

## Developing Creative Thinking in Future Teachers as a Topical Issue of Higher Education

Tatiana Borodina<sup>1</sup>, Alfiya Sibgatullina<sup>2</sup> & Anna Gizatullina<sup>3</sup>

### Abstract

The relevance of the problem of the formation of creative thinking among students of pedagogical areas of training is explained by the current contradiction between the society's need for creative, creatively thinking teachers and the insecurity of the system of professional pedagogical training necessary conditions for organizing the process of forming creative thinking among future teachers. The aim of the article is to study the features of the manifestation of creative thinking among students, as well as to study the dynamics of creativity of future teachers in the process of their professional training. Based on testing of 390 respondents using the methods of J. Bruner, the authors analyzed the levels of formation of creative thinking in several Russian universities. It was revealed that only a third of the students surveyed showed creative thinking at a high level. The study of the dynamics of the manifestation of creative thinking of future teachers was carried out mainly on the basis of Kazan Federal University. The dependence of the level of students' creativity on the course of their education was revealed. In addition, a questionnaire on the author's methodology, conducted additionally, confirmed the hypothesis that regular leisure reading of fiction contributes to an increase in the level of creativity of future teachers.

**Key words:** *higher education, future teacher, creativity, creative thinking, developing.*

### Introduction

The requirements placed by modern society on a teacher's personality determine the need for bringing vocational pedagogical training to a new level. The crucial normative documents ensuring teachers' training confirm the relevance of a qualitative change in the teacher training system with regard to the formation of their creative thinking. The Federal State Educational Standard (FSES) for "Pedagogical Education" mentions a teacher's systemic and critical thinking among his/her key universal competencies (Order of the Ministry of Education and Science of Russia, 2018). Noel-Tsigulskaya notes the impossibility of separating critical thinking from creative thinking (Noel-Tsigulskaya, 2000) since readiness for creative activity can be formed only through the development of critical thinking.

<sup>1</sup> Senior Lecturer, Kazan Federal University, Elabuga Institute of KFU, Russia, [tatjanabaschina@yandex.ru](mailto:tatjanabaschina@yandex.ru)

<sup>2</sup> Assoc. Prof., Kazan Federal University, Elabuga Institute of KFU, Russia, [a.sibgatullina@bk.ru](mailto:a.sibgatullina@bk.ru)

<sup>3</sup> Assoc. Prof., Kazan Federal University, Elabuga Institute of KFU, Russia, [annagiz@rambler.ru](mailto:annagiz@rambler.ru)

The FSES of general secondary education focuses on the development of personal characteristics in a school graduate, motivated for creativity and innovation activity. To develop students' creative abilities, a teacher needs to think creatively, outside the box, and create pedagogical conditions favorable for a student's creativity.

The need for creative teachers is a topical issue throughout the world. In several countries, "there are numerous discussions and movements inside and outside the profession that emphasize the growing need to pay attention to how teachers can be supported in creative learning and promote the creativity of young people" (Craft, 1997, p. 84).

Thus, society needs a creative teacher able to find new ways of addressing professional issues, respond to the needs of students' personality, creatively motivated and capable of non-standard solutions. However, the organization of developing creative thinking in future teachers is not sufficiently supported by professional education, as well as didactic conditions to address this challenge (Adams, 2019; Gerasimova et al., 2018; Grewal et al., 2019; Leonteva et al., 2018).

The development of teachers' creative thinking in many respects depends on the quality of their professional training, including the involvement of the formation of creative thinking in the tasks of teacher training (Cherkasov and Smigel, 2016; Kagema, 2018; Kotluk & Kocakaya, 2018). The formation of creative thinking in future teachers in the context of higher education contributes to the effective fulfillment of their creative potential and achievement of a high level of creativity in their future professional activities. The organization of a purposeful process of forming students' creative thinking in the educational environment of a higher education institution (HEI) involves studying the state of modern education, determining the actual levels of formation of future teachers' creativity and identifying the conditions and factors affecting its effectiveness (Dagdilelis, 2018; Rajović, et al., 2018; Rizki et al., 2019; Taran and Kurbanov, 2018; Ishchenko and Magsumov, 2019; Prodanova et al., 2019; Peretyatko and Zulfugarzade, 2017; Shaytura et al., 2018; Tarman, 2012; 2016).

