creating a strategic plan for solving production practice tasks;

• skills of creating a psychologically attractive working atmosphere, personnel management skills, team building skills, the ability to formulate ideas, the ability to understand people, the ability to convince people.

The indicated skills and competences of a specialist (or an employee of a company) made it possible to simulate the process of creating knowledge in the personnel of multimedia companies in the conditions of training at the workplace. Focusing on the technical aspects of training at the workplace, the key skills that influence the formation

of multimedia technology specialists were considered. In the original matrix (Table 1), the key modules of competencies are distributed according to the corresponding personality qualities. In each competence module (general scientific, general technical, special) a specialist of a multimedia company acquires certain skills and abilities. The question of raising the assessment of the degree of realization of creative skills in the process of solving current tasks correlates with the level of systemology modules competencies.

Table 1. Model of formation of engineering and organizational skills of technical creativity

Personality qualities	Competence modules		
	General scientific	General technical	Special
A) the ability to overcome current routine problems	Mathematical statistics and data processing	Computer graphics and visualization	Pre-print processing of information
B) skills related to processing literary technical sources and reference books	System analysis	Information and communication technologies	WEB resource development technologies
C) skills of general vision of the problem		Modelling of technical systems	Design of databases and knowledge bases
D) skills of optimizing the solution of routine tasks of production practice			Colour theory
E) competence in creating a strategic plan for solving production practice tasks			Multimedia programming

Source: author's development

The intellectual and creative orientation of the development of the company through training at the workplace can be achieved by increasing the level of intellectualization of the content of the module competencies that are the basis of the development of creative thinking. This is with module saturation competencies with modern scientific concepts and hypotheses. The formation of a modern system of competencies, which can be given such characteristics as orderliness, dynamism, complexity, and high cognitive orientations, is determined by the development of thinking mechanisms that stimulate intellectual development and consolidate the foundations of the methodology of scientific knowledge: the selection and setting of goals, ideas about their achievement.

Scientific knowledge introduced into the practice of personnel management should meet informational goals, as well as developmental goals. These should include the broad relevance and generalizability of the problem being studied, as well as the transfer of acquired knowledge and work methods to new issues. A promising and effective direction of intellectualization of the content of training at the workplace should be the use of modern methodologies that reflect the integration of a systemic style of thinking and modelling cognition, i.e. penetration into all aspects of

education of available forms and methods of material and mathematical modelling, including geometric, analogue, etc.

At the current stage of digitalization of society, the methods of creating an information model from idea to programming and implementation of development at the consumer should form the basis of professional training of specialists in the IT industry. The formation of the main goal and contours of the pedagogical system determines the need to agree and take into account the requests of all participants in the learning process at the workplace. This task is multivariate, which requires the implementation of a number of steps.

Step 1. Forming a list of factors. The evaluation of the level of technical creativity of the personnel of a multimedia company in the process of training at the workplace should be considered from the example of a special module of competencies. Table 1 contains the key competencies of the personnel of the multimedia firm in the process of training in the workplace. A morphological matrix for a special module of competencies is obtained (Table 2). Here, the coefficients P_{ij} express the weighting coefficients of the influence of the studied competence modules on the realization of professional skills.

Table 2. Morphological matrix of the formation of technical creativity skills of the personnel of a multimedia company in the process of training at the workplace

		Multimedia programming	WEB resource development technologies	Design of databases and knowledge bases	Theory colour	Basics of designing WEB publications
A	Ability to overcome current routine problems	R _{A1}	R _{A2}	R _{A3}	R _{A4}	R _{A5}
B	Skills related to processing literary technical sources and reference books	R _{B1}	R _{B2}	R _{B3}	R _{B4}	R _{B5}
C	Skills of general vision of the problem	R _{C1}	R _{C2}	R _{C3}	R _{C4}	R _{C5}
D	Skills of optimizing the solution of routine tasks of production practice	R _{D1}	R _{D2}	R _{D3}	R _{D4}	R _{D5}
E	Competencies regarding the creation of a strategic plan for solving production practice tasks	R _{E1}	R _{E2}	R _{E3}	R _{E4}	R _{E5}

Source: author's development

The evaluation and measurement of the given coefficients are achieved through the decomposition of the studied module into the studied topics. The decomposition

from the example of the competence module "Theory of colour" has the following form (Table 3). Table 3 shows the topics studied in columns.

Table 3. Morphological matrix of skill formation for the competency module "Colour Theory"

		Topic 1	Topic 2	Topic 3	Topic 4	Topic 5	...	Topic 13
A	Ability to overcome current routine problems	R _{A1}	R _{A2}	R _{A3}	R _{A4}	R _{A5}	...	R _{A13}
B	Skills related to processing literary technical sources and reference books	R _{B1}	R _{B2}	R _{B3}	R _{B4}	R _{B5}	...	R _{B13}
C	Skills of general vision of the problem	R _{C1}	R _{C2}	R _{C3}	R _{C4}	R _{C5}	...	R _{C13}
D	Skills of optimizing the solution of routine tasks of production practice	R _{D1}	R _{D2}	R _{D3}	R _{D4}	R _{D5}	...	R _{D13}
E	Competencies regarding the creation of a strategic plan for solving production practice tasks	R _{E1}	R _{E2}	R _{E3}	R _{E4}	R _{E5}	...	R _{E13}

Source: author's development

Step 2. Assigning weights to factors and subfactors. Each of the skills must be evaluated by a certain weighting

factor. An example of weighting factors and subfactors for the first theme is given in Table 4.

Table 4. Provision of weighting factors

Skill	An example of assigned weights
A Ability to overcome current routine problems	PA ₄₁ = 0.25
B Skills related to processing literary technical sources and reference books	RB ₄₁ = 0.20
C Skills of general vision of the problem	RZ ₄₁ = 0.30
D Skills of optimizing the solution of routine tasks of production practice	RD ₄₁ = 0.15
E Competencies regarding the creation of a strategic plan for solving production practice tasks	RE ₄₁ = 0.10

Source: author's development

Step 3. Normalization of weight coefficients. The weights of factors and subfactors must be normalized. This is done by multiplying the scales obtained for each factor and the scales related to the subfactors. This is how the final weight for each subfactor is obtained:

$$P_{A4} = P_{A41} \cdot P_{A42} \cdot P_{A43} \cdot P_{A44} \cdot P_{A45} \cdot \dots \cdot P_{A413}$$

Step 4. Summary by points. In the example under consideration, a certain method of formation of professional skills is evaluated (Table 5). The best method is the

one that receives the highest rating. Comparing the weighted points assigned to different options makes it possible to rank the latter. Based on the use of information theory (Shannon, 1993) the possible entropy level for the first

theme was calculated (Table 5). If the specialist successfully masters all skills, the entropy value will be $H_0(A) = 7.39$. If other topics are successfully mastered, the level of entropy will decrease and ideally tend to zero.

Table 5. Calculation of the level of possible entropy

		Topic 1		
		P_i	$\ln P_i$	Σ
A	Ability to overcome current routine problems	0.25	-1.39	-1.14
B	Skills related to processing literary technical sources and reference books	0.20	-1.61	-1.41
C	Skills of general vision of the problem	0.30	-1.20	-0.90
D	Skills of optimizing the solution of routine tasks of production practice	0.15	-1.89	-1.74
E	Competencies regarding the creation of a strategic plan for solving production practice tasks	0.10	-2.30	-2.20
				-7.39

Source: author's development

So, as knowledge increases, entropy will decrease. Indeed, for an unlikely event ($P \rightarrow 0$), the entropy will decay to infinity ($H(A) \rightarrow \infty$). For a credible event ($P \rightarrow 1$), the entropy will decay to zero ($H(A) \rightarrow 0$). This approach makes it possible to evaluate the applied methodology for the formation of professional skills of personnel in the process of training at the workplace and to quickly adjust the methodology.

DISCUSSION

The scientific research carried out within the framework of this work was based on taking into account the following results of the works of leading scientists. Thus, consideration of communication mechanisms in organizational systems of training at the workplace is presented in the works of T.T. Sulaiman *et al.* (2022), Y. Cleovoulou *et al.* (2022). However, the problem of these studies is the fact that the process of personnel development through on-the-job training is carried out from the point of view of the sustainable development of society, that is, without taking into account its evolution. Mechanisms of formation of informal and formalized knowledge, as well as their use in learning processes at the workplace, are proposed in the scientific studies of C.E. Shannon (1993), O.I. Pushkar and Ye. Hrabovskyi (2020). At the same time, these studies do not give clear recommendations to the management of computer and multimedia companies regarding the organization of training at the workplace.

Scientific work of S.M. Zinchenko and A.L. Zinchenko (2021) contains an analysis and systematization of the use of multimedia tools of dual education, which provide opportunities for digitalization of the educational process and an effective combination of theory and practice of using modern information technologies in pedagogical processes. However, the mathematical model of the formation of the corresponding special modules is missing in the mentioned works competencies. The specifics of creating multimedia learning tools in the workplace are analysed in a study by D. Kukushkin and V. Kolesnikova (2022).

However, this study lacks recommendations for diagnosing the levels of training of personnel of multimedia and computer companies to improve their own scientific and technical activities. An innovative strategy for the introduction of information technologies as a tool for improving the quality of training at the workplace is considered in the works of J. Lim (2021), L. Slipchyshyn (2022). However, these studies do not allow obtaining a general systemic view of the processes of formation of skills of the personnel of a multimedia firm in the process of training at the workplace. In a scientific article by R. Alakbarov (2022) proposed an optimization model for task planning in dual education. At the same time, this work does not take into account the influence of engineering and organizational skills on the formation of specialists in multimedia technologies.

The proposed results of this work on the development of a system model for the formation of professional skills among specialists of multimedia and computer companies in the process of training at the workplace are a continuation of research (Pushkar & Hrabovskyi, 2020; Pushkar, 2023) on the issues of informational support of pedagogical processes. The developed system model can be used to analyse the results of the formation of technical creativity skills of the personnel of a multimedia company in the process of training at the workplace.

The results of this study close the problematic part of informational support of pedagogical processes in terms of assessing the impact of studied competence modules on the formation of certain professional skills. This is achieved thanks to the morphological matrix developed by the authors of the formation of technical creativity skills of the personnel of a multimedia company in the process of training at the workplace (Table 2).

In this work, as in the studies of K. Bhushan *et al.* (2023), F. Norm (2023), the explanation of knowledge and skills for effective learning at the workplace is based on the analysis of the modern content of competencies. After all, the modern content of competencies is a reliable basis

that explains the knowledge and skills for effective implementation of training in the workplace. However, the mentioned studies, in contrast to this work, do not take into account such an aspect as the key areas of personnel qualities related to multimedia technologies.

In the conducted research, an information model was developed and the approbation of competence formation within the framework of the relevant modules was carried out. In the studies of T.T. Sulaiman *et al.* (2022), V.T. Dang *et al.* (2023), E. Mohammadpour and Y. Maroof (2023) offer a variety of ready-made information systems for the implementation of the task of supporting the formation of certain skills and abilities of employees in the process of training at the workplace. However, in this work, in contrast to the mentioned studies, based on the consideration and analysis of the main components in the urgency of the formation of professional skills of personnel as a result of training at the workplace, recommendations are offered for diagnosing the levels of training of personnel of multimedia and computer companies to improve their own scientific and technical activities. These recommendations provide opportunities for the management of companies in the IT industry to choose the content of professional training of multimedia specialists based on the application of a systematic approach to the formation of relevant skills and abilities.

The results of the conducted research enable the selection and assignment of factors, which will be used to compare various options for the process of training at the workplace for the personnel of multimedia and computer companies. The presentation of such factors (or properties or criteria) in this work is carried out in the form of a morphological matrix that illustrates the interdependence between factors. In the scientific article J. Malek *et al.* (2019), in contrast to this study, an overview of the practical aspects of dual education is presented without taking into account the factors of comparison of alternative options of the educational process.

In this work, as well as in the study, M. Cécile (2023) emphasizes the influence of engineering and organizational skills in the workplace learning process. However, a distinctive feature of this work is the use of information theory, which is effective for building optimal diagnostic processes. As a result, this study made it possible to calculate the level of entropy of the learning system before and after receiving information, as well as to analyse the dependence of entropy on the level of acquired knowledge.

Modern methods of building creative systems should be related to the integration of research results into the general concept of the workplace training system, and not to the evaluation and selection of a plausible version. Determining the specifics of the training system at the workplace is impossible without consistent application of the procedures of the system approach. At the same time, in the studies of L. Grimal *et al.* (2020), E.E. Vidal Rosas and C. Galván Fernandez (2022) promising ways to solve the problem of the specifics of the training system at the workplace extend from the properties of the entire system of the educational object (composition, structure, functions, system-creative

relations, characteristics, etc.) to the actual content of the corresponding competency modules. However, these studies do not provide a mathematical apparatus for evaluating the effectiveness of the formation of skills and abilities of personnel. Therefore, in this paper, based on the system approach presented in the above studies, a mathematical model of the formation of relevant special modules of competences is proposed using Shannon's information system.

The obtained research results regarding the development of a system model of formation of professional skills among specialists of multimedia and computer companies in the process of training at the workplace are adequate within the limits of the competence approach to the organization of the educational process.

CONCLUSIONS

The conduct of this study was based on the fact that the constant improvement of the competencies of the staff of computer and multimedia companies is the guarantee and basis of effective management in the IT industry. As a result, an urgent need within the framework of this work was to diagnose the level of preparedness of the personnel of the multimedia company for scientific and technical activities. In turn, such a diagnosis is impossible without the appropriate mathematical tools, as a result of which the basics of information theory were involved.

As a result of the work carried out, recommendations were developed regarding the diagnosis of the levels of preparedness of the personnel of a multimedia company for scientific and technical activities, the selection of the content of professional training, the methodology of training at the workplace was revealed, which in the complex contributes to the stimulation of positive motives for scientific and technical activities in the company's personnel, their formation system approach to the formation of relevant competences. The given list of the most important qualities of a person served as the basis for compiling a model of knowledge formation among multimedia technology specialists in the process of acquiring special competencies. Highlighting the technical component, the influence of engineering and organizational skills on the formation of specialists in multimedia technologies was considered. A mathematical model of the formation of professional skills in the process of mastering a special module of competencies based on Shannon's information system was obtained.

The scientific result of the work was the method of informational support for personnel development through on-the-job training, which makes it possible to diagnose the results of the formation of technical creativity skills of employees to solve applied tasks in the IT industry. The practical result of this research is recommendations to the management system of computer and multimedia companies to improve the quality of formation of technical creativity skills of multimedia company personnel in the process of on-the-job training. The possibility of providing such recommendations allows the morphological matrix of the formation of technical creativity skills of the staff pro-

posed by the authors. The direction of further research can be the development of a comprehensive assessment of the quality of the results of the formation of professional competencies in the process of learning at the workplace. Conducting such a comprehensive assessment will be possible based on the involvement of experts from IT companies to determine the level of improvement in the processes of forming the relevant module competencies.

ACKNOWLEDGEMENTS

There is none.

CONFLICT OF INTEREST

The authors declare that they have no conflict of interest in relation to this study, in particular financial, personal, authorship or other, which could affect the study and its results presented in this article.

REFERENCES

- [1] Alakbarov, R. (2022). An optimization model for task scheduling in mobile cloud computing. *International Journal of Cloud Applications and Computing*, 12(1). doi: 10.4018/ijcac.297102.
- [2] Bhushan, K., Santosh, K., & Rasananda, P. (2023). Pedagogy innovation and integration of films in management education: Review and research paradigms. *The International Journal of Management Education*, 21(2), article number 100804. doi: 10.1016/j.ijme.2023.100804.
- [3] Cécile, M. (2023). Contemporary curriculum policies: Globalization, recontextualization and hybridization of pedagogic models. In R.J. Tierney, F. Rizvi, & K. Ercikan (Eds.), *International encyclopedia of education* (4th ed.; pp. 8-18). Elsevier Science. doi: 10.1016/B978-0-12-818630-5.03002-5.
- [4] Cleovoulou, Y., Iznardo, M., & Kamani, F. (2022). An examination of equity pedagogy during program coherence building in teacher education. *Teaching and Teacher Education*, 120, article number 103866. doi: 10.1016/j.tate.2022.103866.
- [5] Dang, V.T., Nguyen, D.B.H., Tran, T.D.T., Le, D.T., & Nguyen, T.L. (2023). Model-free hierarchical control with fractional-order sliding surface for multisection web machines. *International Journal of Adaptive Control and Signal Processing*, 37(2), 497-518. doi: 10.1002/acs.3534.
- [6] European Commission. (2021). *Ethics and data protection*. Retrieved from https://ec.europa.eu/info/funding-tenders/opportunities/docs/2021-2027/horizon/guidance/ethics-and-data-protection_he_en.pdf.
- [7] Grimal, L., Marty, P., Perez, S., Troussier, N., Perpignan, C., & Reyes, K. (2020). Case study: Located pedagogical situations to improve global sustainable skills in engineering education and universities. *Procedia CIRP*, 90, 766-771. doi: 10.1016/j.procir.2020.02.136.
- [8] Hrabovskyi, Y., Minukhin, S., & Brynza, N. (2022). Development of an information support methodology for quality assessment of the prepress process. *Eastern-European Journal of Enterprise Technologies*, 6(2), 30-40. doi: 10.15587/1729-4061.2022.266907.
- [9] Kukushkin, D., & Kolesnikova, V. (2022). Practical aspects of digitalization of dual forms of education in institutions of professional pre-higher education. *Open Educational e-Environment of Modern University*, 12, 69-79. doi: 10.28925/2414-0325.2022.126.
- [10] Lim, J. (2021). Scalable fog computing orchestration for reliable cloud task scheduling. *Applied Sciences*, 11(22), article number 10996. doi: 10.3390/app112210996.
- [11] Malek, J., Laroussi, M., Ghezala, H.B., & Nefzi, M. (2019). A methodology for designing mobile, pervasive, seamless and IoT-based learning scenarios: Language, process and supporting tool. *International Journal of Mobile Learning and Organisation*, 13(3), 255-285. doi: 10.1504/IJMLO.2019.100402.
- [12] Martseniuk, L., & Hruzdiev, O. (2021). Dual education as a means of effective combination theory and practice. *Ekonomika ta Derzhava*, 3, 58-65. doi: 10.32702/2306-6806.2021.3.58.
- [13] Mohammadpour, E., & Maroof, Y. (2023). A performance-based test to measure teachers' mathematics and science content and pedagogical knowledge. *Heliyon*, 9(3), article number e13932. doi: 10.1016/j.heliyon.2023.e13932.
- [14] Norm, F. (2023). Phenomenology and education: Researching pedagogical experience. In R.J. Tierney, F. Rizvi, & K. Ercikan (Eds.), *International encyclopedia of education* (4th ed.; pp. 131-140). Elsevier Science. doi: 10.1016/B978-0-12-818630-5.11015-2.
- [15] Punithavathi, P., & Geetha, S. (2020). Disruptive smart mobile pedagogies for engineering education. *Procedia Computer Science*, 172, 784-790. doi: 10.1016/j.procs.2020.05.112.
- [16] Pushkar, O.I. (2023). The concept of creating multimedia tools for educational space of dual education. *Printing and Publishing*, 1, 101-122. doi: 10.32403/0554-4866-2023-1-85-101-122.
- [17] Pushkar, O.I., & Hrabovskyi, Ye.M. (2020). Methodology of knowledge transformation for e-learning systems in training publishing industry specialists. *Information Technologies and Learning Tools*, 77(3), 186-204. doi: 10.33407/itlt.v77i3.2820.
- [18] Shannon, C.E. (1993). *Collected papers*. New York: IEEE Press.
- [19] Sikström, P., Valentini, C., Sivunen, A., & Kärkkäinen, T. (2022). How pedagogical agents communicate with students: A two-phase systematic review. *Computers & Education*, 188, article number 104564. doi: 10.1016/j.compedu.2022.104564.

