

Self-Development of Research and Creativity of Future Teachers

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Abstract: The psychological condition of self-development of research creativity of future teachers is their reflective activities, personal and cognitive constructs. The pedagogical conditions of self-development of research creativity of future teachers are facilitative, interactive and innovative educational technologies in higher educational institutions. Features of self-development of research creativity of future teachers are characterized by their integral features of consciousness, connecting the sense of responsibility, commitment to the activity, experiencing “Me”, the motivation for self-development and cognitive activity. The structure of self-development of research creativity is defined as a complex integrative student presentation of himself in the context of the real and the ideal, the present and the future. The success of self-development of the research creativity of the future teachers is studied in inter-relationship of self-awareness, motivation structure and creative thinking of students. Objective of the study is to determine the structure, conditions and mechanisms of self-development of research creativity of future teachers. For the experimental study we selected the tests of creative thinking of E.P. Torrance, techniques to study the motives of educational activity K. Zamfir (modification of A.A. Rean and V.A. Yakunin).

Key words: Self-development • Creativity • Motivation • Reflection • Locus of control • Self-awareness and creative thinking

INTRODUCTION

Today person's willingness to act proactively and creatively under any circumstances is very important. This social demand meets the needs of future teachers to be independent, to know and be able to use their capabilities in research and teaching and professional activities.

It can be argued that the student who is aware of the need for knowledge in research activities, self-development, in creation required in the future teaching will be active in professional education.

But by itself the need in creative transformation of reality does not arise and creativity can be developed only in the activities. It is therefore very important to identify the psychological and pedagogical conditions for the development of future teachers. This allows you to shift the focus from learning as a passive process and reproductive assimilation of knowledge on the learning with a high degree of independence, ensures the efficient formation of professional knowledge, encourages the

development of cognitive activity, underpinning the development of creative and transformative power of students in real learning activities.

The most important of these tools, according to L.F. Avdeeva [1], V.I. Andreev [2], V.I. Zhuravlev [3], V.I. Zagvyazinsky [4], A.I. Kochetov [5] and others, is that students perform educational and research works. The research work of students as one of the types of learning activities actually creates a personal situation asserting the proper structure of activities providing self-development and formation of experience for developing personal knowledge, proper opinions and world view.

Self-development is one of the fundamental needs of the individual, but the ways and forms of self-development are individual and original.

In foreign theories of personality, based on the idea of internal determinism, self-development is developed within the broader context of the class of development; its source is: the internal contradictions, internal conflict (A. Adler, Z. Freud, E. Fromm, K. Horney) [6-9], the innate

human desire for the attainment of spiritual values (E. Spranger) [10], the tendency of various components of personality to unity-to the attainment of self (Carl Jung) [11] and to proprium (G. Allport) [12]. In the theories of reciprocal determinism, self-development is analyzed through human interaction with others, the elements of the environment, previous life events (A. Bandura, J. Kelly, J. Rotter) [13-15]. Indeterminate humanistic psychology focused attention on the creative potential of an individual, his need for self-actualization (A. Maslow, Carl Rogers) [16-17]. In the theories of self-determination, the source of self-development is considered to be the proper activity of a person, his capacity for independent choice of development trends (E. Deshi, R. Ryan) [18], a reflexive awareness of the determinants and constraints of proper activity (W. Tateson) [19], the control of basic needs and anxiety, born in the relations with the outside world (J. Istebuk) [20], the dialectical ability for self-reflection and transcendence (G. Richlak) [21]. The analysis shows that the presented theories distinguish either the instance, managing self-development (self, proprium, self-concept), or the principle underpinning the self-development (self-efficacy, self-regulation, self-support, interpretation and forecasting, self-realization, self-actualization, self-reflection and transcendence).

Self-development of a future teacher is a mandatory component of modern higher education, the indicator of creative and valuable relation of the student to research and training activities (B.G. Ananiev [22], L.I. Antsyferova [23], etc.).

The problem of creativity is one of the main problems for the psychology of personality and its development. F. Barron and David Harrington [24] are the following characteristics of the creative process:

- Creativity is the ability to adaptively respond to the need for new approaches and new products. This ability also allows you to be aware of the new in being, although the process can have both conscious and unconscious nature.
- Creating a new creative product largely depends on the personality of the creator and the strength of its intrinsic motivation.
- The specific properties of the creative process, product and personality are their originality, consistency and adequacy of the problems.
- Creative products can be very different in nature: a new solution to the problem in mathematics, the discovery of a chemical process, creating music,

painting or a poem, a new philosophical or religious system, innovation in law, a fresh solution of social problems.

