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CREATIVITY AND ITS DEVELOPMENT AS A SCIENTIFIC AND PEDAGOGICAL PROBLEM

KREATYWNOŚĆ PEDAGOGICZNA JAKO CZYNNIK ODPORNOŚCI ZAWODOWEJ I ADAPTACJI NAUCZYCIELA W WARUNKACH ZAGROŻEŃ WOJENNYCH

Abstract: The presented work investigates the phenomenon of creativity as a strategic resource of modern education and a key competence of a future teacher. The author has carried out a retrospective analysis of the conceptual apparatus, delimited the definitions of “creativity” and “creativity”. Based on the concepts of J. Guilford, E. Torrens, R. Sternberg, A. Maslow, it is proved that creativity is not only an intellectual operation, but a complex dynamic quality of a person, which is based on divergent thinking, motivation and the ability to take reasonable risks.

Attention is paid to the pedagogical aspect of the problem. Thus, it is substantiated that a high IQ level is not identical to creativity, and sometimes it can even act as a barrier to non-standard solutions. The article presents the results of a multi-year experiment (2017–2024) conducted at the Zhytomyr Ivan Franko State University. The author details the parameters of pedagogical creativity - from the speed and flexibility of thinking to the ability to “disturb the peace” and implement a creative strategy.

The practical significance of the study lies in the description of specific technologies for developing the creative potential of higher education students, such as video cases, “flipped classroom”, mental maps, SCAMPER methods, “Bus, Bed, Bath”, etc. The paper concludes that a modern school needs a teacher-facilitator who is able to abandon templates in order to create an innovative educational environment. The article may be useful for scientists, teachers of higher education institutions and practicing teachers focused on the requirements of the New Ukrainian School.

Keywords: creativity, creativity, pedagogical creativity, divergent thinking, future teacher, New Ukrainian School (NUS), innovative teaching technologies, flexibility of thinking, case studies, professional competence.

Streszczenie: Niniejsza praca bada zjawisko kreatywności jako strategicznego zasobu współczesnej edukacji i kluczowej kompetencji przyszłego nauczyciela. Autorka przeprowadziła retrospektywną analizę aparatu pojęciowego, wyodrębniając definicje „kreatywności” i „kreatywności”. Opierając się na koncepcjach J. Guilforda, E. Torrensa, R. Sternberga i A. Masłowa, dowodzi się, że kreatywność to nie tylko operacja intelektualna, ale złożona, dynamiczna cecha człowieka, oparta na myśleniu dywergencyjnym, motywacji i zdolności do podejmowania rozsądnego ryzyka.

Szczególne uwagę zwrócono na pedagogiczny aspekt problemu, w szczególności dowodząc, że wysoki poziom IQ nie jest tożsamy z kreatywnością, a niekiedy może wręcz stanowić barierę dla niestandardowych rozwiązań. Artykuł przedstawia wyniki wieloletniego eksperymentu (2017–2024) przeprowadzonego na Żytomierskim Uniwersytecie Państwowym im. Iwana Franki. Autor szczegółowo opisuje parametry kreatywności pedagogicznej – od szybkości i elastyczności myślenia po zdolność do „zakłócania spokoju” i wdrażania kreatywnej strategii.

Praktyczne znaczenie badania tkwi w opisie konkretnych technologii rozwijających potencjał kreatywny studentów, takich jak videokazusy, „odwrócona klasa”, mapy mentalne, metody SCAMPER, „autobus, łóżko, kąpiel” itp. Artykuł dowodzi, że nowoczesna szkoła potrzebuje nauczyciela-facylitatora, który potrafi porzucić schematy, aby stworzyć innowacyjne środowisko edukacyjne. Artykuł może być przydatny dla naukowców, nauczycieli szkół wyższych i praktyków, skupionych na potrzebach Nowej Szkoły Ukrainkiej.

Słowa kluczowe: kreatywność, kreatywność, kreatywność pedagogiczna, myślenie dywergencyjne, nauczyciel przyszłości, Nowa Szkoła Ukrainka (NUS), innowacyjne technologie nauczania, elastyczność myślenia, studia przypadków, kompetencje zawodowe.

Introduction

In the modern world, a persistent trend towards the exploration of new areas of society related to the development of creativity has recently been detected. These include creative pedagogy, creative industry, and creative environment. In addition, new professions are emerging, such as creative manager, creative director, etc. The world economy of both developed countries and countries of so-called “catch-up” development is increasingly oriented towards the development of the intellectualization of the economy, the main products of which are new creative ideas that are commercialized in innovation.

Thus, all the above-mentioned factors require the domestic education system to create the necessary conditions for the comprehensive development of the individual as an active citizen, able to perceive and effectively respond to modern individual and social challenges. Modernization of the content of education against the background of ever-increasing requirements for the organization of the educational process requires continuous and free development of individual abilities. Because of this, the development of creative thinking and creativity as

“the ability to constructive non-standard thinking and behavior, awareness and development of one’s own experience” becomes particularly relevant.

In times of global civilization challenges and military threats, education faces a critical task: not just to preserve the learning process, but to transform it in accordance with the extreme conditions of today. In this context, the creativity of a teacher ceases to be just an additional professional trait and turns into a strategic mechanism of professional resilience and adaptability of a teacher.

Since 2017, Ukraine has begun a reform in education, and a large-scale educational project “New Ukrainian School” has been launched. We see many changes in the approaches to providing educational services for students at comprehensive schools, such as construction of creative environment, implementation of new engaging methods and forms of learning, as well as involvement of teachers who have undergone special training to provide new, improved educational services.

However, society cannot wait until the emergence of educators of new generation in an upcoming decade, since the state needs modern, competitive, highly qualified specialists in various fields right now, therefore developing the level of creativity of individuals of different age categories is of great importance.

AIM OF THE RESEARCH is to carry out analysis of modern views on understanding the essence of creativity as an important skill of modernity and developing approaches to developing the creativity of a future teacher.

RESEARCH METHODS: analysis of psychological-pedagogical, regulatory and legal literature; content analysis aimed at defining the definition of “creativity” and “creativity”; a systematic approach to structuring the components of creativity; generalization and synthesis to identify the creative potential of specific innovative teaching methods for future teachers.