- [20] Slipchyshyn, L. (2022). [Dual education as a tool of improving the quality of teaching professional disciplines](#). *Modern Trends in Development of Education and Science: Problems and Perspectives*, 10, 12-18.
- [21] Sulaiman, T.T., Mahomed, A.S.B., Abd Rahman, A., & Hassan, M. (2022). Examining the influence of the pedagogical beliefs on the learning management system usage among university lecturers in the Kurdistan Region of Iraq. *Heliyon*, 8(6), article number e09687. [doi: 10.1016/j.heliyon.2022.e09687](#).
- [22] Vidal Rosas, E.E., & Galván Fernandez, C. (2022). Pedagogical framework to develop interactive virtual tools for the teaching and learning of dynamic systems in Control Engineering. *IFAC-PapersOnLine*, 55(17), 218-223. [doi: 10.1016/j.ifacol.2022.09.282](#).
- [23] Zinchenko, S.M., & Zinchenko, A.L. (2021). Dual education as a guarantee of social partnership in the professional training of university graduates: Foreign experience. *Academic Notes. Series: Pedagogical Sciences*, 192, 181-185. [doi: 10.36550/2415-7988-2021-1-192-181-185](#).

Олександр Іванович Пушкар

Доктор економічних наук, професор

Харківський національний економічний університет імені Семена Кузнеця

61166, просп. Науки, 9А, м. Харків, Україна

<http://orcid.org/0000-0003-3592-3684>

Євген Миколайович Грабовський

Кандидат економічних наук, доцент

Харківський національний економічний університет імені Семена Кузнеця

61166, просп. Науки, 9А, м. Харків, Україна

<http://orcid.org/0000-0001-7799-7249>

Розробка інформаційної моделі розвитку персоналу в процесі навчання на робочому місці

Анотація. Щоб оцінити результативність навчання на робочому місці, необхідно діагностувати рівень підготовленості персоналу мультимедійної фірми до науково-технічної діяльності, саме тому актуально створювати відповідні інформаційні моделі розвитку персоналу. Метою статті було розробити системну модель формування професійних навичок у фахівців мультимедійних технологій поліграфічного профілю. У статті запропоновано методику інформаційної підтримки розвитку персоналу шляхом навчання на робочому місці. У якості основи, яка пояснює знання та навички для ефективного здійснення навчання на робочому місці, розглядається сучасний зміст компетентностей. Систематизовано ключові якості персоналу, які стосуються мультимедійних технологій. Створено інформаційну модель і проведено апробацію формування компетентностей у межах відповідних модулів. Розглянуто вплив інженерно-організаційних умінь на вдосконалення компетентностей фахівців мультимедійних технологій. Проаналізовано основні складники успішного формування професійних навичок персоналу. Складено рекомендації щодо діагностики рівнів підготовки персоналу мультимедійних і комп'ютерних фірм до вдосконалення власної науково-технічної діяльності, вибору змісту професійної підготовки фахівців мультимедійного профілю, застосування системного підходу до формування відповідних умінь та навичок. Створено морфологічну матрицю формування навичок технічної творчості персоналу мультимедійної фірми в процесі навчання на робочому місці. За допомогою інформаційної системи Шеннона отримано математичну модель формування відповідних спеціальних модулів компетентностей. Вивчено роль інженерно-організаційних навичок у процесі навчання на робочому місці. Проведено розрахунок рівня ентропії системи навчання до та після отримання інформації. Проаналізовано залежність ентропії від рівня отриманих знань. Практичне значення отриманих результатів полягає у формуванні рекомендацій керівництву комп'ютерних і мультимедійних фірм для організації навчання на робочому місці, внаслідок чого працівники отримують позитивні стимули до розвитку відповідних компетентностей

Ключові слова: технічна творчість; системний підхід; поліграфія; технічна інформація; епістемологічні рівні; мультимедійні технології

UDC 378.011.3-057.875:316.47]:005.591.6

DOI: 10.52534/msu-pp3.2023.72

Botond Géza Kálmán

PhD in Management and Organisation, Assistant Professor

Kodolányi János University

1139, 50-56 Frangepán Str., Budapest, Hungary

<https://orcid.org/0000-0001-8031-8016>

Nina Poyda-Nosyk*

Doctor of Economic Science, Professor

Ferenc Rakoczi II Transcarpathian Hungarian College of Higher Education

90202, 6 Kossuth Sq., Berehove, Ukraine

<https://orcid.org/0000-0002-5378-8028>

The role of the teacher-student relationship in the innovation of education: Interdisciplinary review of the issue

Article's History:

Received: 20.04.23

Revised: 23.07.23

Accepted: 30.08.23

Suggested Citation:

Kálmán, B.G., & Poyda-Nosyk N. (2023). The role of the teacher-student relationship in the innovation of education: Interdisciplinary review of the issue. *Scientific Bulletin of Mukachevo State University. Series "Pedagogy and Psychology"*, 9(3), 72-81. doi: 10.52534/msu-pp3.2023.72.

Abstract. Many contemporary authors addressed digital and online education, competencies, and lifelong learning. However, less is said about the importance of interpersonal relationships, even though they are essential for preserving the sustainability of education. The research aims to examine the field of human relations. To achieve this goal, the theory of organisational and social psychology was used. Relations can only be implemented through interpersonal dialogue. From an environmental perspective, both subjective and objective factors were determined to define the strength of the relationship. It was concluded that the teacher's personality is the key to success at all levels of education. It is justified that the result of curricula's central regulation is that the education of tomorrow's professionals is directed by today's professionals, who often have an interest in providing what is needed now rather than what may be needed in the future. It is proved that it is not enough for students to be aware of the academic mission, nor for the university to be a kind of training site for the labour market. From a socio-psychological perspective, it was disclosed that teaching quality mattered most, but subject to the theory of organisational psychology. The introduced materials can be utilized by universities to work on the nature of graduates' preparation through the advancement of their character. Considering various approaches to the organization of education participants' activities and characteristics of their self-development, the model for the formation of the value system of future teachers will make it possible to provide conditions for the individualization of training paths

Keywords: career planning; instruction; paradigm shift; Industry 4.0; creativity; interpersonal relationships

*Corresponding author

INTRODUCTION

Many aspects of life have undergone a paradigm shift as a result of Industry 4.0. The digitalization of industry, which will integrate marketplaces and supply chains, automated systems, interconnected factories, and advanced technologies into combined physical, digital, and biological worlds, has been described using this new paradigm (Bratu *et al.*, 2023). L. Kohnová and N. Salajová (2023) demonstrate

a paradigm shift in how suppliers are perceived to be powerful, as well as the strong technological push and primary focus on product innovation in Slovakia. Data has taken over the industrial context of today, driven by the Industry 4.0 paradigm (Sabbatini *et al.*, 2023).

In education, new approaches and learning environments emerged, and initial labour market competencies



were also altered. These days, many creators manage advanced and online schooling, abilities, and deep-rooted learning. S. Perrin and L. Wang (2021) discovered that if universities want to participate by the rules of Industry 4.0, they need to better train their teaching staff for digitalized education. With the emergence of novel concepts and technological advancements, Industry 4.0 presents new education opportunities. One of these is combined learning, which bridges the gap between traditional classroom and online learning (Etom *et al.*, 2021). An online platform that implements distance-based forms of e-learning for specialists is a novel component of the information service in the field of technical training of specialists for Industry 4.0 (Gurjanov *et al.*, 2021).

However, despite their crucial role in ensuring the sustainability of education, interpersonal relationships are less addressed. V. Wibeck *et al.* (2019) demonstrated that interpersonal relationships and sustainability closely correlate, including a sense of belonging. Interpersonal Relationships, Industry-Person Congeniality, Organisational Climate, Working Conditions, and Nature of Work were the five dimensions J.M. Luo *et al.* (2018) used to measure students' attitudes. The proposed measurement scale will assist in determining the sustainability of partnerships between universities and businesses. In higher education, the importance of students having relational bonds with their teachers, faculty, and staff outweighs recent shifts in educational funding, which is why it is advisable to further investigate RQ (Snijders *et al.*, 2018).

The previous role of the teacher is being transformed: they are not a transferer of lexical knowledge and an assessor, but a leader. Teachers' main task is to guide the student in the exponentially growing information labyrinth. A. Bandur (2018) investigated the critical determinants of compelling school-based administration (SBA) for improved teaching-learning conditions and understudy accomplishments by noticing school initiative, school advancement arranging and changing jobs of school pioneers under SBA change. D.W. Shaffer *et al.* (2015) analysed how education is changing in the digital age, how teachers' roles are changing in a technology-rich education system, and how teachers will need to support students' social, emotional, and intellectual development in a digital learning environment. L. Raj (2009) discusses how teachers' roles are evolving into teacher-leadership roles in the developing Indian scenario.

This study examines the role of the teacher-student relationship, which is the basis of education. It aims to determine how the paradigm shift taking place in modern education and innovation are related to the teacher-student relationship developed in traditional education. The objectives are to find means and intervention areas to influence and enhance relationships between students and teachers.

The methodology of the study differs from the usual samples. Based on an interdisciplinary comparison, an examination of how educational science is seen by scientists from other fields has been conducted. Multidisciplinary, Interdisciplinary, and Convergence Research were

considered as basic elements that build upon one another, with minor but distinct differences. Both interdisciplinary and convergence research are based on multidisciplinary research. In a similar vein, interdisciplinary research has resulted in convergence research, which goes beyond the integration of disciplines to incorporate societal impact into disciplines that have not previously collaborated. First, the broader context of the teacher-student relationship has been considered, focusing primarily on the phenomenon of Industry 4.0 and the future of education.

Among the frontier sciences of pedagogy and educational science, the findings of social psychology have been disclosed. These findings, which correspond to each university's corresponding Areas of Challenge, focus on the significance of social and learning relationships throughout all phases of education, in both formal and informal settings (Official website of the University..., n.d.). They also examine how these relationships affect the effectiveness and retention of practitioners, as well as the quality of children's learning experiences. Research that is cross-disciplinary in its theoretical and methodological approaches is produced when social psychology is applied to teaching, learning, and other educational experiences. This research not only contributes to the generation of knowledge within the academic community but also informs policy and practice.

INDUSTRY 4.0 AS AN INTEGRAL PHENOMENON OF OUR TIMES

The era that marks the integration of ICTs into educational settings to develop instructional, pedagogical, and technological processes is known as Education 4.0 (Atasoy, 2023). It also enhances operational procedures by providing novel approaches to education and instruction, as well as creative solutions to societal issues of the present and future. It also aims to demonstrate management tools and intelligent infrastructure. Emerging technologies like Metaverse and immersive virtual reality (IVR) are creating new directions for education's future (Wei & Yuan, 2023). Societies are undergoing rapid and significant change (OECD, 2018). The environment presents a first obstacle. The depletion of natural resources and climate change necessitates immediate action and adaptation. The economic issue is another obstacle. Social issues are a third obstacle. It is time to develop new institutional, social, and economic models that aim to improve everyone's lives.

Industry 4.0 is an integral phenomenon of our era. It is a scientific and technical revolution in which digitization, robotics, and the ever-closer human-machine relationship play the main role. Machines work with us and for us, decision-making is increasingly being entrusted to algorithms. Going further back in history, the time horizon of certainty expands. In ancient cultures (Egypt, India, China) thousands of years passed without significant changes. It also means that the future is predictable. There was still uncertainty in everyday matters, which is why the soothsayers of Delphi or Dodona, for example, prospered.

Today, the situation has changed radically. One of the reasons for this is the ever-accelerating development of computer technology and technical sciences. The younger the generation, the more it becomes evident that their whole life, including most of their decision-making mechanisms, is woven through the active use of internet technology (Grotte & Magyar, 2023).

In recent years, several studies have been published that stated that today's schools should prepare students for professions that cannot even be foreseen in the future (Digital Marketing Institute, 2014; Belli, 2017; Tencer, 2017). Although their reasoning is logical, the future is not so uncertain (Doxtdator, 2017). The young people of today will themselves be the creators of the professions of the future, so they do not have to learn them "in advance".

Industry 4.0 has brought its achievements to education as well. While previously the relationship between these two areas could be observed primarily in vocational education at the secondary school level, today the relationship between industry and higher education has become much more important. Inhibiting an ecological concept is an effective way of achieving mutualism (Baranyai & Veres, 2020). It is about a coexistence that is mutually beneficial for both parties. Higher education has always been a key driver of economic growth, increasing the skills of the workforce and stimulating innovation. But rapidly changing industry needs, and funding models are transforming the relationship between universities and the private sector. On the one hand, the availability of higher education affects an increasingly wide range of people. Although the "degree mills" phenomenon hurts both the labour market and higher education (Ezell & Bear, 2012), the mass spread of higher education worldwide is driven by the desire for better skills, higher level knowledge, increasing productivity and more effective innovation.

Futurology is still almost as exact today as it was in ancient Greece. The article by Power is noteworthy (Power, 2022). According to the study, by 2026, machines will be better at writing school essays, and by 2050, algorithms will be writing bestsellers. Therefore, sooner or later, machines will be better than people in everything. They could also decide our fate and existence (Cameron, 1985). However, there is one human quality that will never belong to machines: the ability to make decisions based on emotions and instincts. These can be linked to areas still unknown to science, such as the limbic system or the collective unconscious (Durant, 1985; Plutchik & Kellerman, 2013). Therefore, the compilation and teaching of learning content could be entrusted to machines, but then the education equation could be simplified by omitting a very important factor: the factor of human relationships.

THE ENVIRONMENT AND ELEMENTS OF THE TEACHER-STUDENT RELATIONSHIP

The teacher's role has been transformed; the reading-questioning method was replaced by the concept of the assistant-leader-support teacher. This is not new either, this is

how Virgil taught Dante (Alighieri, 1320/2005) or Adam taught Lucifer (Madách, 1861).

It is worth contemplating how a professor would approach an evaluation of their teaching portfolio. Presumably, they would describe the course or subject and the level of instruction: whether it is primary school, secondary school teacher, or university lecturer. Taking time for a minor psychological tactic utilizing rating the following answer to the above question from one to five (1 = strongly disagree, ... 5 = strongly agree): "I teach students", the hope remaining for the future of pedagogy will be a linear function of the assigned score. The higher the assigned score is, the more hope remains for the future of pedagogy. This is the baseline for the other questions raised.

In recent years, partly as a result of the forced closures due to COVID-19, the focus of the literature and decision-makers has increasingly been directed towards digital education. Studies and methodological guides have been published on the topic (Dringó-Horváth *et al.*, 2020; Malatyinszki, 2022b; Farkas *et al.*, 2021;). Studies and books, such as the attention-grabbing works of D. Watson (2009; 2014), explain that authority on English higher education is less and less prominent. The author of these laid down the "laws of the academic jungle". Although these laws are rather humorous, they address the importance of the role played by personality in higher education. The authors of this study add to this by noting that the teacher's personality is the key to success at all levels of education. Watson also provided a conceptual impression of the relationship between industry and higher education. He stated that in the early 21st century, just as universities tried to be similar to workplaces, workplaces were increasingly trying to look like universities.

In almost all universities, the curriculum is regulated by professional bodies or the government. The result is that the education of tomorrow's professionals is directed by today's professionals, who often have an interest in providing what is needed now rather than what may be needed in the future.

Nevertheless, let us take a look at what students necessitate. It is not enough for them to be aware of the academic mission, nor for the university to be a kind of training place and preparation for the labour market. Universities should be places where students are helped to acquire sound and usable interdisciplinary knowledge and the ability to learn independently. At least three parties are involved in the issue: universities, the labour market, and students. Universities as institutions are changing. The labour market is changing at an accelerating pace. But perhaps most importantly, the students themselves are active actors in this change. They want more hands-on experience to dive into their first career after graduation. They want assignments that outline a real business problem for a real company and find out why the problem exists and how to solve it. Such tasks require two types of knowledge. One is academic, lexical knowledge (English pedagogical slang calls this book smart), but life experience (street smarts) is also required. Neither form of knowledge is new.

Schools have been teaching for a long time, but it is also an old truth that life teaches life.

One of the possibilities of a long life is personal example, which also establishes the quality of the teacher-student relationship. The most important characteristic of a personal example is that it is always an adequate reaction to the given circumstances. Within the ancient walls of an English college, real success can be achieved by treating students as peers and arousing their interest in the subject (Weir, 1989) – if institutional adherence to traditional principles does not prevent this. Students in secondary school who do not like to study can be motivated by success in another activity (Carter, 2005). Even vulnerable children can be positively influenced (Radler, 1999). Early Childhood Education and Care (ECEC) for refugee children have the potential to improve outcomes for them, but the majority of the research is from high-income nations (Stevens *et al.*, 2023). Survey research methods may be used to study vulnerable and stigmatized groups because of a purely academic interest in human behaviour and its motivations, a concern about these groups' safety and well-being, or a concern about the risks these groups may pose for other people (Berry & Gunn, 2014). In terms of vulnerability, there is a multitude of different scenarios. Higher education's response to similar events in the future can be guided by an understanding of the impact of change on vulnerable students (Horner *et al.*, 2022). Weak understudies need direction in adapting abilities to oversee emotional well-being chances when they are away from family and naturally encouraging groups of people.

A SOCIAL PSYCHOLOGICAL APPROACH TO THE TEACHER-STUDENT RELATIONSHIP

A good teacher-student relationship has a positive effect on the teacher as well. Teachers who consider it important to maintain positive, personal relationships with students (Spilt *et al.*, 2011) are not only more satisfied with their work (Admiraal *et al.*, 2019), but also have greater self-efficacy (Mashburn *et al.*, 2006) and are emotionally more stable (Milatz *et al.*, 2015). Recent studies also confirm that experiencing the teacher-student relationship as "belonging to a community" results in more effective teaching practice on the part of the teacher (van der Lans *et al.*, 2020). Interestingly, in the literature, even though many authors deal with the issue of the teacher-student relationship, there are hardly any studies of van der Lans or others on how positive relationships can be linked to the quality of teaching practice.

The question is dealt with by the science of organisational psychology, which examines the impact of positive relationships on the performance of adults. One of the theories dealing with this issue is the leader-member exchange theory (LMX). In the jargon of the theory, the teacher corresponds to the leader and the student to the follower (Dulebohn *et al.*, 2012). According to this, the relationship of managers with all their subordinates is not the same. They develop strong relationships based on trust, emotion, and

respect with some members of the team, but not with others (Bauer & Erdogan, 2015). On the other hand, subordinates' attitudes and behaviour towards work depend on how their manager treats them (Rockstuhl *et al.*, 2012). According to the research results of C.R. Gerstner and D.V. Day (1997), a more positive relationship among followers results in better performance, greater satisfaction with the leader and greater commitment to the organisation. At the same time, leaders judge such followers more positively and typically set positive expectations towards them. Interestingly, the literature on the theory is quite broad, but to the authors, the theory seems rather as tautology, since in the authors' opinion, it is a well-known fact that a better interpersonal relationship leads to better performance and better evaluations. Studying the literature, the authors made sure they were not alone in their opinions (House & Aditya, 1997; Gottfredson *et al.*, 2020).

Another social psychological theory is transactional management, which, operating with reward and withdrawal, effectively motivates followers mainly in the short term by breaking processes into independent parts (Hargis *et al.*, 2011). The theory of X and Y dates back much earlier (McGregor, 2006). The former describes the command-driven, pressure-operated management style, and the latter the cooperative-communicative management. D. McGregor sees the latter approach as more effective because it unlocks the potential of human capital. Famous for his hierarchy of needs theory (Maslow, 1969), the theory was expanded with behaviour Z, which approaches the issue from the point of view of morality. However, the picture is not black or white; other authors (Lawrence & Lorsch, 1986) have shown that approach X is more effective than others in certain organisational conditions. M. Ahmad *et al.* (2021) implement the same idea into librarianship. As an example, the hierarchical and highly performance-oriented system of the military can be mentioned (Vassiliou *et al.*, 2014). Therefore, X and Y are not two opposite ends of a continuum, but two different approaches. For the majority of organisations, success is achieved with an ideal combination of these. Over the last few decades, many changes in higher education and training formats have been witnessed. The most significant change occurred in adult education and the appearance and credibility of online degrees.