Thus, the goal of this study is to identify the general level of formation of creative thinking in students of pedagogical specializations and to determine the impact on the level of their creativity of such factors as the process of studying at a university and their leisure reading of fiction.

The authors have formulated four main research questions:

1. What is the prevailing type of thinking among students of pedagogical fields of study?
2. What is the level of creativity of future teachers?

3. What are the dynamics of the level of creativity of future teachers at different stages of professional training?
4. Does leisure reading of fiction affect students' creativity?

### **Literature Review**

Developed creative thinking is a prerequisite for the success of an individual in the modern world, as evidenced by including such skills as critical thinking and creativity among the twelve most critical soft or supra-professional skills. At the same time, the FSES of Higher Education (FSES HE) presents the corresponding competence only for critical thinking: the ability to search, conduct critical analysis and synthesis of information, apply a systematic approach to solving the set tasks (UK-1) (Order of the Ministry of Education and Science of Russia, 2018).

As for creativity, understood by Gizatullina and Shatunova as "the ability for creative search, non-standard solution of pedagogical tasks, characterized by the following criteria: speed (productivity) and flexibility of thought, originality, curiosity, accuracy and courage", no matches among the competencies mentioned in the FSES HE have been found (Gizatullina and Shatunova, 2019). At the same time, 110 interviewed teachers define creativity as one of the most important competencies in pedagogical work.

In the most general form, creative thinking is defined as a type of thinking that is characterized by the creation of a subjectively new product and new formations in the very cognitive activity on its creation (General Psychology, 2005a).

Tikhomirov defines creative thinking as a type of thinking that is characterized by the creation of a subjectively new product, which, in turn, implies new formations in the cognitive activity (motives, goals, evaluations, meanings) (Tikhomirov, 2005). Creative thinking is characterized by the rejection of the use of ready-made knowledge and skills that are common to reproductive thinking (General Psychology, 2005b).

Losev believes that thinking is always creative since the essence of thinking is generally a reflection of reality, which is eternal creativity (Losev, 1989). However, the starting point of this study is a thesis on defining creative and non-creative thinking, which is proved in several academic writings (Bono, 2005; Ilyin, 2009; Kalmykova, 1981; Guilford, Hoepfher, 1971; Kambey et al., 2019; Chitsaz et al., 2019; Magsumov, 2018a, b; Gerasimova et al., 2018).

Many researchers of the creativity issue reduce the essence of creative thinking to the manifestation of certain abilities of an individual: to generate original ideas (Dudek et al., 1993), introduce something new (Barron, Harrington, 1981), understand the contradictions and formulate hypotheses regarding a problem-based situation (Torrance, 1979a). However, creative thinking as a complex, integrated phenomenon cannot be determined by one attribute. Thus, at different times, domestic and foreign psychologists defined groups of principal characteristics.

The significance of developing creative thinking in the pedagogical activity can be explained by characteristics and manifestations typical for this type of thinking. By incorporating into a teacher's personality structure, those contribute to enhancing his or her professional culture and effectiveness of the educational process.

Guilford, one of the founders of the creativity theory, distinguishes six parameters of creativity, which is the basis of creative thinking – six types of abilities of an individual who thinks and acts creatively: the ability to identify and state problems, generate a large number of problems, quickly produce various ideas, create remote associations and non-standard solutions, improve the object by adding details and the ability to see new object characteristics and new ways of its application (Guilford, 1965).

According to Torrance, thinking and activity of a creative person can be assessed by such criteria as fluency (generating a large number of ideas), flexibility (using different methods or strategies for solving a task or a problem), originality (producing non-standard solutions, ideas), development (detailed elaboration of the idea), closure resistance (rejection of stereotypes, openness to the new) and abstractedness of the name (understanding the source of the problem, bringing images into verbal form) (Torrance, 1979b).

Clarín outlines the following features of creative thinking: the ability to generate new ideas and their combinations to achieve a certain goal; the originality of the final product, which is the result of internal and external creative activities (Clarín, 1998).

Summarizing different approaches to identifying the characteristic features of creative thinking, Dmitrieva distinguishes such qualities as freedom from stereotypes, criticality, depth, width, independence, openness, empathy, and anticipation (Dmitrieva, 2007).

In the studies of the professional development of a teacher, the significance of creative thinking is determined by the need for efficient transformations within the framework of the pedagogical activity.