Results and discussion

The problem of the formation and development of creativity occupies a prominent place among the current issues of psychological and pedagogical sciences, since society needs creative specialists. For a long time, the term “creative abilities” was used in scientific literature, but today it is increasingly being replaced by the concept of “creativity” (from Latin *creatio* – “the act of creation”)¹ (Хамм, 2012), which has become widespread in domestic science, increasingly being used as a synonym for the word “creativity”. However, it should be noted that creativity and creativity are different concepts, so there is a tendency to

¹ Хамм, О. (2012). Теоретичні основи формування креативного мислення майбутнього вчителя. Наукові праці МАУП [online] 2 (33), 255–259. Режим доступу: <https://journals.mau.com.ua/index.php/psychology/article/view/1527> (дата доступу: 01.05.2026).

distinguish them. At the same time, creativity is usually understood as a process of human activity aimed at creating qualitatively new spiritual and material values; the process of producing something original, something that has great value. That is, the main feature of creativity is the production of something new. Creativity is more correctly defined as the ability to create; the ability to produce new ideas that differ from conventional ones² (Антонова, 2012).

In our opinion, the differences between the concepts of “creativity” and “creativity” are vividly distinguished in the works of T. Amabile³. The researcher notes that creativity is a personal property that is based on the development of higher mental functions, when creativity reaches the level of automatism and extends to all types of human activity and behavior. Creativity is formed under the influence of the social environment, its values, the organization of the information flow and the target direction of all types of activity, starting from educational motivation to the chosen activity and the influence of emotions⁴.

At the same time, T. Amabile claims that creativity manifests itself only in one type of activity due to the available special abilities. Mastering creative skills in a specific profession does not make them transferable to other types of activity. Instead, creativity, as a personal characteristic, is manifested mainly in the fact that a person applies non-standard approach in all types of activity. (Amabile, Pillemer, 2012).

Despite a significant amount of empirical research, there is still no conceptual clarity regarding the concept of “creativity”. An analysis of philosophical, psychological and pedagogical literature shows that there is no single approach to interpreting the concept of “creativity”. Different scientific fields interpret it differently, so there is a need to consider its understanding at different levels of scientific methodology.

Thus, modern philosophers understand creativity not as an activity, but primarily as a kind of relationship that a person enters not so much with their active being, but with their virtual entity.⁵ (Заїченко, 1995). Thus, in a number of philosophical dictionaries, creativity is interpreted as a non-standard unique

² Антонова, О.Є. (2012). Сутність поняття креативності: проблеми та пошуки. У: О.А. Дубасенюк (ред). Теоретичні і прикладні аспекти розвитку креативної освіти у вищій школі (С. 14–41). Житомир: Вид-во ЖДУ ім. І. Франка.

³ Amabile, T., Pillemer, J. (2012). Perspectives on the Social Psychology of Creativity, *Journal of Creative Behavior*, [online], 46, p.8. Available at: https://dash.harvard.edu/bitstream/handle/1/9349326/Perspectives_Soc%20Psych%20of%20Cre_Amabile-Pillemer_JCB_v07_12%2011%2011.pdf?sequence=2&isAllowed=y (дата доступу: 01.05.2026).

⁴ Fisher, C., Poornika, A., Ozumcan, D. (2020). A Winding Road: Teresa Amabile and Creative Process Research. [online], p. 7. Available at: https://link.springer.com/chapter/10.1007/978-3-030-61311-2_4 (дата доступу: 01.05.2026).

⁵ Заїченко, Г.А. (ред.) (1995). Філософія. К.: Вища школа.

beginning, ingenuity, productive originality of human intelligence and thinking, the subjective side of creativeness. According to researchers, it is due to the fact that the human brain is a dynamic complex system, the imbalance of which causes its new, higher order, which causes the emergence of modes of a more complex structure, a new spatio-temporal organization. In particular, N. Kozyrieva in her work notes that creativity is the ability to do something new; an active creative force that gives a real result⁶ (Козирева, 2018).

Thus, exploring creativity within the philosophy of education, N. Khamitov⁷ (Хамитов, 2009) emphasizes that today the ability to operate the information is becoming more important than the ability to accumulate it. Nonetheless, methodologists of modern education inlay the essence of the new paradigm of learning in the fact that possession of information for a student does not mean keeping it in mind, but the ability to effectively search for and use it in problem situations. Therefore, it is the ability to operate with information in conjunction with the ability to create it that is creativity. Education should develop creativity first, otherwise all acquired knowledge becomes only a way of adaptation, which creates a kind of existential alienation of the graduate from the realities of the chosen profession and requires “retraining”.

Within the framework of psychological knowledge, the concept of creativity became widespread only in the 1950s and is usually associated with the research of Joy Guilford, who in 1950 suggested that psychologists focus their attention on studying this phenomenon⁸ (Guilford, 1950). Although some researchers claim that the term “creativity” was first used in 1922 by psychologist D. Simpson, who considered it to mean a person’s ability to abandon stereotypical ways of thinking and to destroy the generally accepted, usual order of origin of ideas in the process of thinking.

However, intensive research into the problem of creativity and its development began in the 1960s in the USA and European countries, thanks to which the modern psychology of creative talent (psychology of creativity) was born. It was then that several laboratories and institutes were created, journals and monographs began to be published, however, according to R. Sternberg, only 0.5% of articles (from 1975 to 1995) were related to the problem of creativity. One of the reasons for this attitude to the problem of creativity on the part of

⁶ Козирева, Н.В. (2018). Словник-довідник для підготовки до практичних занять та самостійної роботи з навчальної дисципліни «Філософія» (для студентів денної, заочної та дистанційної форм навчання усіх напрямів підготовки). Харків: ХНУМГ ім. О.М. Бекетова.

⁷ Хамитов, Н. (2009). Креативність як фундаментальний концепт сучасної філософії освіти. *Філософія освіти*, 1–2(8), 59–66. Режим доступу: <http://enpuir.npu.edu.ua/bitstream/handle/123456789/2575/Hamitov.pdf?sequence=1&isAllowed=y> (дата доступу: 10.05.2026).

