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Pedagogical conditions of formation of creativity at future teachers

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Abstract

The research aims to reveal the level of formation of creativity at future teachers, to determine the pedagogical conditions and to provide their realization via theoretical, diagnostic, empirical, experimental and mathematical statistics and graphic representation of

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results methods. As a result, **t**he level of formation of creativity at future teachers is revealed; pedagogical conditions were determined and the author's methodology of formation of creativity at future teachers is presented. In conclusion, the process of formation of creativity at future teachers will be effective, if formation of creativity of future teachers is carried out on the basis of the developed model.

Keywords: Creativity, Pedagogical conditions, Future teachers.

Condiciones pedagógicas de formación de la creatividad en futuros docentes

Resumen

La investigación tiene como objetivo revelar el nivel de formación de la creatividad en los futuros docentes, determinar las condiciones pedagógicas y proporcionar su realización a través de estadísticas teóricas, diagnósticas, empíricas, experimentales y matemáticas y la representación gráfica de los métodos de resultados. Como resultado, se revela el nivel de formación de la creatividad en los futuros maestros; se determinaron las condiciones pedagógicas y se presenta la metodología del autor de formación de la creatividad en los futuros maestros. En conclusión, el proceso de formación de la creatividad en los futuros maestros será efectivo, si la formación de la creatividad de los futuros maestros se lleva a cabo sobre la base del modelo desarrollado.

Palabras clave: Creatividad, Condiciones pedagógicas, Futuros docentes.

1. INTRODUCTION

The specialists with higher education have to be trained for the solution of the new professional tasks, requiring non-standard creative solutions. The solution to this problem can be promoted by the

educational environment of the modern higher educational institution, focused on the formation of creativity.

Creativity allows the person to be improved and not to be afraid of the new, to adapt quickly to the changing conditions and requirements. It creates favorable prerequisites for personal development in general, promotes its self-disclosure, self-realization, self-sufficiency and tolerance. The main form of activity of the formed personality is, as we know, professional activity, the effectiveness of which in many respects depends on its creative character. In this regard, particular importance has the creative development process, which is necessary for the successful realization of professional activity.

Despite numerous theoretical and pilot studies, the problem of development of creativity still demands further studying, as in the known concepts there is no definite answer to questions about nature, factors of development of creativity, there is no common opinion on phenomenology, classification of qualities of the creative personality. Therefore, it is necessary for the system analysis of scientific knowledge about creativity in order to generalize the main concepts and to determine the most essential factors of development of creativity.

The relevance of the research is caused by the fact that formation of creativity at future teachers, regarding of revelation of the

scientific-theoretical aspects, model development and pedagogical conditions, did not become an attention object from researchers and organizers of higher education.

The transition of Kazakhstan's higher school to the three-level system of higher education makes actual the task of training of the creative, competitive specialist, having professional competences. In this regard, there is an imperative necessity not only competence-based modernization of educational process of higher education institution, but also creative updating of its educational component, acting as personal and significant space of development of creativity at students (MAZANA ET AL., 2019).

2. MATERIALS AND METHODS

2.1. Research methods

The following methods were used in the process of the research: theoretical (analysis; synthesis; concretizing; generalization; method of analogies; modeling); diagnostic (questioning; interviewing; testing; method of tasks and assignments); empirical (studying of experience of higher education institutions, normative and educational-methodical documentation; pedagogical observation); experimental (the ascertaining, forming, control experiments); methods of mathematical

statistics and graphic representation of results (MURASHEVA ET AL, 2018).

2.2. Research base

M. Auezov South Kazakhstan State University. 130 students participated in the experiment. 65 of them made the control group and 65 were in the experimental group.

2.3. Stages of the research

The research of the problem was carried out in three steps: at the first stage, it was carried out the theoretical analysis of the existing methodological approaches in philosophical, psychological and pedagogical scientific literature, dissertation works on the problem, and also the theory and methods of pedagogical researches; the problem, the purpose and methods of the research were determined, the plan of a pilot study was made; at the second stage, the pedagogical conditions were revealed, and the methods on formation of creativity at future teachers was developed, the skilled-experimental work was carried out; at the third stage, the experimental work was completed, theoretical and practical conclusions were specified, the received results were generalized and systematized.

3. RESULTS

We understand as creativity of future teachers – the ability of the personality to creativity, which, based on knowledge, abilities and creative potential, is characterized by the fluency, originality and uniqueness of thinking, which are shown in ability to propose a large number of solutions in the objective, to deviate from traditional schemes and producing the remote associations and unusual answers.