The development of a creative teacher becomes an important task for HEIs implementing teacher-training programs. Unfortunately, one of the major drawbacks of modern vocational pedagogical education is its weak influence on the development of creative potential and creativity in future teachers (Martinez and Tadeu, 2018; Movchan and Yakovleva, 2019). Some aspects of the formation and development of creative thinking in the context of vocational training require further examination.

The works of creativity researchers present the main psychological-pedagogical conditions contributing to the formation and development of students' creative thinking, which can be divided into two groups:

- 1) subjective conditions, which constitute a set of personal characteristics that influence the formation of future teachers' creativity (students' personal qualities, their positive motivation for the creative activity, orientation to creativity, the professional orientation of an individual, etc.);
- 2) objective conditions that allow for a targeted pedagogical action, guiding it in accordance with the objectives set (Ivanov, 2002).

The analysis of psychological-pedagogical literature allows concluding about the versatility and complex nature of creative thinking. The study of the state of the chosen problem in the theory and practice of higher education has led to the conclusion that a high level of creative thinking requires targeted actions on its formation.

Since the field of application of the general scientific concept of "formation" in pedagogy is undefined, its meaning should be clarified in the context of this research. Formation is defined as the gradual creation of operant behavior (behavior characterized by environmental impact, as a result of which changes necessarily occur in it) by reinforcing successive steps that lead to the desired result (Kholodnaya, 1997). Podlasiy concludes that "formation is the process of personal development under the influence of all factors without exception – environmental, social, economic, pedagogical and other factors. Formedness means the level achieved by a person, certain perfection, completeness, the achievement of a level of maturity" (Podlasiy, 2013). The formation deepens the phenomenon of development, which, as is known, is determined by the circumstances of a person's life, his/her activities, targeted upbringing and training processes. In contrast to the purposeful, organized development process, formation also includes many external, objective and internal, subjective factors that spontaneously influence the personality, including the activity of a teacher.

As noted by Kozubovsky, the formation of thinking in general embraces the process of increasing mental abilities, both as a result of the natural course of a person's daily life and special exercises. Thinking as a process is continuously formed and developed in the course of the changing human interaction with the environment, but it never reaches the completed stage (Kozubovskiy, 2008). In accordance with these approaches, the formation of creative thinking of future teachers should be understood as the transition of students' thinking to the level of creative transformation of the surrounding reality and the creation of the new as a result of a targeted impact on a person. The formation of creative thinking involves personal transformations and contributes to overall personal development.

Considering the formation of creative thinking as a purposefully organized and controlled process of pedagogical influence, the authors rely on the positions of the systemic and activity approaches. The formation of creative thinking in future teachers is a holistic pedagogical system that is based on a certain goal, operates according to established principles, and includes a number of interrelated components. In terms of the activity approach, creative thinking is formed by involving future teachers in creative activities (in the context of professional activity), in educational situations that require the fulfillment of their creativity, by building the entire learning process on the principles of creative oriented learning (Bozhkova et al., 2019).

It should be noted that each person has the potential for manifestation of creative thinking. It depends on a number of circumstances whether this potential will be fulfilled. Within the framework of vocational training, these circumstances are psychological, pedagogical and organizational conditions. Their provision contributes to the achievement of a high level of formedness of creative thinking by students.

## **Method**

### **Research Design**

Descriptive case study of the problem of the formation of creative thinking based on two ascertaining experiments (short-term and long-term ones).

A short-term ascertaining experiment conducted in 2018 was aimed at identifying the actual levels of formation of creative thinking among students of pedagogical special fields. It included testing respondents according to the methodology of Bruner "Profile of Thinking" and questioning according to the author's methodology "Leisure Reading and Creativity", which involved obtaining

more detailed information about the respondents, the conditions and characteristics of the organization of their professional training.

In order to study the dynamics of creativity of future teachers in the process of their training at the university, a longitudinal study was conducted using Worthman's questionnaire "What is your creative potential?" The experiment assumed an annual diagnosis of the degree of creativity of future teachers in the process of their training and was conducted in 2014-2017.

The experiment involved 11 higher educational institutions of Russia among the largest and most authoritative ones in the field of professional training of teaching staff: Kazan (Volga) Federal University and its branch – Yelabuga Institute, Moscow State Pedagogical University, V.I. Vernadsky Taurida National University, Ural State Pedagogical University, Dagestan State Pedagogical University, Bashkir State Pedagogical University, Volga State Social and Humanitarian Academy, Shadrinsky State Pedagogical Institute, Glazov State Pedagogical Institute, Naberezhnye Chelny Institute of Social-Pedagogical Technologies and Resources.