⁸ Guilford, J. (1950). Creativity, *American Psychologist*, [online], 5/9, pp. 446–447. Available at: <http://dx.doi.org/10.1037/h0063487> (дата доступу: 03.05.2026).

experimental psychologists was the vagueness in defining the concept and the lack of methods for its diagnosis.

The study of creativity has been carried out mainly in two directions: studying the relationship between creativity and intelligence and finding ways to measure cognitive processes through creativity; recognition of the individual with his/her psychological characteristics as the subject of the creative process and careful study of his/her personal and motivational traits that contribute to the development of creativity.

That is why in psychological literature, creativity is often defined as a manifestation of creative abilities that manifest in thinking, communication, and certain types of activity and is a relatively stable characteristic of a personality⁹ (Степанов, 2006). At the same time, creativity is understood as a set of abilities and other traits that contribute to successful creative thinking.

As a rule, the interpretation of the essence of creativity by researchers is determined by their affiliation with one of two groups (directions) regarding the understanding of the breadth of manifestation of this phenomenon, namely:

- 1) Creativity is inherent in *every individual*, it is an integral part of their personality as the ability to speak, think, etc. Supporters of this approach believe that creativity is a universal trait of a person's personality, which involves defining the understanding of creativity as the process of creating something new. This process is sudden and not programmed. The value of the result is not considered; the main thing is that the result is new and meaningful for the creator.
- 2) *Not every individual* is a creator. Supporters of this opinion emphasize the value of a new result. Although it will be different in scale, it is necessarily universally significant. The main feature of a creator is the strength and persistent need for creativity, which becomes the main goal of life.

The problems of productive thinking in Western European and American psychology were studied by J. Guilford, V. Keller, N. Mayer, P. Torrance, V. Frankl, E. Fromm and others. Under modern conditions, the concept of "creativity" is actively used in the research of domestic authors (M. Boichenko, M. Kozlenko, M. Leshchenko, V. Moliako, V. Pavlenko, V. Frytsiuk and others). However, even today in modern psychology and pedagogy there is no single structure or model of creativity, but all models emphasize the importance of personal traits. It is emphasized that motivation plays a leading role in creativity (T. Amabile, D. Treffinger, K. Urban); a necessary condition for creating a positive emotional background is an environment in which a creative climate prevails (D. Treffinger); the product of the creative process should be distinguished by

⁹ Степанов, О. (упор.) (2006). Психологічна енциклопедія. Київ: Академвидав.

originality, consciousness, expressiveness and economy (P. Jackson, A. Koestler, S. Messick); creative achievements are impossible without specific knowledge of the problem of creativity (T. Amabile) and mastery of methods and techniques for generating and analyzing ideas (D. Treffinger, K. Urban).

Under modern conditions, even though the concept of “creativity” is actively used in research by both domestic and foreign authors, it cannot be recognized as clearly and unambiguously defined, since no single approach or concept of creativity has been proposed. In foreign psychology alone, there are about a hundred definitions, which characterize the ideas of researchers and are presented in numerous concepts of creativity. Let us characterize the most famous of them¹⁰.

The concept of creativity as a general ability to create (J. Guilford)^{11, 12, 13}. Since the researcher considered creativity to be a universal cognitive ability, he based his concept on the cube-shaped model of the structure of intelligence he developed, as well as the differences he identified between two types of thinking - convergent and divergent. This model covers 120 different intellectual processes, which are summarized through 15 components: five operations, four types of content, six types of products of mental activity. Thus, operations include cognition, memory, evaluation and two types of thinking - divergent / productive and convergent. The scientist emphasized the fundamental difference between such operations as convergence (many tasks and only one correct solution) and divergence (search for many solutions to one task). Convergent thinking is logical, consistent, aimed at analyzing all available ways to solve a problem to choose the only correct one from them. Convergent thinking is at the heart of intelligence. Divergent thinking simultaneously operates in many directions and is aimed at generating many different options for solving a problem. This is alternative, illogical thinking, which is manifested in the process of solving problems that assume the existence of many correct answers. J. Guilford associated the divergent type of thinking with the production of many solutions to a problem situation based on unambiguous initial data, believing that it is the “core”, “nucleus” of creativity (Guilford, 1950, Guilford, 1967, Guilford, Hoepfner, 1971).

¹⁰ Антонова, О.Є. (2012). Сутність поняття креативності: проблеми та пошуки. У: О.А. Дубасенюк (ред). Теоретичні і прикладні аспекти розвитку креативної освіти у вищій школі (С. 14-41). Житомир: Вид-во ЖДУ ім. І. Франка.

¹¹ Guilford, J. (1950). Creativity, *American Psychologist*, [online], 5/9, pp. 446–447. Available at: <http://dx.doi.org/10.1037/h0063487> (дата доступу: 03.05.2026).

¹² Guilford, J.P. (1967). *The nature of human intelligence*. New York, NY: McGraw-Hill Book Company. <https://www.scirp.org/reference/referencespapers?referenceid=932875> (дата доступу: 03.05.2026)

¹³ Guilford, J.P., & Hoepfner, R. (1971). *The Analysis of intelligence*. New York, NY: McGraw-Hill Book Co.

According to J. Guilford, divergent thinking is characterized by the following features: ease and productivity – that is, how quickly an individual can create certain creative products (ideas, thoughts, objects, etc.); flexibility – the ability to quickly switch from one problem to another or combine them; originality - originality of thinking, an unusual approach to a problem, its new solution; accuracy (correspondence) - the harmony of mental operations regarding a particular problem, the choice of a solution adequate to the goal.

It was divergent thinking, which J. Guilford laid the foundation of creativity, that became the core of his theory, since he believed that it was this type of thinking that leads to unexpected results and non-standard conclusions. After all, creativity, in his opinion, is the ability to abandon stereotypical ways of thinking. It was after the publication of his works, in which he identified the difference between two types of thinking operations (convergence and divergence), that the concept of creativity gained wide popularity and began to be actively studied. Over time, many researchers began to identify creativity and divergent thinking, perceiving them as synonyms.

