

Developing Creativity in Student Teachers in the Context of Didactic Computer Environment

Ilmar F. Yarullin¹, Anvar N. Khuziakhmetov¹, Ramis R. Nasibullov¹

¹Kazan (Volga Region) Federal University, 420008, Kazan, Russia

Abstract

The importance of the issue is due to the rapid development of innovative technologies which are entering all spheres of our lives (including education), due to the current unstable socio-economic situation requiring people to become more resourceful and creative in their professional lives and in their communication with the dynamically developing information society. The article aims to reflect upon the issue of creative development in view of the fact that the new generation standards in 'Teacher education' set new requirements for university graduates – the formation of professional and cultural competencies in student teachers is now viewed as the main expected outcome of teacher education. This makes the necessity to develop students' creativity a new educational priority. The following research methods were used in this study: theoretical (theoretical and methodological analysis of philosophical, psycho-pedagogical and methodological literature relevant to the issue), empirical (a pedagogic experiment employing a range of educational methods), assessment-orientated (discussions, surveys, tests), praximetric (the analysis of creative work outcomes – the results of essays, educational programs, creative assignments, etc.) and predictive (modeling, thought experiment, statistical analysis). All in all, the results of our experimental work confirm our hypothesis. The materials of this article might be of interest to teachers, teacher trainers and student teachers.

Key words: Personality, Computer environment, Didactics, Creativity, Pedagogical conditions

INTRODUCTION

The Topicality of the Problem

It is clear that the main educational priority at the current stage is to create the system of education which could provide everyone with the opportunity for intellectual and creative development – right now we are actively searching for ways to modernize the whole system of teacher education, to introduce changes that would ensure the rapid achievement of the desired outcomes. The educational modernization requires: the reformation of educational goals, forms and methods, the introduction of new effective practices that are in comparison to the traditional teaching practices more learner-centered – they are constructed so that to take into account individual interests, flairs, capacities and talents of students which in

turn ensures the effectiveness of education.

In order to achieve all this, the contents and organization of education have to be reviewed and redesigned aiming at the introduction of active learning methods necessary for the effective intellectual and creative development of a person.

Explore Importance of the Problem

Being a highly important issue in the current context the creative development of student teachers is being considered and developed by many Russian and international pedagogues and scholars. The methodological basis of this study was formed with the use of: the dialectic logics – the ascension from abstract to concrete (Nikandorov, 1990); the activity theory (Davydov, 1996); the theory of developing education (Andreev, 2000; Matyushkin, 1972); the psychological concepts of memory and creative thinking formation (Imeridze, 2016; Massyrova et al, 2015); the theoretical concepts of heuristic learning (Akhmetshina et al, 2016).

The works of Bender et al [8] and Dauvarte et al. [9] as well as the didactic studies of Efremova et al [10] played a

Access this article online



www.ijss-sn.com

Month of Submission : 04-2017
Month of Peer Review : 05-2017
Month of Acceptance : 06-2017
Month of Publishing : 09-2017

Corresponding Author: Ilmar F. Yarullin, Assistant Professor of Kazan (Volga Region) Federal University, Russia, 420008, Kazan, Kremlyovskaya Street, 18. E-mail: Yarullin_Ilmar@mail.ru

significant role in our study aimed at the development of creativity in student teachers.

Features of Formation of Values of Education

The main theoretical materials of this study can be used in the education system in order to address the issue of creativity development in student teachers, as well as in order to design guidebooks, programs and other educational materials for student teachers.

Status of a Problem

The necessity to consume large amounts of psycho-pedagogic materials on the one hand and the difficulties arising from the necessity to linguistically and professionally digest the didactic materials of computer provision on the other hand come into conflict in teacher education. Within the current system this issue is hardly being developed. From this stems the following problem: what didactic conditions are necessary to ensure the effective development of creativity in student teachers engaged in the process of acquiring psycho-pedagogical knowledge with the use of computer technologies.