THE RELATIONSHIP BETWEEN TEACHERS AND STUDENTS AS A CENTRAL COMPONENT OF THE EDUCATIONAL PROCESS

The value of all science is fundamentally determined by its usability (Szelei & Malatyinszki, 2017). The practice test is one of the most important filters. In education, the teacher-student relationship is positively influenced by playing together. Not only small children are playful, but even "serious" adults enjoy relaxation. A relaxed state has been proven to enhance performance (Denny, 1971; Stern *et al.*, 2022). E. Demerouti (2023) evidenced that working or studying is an effective way of maintaining high levels of well-being

and performance. R.M. Mohamed and M.A.M. Ali (2023) support on-campus students to alleviate their feelings and relax due to the demonstrated positive effects on students' mental well-being of napping, meditation, relaxation, sharing feelings and experiences, which may increase the brain's capacity for learning, which is relevant to a student's level of education. The role of games in education is now analysed by a separate discipline, referred to as gamification. Web-based gaming is a well-known type of recreational action among people, with a few explanations behind its prevalence, for example, giving a way to stretch help, rivalry, and unwinding (Kannan *et al.*, 2023). Simulation games help solve real-world problems, such as StockTrak, a stock market simulation used in economics education that teaches practical investment skills (stocktrak.com). The play-acting nature of learning is highlighted by the script theory (Tomkins, 1987; Fischer *et al.*, 2013; Demetriadis, 2013). As such, human behaviour consists of analogue activities similar to a written script, which provide an appropriate program of action for a given situation. The theory is also applied to the digital trends characteristic of education in our time to develop artificial intelligence (AI). A script is a structured representation that describes a stereotypical sequence of events in a given context. Scripts are used in systems that understand natural language to organize a knowledge base, based on the situations that the system needs to understand (Schank, 2008). Since ready-made scripts are often long, they are non-flexible. Therefore, in this case, it is broken down into smaller units, so-called memory organisation packages, which the AI can freely combine.

It is, indeed, much easier for the teacher to stand on the podium and repeat the text, prepared in advance over years and decades every year, perhaps illustrating it with an old presentation. But this only results in a lack of interest in today's students and absenteeism from lectures. Gaining positive feedback from students is much more difficult and time-consuming: finding ways to incorporate interactive, challenging – and fun – learning opportunities into every lesson. Although this teaching and learning approach is gaining ground, it is of course not yet a standard operating procedure in higher education. In most colleges and universities around the world, students know what to expect in many courses: they sign into a classroom or lecture hall and sit passively while their instructor talks for an hour or more. This happened even when the COVID-19 pandemic forced education into the digital space. It turned out that although the authors had tools for online education, they did not use their possibilities. Traditional reading instruction may have been an effective strategy in the 14th century when books were still made by hand and speech was the best way to convey information. But given Gen Z's total immersion in interactive technology – and the shift to distance learning, forced by the COVID-19 pandemic – this cycle of listening to lectures, taking notes, and passing exams is rather downright outdated. At the same time, conversation as an educational method should not be underestimated. Considering Raffaello's 1511 fresco, the Athenian

school depicts the school of the future. Plato is teaching his favourite student, Aristotle, in the middle of the picture, and to their left, Socrates is teaching a small group – they are all talking, debating, and arguing. The word “dialogue” is of Greek origin and indicates the role of reasoning in the conversation, since *dialogoma* also means in Greek: I argue (this word is also the basis of the term “dialectic”).

In education, the analysis and investigation of interpersonal relationships rarely cover their role in career building. However, a good teacher helps students not only in the present but also after the end of the joint activities. One way to provide this assistance is to help students find the right career. Career planning courses are available. Here, students learn to write a resume, and cover letter, networking, personal development, and many other practical skills.

Presentations are made around these to make students aware of opportunities to improve their employability during their studies, such as volunteering, part-time jobs, work placements, involvement in clubs and societies, and pathways through training programs and training at the end, such as degree and non-degree careers, self-employment, or further study. Scientists, staff specialists, former university students, and current postgraduate students are invited to the lectures, so practical experience can also be transferred. Each lecture builds on students' understanding of the available opportunities and how to achieve them.

Dual education also plays an important role in shaping personal relationships. This not only adds practical and real-world experience to the theoretical knowledge that can be obtained at the university but is also an excellent opportunity for group building. It creates a feeling of belonging to the profession and the professional community, and the students also experience how learning can be useful in something authentic. The sense of community has additional benefits. Marketing research shows that shopping recommendations are more effective when they come from a source other than the brand. This is the basis of the transmission of knowledge through oral tradition. Although the process is very old, it is still one of the most effective ways of learning today. Its distant historical origins are indicated by the fact that Homer's epics, for example, originally taught everyday knowledge and history with the power of fairy tales. The audio method was later supplemented by visual education, which is also not an invention of the modern age. The frescoes of medieval churches, or the Bible, which creatively applied book printing to those who could not read (Pfister, 1462), also served this purpose.

A comparison of the relationship between teachers and students with other scholars' findings in the labour market shows similarity in the concept. Since psychological capital plays a mediatory role in the relationship between an employer and employee, Riemenschneider *et al.* (2023) suggest that businesses create a supportive environment that values innovation, high-quality services, diversity, and collaboration. T.L. Akpey-Mensah's (2020) study focussing on two Technical Universities in Ghana had the idea that innovation in social capital can build academic staff's human

resources, making them more committed to their jobs and eager to stay on board, and found that making advancement in human resources improvement using social capital can guarantee staff responsibility and maintenance. This idea is also backed by the finding of Sz. Malatyinszki (2018) in the corporate environment.

Innovation has several inputs, only one of which is the relationship between stakeholders. Skills and knowledge transfer are key figures in themselves, too. Skilled workers are crucial to the growth of the economy and innovation in the knowledge economy (Castro-Silva & Lima, 2023). According to V. Simeunović *et al.* (2022), both innovation and higher education have an equal effect on the prosperity of the economy, based on results gained from Bosnia and Herzegovina.

However, even though Industry 4.0 has led to a paradigm shift in many areas of life, in particular, new methods and educational spaces have appeared in education, the input competencies of the labour market have been modified, the role of interpersonal relationships between a teacher and a student will remain an important factor in successful education at all its levels.

CONCLUSIONS

The study examined the role of the personal teacher-student relationship in today's transforming, increasingly digitized and online education from only a few aspects. Although independent and lifelong learning is becoming more and more important, they cannot let go of the student's hand in any way.

The basic finding of the study is the fact that this interpersonal relationship is crucial in the modernization of education. A good teacher is no longer a lone worker. They take part in the development of the learning content himself, if necessary, consult with experts in the field. It uses all the advantages of modern platforms and aims to arouse and maintain the interest of students. The main goal is the effective transfer of knowledge and a love of learning,

which essentially require interactivity, personal advice, guidance, and personal contact in general. Pedagogues and instructors are more than just teachers but also role models in the eyes of their students, and personal contacts shall be established with them accordingly. This is what the authors intended to draw attention to in the current digitising, mechanized world.

The fact that the research is a progressive development of the didactic component of the university educational system in terms of the formation of the communicative competence of future teachers is what makes it novel and original. It utilizes an integrative way to deal with knowledge perception, which permits the most top-to-bottom way to deal with the issues of collaboration in the public and cultural context. The set goal to scrupulously examine the field of human relations in higher education has undoubtedly been achieved; however, the lack of an independent sample might make all efforts questionable to the public at this point. A meticulous mind map about the interconnectedness of the teacher-student relationship will boost the effectiveness of describing the findings, and, naturally, a questionnaire survey about students' perception of teachers' attentiveness, cooperation, and future orientation in bachelor's programmes is also yet to come in the following years.

These results are to be put into effective use in the innovative development of future educational content and methods.

ACKNOWLEDGEMENTS

Authors may provide the following information in this section: technical help, indirect assistance, funding bodies, grant numbers, associated fellowships etc.

CONFLICT OF INTEREST

The authors declare that they did not have any competing financial, professional, or personal interests from other parties.

REFERENCES

- [1] Admiraal, W., Veldman, I., Mainhard, T., & van Tartwijk, J. (2019). A typology of veteran teachers' job satisfaction: Their relationships with their students and the nature of their work'. *Social Psychology of Education*, 22(2), 337-355. doi: 10.1007/s11218-018-09477-z.
- [2] Ahmad, M., Khan, A., & Arshad, M. (2021). [Major theories of job satisfaction and their use in the field of librarianship](#). *Library Philosophy and Practice (e-journal)*, article number 6385.
- [3] Akpey-Mensah, T.L. (2020). [Social capital development as innovation in human resource development: A case of technical universities in Ghana](#). *African Journal of Science, Technology, Innovation and Development*, 12(1), 27-32.
- [4] Alighieri, D. (2005). *The divine comedy*. Retrieved from <https://www.gutenberg.org/files/8800/8800-h/8800-h.htm>.
- [5] Atasoy, R. (2023). Sustainability of the school leadership in the digital era under the shadow of crisis. In E. Al-Aali, & M. Masmoudi (Eds.), *Leadership and workplace culture in the digital era* (pp. 149-168). Hershey: IGI Global. doi: 10.4018/978-1-6684-5864-8.ch010.
- [6] Bandur, A. (2018). Stakeholders' responses to school-based management in Indonesia. *International Journal of Educational Management*, 32(6), 1082-1098. doi: 10.1108/IJEM-08-2017-0191.
- [7] Baranyai, J., & Veres, G. (2020). *Biology 10. (NAT2020)*. Budapest: Oktatási Hivatal.
- [8] Bauer, T.N., & Erdogan, B. (Eds.). (2015). *The Oxford handbook of leader-member exchange*. Oxford: Oxford University Press. doi: 10.1093/oxfordhb/9780199326174.001.0001.

- [9] Belli, G. (2017). *65 percent of tomorrow's workers will have jobs that don't exist today*. Retrieved from <https://www.payscale.com/career-news/2017/08/65-percent-tomorrows-workers-jobs-dont-exist-today>.
- [10] Berry, S.H., & Gunn, P.P. (2014). Conducting research on vulnerable and stigmatized populations. In R. Tourangeau, B. Edwards, T. Johnson, K. Wolter, & N. Bates (Eds.), *Hard-to-survey populations* (pp. 368-378). Cambridge: Cambridge University Press. doi: 10.1017/CBO9781139381635.021.
- [11] Bratu, T., Suci, G., Alexandru, C., & Cheveresan, R. (2023). Steps towards Industry 4.0 in the Danube region. *Advanced topics in optoelectronics, microelectronics, and nanotechnologies XI*, article number 124930N. doi: 10.1117/12.2643114.
- [12] Cameron, J. (Director). (1985). *The Terminator* [Film]. Hemdale Film Corporation, Pacific Western Productions, European Film Fund, Cinema'84.
- [13] Carter, T. (Director). (2005). *Coach Carter* [Film]. Paramount Pictures.
- [14] Castro-Silva, H., & Lima, F. (2023). The struggle of small firms to retain high-skill workers: Job duration and the importance of knowledge intensity. *Small Business Economics*, 60, 537-572. doi: 10.1007/s11187-022-00602-z.
- [15] Demerouti, E. (2023). Effective employee strategies for remote working: An online self-training intervention. *Journal of Vocational Behavior*, 142, article number 103857. doi: 10.1016/j.jvb.2023.103857.
- [16] Demetriadis, S. (2013). Research evidence on the impact of technology-enhanced collaboration scripts on learning. In D. Hernández-Leo, T. Ley, R. Klammer, & A. Harrer (Eds.), *Scaling up learning for sustained impact: Proceeding of the 8th European conference on technology enhanced learning* (pp. 97-110). Berlin, Heidelberg: Springer. doi: 10.1007/978-3-642-40814-4_9.
- [17] Denny, M.R. (1971). Relaxation theory and experiments. In F.R. Brush (Ed.), *Aversive conditioning and learning* (pp. 235-295). New York: Academic Press. doi: 10.1016/B978-0-12-137950-6.50009-2.
- [18] Digital Marketing Institute. (2014). *10 jobs that didn't exist 10 years ago*. Retrieved from <https://digitalmarketinginstitute.com/blog/10-jobs-didnt-exist-10-years-ago>.
- [19] Doxtator, B. (2017). *A field guide to "jobs that don't exist yet"*. Retrieved from <https://longviewoneducation.org/field-guide-jobs-dont-exist-yet>.
- [20] Dringó-Horváth, I., Dombi, J., Hülber, L., Menyhei, Zs., Pintér, T.M., & Papp-Danka, A. (2020). *Methodology of educational informatics in higher education*. Budapest: Károli Gáspár Reformed University ICT Research Center.
- [21] Dulebohn, J.H., Bommer, W.H., Liden, R.C., Brouer, R.L., & Ferris, G.R. (2012). A meta-analysis of antecedents and consequences of leader-member exchange: Integrating the past with an eye toward the future. *Journal of Management*, 38(6), 1715-1759. doi: 10.1177/0149206311415280.
- [22] Durant, J.R. (1985). The science of sentiment: The problem of the cerebral localization of emotion. In P.P.G. Bateson, & P.H. Klopfer (Eds.), *Perspectives in Ethology* (pp. 1-31). Boston: Springer. doi: 10.1007/978-1-4757-0232-3_1.
- [23] Etom, R., Pabatang, O., Dapanas, K.M.M., Consolacion, R., Iniego, J.M., Jumao-as, A.M., Pabua, A.M., & Tee, K.C. (2021). The use of elearning tools in blended learning approach on students' engagement and performance. *Journal of Physics: Conference Series*, 1835, article number 012075. doi: 10.1088/1742-6596/1835/1/012075.
- [24] Ezell, A., & Bear, J. (2012). *Degree mills: The billion-dollar industry that has sold over a million fake diplomas*. Amherst: Prometheus Books.
- [25] Farkas, A., Földeáki, A., Főző, A.L., Frész, A.J., Genáhl, K. J., Horváth, Á., Jánossy, Z., Kapcsáné, N.J., Krajcsovicz, Á., Neumann, V., Pintér, G., Sió, L., Szabados, T., Szalay, S.Z., Szilágyi, Á., Timár, B., & Tóth, T. (2021). *Collection of digital pedagogical methodological recommendation*. Budapest: Oktatási Hivatal.
- [26] Fischer, F., Kollar, I., Stegmann, K., & Wecker, C. (2013). *Toward a script theory of guidance in computer-supported collaborative learning*. *Educational Psychologist*, 48(1), 56-66.
- [27] Gerstner, C.R., & Day, D.V. (1997). Meta-analytic review of leader - member exchange theory: Correlates and construct issues. *Journal of Applied Psychology*, 82(6), 827-844. doi: 10.1037/0021-9010.82.6.827.
- [28] Gottfredson, R.K., Wright, S.L., & Heaphy, E.D. (2020). A critique of the leader-member exchange construct: Back to square one. *The Leadership Quarterly*, 31(6), article number 101385. doi: 10.1016/j.leaqua.2020.101385.
- [29] Grotte, J., & Magyar, T. (2023). Positive and negative experiences of young foreign tourists in Budapest. In C. Obádovics, R. Resperger, Z. Széles, & B.I. Tóth (Eds.), *Society - economy - nature: Synergies in sustainable development: Conference proceedings* (pp. 408-416). Sopron: Soproni Egyetem Kiadó. doi: 10.35511/978-963-334-450-7.
- [30] Gurjanov, A.V., Zakoldaev, D.A., Zharinov, I.O., & Zharinov, O.O. (2021). The Industry 4.0 technological and information processes cyber-modelling. *Journal of Physics: Conference Series*, 2094, article number 042062. doi: 10.1088/1742-6596/2094/4/042062.
- [31] Hargis, M.B., Watt, J.D., & Piotrowski, C. (2011). *Developing leaders: Examining the role of transactional and transformational leadership across business contexts*. *Organisation Development Journal*, 29(3), 51-66.
- [32] Horner, C., Hugh-Jones, S., Sutherland, E., Brennan, C., & Sadler-Smith, C. (2022). "This doesn't feel like living": How the COVID-19 pandemic affected the mental health of vulnerable university students in the United Kingdom. *European Journal of Mental Health*, 17(2), 52-64. doi: 10.5708/EJMH.17.2022.2.7.

- [33] House, R.J., & Aditya, R.N. (1997). The social scientific study of leadership: Quo vadis? *Journal of Management*, 23(3), 409-473. doi: [10.1177/014920639702300306](https://doi.org/10.1177/014920639702300306).
- [34] Kannan, A., R. P., & Sinduja, P. (2023). The influence of online gaming on students' attitudes, behaviors, and academic performance. In *2023 International Conference on Business Analytics for Technology and Security (ICBATS)*. Dubai: IEEE. doi: [10.1109/ICBATS57792.2023.10111396](https://doi.org/10.1109/ICBATS57792.2023.10111396).
- [35] Kohnová, L., & Salajová, N. (2023). Re-thinking Industry 4.0 effect on competitive forces: Empirical study on innovation. *Sustainability*, 15(3), article number 2637. doi: [10.3390/su15032637](https://doi.org/10.3390/su15032637).
- [36] Lawrence, P.R., & Lorsch, J.W. (1986). *Organisation and environment: Managing differentiation and integration* (Revised ed.). Boston: Harvard Business School Press.
- [37] Luo, J.M., Chau, K.Y., Lam, C.F., Huang, G.Q., & Kou, I.T. (2018). Attitudes of undergraduate students from university – industry partnership for sustainable development: A case study in Macau. *Sustainability*, 10(5), article number 1378. doi: [10.3390/su10051378](https://doi.org/10.3390/su10051378).
- [38] Madách, I. (1861). *The tragedy of man*. Retrieved from <https://mek.oszk.hu/00800/00849/html>.
- [39] Malatyinszki, Sz. (2018). Organizational development and human resources in the life of small businesses. In D. Mócz (Ed.), *From training to the labor market: Studies in the field of human resource management* (pp. 109-114). Orosháza: Kodolányi János Egyetem.
- [40] Malatyinszki, Sz. (2022b). Changes in adult education methodology. In R. Kattein-Pornói, J. Mrázik, & M. Pogátsnik (Eds.), *Learning society: Educational research during an epidemic: HERA yearbooks IX* (pp. 414-425). Budapest – Debrecen: Hungarian Educational Research Association (HERA).
- [41] Mashburn, A.J., Hamre, B.K., Downer, J.T., & Pianta, R.C. (2006). Teacher and classroom characteristics associated with teachers' ratings of prekindergartners' relationships and behaviors. *Journal of Psychoeducational Assessment*, 24(4), 367-380. doi: [10.1177/0734282906290594](https://doi.org/10.1177/0734282906290594).
- [42] Maslow, A. (1969). *Theory Z*. Retrieved from <https://web.archive.org/web/20181023024341/http://maslow.org/sub/theoryz.php>.
- [43] McGregor, D. (2006). *The human side of enterprise* (Annotated ed.). New York: McGraw Hill.
- [44] Milatz, A., Lüftenegger, M., & Schober, B. (2015). Teachers' relationship closeness with students as a resource for teacher wellbeing: A response surface analytical approach. *Frontiers in Psychology*, 6, article number 1949. doi: [10.3389/fpsyg.2015.01949](https://doi.org/10.3389/fpsyg.2015.01949).
- [45] Mohamed, R.M., & Ali, M.A.M. (2023). Promoting students' mental health through design and implementation of multi-activity pods in educational institutions using the WELL Building Standard. *Designs*, 7(1), article number 30. doi: [10.3390/designs7010030](https://doi.org/10.3390/designs7010030).
- [46] OECD. (2018). *The future of education and skills. Education 2030*. Retrieved from [https://www.oecd.org/education/2030/E2030%20Position%20Paper%20\(05.04.2018\).pdf](https://www.oecd.org/education/2030/E2030%20Position%20Paper%20(05.04.2018).pdf).
- [47] Official website of the University of Worcester. (n.d.). Retrieved from <https://www.worcester.ac.uk/about/academic-schools/school-of-education/education-research/social-psychology-of-education.aspx>
- [48] Perrin, S., & Wang, L. (2021). COVID-19 and rapid digitalization of learning and teaching: Quality assurance issues and solutions in a Sino-foreign higher education institution. *Quality Assurance in Education*, 29(4), 463-476. doi: [10.1108/QAE-12-2020-0167](https://doi.org/10.1108/QAE-12-2020-0167).
- [49] Pfister, A. (1462). *Paupers' Bible*. Retrieved from <https://www.loc.gov/item/2021666795>.
- [50] Plutchik, R., & Kellerman, H. (2013). *Biological Foundations of Emotion*. Academic Press.
- [51] Power, M. (2022). *The jobs that will pay the highest salaries in 2040*. Retrieved from <https://www.telegraph.co.uk/family/life/best-jobs-pay-highest-salaries-2040-alevel-results-planning-university>.
- [52] Radler, R. (Director). (1999). *The Substitute 3: Winner Takes All* [Film]. Artisan Entertainment.
- [53] Raj, L. (2009). Transformation of teacher to teacher leader: Indian scenario. *Indian Journal of Science and Technology*, 2(7), 61-63. doi: [10.17485/ijst/2009/v2i7.9](https://doi.org/10.17485/ijst/2009/v2i7.9).
- [54] Riemenschneider, C.K., Burney, L.L., & Bina, S. (2023). The influence of organisational values on employee attitude and information security behavior: The mediating role of psychological capital. *Information and Computer Security*, 31(2), 172-198. doi: [10.1108/ICS-10-2022-0156](https://doi.org/10.1108/ICS-10-2022-0156).
- [55] Rockstuhl, T., Dulebohn, J., Ang, S., & Shore, L.M. (2012). Leader – member exchange (LMX) and culture: A meta-analysis of correlates of LMX across 23 countries. *Journal of Applied Psychology*, 97(6), 1097-1130. doi: [10.1037/a0029978](https://doi.org/10.1037/a0029978).
- [56] Sabbatini, L., Belli, A., Palma, L., & Pierleoni, P. (2023). One datum and many values for sustainable Industry 4.0: A prognostic and health management use case. *International Journal of Electrical and Computer Engineering (IJECE)*, 13(1), 658-668. doi: [10.11591/ijece.v13i1.pp658-668](https://doi.org/10.11591/ijece.v13i1.pp658-668).
- [57] Schank, R. (2008). *Dynamic memory revisited* (2nd ed.). Cambridge, New York: Cambridge University Press.
- [58] Shaffer, D.W., Nash, P., & Ruis, A.R. (2015). Technology and the new professionalization of teaching. *Teachers College Record*, 117(12). doi: [10.1177/016146811511701205](https://doi.org/10.1177/016146811511701205).