J. Guilford noted that creativity as a natural creative potential of a person is genetically determined. The researcher identified four main properties of creativity: originality, semantic flexibility, figurative-adaptive flexibility, semantic spontaneous flexibility. General intelligence is not included in the structure of creativity. Later, J. Guilford concluded that there are six main parameters of creativity: identifying and formulating problems; generating a large number of ideas (productivity); producing a wide variety of thoughts (flexibility); the ability to respond to stimuli in a non-standard way (originality); improving the object of perception by adding certain details; solving the problem by implementing the appropriate analytical and synthetic operations.

The researcher and his followers included the following components of creative thinking: the ability to analyze, synthesize, compare and establish cause-and-effect relationships, critical thinking and the ability to find contradictions, predicting possible development, the ability to see any system or object in a multi-screen way in terms of the past, present, future, build an algorithm of actions, generate new ideas and solve them in a figurative and graphic form¹⁴.

Based on these parameters, the scientist and his team developed a series of tests to investigate divergent abilities. Therefore, J. Guilford and his follower E. Torrens are considered the main ideologists of the “psychometric” approach to the study of creativity, as they proposed to investigate creativity using procedures similar to intelligence testing, developing creativity tests.

¹⁴ Павлюк, Р.О. (2007). Креативність як складова частина професійної підготовки майбутніх учителів. Режим доступу: http://www.rusnauka.com/16_NPM_2007/Pedagogica/22154.doc.htm (дата доступу: 07.05.2026).

The reduction of creativity to operations that remove the individual from the structure of creativity is considered the main drawback of the concept of J. Guilford.

The American psychologist E. Torrens, who began his research on creative thinking in 1958, continued the ideas of J. Guilford. It was then that he proposed a definition of creativity based on the process of survival, according to which the essential characteristic of creativity is courageous risk-taking. Later, he defines creativity as the process of perceiving gaps or violations, missing elements; forming ideas or hypotheses about them; testing these hypotheses; and reporting the results, possible modification and re-testing of hypotheses¹⁵ (Torrance, E., 1962). To form a creative solution, a person, depending on the circumstances in which they find themselves, by combining existing knowledge, reshapes it into other forms and combines it in a new configuration. Creativity is understood as the process of recognizing problems, shortcomings and gaps in knowledge, as well as identifying needs¹⁶ (Torrance, E., 1988).

Together with his colleagues, E. Torrens developed the widely known The Torrance Tests of Creative Thinking (TTCT), the initial version of which was published in 1966. When developing this test, he relied on the work of J. Guilford, however, unlike the latter, he began to investigate verbal and non-verbal activity, and also grouped the various TTCT subtests into three categories: 1. Verbal tasks that use verbal stimuli (stimuli); 2. Verbal tasks using non-verbal stimuli (stimuli); 3. Non-verbal tasks (figurative forms).

The new version of TTCT (Goff, Torrance, 2002) aims to measure 4 abilities: 1) fluency of speech – the ability to generate numerous ideas related to the activity; 2) originality – the ability to generate rare ideas; 3) elaboration – the ability to develop ideas related to the activity; 4) flexibility – the ability to interpret the same stimuli differently¹⁷.

In the implementation of the creative process, E. Torrens identified the following stages: identification of the problem, search for a solution, emergence and formulation of hypotheses, testing of hypotheses, their modification and obtaining a result.

¹⁵ Torrance, E.P. (1962). *Guiding Creative Talent*. Englewood Cliffs, NJ: Prentice-Hall, Inc. Available at: <http://dx.doi.org/10.1037/13134-000> (дата доступа: 08.05.2026).

¹⁶ Torrance, E. (1988). The Nature of Creativity as Manifest in Its Testing. In R. Sternberg (Ed.), *The Nature of Creativity* (pp. 43–73). New York: Cambridge University Press. Available at: <https://www.scirp.org/reference/referencespapers?referenceid=2088826> (дата доступа: 02.05.2026).

¹⁷ Goff, K., & Torrance, E.P. (2002). *Abbreviated Torrance Test for Adults Manual*. Bensenville, IL: *Scholastic Testing Service*.

The concept of M. Wallach and N. Kogan is based on a critical perception of the ideas of J. Guilford. The mentioned researchers criticized the strict time limitation, the creation of an atmosphere of competition and the presence of a single criterion of the “correct answer”, noting that the transfer of test models of measuring intelligence by J. Guilford, E. Torrens and their followers to measure creativity led to the fact that creativity tests simply diagnose IQ, like ordinary intelligence tests. According to M. Wallach and N. Kogan, a relaxed, free environment is needed for the manifestation of creativity. They changed the testing procedure (they removed the competitive situation, abandoned the time limit for solving the task and the criterion of accuracy). The researchers gave the subjects as much time as they needed to solve the task or formulate an answer to the question. Testing was carried out during the game, competition between the participants was minimized, and the experimenter accepted any answer to the subject. As a result, they obtained data indicating the independence of creativity and intelligence.

As a result of experimental work, M. Wallach and N. Kogan identified four groups of children with different levels of intelligence and creativity, who differed in the ways of adapting to external conditions and solving life problems. The most adaptive, researchers note, are children with a high level of intelligence and creativity. Next are children with a high level of intelligence, but with low creativity. The least socially adaptive were children with high creativity, but with a low level of intelligence. Children with a low level of both intelligence and creativity demonstrate good adaptation (at least, outwardly)¹⁸ (Wallach, Kogan, 1965).

R. Sternberg’s “Investment Theory”, proposed by R. Sternberg and T. Lubart, is one of the latest in terms of time of emergence. This concept manifested the personal characteristics of R. Sternberg himself, the author and co-author of more than 600 publications on the problems of intelligence, creativity, and abilities. The authors call a person creative who can devote time to unknown or unpopular ideas, move forward despite the resistance of the environment, misunderstanding and rejection, promoting new ideas and knows how to “buy ideas at a low price and sell at a high price”. The main thing in such a person, according to the authors, is to correctly assess the potential of primary ideas, the possibilities of their development and demand. According to R. Sternberg, creativity is an internal motivation for creativity, a tolerant attitude to uncertainty, the ability to take reasonable risks, a willingness to overcome obstacles, and to resist the opinions of others. At the same time, the presence of a creative

¹⁸ Wallach, M A & Kogan, N. (1965). *Modes of thinking in young children: a study of the creativity intelligence distinction*. New York: Holt, Rinehart & Winston.

environment is considered a mandatory factor for the manifestation of creativity. The creative process is a form of activity aimed at solving problematic tasks, that is, a conscious, purposeful attempt to expand one's own boundaries of knowledge, positioning creativity as a form of intellectual activity¹⁹.