Creativity (from Lat. Creatio - creation) of an individual. Creativity is characterized by a willingness to produce cardinal new ideas and talents within the structure as an independent factor [25]. The concept of creativity as a universal cognitive creative abilities gained popularity after the publication of the works of J. Guilford. The basis of this concept was his model of the structure of intelligence: SOI (structure of the intellect) [26]. According to E.P. Torrance, creativity involves an increased sensitivity to the problems, to the deficit of knowledge or contradictory information, the efforts to identify these problems, to seek for their decisions on the basis of hypotheses, verification and modification of hypotheses and on the formulation of the solutions [27]. According to D. Johnson, creativity manifests itself as a sudden productive act committed by the performer spontaneously in a certain setting of social interaction. At that the performer is based on their own knowledge and capabilities [28].

Self-development of creativity is aimed at enhancing internal personal resources of the future teacher in order to fully realize themselves in the process of teaching and professional activities. The analysis of different approaches allows self-development of research creativity as a continuous, conscious, purposeful process of personal and professional development. Self-development of the research work is based on the interaction of internally meaningful and perceived external active and creative factors. Self-development of research creativity has always focused on raising the level of professional competence and the development of professionally significant qualities.

The motives are known to cause not only an interested attitude to learning, but also to research activities, to the process of self-development and creativity as the basis of professional teaching.

We proceeded from the assumption that the study of self-development of research creativity of future teachers can be implemented if minimum three conditions are met: it is necessary to identify the initial state, i.e. to determine the creativity of future teachers and professional motivation to study future teachers. Only then we will have the opportunity to develop and implement a program of self-development of research creativity of future teachers.

The study of self-development of research creativity of future teachers providing the necessary degree of generality and flexibility is a necessary condition for the realization of individual trajectories of self-identity of the student's personality. The main areas of the study of self-development of research creativity of future teachers are diagnosing the level of professional training and development of personal qualities.

The most studied is the age-related dynamics of formation of creative thinking in the preschool and early school ages. There is a considerable amount of research and development programs of practical creativity of students. The less studied is the students' age and the problem of self-development of research creativity of future teachers is not investigated in full.

In this context, the aim of the study is to determine the structure, conditions and mechanisms of self-development of research creativity of future teachers.

MATERIALS AND METHOD

For the experimental study the methodology of creative thinking analysis by E.P. Torrance (Torrance Tests of Creative Thinking) was selected [29]. It was modified by A.N. Voronin on a sample of managers aged from 23 to 35 years. The test was adapted in

1993-1994 in the laboratory for the diagnostics of abilities and professionally important qualities of the Institute of Psychology of the Russian Academy of Sciences.

To determine the relationship to "self" and to the research work of the future teachers we have chosen the technique by K. Zamfir "The motivation of professional activity" (in the modification of A. Rean) [30].

The study was conducted in 2010-2012. The participants of the experiment were the 1-year students majoring in pedagogics: from the Kazakh National Pedagogical University named after Abai, Almaty city (156 people) and East Kazakhstan State University named after S. Amanzholov, Ust-Kamenogorsk city (164 people). The average age of the participants was 17.5 years.

RESULTS

The data from the studies of future teachers' creativity are given in Tables 1 and 2.

Analysis of the results showed that the students are more satisfied with the chosen profession. Choosing between the best, optimal and the worst types of relationships, most of the students chose the optimal complex represented by combinations of: IM> EPM> ENM (41%) and IM=EPM> ENM(11%) (Table 3).

Table 1: Indicators of verbal creativity of students by the method of E.P. Torrance.

Fluency		Flexibility		Originality	
Average value (İ)	Standard deviations (s)	Average value (İ)	Standard deviations (s)	Average value (İ)	Standard deviations (s)
65.94	24.81	30.73	12.76	71.52	33.04

Table 2: Indicators of picturesque creativity of students by the method of E.P. Torrance.