Pedagogical activity assumes the high level of creativity, as it is directed to the creation of the objects, possessing of the individual originality and demanding of the special perception. The modern situation in the country dictates the changed requirements and to pedagogical activity; the content and ultimate goal of which must be personally focused pedagogy. And it involves serious changes in the characteristic of professionals, to whom the society trusts training of the younger generation for life.

The creative activity of the teacher allows the vision of the new problem in a familiar situation and finding the ways of its decision, ability to independently combine and transform already known ways of professional and pedagogical activity.

The analysis of prerequisites (the requirement of society, "creative economy", employers) and conditions (information, technological, personal) allowed us to reveal the pedagogical potential of vocational training in the solution of the research task and to

develop a model of formation on creativity at future teachers (Figure 1).

Experimental introduction of model in educational process of higher education institution happened in specially created pedagogical conditions, which we divided into three groups: 1) information conditions (cognitive basis of pedagogical process); 2) technological conditions (procedural and methodical basis of pedagogical process); 3) personal conditions (psychological and pedagogical basis of pedagogical process). Conditions of the first and second groups (together with the main point and content of the most pedagogical task on the formation of creativity) characterized, actually, teaching and educational process; and the content of the third group made conditions of the effective functioning of teaching and educational process (SOLEIMANI ET AL, 2018).

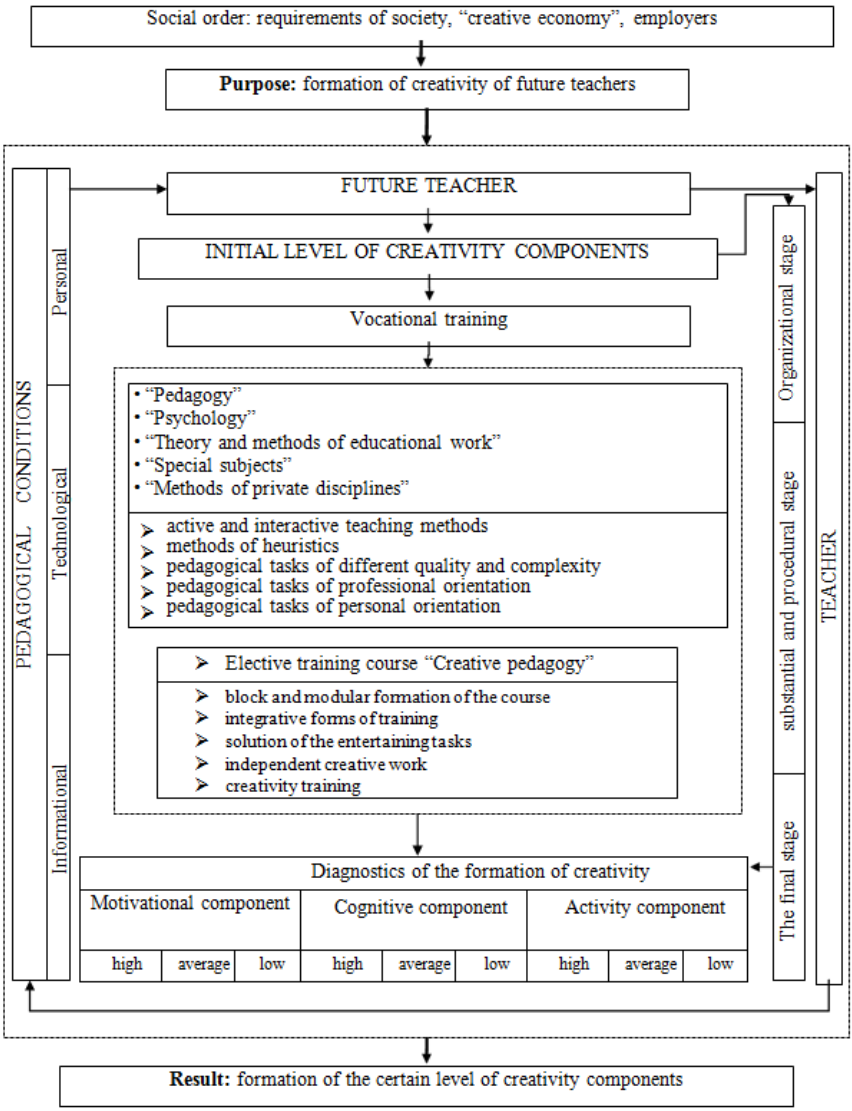

Figure 1. Model of formation of creativity at future teachers

Information conditions included: the purposes, the content of disciplines of vocational training (an invariant part of the State standard of the higher education), the content of specially developed elective course (the variable part of the State standard of the higher education), the content of pedagogical tasks, the ideas about essence creativity and ways of its formation; and also knowledge about requirement which are imposed to the modern specialist from the side of society.