The opinions of the authors of the mentioned concept regarding the development of creative activity of the individual, which is ensured by the presence of a number of interrelated components, are worthy attention, namely: abilities, which are divided into synthetic (the ability to see a problem in a new way, divergent thinking), analytical (the ability to analyze and evaluate ideas), and practical-contextual (the ability to find practical application for abstract ideas); knowledge, based on which a person is able to realize creative ideas in activities, to use theoretical knowledge in practice in a new way; thinking (the most important thing for creativity is the "legislative" style, aimed at one's own laws of movement and development of thought); personal qualities/traits, including the ability to overcome obstacles and uncertainty, and to take risks; motivation that helps focus on creative work; environment, since without an atmosphere of creativity, creativity cannot manifest and develop.

Thus, in R. Sternberg's and T. Lubart's "Investment Theory"^{20, 21, 22} six separate and yet related components that are necessary for creativity are singled out: intellectual skills (e.g., the ability to analyze and synthesize); specific industry knowledge; specific "cognitive styles" (e.g., the tendency to think in new ways); motivation; specific personality traits; and an environment that supports and encourages creative ideas. (Sternberg, R., Lubart T., 1995). Later, R. Sternberg²³ conducted a study where he showed the importance of combining the above components, arguing that creative endeavors are much more complex than the simple sum of all the corresponding components. The interaction of different resources can generate a variety of different results: for example, a high level

¹⁹ Гриненко, І.В. (2008). Педагогічні умови розвитку креативності майбутніх учителів гуманітарного профілю у процесі фахової підготовки. Кандидат наук. Тернопільський національний педагогічний університет імені Володимира Гнатюка.

²⁰ Sternberg, R., Lubart T. (1991). An investment theory of creativity and its development. *Human Development*, [online], 34/1, p. 21. Available at: <http://dx.doi.org/10.1159/000277029> (дата доступу: 01.05.2026).

²¹ Sternberg, R., Lubart T. (1995). *Defying The Crowd: Cultivating Creativity In A Culture Of Conformity*. New York, NY: Free Press [online], p.3. Available at: <https://www.scirp.org/journal/paperinformation?paperid=21637> (дата доступу: 01.05.2026).

²² Sternberg, R., & Lubart, T. (1999). The concept of creativity: Prospects and paradigms. In R. Sternberg, & T.I. Lubart (Eds.), *Handbook of creativity* (Vol. 1, pp. 3–15). London: Cambridge University Press.

²³ Sternberg, R., 2006. The nature of creativity. *Creativity Research Journal*, [online], 18/1, p.91. Available at: https://www.cc.gatech.edu/classes/AY2013/cs7601_spring/papers/Sternberg_Nature-ofcreativity.pdf.

of many of the components can significantly enhance the creative activity of an individual, and vice versa, for each component there may be a certain threshold value, below which a person will not have any creative achievements, regardless of the presence of other resources (Sternberg, 2006).

Thus, following the opinion of R. Sternberg, creativity can be understood as the ability to detail a creative product and give it a specific objective form.

A. Maslow's theory of creative personality. According to A. Maslow, the pace of development of the historical process has recently accelerated significantly and humanity is experiencing a special historical moment, completely unlike the previous ones. In society, the researcher claims, there is a need for a new type of person – a creative personality, who would not be frightened by changes, but would be inspired, who would be capable of improvisation, confident, courageous, spiritually strong, adaptive in an unexpected, unfamiliar situation. So, the problem of creativity, according to A. Maslow, is primarily a problem of a creative personality (and not the products of creative activity, creative behavior, etc.). The author is deeply convinced that creativity can manifest itself in everything that a person does: in his perception, attitudes, and behavior. That is why it cannot but affect the contractive, cognitive and emotional sphere of a person.

Creativity, according to the scientist, is a stage of inspired creativity, the process of detailing a creative product and giving it a specific objective form. In the context of research into self-realization and human potential to achieve higher levels of personal development, A. Maslow expresses the opinion that creativity is a certain means of realizing personal potential (self-actualization), and associates it with such features as self-acceptance, freedom of spirit²⁴ (Maslow, 1954). The author believes that the concept of creativity and the concept of a healthy, self-actualizing personality are approaching each other. Teaching creativity, or, more precisely, learning through creativity, can be extremely useful not so much for preparing people for mastering creative professions or for producing art products, but for creating a good, beautiful, good person.

In pedagogical literature, creativity is interpreted as the creative capabilities (abilities) of a person that can manifest themselves in thinking, feelings, communication, individual types of activity, characterize the personality as a whole or its individual aspects, products of activity, the process of their creation. Creativity is considered the most important and relatively independent factor of giftedness, which is not always reflected in intelligence tests and academic achievements. Creativity is determined not so much by a critical attitude to the

²⁴ Maslow, A. (1954). *Motivation and Personality*. New York City: English Edition by Harper & Row, Publishers. [online], p. 37. Available at: <https://www.holybooks.com/wp-content/uploads/Motivation-and-Personality-Maslow.pdf> (дата доступу: 02.05.2026).

new from the point of view of existing experience, but by susceptibility to new ideas²⁵.

The encyclopedia of education states that creativity is the creative spirit, the creative potential of an individual, their creative abilities, which are manifested not only in original products of activity, but also in thinking, feelings, and communication with other people²⁶.

Investigating the pedagogical aspect of creativity, E. De Bono concludes that creativity can be learned. However, it can be difficult for a person with a high IQ level, because intellect will constantly compare new ideas with those that already exist and will reject non-standard solutions due to their so-called “absurdity”, untested by experience. That is why a person with a lower level of intelligence has more chances to propose a creative idea. In this case, a high IQ level can block the generation of a non-standard solution²⁷ (De Bono E., 1973).