- [59] Simeunovic, V., Milic, S., & Pajrok, A. (2022). Higher education in the eyes of economic operator. *Sustainability*, 14(13), article number 7973. [doi: 10.3390/su14137973](https://doi.org/10.3390/su14137973).
- [60] Snijders, I., Rikers, R.M.J.P., Wijnia, L., & Loyens, S.M.M. (2018). Relationship quality time: The validation of a relationship quality scale in higher education. *Higher Education Research & Development*, 37(2), 404-417. [doi: 10.1080/07294360.2017.1355892](https://doi.org/10.1080/07294360.2017.1355892).
- [61] Spilt, J.L., Koomen, H.M.Y., & Thijs, J.T. (2011). Teacher wellbeing: The importance of teacher – student relationships. *Educational Psychology Review*, 23(4), 457-477. [doi: 10.1007/s10648-011-9170-y](https://doi.org/10.1007/s10648-011-9170-y).
- [62] Stern, M., Dillavou, S., Miskin, M.Z., Durian, D.J., & Liu, A.J. (2022). Physical learning beyond the quasistatic limit. *Physical Review Research*, 4(2), article number L022037. [doi: 10.1103/PhysRevResearch.4.L022037](https://doi.org/10.1103/PhysRevResearch.4.L022037).
- [63] Stevens, K.E., Siraj, I., & Kong, K. (2023). A critical review of the research evidence on early childhood education and care in refugee contexts in low- and middle-income countries. *International Journal of Child Care and Education Policy*, 17, article number 7. [doi: 10.1186/s40723-023-00109-4](https://doi.org/10.1186/s40723-023-00109-4).
- [64] Szelei, A., & Malatyinszki, Sz. (2017). The values of adult education today. In Z. Árpási, & I. Gurzó (Eds.), *Responsible tourism: International scientific conference* (pp. 103-111). Békešská Čaba: Foundation for Higher Education in Economics..
- [65] Tencer, D. (2017). *85% of jobs that will exist in 2030 haven't been invented yet: Dell*. Retrieved from https://www.huffpost.com/archive/ca/entry/85-of-jobs-that-will-exist-in-2030-haven-t-been-invented-yet-d-ca_5cd4e7dae4b07bc72973112c.
- [66] Tomkins, S.S. (1987). *Script theory*. In J. Aronoff, A.I. Rabin, & R.A. Zucker (Eds.), *The emergence of personality* (pp. 147-216). New York: Springer Publishing Co.
- [67] Van der Lans, R.M., Cremers, J., Klugkist, I., & Zwart, R. (2020). Teachers' interpersonal relationships and instructional expertise: How are they related? *Studies in Educational Evaluation*, 66, article number 100902. [doi: 10.1016/j.stueduc.2020.100902](https://doi.org/10.1016/j.stueduc.2020.100902).
- [68] Vassiliou, M.S., Alberts, D.S., & Agre, J.R. (2014). *C2 re-envisioned: The future of the enterprise*. Boca Raton: CRC Press. [doi: 10.1201/b17814](https://doi.org/10.1201/b17814).
- [69] Watson, D. (2009). *The question of morale: Managing happiness and unhappiness in university life: Searching for happiness in university life*. Maidenhead: Open University Press.
- [70] Watson, D. (2014). *The question of conscience: Higher education and personal responsibility*. London: Institute of Education Press.
- [71] Wei, Z., & Yuan, M. (2023). Research on the current situation and future development trend of immersive virtual reality in the field of education. *Sustainability*, 15(9), article number 7531. [doi: 10.3390/su15097531](https://doi.org/10.3390/su15097531).
- [72] Weir, P. (Director). (1989). *Dead poets society* [Film]. Touchstone Pictures, Silver Screen Partners IV.
- [73] Wibeck, V., Linnér, B.-O., Alves, M., Asplund, T., Bohman, A., Boykoff, M.T., Feetham, P.M., Huang, Y., Nascimento, J., Rich, J., Rocha, C.Y., Vaccarino, F., & Xian, S. (2019). Stories of transformation: A cross-country focus group study on sustainable development and societal change. *Sustainability*, 11(8), article number 2427. [doi: 10.3390/su11082427](https://doi.org/10.3390/su11082427).

Ботонд Геза Калман

Доктор філософії з менеджменту та організації, доцент
Університет прикладних наук Кодоланьї Яноша
1139, вул. Франгепана, 50-56, м. Будапешт, Угорщина
<https://orcid.org/0000-0001-8031-8016>

Ніна Никифорівна Пойда-Носик

Доктор економічних наук, професор
Закарпатський угорський інститут імені Ференца Ракоці II
90202, пл. Кошута, 6, м. Берегове, Україна
<https://orcid.org/0000-0002-5378-8028>

Роль взаємин між викладачем і студентом в інноваційній освіті: міждисциплінарний огляд питання

Анотація. Сьогодні багато авторів займаються цифровою та онлайн-освітою, компетенціями та навчанням протягом життя. Проте менше говорять про роль міжособистісних стосунків, навіть якщо вони важливі для збереження сталості освіти. Мета статті – дослідити сферу людських відносин. Для досягнення поставленої мети була використано теорію організаційної та соціальної психології: відносини можуть бути реалізовані лише через міжособистісний діалог. З погляду навколишнього середовища виявлено, що як суб'єктивні, так і об'єктивні чинники визначають близькість стосунків. Зроблено висновок, що особистість учителя – запорука успіху на всіх рівнях освіти. Обґрунтовано, що результат центрального регулювання навчальних програм такий, що освітою майбутніх фахівців керують сучасні професіонали, які часто зацікавлені забезпечити те, що потрібно зараз, а не те, що може знадобитися в майбутньому. Доведено, що недостатньо лише, аби студенти усвідомлювали академічну місію, а також того, щоб університет був своєрідним місцем навчання та підготовки до ринку праці. Із соціально-психологічного погляду показано, що якість викладання має найбільше значення, але з урахуванням теорії організаційної психології. Представлені матеріали можуть використати університети для роботи над підготовкою випускників шляхом роботи над удосконаленням характеру. Враховуючи різноманітні підходи до організації діяльності учасників навчання та особливості їхнього саморозвитку, модель формування системи цінностей майбутнього вчителя дасть змогу забезпечити умови для індивідуалізації траєкторії навчання

Ключові слова: планування кар'єри; інструкція; зсув парадигми; Індустрія 4.0; креативність; міжособистісні стосунки

UDC 159.922.23

DOI: 10.52534/msu-pp3.2023.82

Liana Spytska*

Doctor of Psychological Sciences, PhD in Law, Professor

Volodymyr Dahl East Ukrainian National University

01042, 17 John Paul II Str., Kyiv, Ukraine

<https://orcid.org/0000-0002-9004-727X>

Psychological trauma and its impact on a person's life prospects

Article's History:

Received: 02.05.23

Revised: 08.08.23

Accepted: 30.08.23

Suggested Citation:

Spytska, L. (2023). Psychological trauma and its impact on a person's life prospects. *Scientific Bulletin of Mykachevo State University. Series "Pedagogy and Psychology"*, 9(3), 82-90. doi: 10.52534/msu-pp3.2023.82.

Abstract. In psychology, increasingly more attention is being paid to psychological trauma and its impact on people. Psychological trauma poses no less danger to a person and can have a much stronger and more profound impact on their health than a physical illness, and therefore it is necessary to investigate this problem for further effective solution. The purpose of this study was to explore the concept of psychological trauma and its impact on a person's life prospects. The methodology of the study combined theoretical analysis of the literature, the main purpose of which was to define the concept of psychological trauma and its aspects, and empirical research. The empirical stage consisted of a survey and the use of psychodiagnostic techniques. Statistical methods, such as the Mann-Whitney U test and Spearman's correlation coefficient, were used to process the data using the SPSS Statistics software. The findings suggested that people with psychological trauma have a less balanced life perspective, assess the past more negatively, and have higher hopes for the future, which may be a form of compensation for the loss of the past. It was found that the degree of post-traumatic growth depends on the intensity of the trauma. The study substantiated the position that psychotrauma can affect various components of the personality, including motivational, volitional, emotional, and self-esteem. The study confirmed that psychological trauma changes life perspective and can cause disorders in everyday life. It was recommended that for further study of this issue, the subject of research should be narrowed down and psychological approaches to work with survivors of psychological trauma should be developed. The practical significance of this study lies in the development of a comprehensive model of the impact of traumatic events on personality development depending on a range of factors

Keywords: traumatic stress; post-traumatic growth; experiences; personality; mental health

*Corresponding author

INTRODUCTION

There are several definitions of psychological trauma in the literature. Such definitions include "an emotional response to an extremely negative situation" (Starcevic, 2019), "an emotional response to a terrible event like an accident, rape, or natural disaster" (American Psychological Association, n.d.), "the result of extraordinarily stressful events that shatter your sense of security, making you feel helpless in a dangerous world" (Robinson *et al.*, 2023). When analysing the factors of psychological trauma, there are several features, namely: intensity; significance; importance and relevance;

pathogenicity; acuteness of onset (suddenness); duration; recurrence; associations with premorbid personality traits.

Scientific literature describes psychological trauma as internal conflicts that usually occur on a somatically weakened (modified) basis, mainly in people who are predisposed to psychogenetics (Harkavets, 2021). The clinical structure is characterised by the acuteness of painful experiences, the vividness of these images, painful imagination; increased fixation on the interpretation of disturbed health, internal discomfort, suffering; anxiety about one's future.



M.A. Dutton *et al.* (1994) offered the following definition: psychological trauma is a complex phenomenon in which the subclinical reaction of consciousness to the psychological trauma itself is at the centre and is accompanied by a certain defensive reaction, which acts as a system of psychological attitudes. As noted by A. Miguel-Alvaro *et al.* (2022), this defence response usually neutralises the pathogenic effects of trauma and thus prevents the development of a psychogenic illness. In these cases, one speaks of psychological defence, which functions as a rather significant form of conscious response to psychological trauma.

In the context of globalisation, escalating military and political conflicts, intense information flow and the epidemiological situation, external stimuli adjust a person's life and shape revisions of their life prospects. The frequency of such uncertainty and instability of situations, even extreme ones, that transcends everyday life, makes people reconsider their plans and goals in life, their attitude towards present and past events. D.A. Fitzgerald *et al.* (2021) emphasised that in modern realities, the media catastrophise, increase fear, exacerbate conflicts and introduce confrontational behaviour into the public consciousness. Currently, little attention is paid to how a person can neutralise the consequences of an extreme situation or psychological trauma on their own, how to relieve general tension with a specialist's help, or how to deal effectively with family members who have experienced psychological trauma. This is especially true for such a vulnerable category as children.

M. Vagni *et al.* (2020) describe that psychotraumatic events inevitably force a person to reassess their life path and plans, resulting in a constant transformation of the system of life prospects. In the practice of psychologists and psychotherapists, a detailed study of changes in life perspectives after psychotrauma is becoming increasingly important. After this process, which includes negative experiences or events, a person's life prospects can change to an adaptive type if the conditions are favourable. This change is accompanied by a revision and reassessment of new meanings and values in life, as well as a search for new opportunities. In turn, this process contributes to post-traumatic growth, which means positive changes in the individual after a traumatic event, such as strengthening personal resources, increasing self-esteem, and the ability to recover.

M. Eastmond *et al.* (1994) noted that there is no clear division between positive and negative reactions, usually there is a mixed reaction of the individual to certain temporary "weather" factors, the perspective can change and indicate growth and suffering. In their study, the authors consider psychological trauma to be "objectively significant" based on the classification of events by the role of an intervention that is of significant importance to most people (death of a loved one, divorce, terminal illness). This is also confirmed by A.A. Scoglio and C. Salhi (2021), who noted the strong impact of cross-cutting stress factors, such as forced resettlement (refugee status) and adaptation to radically new living conditions.

Notably, even in the case of objectively significant psychological trauma, close people, based on their beliefs, often devalue the significance of psychological trauma for a person, as well as their suffering (often such losses include the loss of a child, difficult divorces). This often results in people hiding their grief from each other and having trouble finding the resources to successfully work through it, which leads to lower life prospects, fixation on the negative past, depression, and other adverse consequences. The clinical manifestation of acute grief is similar from person to person, and similar symptoms of psychological trauma underlie post-traumatic stress disorder in people with different types of psychological trauma.

The purpose of this study was to investigate the specific features of the life prospects of persons who have experienced psychological trauma, as well as to consider different approaches to the interpretation of the concept of psychological trauma. Objectives: 1) to analyse the literature on the subject matter; 2) to define the essence of psychological trauma, characterise its types, and present the connection between psychological trauma and mental health.

MATERIALS AND METHODS

The paper presents the materials of an in-depth study of the impact of psychological trauma on the future life of a person and on the changes that occur in the structure of the personality. To solve the tasks set in the study, the following theoretical methods were used: analysis of scientific literature on the research topic, generalisation, comparison, and systematisation. Empirical methods of data collection (surveys, research using psychodiagnostic techniques, conversation and interviews) and methods of statistical data processing were also used. The study was conducted from September 2020 to November 2020 and consisted of two stages: theoretical and practical. By analysing and systematising the literature data, the study defined the concept of psychological trauma and its main aspects, considered and investigated the opinions of other authors on the issue, their classifications and definitions. The main aspects of this issue were highlighted.

Experimental methods were also used to determine the consequences of psychological trauma in the study participants. The study involved 48 people, 24 men and 24 women, aged 26 to 46 (mean age 37.6). All participants were divided into two groups of 24: people who had previously experienced psychological trauma, and 24 people in the control group (people without traumatic experience). All respondents have higher or incomplete higher or secondary technical education and are employed. Both groups were gender-balanced to avoid bias in the evaluation. The time since the traumatic event ranged from 3 to 15 years in the main group (mean 9.26).

The Subjective Assessment of Traumatic Event Severity Scale and the Objectification of Impact on the Subjective World Scale (OISW) were used to identify symptoms and assess their severity in individuals who had experienced trauma in the past. This methodology was used to

determine the main clinical manifestations of post-traumatic disorder and the degree of impact of traumatic events on a person by three subscales: "physiological excitability", "rejection", "avoidance". Time perspective in both groups was assessed using the Zimbardo Time Perspective Inventory, ZTPI (Zimbardo & Boyd, 2008). The main group, namely the one with a history of psychotraumatic events, was surveyed using the Posttraumatic Growth Survey (PGS) (Tedeschi & Calhoun, 2004). The comparative analysis method was used to assess the reliability of the differences in time-perspective indicators, and to evaluate the difference in the control and intervention groups.

The statistical analysis of differences in the mean values of the time perspective component was conducted using the non-parametric Mann-Whitney U test to assess differences in the mean values of the two samples. The Spearman's ρ -correlation coefficient was used to identify changes and relationships between time perspective and indicators of posttraumatic growth and life satisfaction. The SPSS Statistica computer software was used for mathematical processing of these data.

The survey followed the recommendations of the International Code of Market, Social and Community Research and Data Analysis ICC/ESOMAR (2016), specifically ethical and professional standards. All participants were informed about the study and gave their consent to the processing and use of their data.

RESULTS

The phenomenological manifestations of trauma studied in modern psychology are revealed through various aspects and studies of the consequences of psychologically traumatic events. They reflect the experiences associated with the traumatic event, as well as the various stages of this single process. The experience of an event is a dynamic system in which different subsystems and elements (including a set of attitudes at various levels) can be distinguished from each other, but which cannot be reduced to them. The experience of psychological trauma should be considered as a process that has its own phase dynamics and possible deviations from the normal course (Fariba & Gupta, 2022).

The experience of mental trauma is unfolded in time. The initial stage relates to the stage of psychological shock, which is characterised by denial of what is happening. Denial is a defence mechanism; the human psyche tries to pre-

serve itself. At the stage of shock, a person experiences inhibition of activity, disorientation in the environment, and disorganisation of activity. The stage of shock is short-lived, and a person quickly moves on to the next stage – exposure or emotional response. At this stage, a person experiences strong emotions related to the traumatic event itself or its consequences. Initially, the dominant emotions are fear, anxiety, anger, crying, etc. Gradually, they are replaced by self-doubt, helplessness, self-criticism, guilt, etc. At this stage, either the trauma is fixed and becomes a chronic disorder, the individual gets stuck in their suffering or accepts the situation and their own powerlessness and gradually comes out of the negative psychological state. This stage is quite long, and its duration depends on the nature of the trauma and individual psychological characteristics. At the third stage – normal response – adaptation to new circumstances takes place.

Overcoming a psychological trauma is an individual way of dealing with the situation according to one's own logic, i.e., within the person's life and psychological capabilities (Zahray, 2015). The process of overcoming psychological trauma depends heavily on a person's subjective perception of the existing stressful situation. Since psychotrauma is always characterised by a high degree of uncertainty, the main goal of overcoming it is to keep the person in a state of mental balance, if possible. When overcoming psychological trauma, the emphasis is on resolving the situation and transforming the person's attitude towards the current situation (especially if it cannot be changed). Coping strategies are diverse, and each person develops their own set of strategies based on their own experience in facing new demands when existing methods of response become ineffective (Brewin, 2020).