### **Participants**

The total number of respondents was 390 students aged 17-25, studying in 1-5 courses in the direction of preparation "Pedagogical Education" at Kazan Federal University. The strategy for selecting participants was determined by the logic of the study. In accordance with the main goal of the study, the educational institution and the direction of study, the course of study, and the age of students were assigned to the significant characteristics of the respondents to determine the sample. Such characteristics as nationality, gender, marital status were not taken into account.

Most of the respondents were students of the Yelabuga Institute of KFU.

In the process of studying the dynamics of student creativity, the group of respondents was constant (164 students) throughout the study period.

The short-term ascertaining experiment involved 390 students of pedagogical specializations of 1st-5th years of study. Based on the results of testing and questioning of these students, the actual levels of the formation of creative thinking were determined.

In the process of studying the dynamics of manifestation of future teachers' creativity at different stages of vocational training, 164 students of the 1st-4th years of study were tested. Sampling during the longitudinal study was constant, which ensured obtaining reliable data for analyzing the

effectiveness of the conditions created at HEIs for the formation of creative thinking in future teachers.

The experiment was conducted at three educational institutions: Kazan Federal University, Naberezhnye Chelny Institute of Social-Pedagogical Technologies and Resources, and Yelabuga Institute of Kazan Federal University.

### **Instrumentations**

In the process of studying the levels of formation of students' creativity, as well as its dynamics, such research methods as testing, questioning, and methods of mathematical statistics were used. The J. Bruner test, the L. Worthman test questionnaire, and also the questionnaire developed by the authors were used.

Bruner's method allows determining the basic (dominant) type of thinking and assessing the level of creativity in adults. In accordance with the questionnaire, there are 4 basic types of thinking, each of which has specific characteristics: object, visual, sign-oriented and symbolic thinking.

The method of determining creative potential according to Wortman ("What is your creative potential?") allows the respondent to evaluate his or her creative abilities. Determining the frequency or nature of manifestation of a particular state, attitude or action, concluded in a series of statements, future teachers were assessed as "non-creative" to "highly creative" personalities.

The questionnaire was conducted according to the authors' method developed by a team of authors (Borodina, Shatunova, Shastina) in order to obtain more detailed information about the respondents: their educational profile, self-assessment of creativity, factors of formation of creative thinking (in the students' opinion), the features of their reading activity and the regularity of fiction reading. The questionnaire consisted of 12 questions (including 5 open questions and 7 closed ones).

The reliability of the results was ensured by the use of complementary and mutually checking methods (test and questionnaire).

### **Data Collection**

Students were tested and questioned in two ways: 1) face-to-face, i.e. with the personal participation of authors, 2) remotely using the capabilities of the Internet to collect data and their



primary processing. In the first case, the direct interaction of the survey organizer with the respondents was ensured.

Students received a set of methods for simultaneously filling out forms of creativity and thinking type test and a questionnaire to determine the relationship between fiction reading and creative thinking of future teachers. The remote format involved the use of Google forms, reduced to the form of a test and a questionnaire. Students participated in the experiment anonymously, providing information only about the program and field of study.

To identify the formedness of creative thinking, future teachers passed the test once in 2018. Testing of students was carried out mainly remotely, using the capabilities of the Internet for data collection and their primary processing. The authors' questionnaire, which was part of the experiment program, was used in parallel with testing.

The longitudinal study of the dynamics of creativity levels suggested a gradual study of students' actual indicators at each of the stages of vocational training over a long time. The groups of students selected for the experiment in three universities were tested annually, in the period of 2014-2017. The selection of groups took place in students' field of study (pedagogical specializations). The sample was constant (164 participants, with minor changes in the number due to the academic movement of students). In the process of studying the levels of creativity formation, no pedagogical influences on the groups of subjects were carried out, special conditions capable of purposefully influencing the manifestation of students' creative potential were not created.

Experimental work involves the collection of quantitative data on the ratio of different levels of creativity from future teachers.

### **Data Analysis**

In the process of analyzing the results of experimental work, the methods of quantitative and qualitative data processing were used. The obtained experimental data on the dominant level of creativity were reduced to average values and to the percentage ratio (by the levels of creativity, by the year of study).