MATERIALS AND METHODS

Objectives of the Study

In the course of the study the following goals were pursued:

- to consider the nature and main characteristics of creativity in student teachers and the influence of the didactic computer environment on creativity development;
- to develop the methodology of effective creativity development in student teachers based on the integration of psycho-pedagogic courses;
- to empirically test the developed methodology and assess the effectiveness of the didactic conditions within the context of the current informational provision.

The Oretical and Empirical Methods

The aforementioned goals were achieved with the use of the following methods:

- theoretical;
- empirical;
- assessment-orientated;
- praximetric;
- predictive.

Base of Research

The study was based at Institute of education and psychology (Kazan Federal University).

Stages of the Study

The study had three following stages:

The Stage I (2011-2012) involved the theoretical analysis of literature relevant to the issue: we considered the works focused on the issue of integration processes in higher education, the process of concept and terminology formation in the Tatar language as well as the methodologies and practices of creative development.

At the Stage II (2013-2014) we assessed, analyzed and drew conclusions in relations to the issue; the structure of the transforming learning process was analyzed, its characteristics were identified taking into account the teaching practices of educators and learning activities of students; the didactic conditions necessary for the creative development of student teachers were established.

The Stage III (2015-2016) involved the empirical approbation of the identified didactic conditions; further testing of our hypothesis; the analysis, systematization and revision of findings.

Evaluation Criteria

In this study we used the following assessment criteria:

- the ability to analyze the influence of historical facts on the cultural and socio-economic development of society;
- the ability to express one's opinions on a specific issue;
- the ability to use the method of idiographic analysis of facts and ideas;
- the ability to think critically when analyzing concepts.

RESULTS

We view the development of student personalities, of their creative potential within the learner-centers educational systems as a specific objective that defines the contents of education, the objective that requires specific approaches, practices and methods. In order to effectively facilitate the development of the student's personality the didactic computer environment can be employed which is in essence the complex of pedagogical ideas, methodological materials, educational practices, software and hardware. The role of this complex in the creativity development process can be realized through viewing this complex as a unified element of pedagogical systems, as the environment that brings together different individuals enabling them to realize their personal functions. The didactic computer environment provides useful activity tools and gives access to information and communication systems. This environment introduces to the education system new participants – teachers and developers working on the design of software (Shubin et al, 2015).

Creating the didactic computer environment in the context of psycho-pedagogical courses can play a significant role

in the development of student creativity. The course of pedagogics has to facilitate the development of the following: the skills to set one's goals and plan one's actions effectively before carrying them out with the use of a computer, the skills to formally describe one's goals and understand the mechanisms and functions of computers; the skills to effectively use the cutting-edge technologies in one's work.

In order to facilitate the development of creativity in students effectively the following need to be organized: the theoretical, methodological and practical preparation of students for their future work; the development of student professional awareness and motivation in order to ensure their sustainable commitment to the chosen profession; the development of professional interests in students and their encouragement to engage in continuous professional development.

Having assessed student development at the initial stage of the experiment we established that the levels in both (control and experimental) groups were very similar. We think that when organizing constructive project-based activities in psycho-pedagogic courses the model needs to be comprised of the following logically set blocks: initial assessment; goal formation; the formation of the educational strategy; action planning; controlling assessment and feedback collection; the analysis of the results and reflection.

In order to assess the level of student preparation for constructive project-based activities we used the 5 point scale system: the score of 5 points indicates a high level, 4 – a sufficient level, 3 – a medium level, 2 – a low level, 1 – the key skills are not formed at all.

In the course of the initial assessment stage of our experiment this scale system was used by the teaching staff of Kazan Federal University. Moreover, our findings indicated that 40% of respondent students thought that the ability to plan one's activities is the most important, 20% opted for the ability to analyse all pedagogic situations (performing psycho-pedagogic and methodological analysis).