The coping strategies developed can be focused on the problem that has arisen or on the person themselves, aimed at changing the activity, perceptions of the activity and the situation, and the feelings that accompany the situation and the activity. The Subjective Assessment of Traumatic Event Severity Scale is used to identify symptoms and assess their severity in individuals who have experienced trauma in the past. This methodology is used to determine the main clinical manifestations of post-traumatic disorder and the degree of impact of traumatic events on a person by three subscales: "physiological excitability", "rejection", "avoidance" (Table 1).

Table 1. Clinical manifestations of post-traumatic stress disorder and the degree of impact of traumatic events on a person

Index	Group (score)		Mann-Whitney U-test	Significance of the criterion
	Main (20)	Control (20)		
Rejection	16.2	6.6	20.4	$p < 0.001$
Avoidance	18.7	10.2	50.3	$p < 0.001$
Physiological excitability	10.2	4.3	44.5	$p < 0.001$
Integral indicator	47.8	22.5	24	$p < 0.001$

Source: compiled by the author of this study

The analysis revealed that the intervention group's scores on all three subscales were much higher than those of the control group. Statistically significant differences were recorded ($p < 0.05$), which once again proves the fact of psychotraumatic events in the respondents of the experimental group. In the surveys of the main group, namely the one with a history of psychotraumatic events, using the Posttraumatic Growth Survey (PGS) methodology by R.G. Tadeshi and K.G. Calhoun (2004), a medium level and a high level of posttraumatic growth were identified with an average value of 59.8. Therefore, the scores are quite high in relation to the normative tables. This high increase can probably be explained by the fact that on average 9.26 years have passed since the traumatic event, meaning that there has been enough time to cope and adapt. The highest score was obtained for the New Opportunities subscale, which is consistent with previous research and the subjective assessment of traumatised individuals who characterised their experience as: "It pushed me to see my life with new eyes",

"Trauma radically changed my life for the better", "I found a new opportunity for self-fulfilment", "I became more worthy and found new perspectives", etc.

Previous studies (Helzer *et al.*, 1987; Tedeschi & Calhoun, 2004; Brewin, 2020) have suggested that the scales of new opportunities after a traumatic event vary significantly across time periods (1-5 years, 6-11 years, 12-28 years) and this difference is statistically significant ($p < 0.05$), with an observed tendency to increase over time. A direct correlation was also found between the magnitude of traumatic impacts (measured according to the OISW method, an integral indicator) and the degree of post-traumatic growth ($p < 0.05$) with a Spearman correlation coefficient of $p = 0.532$. This indicates that exposure to high intensity trauma contributes to greater activation of posttraumatic growth, and therefore it is necessary to address this problem by investigating the nature of trauma and its further impact on posttraumatic growth. The time perspective in both groups was assessed using the ZTPI (Table 2).

Table 2. Time perspective study

Index	Group (score)		Mann-Whitney U-test	Significance of the criterion
	Main (20)	Control (20)		
Past-Negative	3.07 ± 0.79	2.14 ± 0.63	72.5	<0.001*
Past-Positive	3.22 ± 0.57	3.25 ± 0.4	179	0.568
Present-Hedonistic	2.9 ± 0.23	2.89 ± 0.15	129	0.082
Present-Fatalistic	3.23 ± 0.43	1.9 ± 0.39	99	0.009*
Future	2.88 ± 0.49	2.99 ± 0.39	97	0.005*

Note: * differences in the level of the trait in the compared groups are statistically significant ($p < 0.05$)

Source: compiled by the author of this study

The result was a statistically significant ($p \leq 0.05$) difference in the subscales Past-Negative, Present-Fatalistic, and Future subscales: the intervention group assessed their past events as more negative compared to the control group. Respondents in the main group are overestimating their future compared to the control group. Perhaps, in this way, they are transferring their expectations to the future, i.e., compensatory mechanisms are activated. The first group also scored significantly higher on the Present-Fatalistic subscale, which may indicate that trauma can shift the locus of control to an external level ("My past experience has shown that I cannot change anything", "Whatever happens, it cannot be avoided", "There are events that no one can control"). The type of change in the direction of time orientation and life attitudes in the present, depending on the presence of psychological trauma, was tested using Spearman's correlation coefficient. A comparative analysis of the reliability of the difference in time-perspective indicators revealed no significant statistical differences ($U = 136$, $p = 0.082$) in the groups of the Present-Hedonistic and Future-Positive subscales. It can be concluded that for all respondents, regardless of the degree of exposure to traumatic events and the

degree of post-traumatic growth, an average orientation towards the desire to enjoy life here and now, as well as the presence of positive memories of the past, is typical. A correlation ($p = -0.606$) was found between the integral scores (sum of subscales) of the OISW and interest in life (Helzer *et al.*, 1987). The relationship between the characteristics under study is inverse, with moderate density (strength) of the relationships on the Chaddock scale. The sign relationship is statistically significant at the $p < 0.01$ level. An inverse correlation was also found between the Past-Negative and the life satisfaction index ($p = -0.588$).

Considering this relationship, as well as the data presented in the comparison table between the treatment and control groups using the OISW, in which the highest integral score was recorded for those respondents who had previous traumatic experiences, it follows that the more severe the trauma, the lower the enthusiasm and commitment in everyday life. At the same time, there were no statistically significant correlations between the intensity of the impact of psychotraumatic events (the integral indicator of the OISW) and changes in the perception of certain time regimes in the future. Without considering the significant

differences between the treatment and control groups in comparative analyses, correlation analyses do not provide information about the direction of changes in orientations over time. Focusing on negative past events is strongly inversely correlated with a positive assessment of oneself and one's own actions ($p < 0.01$).

Psychological trauma can affect and break the centre of the personality, leaving traces in the form of the victim's guilt, self-criticism, often depression, and self-esteem. There is a connection between the factor of fatalistic presence and the consistency of goal achievement ($p = -0.724$; $p < 0.01$), presumably because the bias towards fatalism indicates that a person shares a certain responsibility for implementation, shifts their plans from "fate", "luck", and this does not always turn out to be a consistent process. Therefore, the psychological trauma leads to a change in life perspective. The process of change itself is dynamic, some of it clearly visible in time, as in the case of post-traumatic growth, which is more pronounced in the future and which also determines future orientation, hoping that the trauma as a trigger will provide impulses for reconstructing time, perspective, reassessment and finding new opportunities for growth.

The most constructive and desirable line of development of the psychological state of participants who have experienced psychological trauma is actualisation of the need for positive changes in the near future, clear planning for the near future, considering their own strengths and capabilities. At the same time, post-traumatic growth is not a return to the previous level of functioning after trauma (Kelber *et al.*, 2022). It is the acquisition of a new quality by a person, overcoming the path to self-improvement. In 2019, the Institute of Psychology developed the social and psychological training "Through Trials to Growth", which aims to optimise the use of participants' internal resources to overcome the trauma they have experienced and to ensure successful personal and professional rehabilitation (Zlyvkov & Lukomska, 2019).

DISCUSSION

There is still no consensus in the scientific literature on this issue. In most works that consider the causes, features and consequences of the impact of psychotraumatic situations on the psychological state of a person, there is a comprehensive approach (Turynina, 2017; Bondaruk. Yu.S., 2018; Altmaier, 2019). The authors assume that psychological trauma is "a form of damage to the psyche that occurs as a result of experiencing either a single traumatic event or multiple reoccurrences of traumatic events" (Raudenská *et al.*, 2020). These events are substantially different from previous experiences and have caused so much suffering that people reacted violently and negatively. The phenomenon of "psychotrauma" has become the most investigated and widespread in the context of research into the causes and manifestations of post-traumatic stress disorder.

Proponents of crisis psychology, who put forward and study the pathogenetic mechanisms of this pathology, interpret the term "psychotrauma" as a mental shock

experienced as a result of special conditions of interaction between the individual and the world around them. Sometimes, mental trauma is interpreted as an information blow that violently interrupts the integrative mechanisms of the psyche, disrupts its systemic nature, and substantially disrupts adaptation. Psychotrauma is also defined as a psychogenic shock characterised by particular sharpness, unexpectedness, suddenness, incomprehensibility and accompanied by affective disorders. This approach is typical for B.O. Rothbaum (1997). The researcher divides pathogenic factors into psychological trauma and psychogenicity. By mental trauma, he means an acute, sudden, traumatic impact with severe consequences. In his research, Rothbaum understands psychogenia as long-term systematic psychotraumatizing psychogenic influences consisting of several strong everyday influences in the form of humiliation, threats, mental pressure, which are important for a particular person and cause chronic frustration.

Psychological trauma can occur as a result of different events, but such disorders have many common features. It is usually a disorder that leads to a state of extreme bewilderment and uncertainty. A person gets into this state when they are faced with a violation of the usual perceptions of the world or violations of their rights. Psychotrauma is a vital phenomenon for an individual, affecting important aspects of their existence, which leads to profound psychological experiences, resulting in adaptation disorders and stress-related disorders.

The analysis of different opinions on the psychotraumatic situation has suggested that the term "mental trauma" should be interpreted as the result of the impact of stress factors on the personality, which is expressed in the reduced efficiency of the subject's life, changes in their system of self-regulation. These changes can be the result of an intense one-time stressful event or a stressful situation that has been in place for a long time. Therewith, a psychotraumatic situation may be based on conscious and unconscious changes in the physiological, emotional, cognitive (intellectual), and behavioural components of the regulatory system.

The central theme of psychological trauma is unresolved emotional conflicts because trauma works primarily at the level of feelings. Based on their psychotherapeutic experience, B.L. Green *et al.* (1997) managed to identify a central feeling in each of the conflicts: fear of death (arising in situations that threaten human life, in which a person experiences mortal danger and mortal fear) – in existential trauma; fear of abandonment – in loss trauma; Disappointment (occurs when a child's primary needs for emotional attachment, i.e., love, support and security, are not met by parents and a strong bond with parents is unattainable for the child); shame and guilt (occurs when the entire family system, the entire social group, or the entire society is affected by traumatic events initiated by members of this system).

However, in his classification, Green describes not only the adverse consequences of experiencing psychotrauma, but also their alternatives. Thus, the emotional conflict in the case of experiencing existential trauma is, on the one

hand, withdrawal from oneself, and, on the other hand, mental resilience. In the case of loss trauma, emotional conflict manifests itself in fixation on negative feelings or release from them. Emotional conflict presents a person with a dilemma: to trust no one or to trust and love in the face of relationship trauma. Having revealed the trauma of systemic relations, the emotional conflict is fixed, on the one hand, in secrecy and concealment, and, on the other hand, in acceptance of responsibility and guilt. Therewith, these types of trauma (existential, loss, relational, systemic) can be conditioned by time boundaries, the type of situation and the subjective attitude of a person towards the situation.

Other scientists have also investigated the impact of psychological trauma on a person's life. According to research by A. Ehlers and D.M. Clark (2000), the experience of a traumatic situation is accompanied by the emergence of three different phenomena that are closely related but have characteristic differences. This refers to primary, secondary, and tertiary dissociation (disruption of the coherence of mental processes). According to M.E. Kaler *et al.* (2008), the fact that dissociation is a fundamental property of the psyche underlies many phenomena. Dissociations play a significant role in the functioning of the psyche and are valuable for adapting to changing environmental conditions. These authors also investigated factors that can increase the activity of psychotraumatic growth. According to them, the more a person is affected by an irritating factor, the greater the psychotraumatic growth will be, and it will progress over time. Therefore, the study also proved that high intensity of trauma can contribute to greater activation of post-traumatic growth. This strongly suggests that it is necessary to address this issue by investigating the nature of trauma and its subsequent impact on post-traumatic personality growth.

The study of internal mechanisms aimed at overcoming the destructive impact of psychological trauma on the personality is carried out by such teams of scientists as J.P. Wilson *et al.* (2000) and J.L. Maples-Keller *et al.* (2020). When describing strategies for overcoming psychological trauma, they pay attention not only to the psychological but also to the social aspect, which, in the author's opinion, manifests itself in various violations of the system of human relations and in socially unacceptable forms of behaviour: antisocial, deviant, criminal. The authors emphasise the relationship between the conscious and unconscious spheres of the psyche and the impact of traumatic experiences on the development of destructive tendencies in the psyche, even though trauma can cause disorders of consciousness (Wilson *et al.*, 2000; Maples-Keller *et al.*, 2020). Comparing this hypothesis with the data obtained in this study, psychological trauma does indeed affect changes in the psyche of an individual. A person unconsciously begins to transfer the adverse consequences of past traumatic events to their present, which is the severity of the phenomenon of psychological trauma. Given the data obtained as a result of the study, it is confirmed that psychotrauma can affect and break the centre of the personality, leaving traces in the

form of the victim's guilt, self-criticism, often depression, and self-esteem. Therefore, the authors' opinion on this issue is entirely reliable.

The result of the psychological activity of experiencing can be a person's awareness of what has happened, the meaning of their entire life. Without such an awareness, it is virtually impossible to reconstruct an individual life situation, and therefore impossible to adequately overcome psychological trauma, as noted by H. Kerbage *et al.* (2022). This means that experiencing as a special form of activity allows a person in a crisis to survive difficult events and gain awareness of their own existence through a reassessment of values. V.M. McKeever and M.E. Huff (2003) argue that after a traumatic event, a person experiences certain personal changes: they develop self-doubt, which naturally manifests itself in behaviour (ease and nonchalance disappear) and in communication with other people. L. Raynor (1980) argues that traumatic experiences cause the destruction of a person's cognitive schemas and change their information pattern, which regulates and organises perception and behaviour. Therefore, to reduce the intensity of the experience, the processes of mental defence and cognitive control (e.g., in the form of denial, emotional numbness) begin to operate, which substantially complicates the process of overcoming trauma. The phenomenon of experience is of particular importance in the context of psychodynamic theory. Therefore, during the study, data were obtained that suggest that psychotraumatic events have an adverse impact on the life prospects of an individual. The participants' orientation towards the future, the emergence of new landmarks in it, and a clear definition of the meaning of life can serve as an impetus to reduce the focus on negative past events, promote a reassessment of life values, and become a trigger for overcoming this problem. The transfer of expectations to the future is clearly visible, i.e., compensatory mechanisms are activated.

CONCLUSIONS

The life perspective of people with previous trauma differs from people with everyday experience, it is less balanced. On average, the treatment group assesses their past considerably more negatively than the control group. As for the "fatalistic present", the dominant role of fatalism is also noted. Against this backdrop, the future emerges, on which the first group has high hopes, which may be a form of psychological compensation for the loss of the past. The treatment group rated their past events as more negative than the control group. Respondents in the main group are overestimating their future compared to the control group. Perhaps this is how they carry forward their expectations into the future. The first group also received considerably higher scores on the Preset-Fatalistic subscale, which may indicate that trauma can shift the locus of control to an external level. The results of the study confirmed that the stronger the negative psychotraumatic effects, the lower the enthusiasm and commitment in everyday life. Therefore, the psychological trauma leads to a change in life perspective.

Post-traumatic growth occurs through the adaptive pathway of recovery from trauma, and research shows that the degree of growth depends on the intensity of the trauma. People are forced to look for untapped resources, and therefore they are forced to look for opportunities, seek support and make new plans, as the old ones are no longer relevant. In this case, although the person may subjectively assess their past events as an extremely negative experience, they notice that they have experienced what is known as forced growth. Focusing on the Past-Negative after a traumatic event can have a strong impact on various structural components of the personality, namely motivational, volitional, emotional, and self-esteem. The studies of scholars who have previously investigated this topic emphasise the connection between self-esteem and degrees of irritation, i.e., its role is not limited to adaptive functions, but has become a mechanism for human fulfilment.

A psychotraumatic event usually occurs unexpectedly in a person's life, breaking the structure of existing life prospects, changing plans, and since it was unpredictable, there is a shift towards a Present-Fatalistic, when it seems that at any moment an event or moment can occur that a person is

not ready and cannot control. Nevertheless, the interviewees are optimistic for the future, but at the same time base their plans on fatalistic thinking in the present, which often results in a disruption of the order of achievement, as evidenced by the context revealed.

The life perspective as a research topic has recently been investigated in the context of critical (extreme) events, and therefore only empirical data is currently being generated, which can sometimes be contradictory, leading to discussions and a more objective and holistic study of this topic in modern sciences. Further study of the problem of the impact of psychotrauma on the life perspective of an individual requires narrowing the subject of research, determining the category of participants in the experimental study and the directions of psychological work with them.

ACKNOWLEDGEMENTS

None.

CONFLICT OF INTEREST

None.

REFERENCES

- [1] Altmaier, E.M. (2019). An introduction to trauma. In *Promoting positive processes after trauma* (pp. 1-15). London: Academic Press. doi: 10.1016/B978-0-12-811975-4.00001-0.
- [2] American Psychological Association. (n.d.). *Trauma*. Retrieved from <https://www.apa.org/topics/trauma>.
- [3] Brewin, C.R. (2020). Complex post-traumatic stress disorder: A new diagnosis in ICD-11. *BJPsych Advances*, 26(3), 145-152. doi: 10.1192/bja.2019.48.
- [4] Dutton, M.A., Burghardt, K.J., Perrin, S.G., Chrestman, K.R., & Halle, P.M. (1994). Battered women's cognitive schemata. *Journal of Traumatic Stress*, 7(2), 237-255. doi: 10.1007/BF02102946.
- [5] Bondaruk, Yu.S. (2018). Psychological features of post-traumatic stress disorder as a complex of human reactions to a traumatic situation. *Virtus*, 26, 43-47. Retrieved from <https://lib.iitta.gov.ua/id/eprint/713132>.
- [6] Eastmond, M., Ralphsson, L., & Alinder, B. (1994). The psychosocial impact of violence and war. Bosnian refugee families and coping strategies. *Refugee Participation Network*, 16, 7-9.
- [7] Ehlers, A., & Clark, D.M. (2000). A cognitive model of post-traumatic stress disorder. *Behaviour Research and Therapy*, 38(4), 319-345. doi: 10.1016/S0005-7967(99)00123-0.
- [8] Fariba, K.A., & Gupta, V. (2022). *Post-traumatic stress disorder in children*. Retrieved from <https://www.ncbi.nlm.nih.gov/books/NBK559140/>.
- [9] Fitzgerald, D.A., Nunn, K., & Isaacs, D. (2021). What we have learnt about trauma, loss and grief for children in response to COVID-19. *Paediatric Respiratory Reviews*, 39, 16-21. doi: 10.1016/j.prrv.2021.05.009.
- [10] Green, B.L., Epstein, S.A., Krupnick, J.L., & Rowland, J.H. (1997). Trauma and medical illness: Assessing trauma-related disorders in medical settings. In J.P. Wilson & T.M. Keane (Eds.), *Assessing psychological trauma and PTSD* (pp. 160-191). New York: The Guilford Press.
- [11] Harkavets, S. (2021). *Legal psychology: A reference dictionary*. Severodonetsk: V. Dal SNU Publishing House.
- [12] Helzer, J.E., Robins, L.N., & McEvoy, L. (1987). Post-traumatic stress disorder in the general population. *New England Journal of Medicine*, 317(26), 1630-1634. doi: 10.1056/NEJM198712243172604.
- [13] ICC/ESOMAR International Code on Market, Opinion and Social Research and Data Analytics. (2016). Retrieved from <https://esomar.org/uploads/attachments/ckqtawvj00uukdtrhst5sk9u-icesomar-international-code-english.pdf>.
- [14] Kaler, M.E., Frazier, P.A., Anders, S.L., Tashiro, T., Tomich, P., & Tennen, H. (2008). Assessing the psychometric properties of the World Assumptions Scale. *Journal of Traumatic Stress*, 21(3), 326-332. doi: 10.1002/jts.20343.
- [15] Kelber, M.S., Morgan, M.A., Beech, E.H., Smolenski, D.J., Bellanti, D., Galloway, L., Ojha, S., Otto, J.L., Wilson, A.L.G., Bush, N., & Belsher, B.E. (2022). Systematic review and meta-analysis of predictors of adjustment disorders in adults. *Journal of Affective Disorders*, 304, 43-58. doi: 10.1016/j.jad.2022.02.038.