The choice of methods for analyzing the obtained data was determined by the nature of the research questions, the answer to which had to be obtained. So, to determine the prevailing type of thinking based on the data obtained during testing, the percentages of all these types were calculated.

The identification of students' creativity levels suggested the calculation of average data. The study of the dynamics of creativity in the learning process of students was based on a comparison of average data by levels. The influence of reading fiction on the level of creativity was based on calculating average indicators and comparing the percentage ratios of students' creativity levels with the frequency of reading. A qualitative approach to interpreting the results of the survey contributed to obtaining additional data. Processing the results of the questionnaire was based on the synthesis, analysis, systematization and generalization of the data obtained, as well as on comparison with the results of students' testing with the use of Bruner's questionnaire.

The qualitative and quantitative analysis of the empirical data obtained as a result of ascertaining experiments made it possible to formulate the main findings and conclusions of the conducted research.

### Findings

The data on the first and second questions of the study are presented in Table 1.

The study showed a predominance of the iconic type of thinking in the subjects (70%).

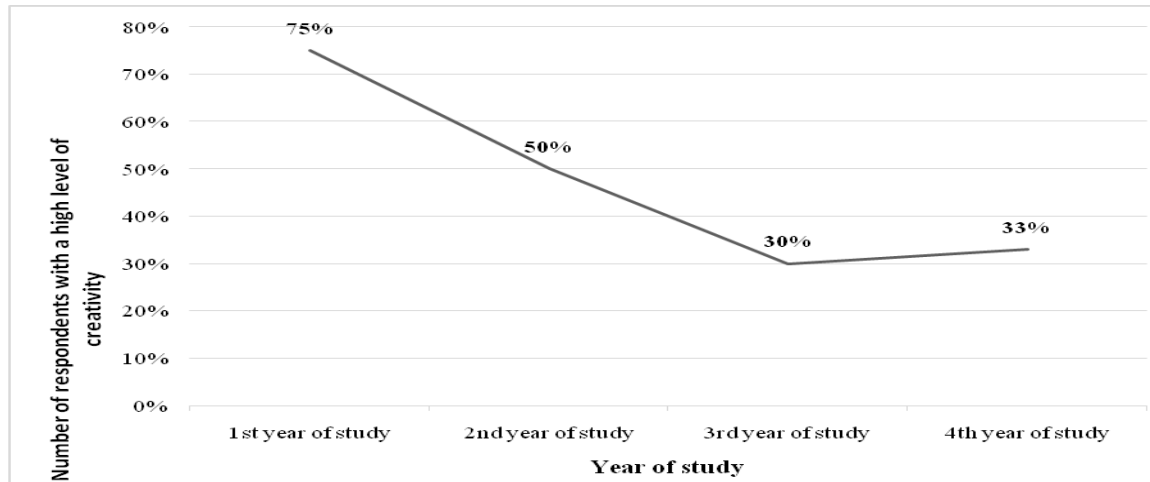
The analysis of the results of experimental work has shown that the majority of students in pedagogical specialties are characterized by an average level of creativity. High-level creativity was manifested only in 33% of the students surveyed.

**Table 1**

*Determination of the basic type of thinking and the level of creativity in future teachers*