Yu. Surmyak claims that the creative process takes place in three main phases: preparatory, search, and execution. The first phase is associated with contact with the environment and the ability to formulate problems, the solution of which will be useful to society in the future, to anticipate current problems, and to generate ideas. The second phase is associated with intellectual work, which is the search for ways to solve the task. The third phase is the embodiment of the proposed solution to the problem into a specific product. Researchers have found that each person’s ability to each of the phases may be different. Thus, there are individuals who are the so-called “generators” of ideas. They can produce many interesting current proposals in a short period of time, but they can solve them. The next group of individuals that is distinguished are developers who can develop solutions to solve the task. And the last one is implementers of ideas, people who can creatively embody ideas into a specific final product.

Creativity is manifested in the successful implementation of all three phases – the ability to independently see and set tasks, solve them, and creatively translate them into a specific result²⁸ (Сурмяк, 2017).

Even though research on creativity has been actively conducted for several decades, the accumulated data does not so much clarify as confuses the understanding of this phenomenon. For example, forty years ago more than 60 definitions of creativity were proposed, today it is impossible to count them.

²⁵ Педагогічний словник / за ред. М. Ярмаченка. – Київ : Педагогічна думка, 2001. – 516 с.

²⁶ Кремень, В.Г. (ред.). (2008). Енциклопедія освіти. Київ: Юрінком Інтер.

²⁷ De Bono, E. (1973). *Lateral thinking/Creativity Step by Step*. New York: Harper and Row publishers, [online], pp. 105–107. Available at: <https://archive.org/details/laterthinking00debo/page/n5/mode/2up> (дата доступу: 03.05.2026).

²⁸ Сурмяк, Ю.Р. (2017). Розвиток креативності учнів у навчально-виховному процесі. *Науковий вісник Львівського державного університету внутрішніх справ. Серія психологічна, 1*, 106–115.

During the research, we analyzed the known definitions of the concept of “creativity”. For this purpose, elements of the content analysis method were applied²⁹ (Чернілевський, 2012). At the initial stage, an analysis of a significant body of scientific literature was carried out; the main task of this stage was to generalize the theoretical views of the scientific community on the concept of “creativity” in order to obtain a holistic understanding of the polysemy of a certain category.

The method of qualitative-quantitative analysis of documents was applied to a sample of scientific texts, which included works by both foreign and domestic scientists. Words and word combinations that characterized different formats of considering creativity were selected as the unit of analysis (indicators). According to the standard procedure for conducting content analysis, words were first noted in the text, and then separately written out and tabulated with an indication of the authorship.

The categorical analysis of the conceptual space of creativity proposed by us covers several different interpretations. Four main meanings of this concept were identified: the ability of the individual, the level of creative talent, creative potential, creative abilities.

The generalized results of the interpretation of the analysis of the concept of “creativity” indicate that most often researchers associate the content of the concept with a certain ability of the individual (such a feature was highlighted by 77% of researchers), which shows its readiness for change, rejection of stereotypes, finding new original solutions to complex problems in a situation of uncertainty.

Further study of the conceptual array involves an analytical characterization of the features of the concept of “creativity”. The positions of scientists in this case also do not coincide. According to the definitions we recorded, 46% of the selected researchers note that creativity, as an individual’s ability, is characterized by: the ability to generate new ideas, deviate from traditional thinking patterns, change behavioral styles, create new concepts, form new skills, produce new non-standard images, create a product that is distinguished by novelty, and bring something new to experience.

Considering the above results, we will consider the primary characteristic of the concept under study to be the ability of an individual to establish new connections between ideas or events.

Based on the generalization of the results of the content analysis, we can formulate the following definition: creativity is the ability of an individual to establish new connections between ideas or events, form new skills and change

²⁹ Чернілевський, Д.В. (ред). (2012). Методологія наукової діяльності. Вінниця: Вид-во АМСКП.

behavior styles, which leads to an original, non-standard result in solving a problem situation. Thus, creativity is understood as a dynamic personality that manifests itself in any sphere of human activity, characterized by the ability to generate and implement new ideas, to abandon patterns, which develop in the process of creative activity and is characteristic of representatives of various professions. Creativity is manifested in speed, originality, flexibility, purposefulness of thinking and activity, perseverance, rich imagination, courage in making decisions, etc. We identify the development of creativity of a person as a process of internal quantitative and qualitative changes in his intellectual, psychological and spiritual forces, which occurs through the activity of the individual and is ensured by his creative self-realization. Creativity is inherent in most mentally healthy people, but the degree of its development in each individual is different. The use of technologies that form creativity in the educational process, the development of creative projects leads to an increase in the level of creativity. That is why the issue of developing creativity is important for the modern education system (Музика, 2010)³⁰.

The practice of modern schoolwork shows that a teacher must not only clearly and correctly reproduce the necessary information – he must be able to generate new, original ideas, find unconventional ways of solving problematic pedagogical situations and tasks, that is, have creative thinking. V. Sukhomlynsky also said that there are no people more curious, more obsessed with thoughts about creativity than teachers. Pedagogical activity, which is a fusion of science and art, in its components involves creativity. Therefore, a teacher must be a creative person: highly competent, efficient, strong-willed, active, sociable, dynamic, self-confident, and what is very important, able to implement creative ideas in his professional activity. And for this, as I. Ziaziun noted, one cannot wait for graduation from a higher pedagogical educational institution in order to then become a master, a creative teacher in practical activity. It is necessary to acquire professionalism during the student years. It requires daily and persistent work on the development of one's abilities for pedagogical activity, in particular creativity. Therefore, the concept of pedagogical education means not only the acquisition of knowledge, but also the development of abilities, the formation of professional qualities and skills that will help to tune the personality as an instrument of pedagogical influence on interaction with children, parents, colleagues. Such a system of education is complex and is not always provided for in curricula, but today it is the most urgent task of pedagogical higher education institutions (Зязюн, 2004).