- [16] Kerbage, H., Bazzi, O., El Hage, W., Corruble, E., & Purper-Ouakil, D. (2022). Early interventions to prevent post-traumatic stress disorder in youth after exposure to a potentially traumatic event: a scoping review. *Healthcare*, 10(5), article number 818. [doi: 10.3390/healthcare10050818](https://doi.org/10.3390/healthcare10050818).
- [17] Maples-Keller, J.L., Post, L.M., Price, M., Goodnight, J.M., Burton, M.S., Yasinski, C.W., Michopoulos, V., Stevens, J.S., Hinrichs, R., Rothbaum, A.O., Hudak, L., Houry, D., Jovanovic, T., Ressler, K., & Rothbaum, B.O. (2020). Investigation of optimal dose of early intervention to prevent posttraumatic stress disorder: A multiarm randomized trial of one and three sessions of modified prolonged exposure. *Depression and Anxiety*, 37(5), 429-437. [doi: 10.1002/da.23015](https://doi.org/10.1002/da.23015).
- [18] McKeever, V.M., & Huff, M.E. (2003). A diatheses-stress model of post-traumatic stress disorder: Ecological, Biological and residual stress pathways. *Review of General Psychology*, 7(3), 237-250. [doi: 10.1037/1089-2680.7.3.237](https://doi.org/10.1037/1089-2680.7.3.237).
- [19] Miguel-Alvaro, A., Fernández-Lansac, V., & Crespo, M. (2022). Quality of memories in battered women: Analysis of positive narratives. *Psychological Trauma: Theory, Research, Practice, and Policy*. [doi: 10.1037/tra0001355](https://doi.org/10.1037/tra0001355).
- [20] Raudenská, J., Steinerová, V., Javůrková, A., Urits, I., Kaye, A. D., Viswanath, O., & Varrassi, G. (2020). Occupational burnout syndrome and post-traumatic stress among healthcare professionals during the novel coronavirus disease 2019 (COVID-19) pandemic. *Best Practice & Research. Clinical Anaesthesiology*, 34(3), 553-560. [doi: 10.1016/j.bpa.2020.07.008](https://doi.org/10.1016/j.bpa.2020.07.008).
- [21] Raynor, L. (1980). *The adopted child comes of age*. London: Routledge. [doi: 10.4324/9781003202844](https://doi.org/10.4324/9781003202844).
- [22] Robinson, L., Melinda Smith, M.A., & Segal, J. (2023). *Emotional and psychological trauma*. Retrieved from <https://www.helpguide.org/articles/ptsd-trauma/coping-with-emotional-and-psychological-trauma.htm>.
- [23] Rothbaum, B.O. (1997). [A controlled study of eye movement desensitization and reprocessing in the treatment of posttraumatic stress disorder sexual assault victims](https://doi.org/10.1037/1089-2680.7.3.237). *Bulletin of the Menninger Clinic*, 61(3), 317-334.
- [24] Scoglio, A.A., & Salhi, C. (2021). Violence exposure and mental health among resettled refugees: A systematic review. *Trauma, Violence, & Abuse*, 22(5), 1192-1208. [doi: 10.1177/1524838020915584](https://doi.org/10.1177/1524838020915584).
- [25] Starcevic, A. (Ed.). (2019). *Psychological trauma*. London: IntechOpen. [doi: 10.5772/intechopen.77651](https://doi.org/10.5772/intechopen.77651).
- [26] Tedeschi, R.G., & Calhoun, L.G. (2004). Posttraumatic growth: Conceptual foundations and empirical evidence. *Psychological Inquiry*, 15(1), 1-18. [doi: 10.1207/s15327965pli1501_01](https://doi.org/10.1207/s15327965pli1501_01).
- [27] Turytnina, O.L. (2017). *Psychology of trauma situations*. Kyiv: Personal Publishing House.
- [28] Vagni, M., Maiorano, T., Giostra, V., & Pajardi, D. (2020). Hardiness and coping strategies as mediators of stress and secondary trauma in emergency workers during the COVID-19 pandemic. *Sustainability*, 12(18), article number 7561. [doi: 10.3390/su12187561](https://doi.org/10.3390/su12187561).
- [29] Wilson, J.P., Raphael, B., Meldrum, L., Bedosky, C., & Sigman, M. (2000). [Preventing PTSD in trauma survivors](https://doi.org/10.1037/1089-2680.7.3.237). *Bulletin of the Menninger Clinic*, 64(2), 181-196.
- [30] Zahray, L.D. (2015). [Conceptualization of the “Ego” and psychological trauma](https://doi.org/10.1037/1089-2680.7.3.237). *Bulletin of the Chernihiv National Pedagogical University. Series: Psychological Sciences*, 128, 108-111.
- [31] Zimbardo, P., & Boyd, J. (2008). *The time paradox: The new psychology of time that will change your life*. New York: Free Press.
- [32] Zlyvko, V.L., & Lukomska, S.O. (2019). *Theory and practice of psychological training*. Kyiv-Nizhyn: Publisher PP Lysenko M.M.

Ліана Вікторівна Спицька

Доктор психологічних наук, кандидат юридичних наук, професор
Східноукраїнський національний університет імені Володимира Даля
01042, вул. Іоанна Павла II, 17, м. Київ, Україна
<https://orcid.org/0000-0002-9004-727X>

Психологічна травма та її вплив на життєві перспективи людини

Анотація. У психології все більше уваги приділяється психологічній травмі та її впливу на людину. Психотравма створює для людини не меншу небезпеку й може набагато сильніше і глибше вплинути на її здоров'я, ніж фізичне захворювання, тому необхідно вивчити цю проблему задля подальшого ефективного вирішення. Мета статті – дослідити поняття психологічної травми та її вплив на життєві перспективи людини. Методологія дослідження поєднала теоретичний аналіз літератури, основною ціллю якого було визначити поняття психологічної травми та її аспектів, й емпіричне дослідження. Емпіричний етап полягав в опитуванні та застосуванні психодіагностичних методик. Для обробки даних використовувалися статистичні методи, як-от U-критерій Манна-Вітні та коефіцієнт кореляції Спірмена, з використанням комп'ютерної програми SPSS Statistics. Результати дослідження показали, що особи з психотравмою мають менш збалансовану життєву перспективу, оцінюють минуле негативніше, покладають більші надії на майбутнє, що може бути формою компенсації втрати минулого. Виявлено, що ступінь посттравматичного росту залежить від інтенсивності наслідків травми. Обґрунтовано позицію, що психотравма може впливати на різні компоненти особистості, включно з мотиваційним, вольовим, емоційним та самооцінковим. Дослідження підтверджує, що психотравма змінює життєву перспективу та може спричиняти порушення в повсякденному житті. Рекомендовано для подальшого вивчення порушеного питання звузати предмет дослідження та розробити психологічні підходи для роботи з особами, що пережили психотравму. Практичне значення дослідження полягає в розробці комплексної моделі впливу травматичних подій на розвиток особистості залежно від різних факторів

Ключові слова: травматичний стрес; посттравматичний ріст; переживання; особистість; психічне здоров'я

UDC 159.97

DOI: 10.52534/msu-pp3.2023.91

Tetiana Yablonska*

Doctor of Psychological Sciences, Professor
Taras Shevchenko National University of Kyiv
01003, 60 Volodymyrska Str., Kyiv, Ukraine
<https://orcid.org/0000-0001-7272-9691>

Li Yuanjie

Bachelor in Psychology
Taras Shevchenko National University of Kyiv
01003, 60 Volodymyrska Str., Kyiv, Ukraine
<https://orcid.org/0009-0005-1288-0572>

Psychological characteristics of young men with Internet addiction: A cross-cultural study

Article's History:

Received: 19.04.23

Revised: 23.07.23

Accepted: 30.08.23

Suggested Citation:

Yablonska, T., & Yuanjie, L. (2023). Psychological characteristics of young men with Internet addiction: A cross-cultural study. *Scientific Bulletin of Mukachevo State University. Series "Pedagogy and Psychology"*, 9(3), 91-101. doi: 10.52534/msu-pp3.2023.91.

Abstract. Today's youth actively use the Internet, which increases the risk of developing addiction, and thus raises the issue of investigating its factors to prevent the problem promptly and provide effective psychocorrection. The purpose of this study was to investigate the psychological predictors of Internet addiction among young people. The study was based on a comparative analysis of Ukrainian and Chinese samples. The Internet Addiction Test by K. Young was used to identify the formation of Internet addiction; the Big Five Personality Inventory NEO-FFI and the Beck Depression Inventory were used to diagnose psychological characteristics; respondents were also offered a questionnaire that included questions about demographic data and current situation. It was found that in the Ukrainian sample, 36.3% of respondents have a moderate or severe degree of Internet addiction, while in the Chinese sample, this share is 31.3%. Differences in personal predictors of Internet addiction have been found: the level of Internet addiction among Ukrainian youth is positively correlated with depression, neuroticism, and the impact of war, while it is inversely related to extraversion and conscientiousness. In the group of Chinese youth, only the neuroticism scale correlates with Internet addiction. The comparison showed that the level of depression among young people with Internet addiction in both countries is significantly higher than among young people without signs of addiction. There are significant differences between respondents in Ukraine and China on the scales of neuroticism, conscientiousness, extraversion, and most notably, openness. It was found that Ukrainian youth are characterised by higher levels of neuroticism and openness and lower levels of extraversion and conscientiousness compared to Chinese youth; no differences were found in terms of Internet addiction and depression. The study established that the common factor of Internet addiction among young people in both countries is depression; cultural differences and environmental factors lead to the fact that the predictors of addiction are different personality traits of young people. The practical significance of the study is that its results provide a better insight into the goals of influence in planning the prevention and psychocorrection of youth Internet addiction

Keywords: adolescence; cultural differences; predictors of addiction; personality traits; depression; neuroticism

*Corresponding author



INTRODUCTION

Internet technologies are developing rapidly in the modern world, with young people being the most active users, which is associated with the risk of Internet addiction. According to the statistical report on the development of the Internet, in 2008, China ranked first in the world in terms of the number of users under the age of 30, as 68.6% of the population was recorded as users; and as of June 2022, China had 1051 million netizens, accounting for 74.4% of the population, with teenagers and young adults accounting for about 30% of users (China Internet Network Information Centre, 2022); the most commonly used internet functions by Chinese youth are chatting (99.2%) and watching videos (93.7%). As for Ukrainian youth, according to a survey by the State Institute of Family and Youth Policy (Andriuchenko *et al.*, 2020), they usually use the Internet to communicate on social media (92.8%), search for information for study and work (86.2%), and correspond via email (82.2%) and messengers (82.2%). Therewith, 95% of respondents believe that the Internet has a considerable impact on their lives (Andriuchenko *et al.*, 2020). Among Ukrainian Internet users, between 2% and 6% are considered addicted to it (Bielinska, 2019). Thus, young people are active users of the Internet; therefore, young people are the most vulnerable to developing an addiction to the global network.

In recent years, researchers of the problem of Internet addiction continued discussions about its predictors and criteria (Kuss & Griffiths, 2017; Rowicka, 2018; Błachnio *et al.*, 2019), investigated the issue of family factors of addiction (Meeus *et al.*, 2018; Orben, 2021), specifically the impact of a child's early initiation into the use of gadgets on the development of addiction (Rowicka *et al.*, 2022). Considerable attention is paid to the study of psychological factors of Internet addiction among adolescents and young people (Liu *et al.*, 2017; Samaha *et al.*, 2018), which would allow for more effective psychoprophylactic and correctional interventions. At the same time, the data from different studies differ substantially in their methodology, which makes it difficult to compare them and find common and specific features for each culture and age group.

Modern research on the psychological aspects of using computers, various gadgets and the Internet is quite widespread, but it faces some problems: Internet addiction is not a clinically recognised disorder, its criteria and mechanisms are a matter of debate; personal predictors of Internet addiction are understudied; the methodology of these studies lacks sufficient substantiation (Kuss & Griffiths, 2017); there is a lack of evidence-based solutions for the prevention and correction of Internet addiction, as well as studies based on cross-cultural comparisons. Therefore, it is important to investigate the psychological predictors of youth Internet addiction based on comparative analysis, as well as to consider cultural and environmental factors in its formation, with the subsequent development of effective prevention and correctional programmes on this basis.

The purpose of this study was to investigate the psychological predictors of Internet addiction in adolescence based on a comparative analysis of Ukrainian and Chinese samples.

MATERIALS AND METHODS

The theoretical methods used in the study included analysis (to investigate the available literature on the issue, which concerned the definition, causes, symptoms, criteria and consequences of the phenomenon considered in the study), synthesis (to form an understanding of the phenomenon of Internet addiction, its causes and consequences based on the sources under study) and comparison (to compare the data of this study, i.e., the results of the survey of Chinese and Ukrainian respondents, as well as to compare the data of other modern psychological studies of Internet addiction). The empirical study was based on a cross-sectional comparison that measured the psychological parameters of young people in two countries – Ukraine and China – considering the degree of their dependence on the Internet.

The Internet Addiction Test (Young, 1998), developed to measure the presence and severity of Internet addiction, was used to diagnose the degree of Internet addiction in individuals. The test questions are designed to diagnose the degree of Internet addiction: mild, moderate, or severe. To investigate the psychological characteristics of the respondents, the authors of this study used the Big Five Personality Inventory NEO-FFI (McCrae & Costa, 1987), which defines personality characteristics based on five factors: openness to experience, conscientiousness, extraversion, agreeableness, and neuroticism; Beck Depression Inventory (Beck *et al.*, 1961), which is a 21-item self-assessment rating list that measures the characteristic behaviour and symptoms of depression. During statistical analysis, Cronbach- α , Student's t-test, and correlation analysis were used; statistical analysis of the data was carried out using SPSS 21.0. Respondents were also offered a questionnaire containing questions about their demographic data and current situation.

The sample of respondents included representatives of student youth from Ukraine and China. Characteristics of the Chinese sample – 86 people, including 45 boys and 41 girls, aged 17-20, with an average age of 18.6 years. The Ukrainian sample consists of 88 people, including 27 boys and 61 girls aged 16-21, with an average age of 18.8. The questionnaires for Chinese youth were distributed on an online platform (Questionnaire Star website – chat software) from March to May 2022. The survey among Ukrainian youth was conducted by distributing a questionnaire on online platforms from December 2022 to April 2023. The data was collected using the Google Forms service based on the informational consent of the subjects. The study design and psychodiagnostic instruments were reviewed and approved by the Department of Developmental Psychology of Taras Shevchenko National University of Kyiv for their compliance with ethical standards. All procedures conducted in the study involving people did not violate the honour and dignity of respondents, considered the age characteristics of the respondents, and were carried out with the anonymity of the results obtained. All survey participants were informed about the purpose, objectives, and nature of the survey and gave their consent to the processing of their answers.

RESULTS

Theoretical framework of the study:

Factors and symptoms of Internet addiction

According to the analysis of current research, Internet Addiction Disorder is a new type of addiction phenomenon that has emerged with the development of Internet technologies, which manifests itself in excessive and inappropriate use of the Internet with obvious negative consequences for social and psychological functions.

Most modern researchers, investigating personality predictors of Internet addiction, argue that people with Internet addiction demonstrate specific personality characteristics. Thus, H. Khoshakhlagh and S. Faramarzi (2012) investigated the relationship between mental disorders and emotional intelligence and Internet addiction in young people. The study found a significant link between depression and impaired interpersonal sensitivity in young people with Internet addiction; they have a lower level of emotional intelligence in different situations, which is manifested by difficulties in expressing their emotions and understanding the thoughts and feelings of others. It was confirmed that symptoms of physical and emotional agitation, hostility, and aggressive thoughts are adverse consequences of Internet addiction and uncontrolled use of the Internet.

It was established that young people with Internet addiction are characterised by emotional instability and are more likely to show signs of anxiety, nervousness, irritability, and depression. Thus, a study by K. Niemz *et al.* (2005) found that young people with Internet addiction are typically characterised by low self-confidence, low self-esteem, and self-efficacy. Other studies demonstrate such characteristics of addicted young people as depression, shyness, and addiction as a personality trait. Depression plays a special role in the development of youth Internet addiction; it was found that the level of depression and suicidal thoughts of high school students in the group of people with Internet addiction was significantly higher (Kim *et al.*, 2006; Liu *et al.*, 2017). At the same time, young people often use various methods to regulate their emotions to control them consciously or unconsciously, one of these methods is “escapism”, which manifests itself in the fact that, escaping from the real world, they find themselves in the world of the Internet. Lack of control, social withdrawal and emotional conflict, problems with time management and concealing problematic behaviour are factors of Internet addiction among students (Samaha *et al.*, 2018).

A.M. Gervasi *et al.* (2017) found that negative affect, disinhibition, and psychotic maladaptive personality type can be predictors of Internet addiction. Furthermore, there is an elevated level of comorbidity between problematic internet use and mood/anxiety disorders, such as depression, loneliness, shyness, and self-esteem (Caplan, 2005). Excessive use of the Internet can be conceptualised as a maladaptive strategy for coping with negative emotions and negative life events. Internet use was found to be associated with traits such as poor self-control, impulsivity, and affectivity, and these traits are risk factors for problematic Internet use (Van den Eijnden *et al.*, 2008).

R. Kraut *et al.* (1998) found that excessive addiction to the Internet leads to young people reducing their social interaction in real life, which results in feelings of loneliness. At the same time, it was argued that Internet dependence does not necessarily increase loneliness; on the contrary, increased feelings of loneliness in real life lead to increased online activity for some young people (Amichai-Hamburger & Ben-Artzi, 2003).

In general, studies identify different groups of Internet addiction factors.

Physiological factors are primarily related to the action of neurotransmitters. As a result of online activity, the nerve centres of the brain are highly excited, with the release of dopamine, which is accompanied by certain complex physiological and biochemical reactions, including an imbalance in hormone levels in the body and reduced immune function. If this type of stimulation is regular, the brain amplifies its own chemical response, which is addictive (Pfaff, 2013). A growing body of research and treatment experience demonstrates a strong neurobiological link between behavioural addictions and substance use disorders (Grant *et al.*, 2006). Compared to the general population, people with Internet addiction lack dopamine receptors or serotonin/dopamine (Beard, 2005), and therefore they have a harder time experiencing pleasure and may seek out activities that stimulate dopamine/serotonin levels. Over time, they need increasingly more stimulation, and thus are at risk of addiction.

Psychological factors. M. Lafrenière *et al.* (2009) suggested that Internet addiction may be the result of excessive compulsive addiction. A teenager with an Internet addiction may behave uncontrollably, unable to resist their desires; all this affects their daily life, leading to life conflicts. C.S. Andreessen & S. Pallesen (2014) believe that excessive attention to social media and strong social motivation are the main causes of Internet addiction.

Proponents of the Inadequate Personality Theory argue that Internet addiction is linked to certain personality traits. Studies in the United States have suggested that people with Internet addiction often have characteristics such as loneliness, sensitivity, depression, a tendency to think abstractly, alertness, and disregard for social norms (Wilson *et al.*, 2010). K. Wilson *et al.* (2010) suggest that specific personality traits may contribute to Internet addiction problems; young people with high extraversion and low sense of responsibility have a higher dependence on social media and are more likely to be addicted to the Internet. Research by Chinese psychologists on a sample of students showed a comparable result: the greater the distress, anxiety, and social anxiety of respondents, the more pronounced is the tendency for them to become addicted to the network. The explanation is that students with social anxiety lack self-confidence, and therefore they tend to avoid reality, and a virtual community can provide them with a space to socialise (Chen *et al.*, 2022; Zhao *et al.*, 2023).

Family factors. One of the predictors of adolescents' and young people's involvement in widespread use of the Internet is the nature of the child-parent relationship (Zhang *et al.*

al., 2011). According to socialisation theory, the environment, especially the family, has an important influence on the content, quality, and process of individual socialisation. Thus, Ö. Şenormancı *et al.* (2014) found that Internet addiction is associated with anxious attachment as well as significant impairments in family functioning. However, it has not been established whether family dysfunction leads to Internet addiction or whether Internet addiction interferes with family functioning. Other studies (Shin *et al.*, 2011) confirm that Internet addiction is associated not only with anxious but also with avoidant attachment.