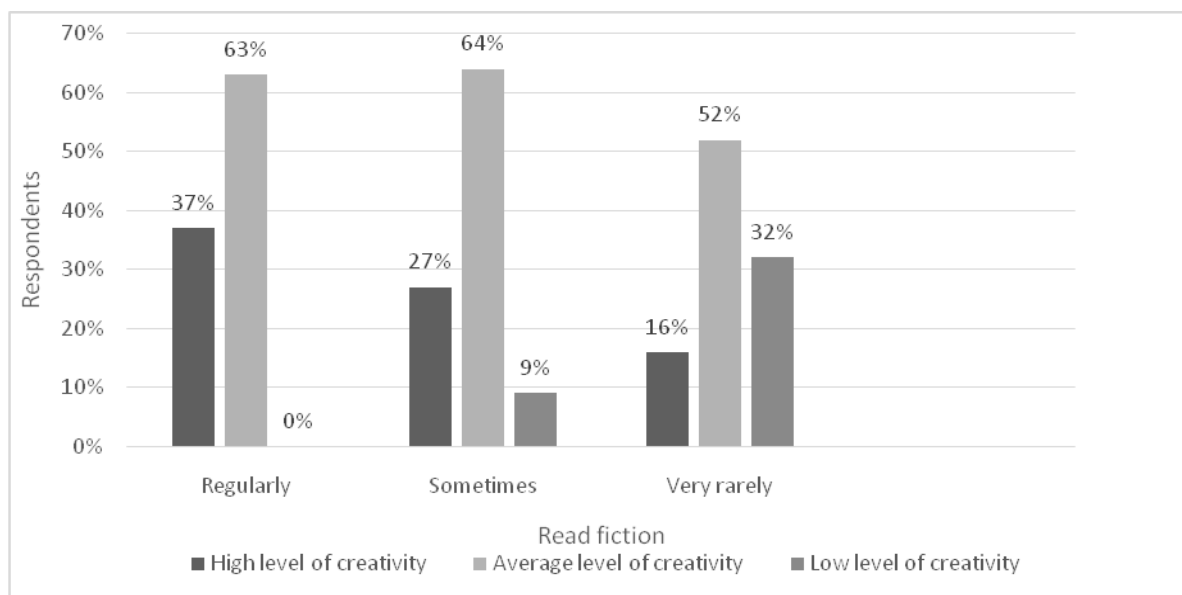
The level of manifestation in respondents	Type of thinking				Creativity
	Objective thinking	Symbolic thinking	Iconic thinking	Figurative thinking	
Low	16%	27%	3%	10%	7%
Average	45%	52%	27%	33%	60
High	39%	21%	70%	57%	33%

The data on the third research question are presented in Figure 1. When studying the dynamics of creativity manifestation in future teachers at different stages of vocational training, the authors revealed a significant decrease in the level of students' creativity by the end of training.



**Figure 1. Manifestation of creativity in future teachers (depending on the year of study)**

Figure 2 presents the data obtained in response to the fourth research question. Students, who regularly read fiction, including foreign literature and literature in the original language, often have a high level of creativity. In this group of students, the low level of creativity has not been revealed (see Figure 2).



**Figure 2. The influence of fiction reading on the creativity of students-future teachers**

## Discussion

The study confirmed the predominance of the iconic type of thinking, which characterizes people with a humanitarian mindset: 70% of respondents had a high level of the specified formed type of

thinking. This can be explained by the fact that students who took part in testing studied in the philological areas of pedagogical training.

The results of the experiments indicate the importance of creative thinking for future teachers. However, for most students, the level of formation of creativity is defined as average, while the highest level is optimal for effective creative activities and fulfillment of creative thinking of future teachers. High-level creativity was manifested only in 33% of the students surveyed.

An important fact is that in the process of professional training, there is a decrease in the levels of formation of creative thinking from 75% in the first year of study to 30-33% in the last two years of study. These data indicate a rather negative impact of the educational environment of the university on the level of students' creative thinking.

The main reason for this decrease is the implementation of standardized tasks, repetitive tasks implying the search for unambiguous solutions, the stereotyped nature of the learning process (Korableva et al., 2019 a, b). The data obtained confirm the need to create conditions in the educational environment of HEIs to increase creativity thinking in future teachers (Safiullin, 2019).

Nevertheless, the study of the role of reading on personal development confirmed that leisure reading of fiction in any language has a positive effect on the level of students' creativity (Shastina et al., 2018). It was found that students who regularly or at least periodically read fiction along with professional literature show a predominantly medium and high level of creativity. The low level among periodically reading students is no more than 9%.

The data suggest that future teachers can increase the degree of creative thinking manifestation if they regularly read foreign language literature using the methods and techniques of creativity formation in the analysis and interpretation of what they read.

The process of developing students' creative thinking, as well as training of creativity, which includes strict, structured intellectual processes (Watson, 2018), consists in purposeful interaction, teacher-student cooperation in adequate, specially organized conditions with the use of necessary forms and methods of organizing the educational process (Černevičiūtė and Strazdas, 2018; Baubonienė et al., 2018; Kireev et al., 2019; Belas et al., 2018; Mueller et al., 2019).