Determination of the purposes was carried out on the basis of the all-didactic principles of training (scientific character and connection of training with practice, availability, demonstrativeness, continuity, systematicness and systemacy, etc.) and provisions of creative pedagogy (orientation on the creativity, functionality, etc.). As the result, there were marked out such purposes as the formation of professionally-oriented knowledge on pedagogical disciplines; formation of the components (motivational, cognitive, activity) of creativity; search of adequate methods for activization of educational cognitive activity at students for the achievement of the first and second purposes.

Technological conditions included the methods, forms, and means of organizing educational activities, directed on formation of creativity at students. The success of training to the great extent depends on the internal activity of students, on the nature of their activity, and, exactly the nature of the activity, degree of independence

and creativity serve as important criteria for the choice of method. “Active teaching methods” satisfy the designated requirements to the greatest extent (the brainstorming, round table, discussion, problem seminar, role-playing game, business game, focus group, etc.), inducing students to vigorous cogitative, practical and communicative activity in the process of mastering of the training material and, forming such student qualities as fluency, flexibility, completeness, originality, etc.

Methods of training were applied in unity with certain teaching means. As one of the means on the formation of creativity, we chose educational pedagogical tasks which in the aspect of the use of teaching means to act as means of purposeful formation of knowledge, abilities, skills and motives. Educational activity of students was carried out at three levels: formal and reproductive; essential and reproductive; reproductive and creative. The frontal, group, individual and collective forms of education were used at the lessons, depending on the pedagogical purpose.

The intensification of process on formation of creativity at students was carried out by means of the introduction of an elective course ("Creative pedagogy") and use of the methods on formation of creativity at the lessons. The elective course allowed updating the content of pedagogical disciplines, to differentiate process of vocational training and formation of creativity at students by means of use of active training methods, entertaining tasks, methods of creativity formation; this course armed the students with knowledge of

creativity (creative behavior) and promoted increase in motivation of students to studying of pedagogical disciplines.

Functional approach and use of various levels of abstraction in the process of vocational training of creative orientation, allowed the student to break numerous psychological barriers of thinking (situational, counter-suggestive, thesaurus).

Before starting realization of the model on formation of creativity at students, there were revealed the next criteria (motivational, cognitive, activity) of creativity; it was carried out their intensional filling (Table 1).

Table 1 - Criteria of creativity and their intensional filling

Criteria of creativity	Intensional filling of the criteria of creativity
Motivational	- orientation (steady motivation) to creativity; - feeling of novelty, criticality; - interest in non-standard pedagogical tasks; - ability to join quickly in process of creativity; - emotional involvement into creative activity; - aspiration to creative cooperation in the process of solution of pedagogical tasks; - orientation on process of the goal achievement, obtaining result of creative activity
Cognitive	- ideas about essence of creativity and ways of its formation; - knowledge about own specific creative features; - ideas about requirements, imposed to the specialist in labor market; - ideas about spheres of application of creative abilities (creative pedagogical abilities); - the level of pedagogical knowledge, allowing to operate with them at the creative level;

	- ideas about creative educational and professional behavior
Activity	- fluency (ability to generate the ideas and to make hypotheses according to the solution of pedagogical tasks, to put forward several solutions of tasks); - flexibility (ability to suggest different forms, types, categories of the solution of pedagogical tasks); - ability to structuring, manifestation of imagination, sense of humor and development of hypotheses; - resourcefulness, inventiveness (ability to change and transform pedagogical tasks; to suggest the additional details, ideas, versions or decisions); - ability to abstract away and degree of concentration in the process of the task solution; - ability to carry out the transfer of pedagogical knowledge and abilities in other object domains; - abilities to represent the training pedagogical material by various ways (visualization, association, etc.), to be able to comment on this process; - originality, ingenuity and efficiency (ability to show behavior which is original, useful to the task solution); - independence, non-standard (ability to abstain from making of the first come to mind, typical, standard task solution, to put forward various ways of the decision and to choose optimum variant)

- We also referred methodical ensuring process on formation of creativity at students to the group of technological conditions (didactic materials, tasks, exercises, tests, computer training tools and special methods of diagnostics of the level of formation of creativity components at various stages of vocational training.