Indicators	Average value (İ)	Standard deviations (s)
Fluency	21.78	5.90
Originality	17.95	7.63
Readiness	9.62	4.17
Abstractiveness of the name	7.11	4.08
Resistance to restraint	12.89	3.75
Total value	69.35	5.12

Table 3: Motivational complex of students

Motivational complex					Number of students
IM	>	EPM	>	ENM	41%
IM	=	EPM	>	ENM	11%
IM	<	EPM	>	ENM	30%
IM	<	EPM	<	ENM	4%
IM	>	ENM	>	EPM	3%
IM	=	EPM	<	ENM	3%
IM	>	EPM	=	ENM	3%
IM	=	EPM	=	ENM	2%
ENM	>	IM	>	EPM	3%

Note: IM - internal motivation; EPM - external positive motivation; ENM - external negative motivation.

- The best motivational complex (the balance of motives);
- The worst motivational complex.

DISCUSSION

Interesting results were obtained from a qualitative analysis of patterns of non-verbal battery by Torrance.

First, the figures are quite common phenomena of nature-flowers, mountains, trees, the sun and children's items-toys, school supplies, etc.

Second, there is a specificity of culture and social environment. Therefore, at the processing of non-verbal battery of Torrance revealed the specific images characteristic for Kazakh society, culturally determined cognitive structures.

Based on these results it can be argued that students who display the children's and school subjects have higher teaching skills. Therefore, these images may serve as more reliable criteria for identifying potentially capable future teachers.

Now the researchers have no doubt that the success of students depends largely on the development of professional motivation. Consequently, the motivational sphere (interest in the subject, awareness, career choices, etc.) determines the development of research creativity of future teachers. In this regard, the structure of self-development of research creativity is defined as a complex integrative student presentation of himself in the context of the real and the ideal, the present and the future. Professional self-motivation makes research creativity of future teachers sustainable and promotes the development of a student's ability to set goals and achieve them.

This suggests that future teachers with these motivational complexes are involved in activities for their own sake, rather than to achieve any external rewards. Such activity is an end in itself rather than a means to achieve some other goal. I.e. these are future teachers, who are attracted primarily by the interest to the process of teaching, research and creativity. They tend to choose more complex tasks that have a positive effect on the self-development of the research work. So, our study revealed the predominance of internal motivation of students over external motivation (IM = 58%; EPM + ENM = 40%) and the prevalence of external positive motivation (30%) over the external negative motivation (10%). The dominant motivational complex self-development of scientific creativity of future educators is the complex "IM> EPM> ENM." 41% of the students have this balance of motives (motivational complex). Therefore, it can be argued that

many of the students have the opportunity to actualize the process of self-development of the research creativity. The worst motivational complex is specific for 12% of the students.

Psychological condition of self-development of research creativity of future teachers is their reflective activities, personal and cognitive constructs. Pedagogical conditions of self-development of research creativity of future teachers are facilitative, interactive and innovative educational technologies in higher educational institutions.

The main mechanism of self-development of research creativity of future teachers is divergent thinking (J. Guilford, E.P Torrance).

Features of self-development of research creativity of future teachers are characterized by their integral features of consciousness, connecting the sense of responsibility, commitment to the activity and the experience of "self", the motivation for self-development and cognitive activity.

The success of the self-development of the research works of the future teachers is studied in inter-relationship self-awareness, motivation structure and creative thinking of students.

We have developed a program of self-development of research creativity of future teachers composed of four stages:

- Diagnostic and analytical stage - analysis of the requirements of society to education, personality, scientific research and professional activities of the educator; actualization of the needs in personal and professional self-knowledge, self-examination and self-diagnosis of the level of their research and development capabilities, achievements and difficulties as future teachers, study and analysis of the development of research and creativity;
- Planning and forecasting stage - taking a cardinal decision on the need of self-development of research creativity, setting specific goals and objectives of the self-development of the research creativity; the choice of the trajectory of individual development of research creativity, strategy and tactics of the research works;
- Organization and activity phase-implementation of self-development of the research works on the basis of internal positive motivation; stimulation of creative self-development of research work, self-control over the progress of the program of research creativity self-development; adjustment of the program or the progress of self-development of the research creativity if required;

- An assessment and reflective stage-pedagogical reflection of content and technology of self-development of research creativity and its results, the definition of efficiency factors of the process of self-development of research creativity; analysis and evaluation of the achieved changes in the scientific and theoretical, psychological and pedagogical knowledge, skills and important personal qualities, comparing them with the intended objectives and the adoption of a decision on further self-development of the research work.

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