³⁰ Музика, О.Л. (2010). Ціннісна регуляція і ціннісна підтримка розвитку творчих здібностей (теоретична модель і принципи побудови методики). Практична психологія та соціальна робота, 6, 6–7.

The study of pedagogical creativity and the features of training future teachers for it is given due attention in the studies of N. Kichuk, M. Leshchenko, S. Sysoieva, L. Khomych, etc. Thus, S. Sysoieva designed a list of signs of pedagogical creativity that can be used for their assessment and self-assessment by future teachers and practicing teachers, as well as for developing a self-improvement program on this basis (Сисоєва, 2006).

Thus, pedagogical creativity involves the ability to creatively search, finding non-standard solutions to pedagogical problems and is characterized by a number of qualities, namely: speed (productivity) and flexibility of thinking, originality, curiosity, accuracy and courage.

Based on the analysis of relevant scientific literature, we have developed the main parameters *that characterize pedagogical creativity*:

the ability to implement a creative approach in pedagogical activity (creativity): speed of thinking (the number of ideas that arise per unit of time); the ability to quickly and without internal effort switch from one idea to another; the ability to generate ideas that differ from generally accepted ones, to paradoxical, unexpected solutions (for a teacher - the search for new forms, methods, means of educational and educational activity); a sense of sophistication of the idea; the ability to be surprised; openness and interest in everything new; the ability to make decisions in situations of uncertainty, not to be afraid of one's own conclusions and to bring them to the end, risking personal success and reputation; the ability to flexible figurative thinking, which can manifest itself in the construction of new original visualization; flexibility of verbal thinking, bright figurative language, the ability to "ignite" students with one's story; selectivity for learning new things; search-transformative style of thinking; creative imagination, developed imagination; problematic vision of the situation; the ability to "disturb the peace"; the ability to immerse oneself deeply in an engaging activity; a desire for inventions, creativity; an interest in mysteries, paradoxes, improvisation; the ability to make decisions independently; the ability to quickly switch attention;

the ability to constantly develop creative pedagogical experience and competence: the desire to increase professional competence, obtain new knowledge, develop relevant skills, pedagogical skills; the ability to quickly find, acquire new knowledge in creative searches, expand one's professional horizons; the ability to purposefully study issues or problems related to pedagogical activity; a sense of satisfaction from enriching the experience of pedagogical activity and at the same time - creative dissatisfaction with the level of achievements, as a condition for further growth of professional competence;

the ability to form and implement a creative strategy of pedagogical activity: a persistent need for systematic enrichment of pedagogical experience; the ability to independently form deep and systematic knowledge in the process of solving

key educational and educational problems; the ability to develop a flexible strategy of creative pedagogical activity based on defining a goal and building a program corresponding to it; the ability to mobilize one's own experience, or quickly acquire additional competence in order to solve an important and complex pedagogical problem; a sense of responsibility when performing creative professional tasks.

Based on the developed parameters, we designed a pedagogical experiment with the aim of developing pedagogical creativity in future primary school teachers, in which applicants for the second (master's) level of higher education participated. The research was carried out during the 2017–2024 academic years. It was preceded by the development of new educational and professional programs, focused primarily on preparing teachers for work in the context of primary school reform.

At Zhytomyr Ivan Franko State University, the content of training for future primary school teachers has undergone significant changes in recent years. In accordance with the conceptual principles of the NUS, a number of modern subjects were included in the content of training for masters of pedagogy, including those aimed at developing the creativity of future teachers: “Fundamentals of pedagogical creativity”, “Development of the creative potential of primary school students”, “Pedagogy of partnership in the New Ukrainian School” and others.

For example, the course “Fundamentals of Pedagogical Creativity” is aimed at solving a number of tasks of professional training of highly qualified specialists, in particular: mastering a system of knowledge about pedagogical creativity, logic, basic elements, stages, methods of forming the creative personality of a teacher and students. The purpose of studying the course is to reveal the patterns and specifics of a teacher's creative pedagogical activity, methods and technologies of organizing students' creative activity in the educational process, and to form in students a holistic system of knowledge about the creativity of a teacher and students. The course content focuses on such aspects as the essence, specifics and features of pedagogical creativity, as well as familiarizing students with the essence, signs, and technologies of developing individual creativity. Future teachers compare classifications and typologies of creative personalities, analyze their characterological features, study the essence and signs of creativity, divergent thinking as its foundations, correlate the concepts of “creativity” and “intelligence”, determine the conditions for transforming a teacher's activity into creative, etc.

The subject of study of the academic discipline “Technologies of Development of Gifted Personality” is the theory and methodology of teaching gifted personality; processes and mechanisms of personality formation as an

individuality in life, activity, communication, which provide the most optimal ways of its self-realization in life, constructive, competent, highly professional implementation of activity as its subject. The purpose of studying the course “Technologies of Development of Gifted Personality” is to train a primary school teacher who has deep theoretical knowledge on the problem of giftedness and can implement them in practical activities. The main tasks of studying this academic discipline are: familiarizing students with the main approaches to understanding the essence and nature of giftedness; mastering theoretical ideas regarding the diversity of models, spheres and types of giftedness; arming specialists with a system of criteria for identifying types and signs of giftedness of a child of different age periods; mastering the latest technologies by future teachers aimed at detecting, identifying and developing various types giftedness.

The latest teaching techniques are becoming increasingly important in implementing the content of training future primary school teachers and developing their pedagogical creativity. The following have proven to be quite effective: case study, flipped classroom, mind maps, SCAMPER creativity development methods, “Bus, Bed, Bath”, STEM education technologies, and others.

We have identified case studies as one of the promising learning technologies, which promotes the development of students’ independent thinking, combines theory and practice, promotes the development of critical reflection, a better understanding of theory, teaches how to solve problems and practically analyze them. Case studies in the training of future primary school teachers use the description (demonstration) and analysis of real pedagogical situations in order to form in students a certain experience of solving problems in professional and pedagogical activities. They analyze the proposed pedagogical situation (reproduced on printed or computer media, presented in the form of dramatization or video), determine the essence of the problem, offer possible solutions and choose the most productive ones. Cases are based on real factual material or are close to a real situation. Using a video case in a lesson allows you to: immerse participants in a real problem situation, which is typical for future professional activity; increase the efficiency of learning material through the use of active learning methods and visualization of a problem situation; easily adapt practical situations to existing training programs due to the specificity and brevity of video cases; develop practical skills directly in the classroom; substantiate various theoretical concepts for developing a solution to a problem situation, since a video case does not contain a ready-made solution or answers to the questions posed; shift the emphasis from transferring ready-made knowledge to developing specific skills and competencies, and make the lesson not boring for its participants, since it contains game procedures.