- The group of personal conditions includes: the behavior, activity, communication, personal qualities of subjects (the student and the teacher) of the educational process. We included in this group:

- 1) Conditions which are determined by the personal qualities of students, including, features of their orientation (motivational structure of the personality, creative activity and so forth); existence of guideline at students on steady positive motivation of necessity for formation of creativity as important professional quality of the modern specialist; the level of pedagogical knowledge allowing to realize the individual-differentiated approach in the process of vocational training; the level of independence of students;

- 2) Conditions, which are determined by personal qualities of the teacher (the type of the personality, the system of values, the self-assessment and so forth) and, first of all, the teacher orientation on motivation of students to formation of creative educational behavior (the encouragement, support, approval), and also demonstration by the teacher of the role model of creative behavior. The role model acted not a certain algorithm of actions and operations, but it was the creative orientation of personality of the teacher, his creative behavior;

- 3) The conditions, connected with interpersonal interaction and communication of the teacher and students: the style of communication, activity in interaction, coincidence of styles of training and teaching and so forth; establishment of the communicative-co-creative relationships between the teacher and students on purpose formation of creativity of the last; application of dialogue training methods during the lessons on pedagogical disciplines; individual pedagogical support of the students, having problems in mastering of the pedagogical disciplines; the organization of creative project activity of students within independent work on pedagogical disciplines, etc.

- The research of efficiency of the developed model and pedagogical conditions on the formation of creativity at students was conducted by the experimental way in the process of introduction of the model and conditions of its realization in the educational process at M. Auezov South Kazakhstan State University.

- The pedagogical experiment included the ascertaining (the measurement of the initial level of the qualitative and quantitative parameters of creativity), forming (approbation of model and conditions) and control (the measurement of the reached level of the qualitative and quantitative parameters of creativity) stages. There were exposed to measurement such

qualitative and quantitative parameters as a creative activity, creative will, creative thinking, creative potential, completeness, fluency, the flexibility of pedagogical knowledge and abilities, independence, motives of professional activity and, actually, creativity.

- The pilot study of the level of development on the creative activity at students was conducted by means of <The methods of diagnostics of the level of the creative activity>, developed by ROZHKOV ET AL., (2010). According to this methodology, the measurements were made according to four criteria: the feeling of novelty, criticality, ability to transform the structure of a mathematical task, orientation on creativity. The level of creative activity at students of control and experimental groups was mainly low (from 34.7 to 64.0%) at the ascertaining experiment stage. Our research showed that the majority of criteria of creative activity at students, studying within the experimental methods, had positive dynamics of the indicators.

The efficiency of introduction of the developed model in practical educational activities of the university was determined on the basis of dynamics of indicators on motivational, cognitive, activity criteria of creativity. Structural and substantial characteristics of motivational criterion of creativity were determined with use of the observation (direct and indirect observation) methods, on the basis of the analysis of the products of educational activity; on the basis of the

questionnaire, revealing the relation of students to process of formation of creativity, the test-questionnaire "Professional motivation" of KRYLOV (2015). The characteristics of the cognitive criterion of creativity were determined on the basis of results of pedagogical observation, written and oral polls of students, and the analysis of products of educational activity. The characteristics of activity criterion of creativity were determined on the basis of results of the current and final control, special pedagogical tasks in the training process; by means the test-questionnaire "Creativity" of GOZMAN (2014). We used a three-level scale for determination of level on the formation of this or that criterion of creativity at students of the university in the process of pedagogical training at its various stages:

- Low level. The student demonstrates the negative or neutral relation to creative activity, works on the algorithm and accurate instructions, makes the decisions agreed with the teacher (share of the solvable control tasks of 0-40%).

- Average level. The student demonstrates the neutral or positive relation to creative activity, can model independently the activity algorithm in relation to a given class of the tasks (share of the solvable control tasks of 41-60%).

- High level. The student demonstrates the positive or interested relation to creative activity, has the individual and collective

ways of actions, has the subject pedagogical knowledge and abilities, possesses creative thinking; creatively solves the problems of new contents (share of the solvable control tasks of 61-100%).

The results of comparative analysis on changes of level of creativity at students in the control and experimental groups on average statistical indicator are presented in table 2.