Having analyzed the work of different groups we established that:

- The most significant differences can be observed when students are offered to solve problems and perform tasks that are constructive in nature.
- The differences observed in the course of performing strategic tasks predict the differences in the course of planning work.

Thus, this stage of the experiment confirmed our views – the current higher education system as a part of the lifelong learning system is not yet sufficiently orientated towards the new priorities to facilitate the development of the new generation of people capable of highly qualified work, social maturity and creative thinking.

In the course of our study we identified the didactic conditions for the effective creative development of student teachers and in accordance with them we organized our experimental teaching practices.

The developed experimental course of pedagogics aimed at the creative development of students with the use of information technologies had the following characteristics: it is not narrowly specialized (the main orientation is educational and developing); the field of knowledge is psycho-pedagogic; it is orientated towards the creative development of students; the educational work is organized with the use of computers; it has differentiated levels.

The creative potential of students was assessed with the test developed by O. I. Tushkanova (Table 1).

As can be seen from the table, over time the number of students who scored higher than 49 points increased in the experimental group while remaining at the same level in the control group. In other words the results of our experimental work indicate that the experimental group achieved higher levels of creativity after participating in our experiment.

When assessing the outcomes of experimental program we used the Torrance test. At the time of assessment one of the experimental groups was engaged in the experimental program for one year and the other experimental group – for three years. The experimental groups were assessed twice each academic year (at the beginning and the end). The control group was assessed once at the end of the academic year (Tables 2 and 3).

The results indicate that the students engaged in the experimental program made a significant progress over

Table 1: The creative potential of students at the initial stage (340 people) and at the stage of controlling assessment (342 people),%

Score	contr		Final (controlling) assessment	
	Control group	Experimental group	Control group	Experimental group
49 and higher	33	33	33	57
24-48	52	53	53	33
23 and lower	15	14	14	10

Table 2: The level of creative thinking, %

The level of creative thinking	Experimental group				Control group
	2 year students (First year engaged in the experimental program)		4 year students, (third year engaged in the experimental program)		
	At the beginning of the academic year	At the end of the academic year	At the beginning of the academic year	At the end of the academic year	
High	10	35	100	100	18
Medium	65	64	0	0	75
Low	25	1	0	0	7

Table 3: The level of intellectual development, %

The level of intellectual development	Experimental group				Control group
	2 year students (First year engaged in the experimental program)		4 year students, (third year engaged in the experimental program)		
	At the beginning of the academic year	At the end of the academic year	At the beginning of the academic year	At the end of the academic year	
Very high	34	63	62	81	43
High	44	26	32	18	55
Medium	22	11	6	1	2
Low	0	0	0	0	0
Very low	0	0	0	0	0

the first year: 25% of the students had the low level of creativity at the beginning of the academic year but by the end of the first year only 1% were at the low level. The number of students who demonstrated the high level increased from 10% to 35% over the first year.

These results are higher than those in the control group in which 18% of students showed the high level by the end of the academic year. As for the experimental group who had been engaging in the experimental program for three years, their creativity levels increased so significantly that they could not be adequately measured any more with the Torrance test –all students scored 100% and their levels could not be differentiated beyond that.

As we can see the level of intellectual development increased in both experimental groups.

Thus, our hypothesis was confirmed – the proposed didactic conditions do facilitate the creative development of student teachers in the course of studying psycho-pedagogic subjects within the didactic computer environment.

DISCUSSIONS

The issue of creative development among future teachers studying and preparing to work under the conditions of educational informatization has not yet been sufficiently developed. More research is needed in relation to how

informational processes and the informatization of education influence the formation of values, priorities and professional aspirations which define the personality of a future teacher; in relation to how creativity develops in the context of computer environment. In view of this finding ways to improve the didactic computer environment, searching for new ways to organize educational processes effectively with the use of informational educational resources has to and will be realized in future studies (Rogers & Aldhafeeri, 2014).