In China, due to the existence of a test-oriented education system, most parents are deeply concerned about their children's academic performance, focusing only on their education and physical health, parents rarely care about other aspects, especially about meeting emotional needs, feelings, often ignoring the child's psychological state (Kirkpatrick & Zang, 2011). As a result, after entering college and leaving the control of their parents, young men find it difficult to find their place in society, which is a factor in their dependence on the network. Analogous trends are observed in Ukraine.

According to the principles of the current education system in China, many educators focus on building learning that is focused on student performance. If the learning outcomes are not high enough, the adolescent/young person hardly feels successful. On the contrary, heavy academic responsibilities and poor academic performance can easily lead to criticism, reproaches from parents and ridicule from classmates. This sense of failure encourages young people to turn to different ways to relieve tension, and the internet can satisfy their internal needs to some extent (Bao *et al.*, 2023).

Cultural perspective. A new perspective on the problem was provided by A. Blachnio *et al.* (2019), who analysed samples from nine countries, showed that when the indicators of human well-being, security and health in a country are low and the economy is developed, the level of dependence on the network is high. Therewith, Internet addiction is positively correlated with the country's economic

well-being, social progress, and human development. The researchers believe that not only the personal characteristics of people with Internet addiction, but also the cultural and economic characteristics of the region can be considered as factors to explain Internet addiction.

Adolescence is a period of very rapid change and development in a person's life. During this period, young people actively develop self-awareness, knowledge of themselves and the world around them, and their emotional sphere becomes more stable. However, the transformational processes of personality, the transition to adulthood in adolescence are not yet complete, and therefore the lability of the emotional sphere stays quite high (Gorbaniuk *et al.*, 2018). Under the current education system, young men are under quite a lot of pressure to study, their parents' expectations are also too high, and there are not enough opportunities for young people to fulfil themselves in their extracurricular activities. Opportunities for self-determination and self-identification of young men are quite limited and usually come down to the results of educational activities, which do not satisfy the need for self-identification. Therefore, young men find other resources to meet their emotional needs, to build self-esteem and self-acceptance. During this period of complex and unbalanced psychological development, it is the Internet resources that provide many of them with the opportunity to search for and learn about themselves, to reveal their feelings. Therefore, the factors of the Internet environment – virtuality and openness, as well as anonymity – provide an opportunity to fulfil the needs of young men. The Internet community provides them with opportunities to fulfil their social life; in this space, an individual can become a member of a community and satisfy the needs of emotional communication.

The results of an empirical study of youth addiction to the Internet

The data obtained from the empirical study of young people from the Chinese and Ukrainian samples were analysed in terms of reliability and validity, resulting in the following indicators (Table 1).

Table 1. Indicators of reliability and validity of empirical data

	Cronbach- α	
	Chinese sample	Ukrainian sample
Internet addiction test	0.903	0.765
"The Big Five"	0.779	0.826
Beck Depression Scale	0.948	0.948

Source: developed by the authors of this study based on the data obtained

Verifying the data obtained for the normality of distribution in both samples suggested that the absolute values of the skewness coefficient Z_s and the kurtosis coefficient Z_k corresponded to or were close to the normal distribution, and therefore parametric criteria were used. According to the K.S. Young's test, the respondents' Internet addiction scores were determined, with $T1 \geq 50$ being diagnosed as Internet addiction (moderate and severe

Internet addiction), and $T1 < 50$ being diagnosed as normal (no Internet addiction or mild Internet addiction). Accordingly, all the subjects were divided into 2 groups: a group of people with Internet addiction and a group without signs of Internet addiction (normal). Thus, in the Chinese sample, 27 people with Internet addiction were identified (31.3% of the sample), in the normal group – 59 people (68.6%); in the Ukrainian sample, 32 people were

Internet-addicted (36.3%), and 56 people (63.6% of the sample) had no signs of Internet addiction.

Next, personality differences between a group of Internet-addicted young men and a group without signs of Internet addiction were compared. The results of the Big Five Personality Inventory (NEO-FFI) survey of

young men and women in the Chinese sample suggested that the N/Neuroticism scale score in the group of people with Internet addiction was significantly higher than in the group without signs of Internet addiction ($p \leq 0.001$); there was no significant difference in other measurements (Table 2).

Table 2. Comparison of personal differences between respondents with and without signs of Internet addiction (Chinese sample, $n = 86$)

Big Five scales	Respondents without signs of Internet addiction	Internet-addicted respondents	<i>t</i>	<i>p</i>
N/Neuroticism	33.85 ± 5.60	39.14 ± 4.12	-3.73	.001
E/Extraversion	42.33 ± 7.18	39.44 ± 9.75	1.35	.189
O/Openness	37.00 ± 3.38	35.85 ± 4.47	1.23	.230
A/Agreeableness	36.77 ± 4.79	35.14 ± 4.88	1.26	.218
C/Conscientiousness	42.40 ± 5.87	40.59 ± 6.04	1.10	.278

Notes: *t* – Student's *t*-test, *p* – statistical significance

Source: developed by the authors of this study based on the data obtained

Comparison of the degree of depression between the group of people with Internet addiction and the group of people without signs of Internet addiction showed that there is a significant difference in the degree of depression between these groups ($p \leq 0.001$), and the level of depression in the group of people with

Internet addiction (24.70 ± 12.26) is significantly higher than in the normal group (11.85 ± 9.09), as presented in Table 3.

A comparison of personality differences between individuals with and without signs of Internet addiction (Ukrainian sample) is presented in Table 4.

Table 3. Comparison of the degree of depression between the group of respondents with and without signs of Internet addiction ($X \pm S$) (Chinese sample)

	Respondents without signs of Internet addiction	Internet-addicted respondents	<i>t</i>	<i>p</i>
Depression score	11.85 ± 9.09	24.70 ± 12.26	-5.16	0.000

Notes: *t* – Student's *t*-test, *p* – statistical significance

Source: developed by the authors of this study based on the data obtained

Table 4. Comparison of personal differences between respondents from the group of people with Internet addiction and the group without signs of addiction ($X \pm S$) (Ukrainian sample)

Big Five scales	Respondents without signs of Internet addiction	Internet-addicted respondents	<i>t</i>	<i>p</i>
N/Neuroticism	34.78 ± 8.73	39.84 ± 7.43	-2.75	0.007
E/Extraversion	41.25 ± 6.68	37 ± 6.61	2.88	0.005
O/Openness	42.03 ± 5.81	41.12 ± 6.95	0.65	0.513
A/Agreeableness	38.87 ± 5.88	38.37 ± 5.73	0.38	0.7
C/Conscientiousness	42.41 ± 7.13	37.62 ± 7.74	2.93	0.004

Notes: *t* – Student's *t*-test, *p* – statistical significance

Source: developed by the authors of this study based on the data obtained

As Table 4 suggests, the group of people with Internet addiction in the Ukrainian sample has significantly higher neuroticism scores than the norm group ($p \leq 0.01$). Therefore, the scores of extraversion and conscientiousness ($p \leq 0.01$) are significantly lower than those of the people

without signs of addiction. Furthermore, a comparison of the degree of depression in the Ukrainian sample indicated that the level of depression in the group of people with Internet addiction is significantly higher than in the normal group ($p \leq 0.001$), as presented in Table 5.

Table 5. Comparison of the degree of depression of respondents from the group of people with Internet addiction and the group without signs of addiction ($X \pm S$) (Ukrainian sample)

	Respondents without signs of Internet addiction	Internet-addicted respondents	<i>t</i>	<i>p</i>
Depression score	14.50 ± 9.49	21.84 ± 9.24	-3.55	0.001

Notes: *t* – Student's *t*-test, *p* – statistical significance

Source: developed by the authors of this study based on the data obtained

Table 6 presents the intercorrelation coefficients for the Ukrainian sample of the following indicators: Internet addiction, depression, neuroticism, extraversion, openness, agreeableness, conscientiousness, and war exposure, as well as the mean and standard deviation.

As Table 6 shows, the results of the correlation analysis suggest that Internet addiction in the Ukrainian sample is associated with depression, neuroticism, extraversion, conscientiousness, and war-related traits. Internet addic-

tion has a moderate positive relationship with depression and neuroticism and the impact of war, as reported by respondents in Ukraine ($p \leq 0.01$). Therewith, Internet addiction has a moderately pronounced inverse relationship with extraversion and conscientiousness ($p \leq 0.01$); while openness and agreeableness are not related to Internet addiction. A comparison of empirical indicators obtained from the survey of young people in Ukraine and China is presented in Table 7.

Table 6. Intercorrelation matrix (Ukrainian sample, $n = 88$)

Name	1	2	3	4	5	6	7	8	9	10
1. Internet addiction	1									
2. Depression	.48**	1								
3. Neuroticism	.44**	.468**	1							
4. Extraversion	-.387**	-.491**	-.366**	1						
5. Openness	-0.091	-.217*	0.09	.348**	1					
6. Agreeableness	0.164	0.073	0.122	0.153	.346**	1				
7. Conscientiousness	-.416**	-.419**	-.374**	.297**	.314**	0.001	1			
8. Impact of the war	.291**	.329**	.251*	-0.126	0.111	0.094	-.237*	1		
<i>M</i>	46	17.17	36.62	39.70	41.70	38.69	40.67	3.30	4.114	1.932
<i>SD</i>	13.19	10.00	8.60	6.93	6.22	5.804	7.67	1.07	0.8635	0.855

Notes: *M* – means, *SD* – standard deviations; * $p \leq 0.05$; ** $p \leq 0.01$

Source: developed by the authors of this study based on the data obtained

Table 7. Comparison of personal predictors of Internet addiction between Ukrainian and Chinese respondents ($X \pm S$), $n = 174$

Indicator	Ukrainian sample, $n=88$	Chinese sample, $n=86$	<i>t</i>	<i>p</i>
Internet addiction	46 ± 13.19	45.48 ± 13.25	0.255	0.799
N/Neuroticism	36.62 ± 8.6	34.24 ± 6.29	2.087	0.038
E/Extraversion	39.7 ± 6.93	42.88 ± 8.46	-2.706	0.008
O/Openness	41.7 ± 6.22	36.83 ± 3.83	6.223	0.000
A/Agreeableness	38.69 ± 5.8	38.32 ± 5.63	0.424	0.672
C/Conscientiousness	40.67 ± 7.67	42.87 ± 6.22	-2.075	0.039
Depression	17.17 ± 13.25	19.48 ± 12.62	-1.34	0.182

Notes: *t* – Student's *t*-test, *p* – statistical significance

Source: developed by the authors of this study based on the data obtained

As Table 7 shows, there are statistically significant differences between respondents in Ukraine and China on the scales of neuroticism ($p \leq 0.05$), conscientiousness ($p \leq 0.05$), extraversion ($p \leq 0.01$), and most notably on openness ($p \leq 0.001$). Accordingly, Ukrainian youth are characterised by higher levels of neuroticism and openness and significantly lower levels of extraversion and

conscientiousness compared to Chinese youth; no significant difference was found in terms of Internet addiction and depression. Therefore, the levels of Internet addiction and the severity of depression do not differ significantly between young people in Ukraine and China. At the same time, cultural differences, as well as the current situation, which directly affects the psycho-emotional state of young

people, may determine that the predictors of Internet addiction are different personality traits of young people in the two countries. A common feature of young people who are addicted to the Internet can be considered depression or a tendency to depression, as the level of depression among young people in both countries is higher in the group of people with Internet addiction than in the normal group.

Thus, the study revealed similarities and differences in the psychological characteristics of young people with Internet addiction in diverse cultures, as well as the impact of the war in Ukraine on the psycho-emotional state as a factor of Internet addiction. At the same time, the study offered an insight into the universality of the problem of youth Internet addiction, as psychological predictors of youth Internet addiction are comparable in different countries.

DISCUSSION

Despite a considerable amount of research, there is still ongoing scientific debate regarding the clinical definition and criteria for Internet addiction. Young (1998) does not consider Internet addiction to be a mental illness in its own right, but a manifestation of the well-known "impulse control disorder" in Internet users. R. Kraut *et al.* (1998) and their co-authors consider this type of addiction as a loss of control over impulses to behave on the Internet without the effects of addictive substances, which is manifested by an obvious impairment of social and psychological functions of individuals due to excessive use of the Internet. The APA Dictionary of Psychology (n.d.) defines Internet addiction as a behaviour pattern characterised by excessive or compulsive use of computers online and offline, which leads to suffering and deterioration of the individual's psychological state.

K.W. Beard and E.M. Wolf (2001) compared the symptoms of excessive Internet use with the criteria for diagnosing other addictions (e.g., pathological gambling) and concluded that Internet addiction should be considered as an impulsive disorder. A summary of these studies makes it possible to identify the following signs of Internet addiction:

1) obsession: a state of fascination with the Internet, when a person's thinking, emotions and behaviour are focused on online activities. Unable to access the Internet, a person feels a strong desire to do so, and once online, they completely lose control of their time;

2) a feeling of euphoria and emptiness. Access to the Internet becomes a way of avoiding problems in real life; when using the Internet, the addicted people can temporarily get rid of the anxiety of reality and gain peace of mind, escape from problems and unpleasant feelings;

3) withdrawal symptoms: when an addicted person is forced to stop surfing the Internet, they experience frustration, anxiety, tremors, fatigue and other symptoms, and may even resort to self-harm or suicide;

4) conflict with reality: due to the excessive amount of time and energy invested in online activity, a person is unable to take care of their real life, which leads to increased family misunderstandings, reduced social activity and activities, loss of personal interests, etc.

From a clinical standpoint, the following signs of Internet addiction are identified:

1) preoccupation: a strong desire for the Internet. The person is focused on previous online activities or waiting for the next online session;

2) withdrawal: expressed by irritability, anxiety, and boredom after several days of inactivity;

3) tolerance: to achieve satisfaction over time, increasingly more active and prolonged use of the Internet is required;

4) self-control difficulties: unwillingness to control, reduce, or stop using the Internet, constant desire to use the Internet and/or unsuccessful attempts to limit use;

5) ignoring harmful consequences: continuing to use the internet excessively despite persistent or recurrent physical or psychological problems caused or exacerbated by the use of the internet;

6) loss of social contacts and interest: the loss of interests, previous hobbies, and passions is a direct result of excessive use of the Internet;

7) using the Internet to overcome negative emotions (e.g., feelings of helplessness, guilt, anxiety);

8) concealing the true amount of time spent on the Internet and/or the cost of taking part in Internet activities from friends and relatives (Tao *et al.*, 2010).

K.S. Young (1998) noted that Internet addiction can cause issues in the following five areas: academic problems, interpersonal problems, financial and professional problems, and physical health problems. Thus, Internet addiction can lead to physical health problems, as people with Internet addiction, by constantly depriving themselves of sleep, can harm their immune system, thereby increasing the body's vulnerability to various diseases. Lack of physical activity can also pose a physiological risk of carpal tunnel syndrome, back pain, and eye strain (Pfaff, 2013). Studies have found a link between internet addiction and sleep disorders, including significantly shorter sleep duration in people with Internet addiction (Alimoradi *et al.*, 2019). C.S. Andreassen and S. Pallesen (2014) believe that Internet addiction affects a person's work, studies, and other activities, has a negative impact on interpersonal relationships in real life, and mental health.

The empirical study of psychological predictors of Internet addiction among young men conducted in this paper not only confirms the theoretical research of many scholars on the manifestations of Internet addiction, but also clarifies and specifies the data obtained in other studies (van den Eijnden *et al.*, 2008; Wilson *et al.*, 2010; Kuss *et al.*, 2014), most of which suggest that people with Internet addiction have specific personal characteristics.

Specifically, it was found that in the Chinese sample there was a significant difference in the neuroticism scale between a group of Internet addicted young men and a group without signs of addiction, but no significant difference in other parameters. In the Ukrainian sample, there were significant differences between the group of people with Internet addiction and the group without signs of

addiction on the scales of neuroticism, extraversion, and conscientiousness, but no significant differences on other parameters. Thus, Ukrainian young people with Internet addiction are more introverted, emotionally unstable, prone to stress, anxiety, and mood swings, and have lower impulse control and determination compared to Chinese young people with addiction. The increased level of these manifestations among Ukrainian youth is conditioned by the impact of the war, and thus increases the risk of Internet addiction. The findings are consistent with the conclusions of the study by N. van der Aa *et al.* (2009), which investigated personality traits using the Big Five. Internet use has been found to be indirectly associated with poor health, depression, lower self-esteem, and loneliness. The researchers believe that compulsive internet use has a mediating effect: introverted, aversive and emotionally unstable teenagers are more likely to fall into a vicious circle, after which they start using the network more excessively, which leads to higher levels of internet addiction and exacerbates their problems.

The findings of the present study also suggest that the level of depression among young people with Internet addiction is significantly higher than among young people without signs of addiction. This confirms the existence of a connection between Internet addiction and depression, which can manifest itself as bad mood, pessimism, slow thinking, reduced volition, etc. These findings are consistent with the results of modern research that address the significant role of depression in the development of Internet addiction (Kim *et al.*, 2006; Morrison & Gore, 2010; Khaz-aal *et al.*, 2022).

Notably, the study described in this paper identified a difference in integrity scores between the two groups of the Ukrainian sample, which is rarely mentioned in other studies. This may indicate that young people with Internet addiction act more impulsively, have poorer planning and self-control skills, and are less organised and focused in their activities (van den Eijnden *et al.*, 2008; Samaha *et al.*, 2018). Furthermore, a comparison of the data from the Ukrainian and Chinese samples, as well as considering the impact of the war in Ukraine, indicates the influence of the war as a substantial environmental stressor, which shows significant positive correlations with the level of Internet addiction ($p \leq 0.01$), depression ($p \leq 0.01$), neuroticism ($p \leq 0.05$), and an inverse relationship with conscientiousness ($p \leq 0.05$) in the sample of Ukrainian youth. The adverse impact of the war on the psycho-emotional state of the population, including young people, increases the severity of negative experiences and emotional states. Therefore, Internet use can be one of the most accessible and familiar coping strategies for young people, which at the same time increases the risk of addiction.

CONCLUSIONS

The study was based on the understanding of Internet addiction as a behaviour characterised by excessive or compulsive use of computers online and offline, which leads to distress and deterioration of a person's psychological state.

Based on the analysis of scientific research, the main factors of Internet addiction were identified as follows: personal (emotional instability, anxiety, irritability, depression, shyness, low self-esteem, lack of empathy, etc.); psychological (search for approval from others, internal psychological conflict, search for sources of emotional intimacy, etc.); psychosocial or internal (loneliness, low communication skills, maladaptive self-awareness, self-doubt, low self-efficacy); external (family and peer relationships). Factors of the online environment include anonymity, invisibility, online identity, etc.

An empirical study of 86 young men and women in China using the K. Young Internet Addiction Test found that 31.3% of the respondents are people with Internet addiction (moderate to high). In the Ukrainian sample of 88 respondents, 36.3% have a moderate or high degree of Internet addiction. The results of a study in a Chinese sample suggested that the level of neuroticism of people with Internet addiction is significantly higher than that of people without signs of addiction. In the Ukrainian sample, it was found that neuroticism in the group of boys and girls with Internet addiction is significantly higher, and the indicators of extraversion and conscientiousness are significantly lower than in young people without signs of Internet addiction. Furthermore, the findings suggested that the level of depression among young people with Internet addiction in both countries is significantly higher than among young people without signs of Internet addiction.