Table 2 – The change of level of creativity at students - %

Level of creativity	Control group			Experimental group		
	Ascertaining stage	Control test	Dynamics	Ascertaining stage	Control test	Dynamics
Low	45,5%	44,0%	–1,5%	45,5%	20,0%	–25,5%
Average	46,5%	49,5%	+3,0%	45,5%	65,0%	+19,5%
High	8,0%	6,5%	–1,5%	9,0%	15,0%	+6,0%

The research of results of the experiment showed that in control group there was no significant change in level of creativity at students, while in experimental group at students it was noted its expressed increase: if in control group the percent of the students, having the low level of creativity, changed from 45.5% to 44.0% (-1.5%), then in experimental group this indicator decreased from 45.5% to 20.0% (-

25.5%). Besides, the indicators of average (18.5%) and high (6.0%) levels of creativity increased in the experimental group, and it is considerably exceeded similar indicators in the control group of students. Thus, the indicators of the level of creativity components at students of higher education institution had positive dynamics.

We studied the changes, happening in the structure of motives of professional activity at students of the university, at the final stage of the experimental part of the research. We used the test questionnaire "Professional motivation" (author A.A. KRYLOV) for conducting the research. We studied the structure of motives of the university students at the beginning and at the end of the experiment. Data on studying of motives of professional activity at students of control and experimental groups are presented in table 3.

Table 3 – Changes in motives of professional activity of students (the measurement unit – is point)

Motives	Control group, 25 people			Experimental group, 25 people		
	At the beginning	At the end	Dynamics	At the beginning	At the end	Dynamics
Own work	6	6	0	6	12	+6
Social importance of work	14	16	+2	14	12	–2
Self-affirmation of work	18	21	+3	18	12	–6

Professional skill	6	6	0	6	12	+6

The data in tables 3 show that at students of the control group, during of the academic year, the indicators of the social importance of work were rather increased (by 2 points) and self-affirmation in work (by 3 points), motives of own work and professional skill were remained invariable. The motives of the social importance of work and self-affirmation in work had negative dynamics at students of the experimental group during the same period: –2 and –6 points respectively, and motives of own work and professional skill had positive dynamics +6 points. The obtained data confirmed the assumption that the offered model on the formation of creativity at future teachers strengthens manifestation of their individual qualities, allowing them to achieve high personal results in educational and creative activity.

4. DISCUSSION

In terms of research tasks, the value of these works consists that their results allow to gain the conception about pedagogical projecting and modeling, and also the possibility of their use in the process of the student training to the new types of educational and professional activity. Besides, the analysis showed that, along with creativity

problem researches in creativity psychology, it is necessary to recognize that these achievements in the field of professional pedagogy are rather modest. Together with it, these researches are insufficiently supported with data of the experiments and their generalizations without which it is impossible to learn pedagogical features and mechanisms of formation of creativity at the student-future specialist.

Thus, the actuality of the research is determined by:

– The contradiction between requirements of society, economy to the process of vocational training of the specialists, designed to form creativity of students, and the traditional training system in higher education institution which is insufficiently effectively solved this problem;

– The contradiction between results of theoretical pedagogical researches and the condition of practice on the formation of creativity at students of higher education institution;

– Insufficient readiness of the pedagogical conditions which are effectively influencing on the formation of creativity of future teachers.

Existence of the revealed contradictions and necessity of their solution determines the scientific task, consisting in insufficient readiness of theoretical basics on formation of creativity at students of

higher education institution in connection with requirements of society, modern economy and the state educational standards, in the necessity of development of the model and identification of pedagogical conditions on formation of creativity at future teachers.

5. CONCLUSION

It is established that the process of formation of creativity at future teachers will be effective, if formation of creativity of future teachers is carried out on the basis of the developed model; the pedagogical conditions on formation of creativity at students will be revealed, proved and realized; the active methods of training and methods on formation of creativity at students will be used. Thus, the suggested methodology on the formation of creativity at future teachers is effective that is confirmed by results of the skilled-experimental work.

The conducted research does not pretend to the exhaustive solution of the problem on the formation of creativity at students, in view of its complexity and multivaluedness for the modern practice of upbringing and education of the younger generation.

Prospects of the research, in our opinion, consist in a further solution of such problems as the formation of basics of creativity at younger school children, development of creativity at senior pupils, the

realization of intersubjective connections in practice of the solution of problems on the formation of creativity at students.

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