CONCLUSION

We considered how creativity in student teachers can be effectively developed in the context of the didactic computer environment influencing their intellectual activities. We developed an educational methodology aimed at developing student creativity through integrating psycho-pedagogic courses. Moreover, we identified the didactic conditions for effective creativity development. All in all, the analysis of the experiment results leads us to the conclusion that the didactic conditions play a significant role in creativity development.

RECOMMENDATIONS

This article is written for the attention of university academic staff involved in didactic provision necessary for the development of student creativity.

ACKNOWLEDGMENTS

The research is performed according to the Russian Government Program of Competitive Growth of Kazan Federal University.

REFERENCES

1. Nikandorov, N.D., 1990. Pedagogical creativity. Moscow: Pedagogics, 144 p.
2. Davydov, V.V., 1996. The theory of developing education. Moscow: INTOR, 544 p.
3. Andreev, V.I., 2000. Pedagogics: creative self-development (a study course). 2nd edition. Kazan: The center of innovative technologies, 608 p.
4. Matyushkin, A.M., 1972. Problem situations in thinking and in learning. Moscow: Logos, 248 p.
5. Imeridze, M., 2016. Implementation of the experimental model of future teachers media education competence formation//Science and Education, Vol. 1, 102-106
6. Massyrova, R., Bainazarova, T., Meterbayeva, K., Smanov, I., Smanova, G., 2015. Future Teacher Training For The Children Under School Age Reative Abilities Development. PROCEEDINGS OF 2ND GLOBAL CONFERENCE ON PSYCHOLOGY RESEARCHES (GCPR-2014), Vol. 190, 164-168. DOI: 10.1016/j.sbspro.2015.04.931
7. Akhmetshina, G.R., Salakhov, R.F., Gabdrahmanova, E.V., 2016. Theoretical and methodological foundations for creative self-realization development among high school students by national applied art means// Turkish online journal of design art and communication, Vol. 6, 3055-3060
8. Bender, E., Schaper, N., Caspersen, M., Margaritis, M., Hubwieser, P., 2016. Identifying and formulating teachers beliefs and motivational orientations for computer science teacher education//Studies In Higher Education, Vol. 41, No11, 1958-1973
9. Dauvarte, L., Dislere, V., 2015. Didactic Usability of the Information Communication Technologies in Home Economics and Technologies Lessons Rural Environment, Education, Personality (REEP), Vol. 8, 188-197.
10. Efremova, O.N., Ivanova, T.O., Plotnikova, I.V., Chaykovskaya, O.N., 2015. Innovative computer technologies as an implementer of active methods of training. RPTSS 2015: INTERNATIONAL CONFERENCE ON RESEARCH PARADIGMS TRANSFORMATION IN SOCIAL SCIENCES, Vol. 28, UNSP 01031. DOI: 10.1051/shsconf/20162801031
11. Shubin, I., Karmanenko, O., Gorbach, T. Umyarov, K., 2015. The methods of adaptation in computer-based training systems. PROCEEDINGS OF 2015 INFORMATION TECHNOLOGIES IN INNOVATION BUSINESS CONFERENCE (ITIB), 64-67
12. Tushkanova, O.I., 2001. Tests. Personality. Communication. Volgograd, 61.
13. The test to measure creative thinking developed by Torrance http://spkaltan.ucoz.net/praktikum/torrens_s_primerami_i_objasnenijami.pdf (accessed date 25.11.2016)
14. Rogers, S., Aldhafeeri, F., 2014. The pedagogical variation model for learning and teaching in the virtual classroom//ICERI2014: 7TH INTERNATIONAL CONFERENCE OF EDUCATION, RESEARCH AND INNOVATION, 1577-1588

How to cite this article: Yarullin IF, Khuziakhmetov AN, Nasibullov RR. Developing Creativity in Student Teachers in the Context of Didactic Computer Environment. *Int J Sci Stud* 2017;5(6):30-34.

Source of Support: Nil, **Conflict of Interest:** None declared.