The “Flipped Classroom” methodology is based on the assumption that the main assimilation of new material by schoolchildren takes place at home, and work in the classroom focuses on completing exercises, additional tasks, conducting laboratory and practical research, individual consultations, etc. As the experimental implementation of the “flipped classroom” technology has shown, students’ motivation to master new material increases, because the assimilation of a significant part of educational information takes place at home, and in classes in the classroom, in cooperation with the teacher, future teachers exchange their knowledge, thereby creating a “discussion field”. The new role of the teacher in the process of using the proposed technology is to organize the process of collective solutions of educational problems in the classroom. The teacher acts as a mentor of students, coordinator of cognitive activity; ensures the activation of educational activity in extracurricular time; implements an individual approach by freeing up time in the lesson; increases his level of ICT competencies; solves the problem of “time deficit” in the lesson. Students have the opportunity to study outside of class at their own pace; they have access to high-quality electronic educational resources; their ICT competencies, self-education skills, and the use of gadgets as a learning tool are developed; they learn to work in a team.

The SCAMPER creativity development methodology provides a step-by-step list of changes that can be made when working on a specific object. It is based on the observation that “everything new is a well-modified known thing.” The implementation of the methodology consists in consistently answering questions about modifying the task: Substitute – replace something, for example, components, materials; Combine – join one educational subject with other ones; Adapt – add new elements (methods, exercises); Modify – change the form of delivery; Put to Other Uses – apply for something else, in another lesson; Eliminate – remove a part, simplify the main one; Reverse – swap places, turn around, find application in something opposite (for example, first conduct a visual arts lesson, in which each student draws something; in a math lesson, students compose tasks based on their drawings; after that, a deskmate composes a task using your drawing).

The essence of the “Bus, Bed, Bath” method is that successful ideas can come to a person in any place (in transport, in the bathroom, etc.) and at any time. The main task is not to interfere with this process, but to let thoughts come to the surface. To successfully apply this method, you do not need to try to urgently come up with a solution to any problem in a given place at the moment. You need to act in a certain sequence: immerse yourself in the problem - define the problem - move away from solving the problem - return to the problem - fix the idea and process it. The method allows you to postpone making a final decision for the future, connects the subconscious to work on the task, makes it possible to

return to the problem from new positions after a certain time, helps to achieve the goals set. The principle of psychological distancing allows you to generate ideas much more effectively, while spending less effort. It works quite effectively in combination with the case method.

The technique of using mental maps (mind maps) is based on the premise that linear presentation of information in the form of text does not fully utilize the capabilities of our brain, since only its left hemisphere works. However, information is remembered better, the larger the volume of the cerebral cortex is connected to its perception. Students are invited to write a key concept in the center of the sheet, and all the associations that need to be remembered, write on the branches coming from the main word. Ideas can also be drawn. Creating such a map helps to come up with new associations, the image of the map is much better remembered. When working with maps, the cortex of the right hemisphere of the brain is additionally included, which is responsible for the perception of visual and color images and creative activity. Thanks to this, visualized information is perceived much faster and is remembered longer.

Conclusions

The retrospective analysis of the conceptual apparatus of the problem of personal creativity allows us to differentiate the categories of “creativity” and “creativity”. In this case, creativity is understood as the process and result of creating new values, and creativity as a personal property of a person to generate non-standard ideas. An important difference between these concepts is that creativity is often localized in one type of activity, while creativity is a universal characteristic of a person, manifested in all spheres of life. The understanding of creativity has evolved from a purely intellectual operation to a complex property of a person. Thus, J. Guilford and E. Torrens defined divergent thinking (the ability to find many solutions to a single problem) as the “core” of creativity and introduced such assessment parameters as speed, flexibility, originality and elaboration. In turn, R. Sternberg proposed an “investment theory”, where creativity is considered as a combination of intelligence, knowledge, thinking style, personal traits, motivation and a favorable environment. A. Maslow linked creativity with self-actualization of a healthy personality and freedom of spirit. Research by M. Wallach and N. Kogan proves that a high IQ does not guarantee high creativity. On the contrary, an excessively high level of intelligence can sometimes block non-standard solutions due to fear of error or the “absurdity” of an idea. Individuals with high indicators of both parameters are the most adaptive.

Therefore, creativity is a universal adaptation tool that helps a teacher not just transfer knowledge, but also instantly respond to challenges, generate ideas “here and now” and turn any problem into a task with many solutions.

Creativity is a dynamic quality that in modern conditions (in particular within the framework of the NUS reform) becomes the main tool for the professional growth of a teacher, allowing him to be not just a translator of knowledge, but a creator of the educational process. For a teacher, creativity is a professional necessity, which includes: the ability to non-standard solutions to pedagogical situations, a search-transformative style of thinking, emotional openness and curiosity, the courage to make decisions in conditions of uncertainty.

Modern education, in particular within the framework of NUS, requires the teacher to transition from the role of a translator of information to the role of a facilitator-researcher. This is possible only through the development of divergent thinking, the courage to take risks and the ability to use subconscious resources (as in the “Bus, Bed, Bath” method) or systemic transformations (SCAMPER). The main conclusion is that creativity is not an innate gift for the chosen ones, since it is a dynamic characteristic that can and should be developed through active learning methods, critical reflection and the creation of an environment where a mistake is perceived not as a defeat, but as a step towards innovation.

The success of modern education is based on divergent thinking, which allows the teacher to find not one “correct” way out of a situation, but ten different ones. And this is the key to the fact that a university graduate will not be just a “certified specialist”, but a living, adaptive personality, able to survive and develop in conditions of constant change.

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