Differences in the personal predictors of Internet addiction in the Ukrainian and Chinese samples are revealed. The level of Internet addiction among Ukrainian youth is positively correlated with depression, neuroticism, and the impact of war; it is inversely related to extraversion and conscientiousness. This suggests that young people with Internet addiction are characterised by the following features: a tendency to stress, impulsivity and maladaptive coping reactions, a low ability to regulate their emotions, a tendency to depression, bad mood, withdrawal, shyness, more pronounced signs of loneliness, irresponsibility, self-doubt, disorganisation. In the group of Chinese youth, only the neuroticism scale has a connection with Internet addiction.

Statistically significant differences between the respondents in Ukraine and China were recorded on the scales of neuroticism ($p \leq 0.05$), conscientiousness ($p \leq 0.05$), extraversion ($p \leq 0.01$), and most notably on openness ($p \leq 0.001$). Accordingly, Ukrainian youth are characterised by higher levels of neuroticism and openness and significantly lower levels of extraversion and conscientiousness compared to Chinese youth; no significant difference was found in terms of Internet addiction and depression. Thus, the levels of Internet addiction and the severity of depression do not differ significantly between young people in Ukraine and China. At the same time, cultural differences and environmental factors influence the fact that the predictors of Internet addiction are different personality traits of young people in the two countries. A common risk factor for Internet addiction is the level of

depression, which is higher in the group of people with Internet addiction in both countries than in the normal group. At the same time, in the Ukrainian sample, the results of the correlation analysis suggested that Internet addiction is related not only to depression and neuroticism, but also correlates with the impact of war and has a moderately pronounced inverse relationship with extraversion and conscientiousness ($p \leq 0.01$). Thus, Ukrainian youth can be characterised as emotionally rich, but with a lower level of emotional stability and a tendency to anxiety; Chinese youth are characterised by a higher level of enthusiasm, a fast pace in life and work, and a higher sense of organisation and responsibility.

The scientific originality of the study lies in the identification of differences in the psychological predictors of Internet addiction among young people in Ukraine and

China. The prospect of the study is to expand cross-cultural research in this area, as well as to develop programmes and recommendations for the prevention of Internet addiction among young people. These programmes should be based on respect for differences and diversity in personal development and build on the strengths of the individual. The focus should be on the mental health of young men and the creation of a suitable social environment for their healthy development, including the development of emotional self-regulation, social skills, and self-confidence.

ACKNOWLEDGEMENTS

None.

CONFLICT OF INTEREST

The authors of this study declare no conflict of interest.

REFERENCES

- [1] Alimoradi, Z., Lin, C.-Y., Broström, A., Bülow, P.H., Bajalan, Z., Griffiths, M.D., Ohayon, M.M., & Pakpour, A.H. (2019). Internet addiction and sleep problems: A systematic review and meta-analysis. *Sleep Medicine Reviews*, 47, 51-61. doi: 10.1016/j.smrv.2019.06.004.
- [2] Amichai-Hamburger, Y., & Ben-Artzi, E. (2003). Loneliness and Internet use. *Computers in Human Behavior*, 19(1), 71-80. doi: 10.1016/S0747-5632(02)00014-6.
- [3] Andreassen, C.S., & Pallesen, S. (2014). Social network site addiction – an overview. *Current Pharmaceutical Design*, 20(25), 4053-4061. doi: 10.2174/13816128113199990616.
- [4] Andriuchenko, T.V., Artyukh, O.R., & Tilikina, N.V. (2020). *Report on the results of an online survey among young people aged 14-34 "Digital technologies in youth work"*. Kyiv: State Institute of Family and Youth Policy.
- [5] APA dictionary of psychology. (n.d.). Retrieved from <https://dictionary.apa.org/internet-addiction>.
- [6] Bao, Y., Chen, Y., Liang, A., & Zhang, W. (2023). Impact of parent-child relationship on adolescent risk-taking behavior: The mediating role of school connectedness. *Journal of Education, Humanities and Social Sciences*, 8, 1976-1982. doi: 10.54097/ehss.v8i.4627.
- [7] Beard, K.W. (2005). Internet addiction: A review of current assessment techniques and potential assessment questions. *CyberPsychology & Behavior*, 8(1), 7-14. doi: 10.1089/cpb.2005.8.7.
- [8] Beard, K.W., & Wolf, E.M. (2001). Modification in the proposed diagnostic criteria for Internet addiction. *CyberPsychology & Behavior*, 4(3), 377-383. doi: 10.1089/109493101300210286.
- [9] Beck, A.T., Ward, C.H., Mendelson, M., Mock, J., & Erbaugh, J. (1961). An inventory for measuring depression. *Archives of General Psychiatry*, 4(6), 561-571. doi: 10.1001/archpsyc.1961.01710120031004.
- [10] Bielinska, I.V. (2020). The role of cyberpractitioners in the formation of Internet addiction among student youth. In L.A. Naidonova, N.L. Diatel, & Yu.S. Chaplinska (Eds.), *Cybersocialization* (pp. 37-39). Kropyvnytskyi: Imex-LTD.
- [11] Błachnio, A., Przepiórka, A., Gorbaniuk, O., Benvenuti, M., Ciobanu, A.M., Senol-Durak, E., Durak, M., Giannakos, M.N., Mazzoni, E., Pappas, I.O., Popa, C., Seidman, G., Wu, A.M.S., Yu, S., & Ben-Ezra, M. (2019). Cultural correlates of internet addiction. *Cyberpsychology, Behavior, and Social Networking*, 22(4), 258-263. doi: 10.1089/cyber.2018.0667.
- [12] Caplan, S.E. (2005). A social skill account of problematic internet use. *Journal of Communication*, 55(4), 721-736. doi: 10.1111/j.1460-2466.2005.tb03019.
- [13] Chen, H., Ma, J., Guan, J., Yin, L., Shi, Z., & Zhang, Y. (2022). The impact of psychological distress on problematic smartphone use among college students: The mediating role of metacognitions about smartphone use. *Frontiers in Psychology*, 13, article number 932838. doi: 10.3389/fpsyg.2022.932838.
- [14] China Internet Network Information Center. (2022). *The 50th statistical report on China's Internet development*. Retrieved from <https://www.cnnic.com.cn/IDR/ReportDownloads/202212/P020221209344717199824.pdf>.
- [15] Gervasi, A.M., La Marca, L., Lombardo, E.M.C., Mannino, G., Calogero, I., & Schimmenti, A. (2017). *Maladaptive personality traits and internet addiction symptoms among young adults: A study based on the alternative DSM-5 model for personality disorders*. *Clinical Neuropsychiatry*, 14(1), 20-28.
- [16] Gorbaniuk, J., Sergieienkova, O., & Yablonska, T. (2018). Peculiarities of personal self-improvement in early and late adolescence. *Social Welfare: Interdisciplinary Approach*, 2(8), 8-19. doi: 10.21277/sw.v2i8.344.
- [17] Grant, J.E., Brewer, J.A., & Potenza, M.N. (2006). The neurobiology of substance and behavioral addictions. *CNS Spectrums*, 11(12), 924-930. doi: 10.1017/s109285290001511x.

- [18] Khazaal, Y., El Abiddine, F.Z., Penzenstadler, L., Berbiche, D., Bteich, G., Valizadeh-Haghi, S., Rochat, L., Achab, S., Khan, R., & Chatton, A. (2022). Evaluation of the psychometric properties of the Arab Compulsive Internet Use Scale (CIUS) by item response theory modeling (IRT). *International Journal of Environmental Research and Public Health*, 19(19), article number 12099. doi: [10.3390/ijerph191912099](https://doi.org/10.3390/ijerph191912099).
- [19] Khoshakhlagh, H., & Faramarzi, S. (2012). [The relationship of emotional intelligence and mental disorders with Internet addiction in Internet users university students](#). *Addiction and Health*, 4(3-4), 133-141.
- [20] Kim, K., Ryu, E., Chon, M.-Y., Yeun, E.-J., Choi, S.-Y., Seo, J.-S., & Nam, B.-W. (2006). Internet addiction in Korean adolescents and its relation to depression and suicidal ideation: A questionnaire survey. *International Journal of Nursing Studies*, 43(2), 185-192. doi: [10.1016/j.ijnurstu.2005.02.005](https://doi.org/10.1016/j.ijnurstu.2005.02.005).
- [21] Kirkpatrick, R., & Zang, Y. (2011). [The negative influences of exam-oriented education on Chinese high school students: Backwash from classroom to child](#). *Language Testing in Asia*, 1(3), 36-45.
- [22] Kraut, R., Patterson, M., Lundmark, V., Kiesler, S., Mukophadhyay, T., & Scherlis, W. (1998). Internet paradox: A social technology that reduces social involvement and psychological well-being? *American Psychologist*, 53(9), 1017-1031. doi: [10.1037/0003-066X.53.9.1017](https://doi.org/10.1037/0003-066X.53.9.1017).
- [23] Kuss, D.J., & Griffiths, M.D. (2017). Social networking sites and addiction: Ten lessons learned. *International Journal of Environmental Research and Public Health*, 14(3), article number 311. doi: [10.3390/ijerph14030311](https://doi.org/10.3390/ijerph14030311).
- [24] Kuss, D.J., Shorter, G.W., van Rooij, A.J., van de Mheen, D., & Griffiths, M.D. (2014). The Internet addiction components model and personality: Establishing construct validity via a nomological network. *Computers in Human Behavior*, 39, 312-321. doi: [10.1016/j.chb.2014.07.031](https://doi.org/10.1016/j.chb.2014.07.031).
- [25] Lafreniere, M.-A.K., Vallerand, R.J., Donahue, E.G., & Lavigne, G.L. (2009). On the costs and benefits of gaming: The role of passion. *CyberPsychology & Behavior*, 12(3), 285-290. doi: [10.1089/cpb.2008.0234](https://doi.org/10.1089/cpb.2008.0234).
- [26] Liu, H.-C., Liu, S.-I., Tjung, J.-J., Sun, F.-J., Huang, H.-C., & Fang, C.-K. (2017). Self-harm and its association with internet addiction and internet exposure to suicidal thought in adolescents. *Journal of the Formosan Medical Association*, 116(3), 153-160. doi: [10.1016/j.jfma.2016.03.010](https://doi.org/10.1016/j.jfma.2016.03.010).
- [27] McCrae, R.R., & Costa, P.T. (1987). Validation of the five-factor model of personality across instruments and observers. *Journal of Personality and Social Psychology*, 52(1), 81-90. doi: [10.1037/0022-3514.52.1.81](https://doi.org/10.1037/0022-3514.52.1.81).
- [28] Meeus, A., Beyens, I., Geusens, F., Sodermans, A.K., & Beullens, K. (2018). [Managing positive and negative media effects among adolescents: Parental mediation matters – but not always](#). *Journal of Family Communication*, 18(4), 270-285.
- [29] Morrison, C.M., & Gore, H. (2010). The relationship between excessive Internet use and depression: A questionnaire-based study of 1,319 young people and adults. *Psychopathology*, 43(2), 121-126. doi: [10.1159/000277001](https://doi.org/10.1159/000277001).
- [30] Niemz, K., Griffiths, M., & Banyard, P. (2005). Prevalance of pathological Internet use among university students and correlations with self-esteem, the General Health Questionnaire (GHQ) and disinhibition. *CyberPsychology & Behavior*, 8(6), 562-570. doi: [10.1089/cpb.2005.8.562](https://doi.org/10.1089/cpb.2005.8.562).
- [31] Orben, A. (2021). Digital diet: A 21st century approach to understanding digital technologies and development. *Infant and Child Development*, 31(1), article number e2228. doi: [10.1002/icd.2228](https://doi.org/10.1002/icd.2228).
- [32] Pfaff, D.W. (Ed.). (2013). *Neuroscience in the 21st century: From basic to clinical*. New York: Springer Science+Business Media, LLC. doi: [10.1007/978-1-4614-1997-6](https://doi.org/10.1007/978-1-4614-1997-6).
- [33] Rowicka, M. (2018). *E-addictions: Theory, prevention, therapy*. Warszawa: Fundacja Praesterno.
- [34] Rowicka, M., Postek, S., & Bujalski, M. (2022). Why preschool children use mobile devices – parental perspective. *Educational Psychology*, 68(26), 43-56. doi: [10.5604/01.3001.0016.3394](https://doi.org/10.5604/01.3001.0016.3394).
- [35] Samaha, A.A., Fawaz, M., El Yahfoufi, N., Gebbawi, M., Abdallah, H., Baydoun, S.A., Ghaddar, A., & Eid, A.H. (2018). Assessing the psychometric properties of the Internet addiction test (IAT) among Lebanese college students. *Frontiers in Public Health*, 6, article number 365. doi: [10.3389/fpubh.2018.00365](https://doi.org/10.3389/fpubh.2018.00365).
- [36] Şenormancı, Ö., Şenormancı, G., Güçlü, O., & Konkan, R. (2014). Attachment and family functioning in patients with internet addiction. *General Hospital Psychiatry*, 36(2), 203-207. doi: [10.1016/j.genhosppsych.2013.10.012](https://doi.org/10.1016/j.genhosppsych.2013.10.012).
- [37] Shin, S.-E., Kim, N.-S., & Jang, E.-Y. (2011). Comparison of problematic Internet and alcohol use and attachment styles among industrial workers in Korea. *Cyberpsychology, Behavior, and Social Networking*, 14(11), 665-672. doi: [10.1089/cyber.2010.0470](https://doi.org/10.1089/cyber.2010.0470).
- [38] Tao, R., Huang, X., Wang, J., Zhang, H., Zhang, Y., & Li, M. (2010). Proposed diagnostic criteria for Internet addiction. *Addiction*, 105(3), 556-564. doi: [10.1111/j.1360-0443.2009.02828.x](https://doi.org/10.1111/j.1360-0443.2009.02828.x).
- [39] Van den Eijnden, R.J.J.M., Meerkerk, G.-J., Vermulst, A.A., Spijkerman, R., & Engels, R.C.M.E. (2008). Online communication, compulsive Internet use, and psychosocial well-being among adolescents: A longitudinal study. *Developmental Psychology*, 44(3), 655-665. doi: [10.1037/0012-1649.44.3.655](https://doi.org/10.1037/0012-1649.44.3.655).
- [40] Van der Aa, N., Overbeek, G., Engels, R.C., Scholte, R.H., Meerkerk, G.J., & van den Eijnden, R.J. (2009). Daily and compulsive Internet use and well-being in adolescence: A diathesis-stress model based on big five personality traits.

- Journal of Youth and Adolescence*, 38(6), 765-776. doi: [10.1007/s10964-008-9298-3](https://doi.org/10.1007/s10964-008-9298-3).
- [41] Wilson, K., Fornasier, S., & White, K.M. (2010). Psychological predictors of young adults' use of social networking sites. *Cyberpsychology, Behavior, and Social Networking*, 13(2), 173-177. doi: [10.1089/cyber.2009.0094](https://doi.org/10.1089/cyber.2009.0094).
- [42] Young, K.S. (1998). Internet addiction: The emergence of a new clinical disorder. *CyberPsychology & Behavior*, 1(3), 237-244. doi: [10.1089/cpb.1998.1.237](https://doi.org/10.1089/cpb.1998.1.237).
- [43] Zhang, J.-T., Liu Q.-X., Deng L.-Y., Fang X.-Y., Liu C.-Y., & Lan, J. (2011). [Parents-adolescents relations and adolescent's Internet addicition: The mediaiton effect of loneliness](#). *Psychological Development and Education*, 27(6), 641-647.
- [44] Zhao, H., Rafik-Galea, S., Fitriana, M., & Song, T. (2023). Meaning in life and smartphone addiction among Chinese female college students: The mediating role of school adjustment and the moderating role of grade. *Frontiers in Psychology*, 14, article number 1092893. doi: [10.3389/fpsyg.2023.1092893](https://doi.org/10.3389/fpsyg.2023.1092893).

Тетяна Миколаївна Яблонська

Доктор психологічних наук, професор
Київський національний університет імені Тараса Шевченка
01003, вул. Володимирська, 60, м. Київ, Україна
<https://orcid.org/0000-0001-7272-9691>

Лі Юаньцзе

Бакалавр психології
Київський національний університет імені Тараса Шевченка
01003, вул. Володимирська, 60, м. Київ, Україна
<https://orcid.org/0009-0005-1288-0572>

Психологічні особливості юнаків з проявами інтернет-залежності: крос-культурне дослідження

Анотація. Сучасна молодь активно користується інтернетом, і це посилює ризик розвитку залежності, а отже, гостро ставить проблему вивчення її чинників, для того щоб вчасно попереджати проблему та проводити ефективну психокорекцію. Метою дослідження було вивчення психологічних предикторів інтернет-залежності юнацької молоді. Дослідження здійснювалося на основі порівняльного аналізу української та китайської вибірок. Для виявлення сформованості інтернет-залежності використано Internet Addiction Test K. Янг; для діагностики психологічних особливостей – Big Five Personality Inventory NEO-FFI та Beck Depression Inventory; також респондентам запропоновано анкету, яка включала питання щодо демографічних даних та актуальної ситуації. Виявлено, що в українській вибірці 36,3% опитаних мають середній або виражений ступінь інтернет-залежності, у китайській вибірці ця частка складає 31,3%. Встановлено відмінності щодо особистісних предикторів інтернет-залежності: рівень інтернет-залежності української молоді позитивно корелює з депресією, нейротизмом і впливом війни, водночас обернено пов'язаний з екстраверсією та сумлінністю. У групі китайської молоді з інтернет-залежністю корелює тільки шкала нейротизму. Порівняння показало, що рівень депресії молоді з інтернет-залежністю в обох країнах суттєво вищий, ніж у молоді без ознак залежності. Зафіксовано значущі відмінності між опитуваними в Україні й Китаї за шкалами нейротизму, сумлінності, екстраверсії, а найвиразніше – відкритості. З'ясовано, що українська молодь характеризується вищими показниками нейротизму та відкритості й нижчими, якщо порівнювати з китайською молоддю, проявами екстраверсії та сумлінності; щодо показників інтернет-залежності та депресії відмінностей не виявлено. Виснувано, що спільний фактор інтернет-залежності молоді обох країн – депресія; культурні відмінності й середовищні фактори спричиняють те, що предикторами залежності виступають відмінні особистісні риси молодих людей. Практичне значення дослідження зумовлене тим, що його результати допомагають краще розуміти цілі впливу в плануванні профілактики та психокорекції інтернет-залежності молоді

Ключові слова: юнацький вік; культурні відмінності; предиктори залежності; особистісні риси; депресія; нейротизм

**НАУКОВИЙ ВІСНИК
МУКАЧІВСЬКОГО ДЕРЖАВНОГО УНІВЕРСИТЕТУ
СЕРІЯ «ПЕДАГОГІКА ТА ПСИХОЛОГІЯ»**

Науковий журнал

Том 9, № 3. 2023

Заснований у 2015 р. Виходить чотири рази на рік

Оригінал-макет видання виготовлено
у редакційно-видавничому відділі Мукачівського державного університету

Відповідальний редактор:

М. Ковінько

Редагування англomовних текстів:

А. Кравченко

Комп'ютерна верстка:

О. Глінченко

Підписано до друку 30.08.2023 р. Формат 60*84/8

Умовн. друк. арк. 12

Тираж: 300 прим.

Адреса видавництва:

Мукачівський державний університет
89600, вул. Ужгородська, 26, м. Мукачево, Україна
E-mail: info@pp-msu.com.ua
<https://pp-msu.com.ua>

**SCIENTIFIC BULLETIN
OF MUKACHEVO STATE UNIVERSITY
SERIES “PEDAGOGY AND PSYCHOLOGY”**

Scientific Journal

Vol. 9, No. 3. 2023

Founded in 2015. Published four times a year

The original layout of the publication is made
in the publishing department of Mukachevo State University

Managing Editor:

M. Kovinko

Editing English-Language Texts:

A. Kravchenko

Desktop Publishing:

O. Glinchenko

Signed for print 30/08/2023. Format 60*84/8

Conventional printed pages 12

Circulation 300 copies

Publishing Address:

Mukachevo State University
89600, 26 Uzhhorodska Str., Mukachevo, Ukraine

E-mail: info@pp-msu.com.ua

<https://pp-msu.com.ua/en>