The use of non-traditional forms and methods, innovative technologies, training sessions, conferences, contests, discussions, etc. facilitates the formation of creative thinking in future teachers. Implementation of the problem-based learning principles, which is related to the

formulation and solution of educational, scientific and professional-pedagogical tasks, also contributes to the effectiveness of the process under consideration. The organization of problem-based learning involves teacher-student interaction in the form of problem-based lectures, practical and seminar lessons of a problematic nature (discussions, defense of topic papers, business games, solving professional-pedagogical tasks, etc.). Project-oriented learning provides a wide field for the formation of creative thinking and manifestation of creativity (both by students and teachers) (Tanggaard, 2011).

Taking into account that the professional competence of a teacher or a university professor consists of three components – object, psychological-pedagogical and methodical competence, one could speak of the need to improve the methodical aspect, since the use of various methods and technologies allows a teacher to create and develop students' creative thinking.

The whole groups of methods contributing to the formation of students' creative thinking have been identified. For example, the classification by Smirnov presents two large groups of such methods: 1) by the way of organizing educational activities (these include structural-logical, training and game methods) and 2) by formative orientation (it includes methods for developing the experience of creative activity and emotional impact methods) (Smirnov, 2005).

Heuristic training methods are effective at the stage of basic vocational training of future teachers, as they stimulate the development of students' creative potential and contribute to the development of their qualities (Khutorskaya, 2003).

The presented methods can be successfully implemented when teaching language disciplines, primarily in foreign language lessons. The practical course of a foreign language has great potential in the process of forming future teachers' creative thinking, as it implies performing creative tasks, applying well-known information in new (imaginary) situations, solving problematic tasks, etc. In this case, working with the literary text is of particular importance.

The author's personal experience in teaching a foreign language (including analytical reading in a foreign language) at the language department of a pedagogical HEI allows for conclusions that when analyzing and interpreting a literary text, students mainly perform tasks aimed at achieving subject-specific results of teaching a foreign language: mastering new lexical units, forming dialogic and monologue speech skills and the ability to conduct stylistic analysis of the text, etc. At the same time, tasks related to the implementation of students' creative potential and their creative thinking account for no more than 10%. With insufficient attention to the problem of

developing creative thinking in future teachers, such an approach to organizing education negatively affects students' development and prevents them from becoming independent creative individuals.

### **Conclusion**

The study showed that professional pedagogical education is characterized by the presence of significant contradictions between the need to prepare creative teachers for pedagogical activities and the insufficient level of creativity among graduates of pedagogical faculties and institutes.

When considering creative thinking as a process, creativity as an integral property of an individual, determining his/her capacity for creative search, non-standard solution of pedagogical tasks, etc., acts as a system-forming element. Consequently, according to the level of creativity formation, one can judge about the creative thinking of an individual. About a third of students enrolled in the pedagogical field of study have a high level of creativity formation. Besides, in the process of learning, their level of creativity gradually decreases.

Another contradiction directly affects the organization of the process of training teachers: between the need to form creative thinking of future teachers and the lack of didactic conditions for the organization of this process in higher education.

The scientific-methodological literature presents some experience of justifying the conditions for the formation of creative thinking in future teachers. The main conditions influencing the increase in the level of students' creativity are the choice of optimal teaching forms and methods and the use of the possibilities of the educational process for creating a creative environment. The use of pedagogical technologies that require updating students' creative abilities can increase the level of formation of their creativity.

Based on the data obtained, it can be concluded that the level of formation of the creative thinking of future teachers is not high enough for the effective implementation of a creative approach to professional activity.

However, the results of the experiment indicate that in the educational environment of the university, these opportunities are not fully used, which leads to a decrease in students' creativity in the process of their study.

Focusing on the goal and main research questions, the authors made the following conclusions:

1. The prevailing type of thinking among students of pedagogical areas of training is the iconic type of thinking.

2. For most future teachers (60%), an average level of creativity is characteristic. A high level of creativity is shown only in 33% of the students surveyed.
3. The study of the dynamics of the level of creativity of future teachers at different stages of vocational training showed that the level of students' creativity is characterized by a noticeable decrease by the end of training (from 75% to 33%).
4. Leisure reading of fiction in the native and/or foreign languages has a positive effect on the level of students' creativity.

The study determines the direction of further scientific research and research activities.

The following aspects are important and promising:

1. Identification, description and experimental verification of the effectiveness of psychological-pedagogical conditions for the formation of students' creative thinking.
2. Creation of methodological recommendations for university teachers on organizing the process of formation of creative thinking in future teachers.
3. The study of the degree of readiness of university teachers for the formation of students' creative thinking.

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