Pedagogical and psychological conditions of formation of teacher’s readiness to realize innovative technologies of training

Alina Kuandykovna Bimaganbetova, Talgat Abubakirovich Daniyarov, Mukhabat Erubaevna Rustambekova, Marzhan Moldakasymovna Duyosenova, Aiman Kalyshbaevich Rysbekova, Kamalbek Meirbekovich Berkimbaev

Ahmed Yasawi International Kazakh-Turkish University, 29 B. Sattarkhanov Avenue, 161200 Turkistan, Kazakhstan

Abstract: The article gives the analysis of teachers readiness to realize innovative technologies of training on developed criteria the results of which were checked in the course of constantan experiment by students and teachers of South-Kazakhstan and Kyzyl-Orda regions schools, and workout of module program “Innovative pedagogical technologies and their realization” in order to carry out a special work on teachers preparation which provides revealing theoretical and practical aspects of the problem. The offered technique of teachers’ preparation to realize innovative training technologies can be used in practice of higher education institutions work, on courses of QDI and QDF of the Republic of Kazakhstan aimed to improve professional training of specialists to pedagogical-psychological activity.


Keywords: educational process, teacher, innovative technologies, professional preparation, personal-creative concept.

1 Introduction

The processes of humanization which are occurring now around the world define new requirements to educational institutes of the society. Technical progress and increase of volume of scientific information, reorganization of the content of school education and revision of the principles of activity of teaching-and-educational institutes - all this steadily raises requirements to professional competence and the identity of the teacher, to personal orientation of all pedagogical-and-psychological process [1].

Changes of the purpose and essence of education within personally focused paradigm allow to speak about emergence of the new category "educational technology" at the heart of which is the understanding of educational process as spontaneous system where activity of pupil becomes a leading factor, and training acts as the reflexive management assuming intersubject interaction of teacher and pupil and providing development of their opportunities [2].

The modern teacher is the person who according to the content of professional activity has to possess the set of qualities belonged not to the many: teacher has to be able to project educational process, to combine various approaches to technology of training, to use innovative systems of training, to use innovative systems of training, to carry out a pedagogical-and-psychological reflection, i.e. to solve creative, problem tasks of professional and pedagogical-and-psychological activity [3].

2. Problem statement

The analysis of practice shows that development of innovative educational technologies at school is interfered by no formation of the related activity of the teacher (V.V. Pikan, Hp Podymova, V.A. Slastenin, G.M. Tyulyu). Despite available development in the field of pedagogical-psychological technologies, managements of development of innovative processes at school, the realization question, that is uses of innovative educational technologies in mass practice, is still insufficiently developed. Innovative process as process of development, mastering of use of an innovation in mass practice for these technologies ends at the stage of creation or experimental check, and lack of the stage of "broad" realization doesn't allow speaking about completeness of an innovation. At the same time the system of training of future specialists existing now at higher schools keeps orientation in preparation for traditional understanding and implementation of pedagogical-and-psychological process and doesn't reflect feature of realization in practice of innovative pedagogical-and-psychological technologies. Experience shows that the training of specialists, the innovative technologies of training focused on realization, not quite quickly is solved and
in system of professional development and retraining of pedagogical staff [4].

In the conditions of continuous training it is required special measures to improve mechanisms of adaptation of teachers to work on application of innovative technologies of training.

Therefore, higher education institutions, institutes of professional development have to assume preparation of pedagogical staff in accordance with the introduced technology and in process of its improvement and development to provide timely adequate retraining of teachers [5].

Preparation of pedagogical staff as a multidimensional scientific problem was reflected in works of the scientists opening conceptual fundamentals of preparation of teachers: N.V. Kuzmina, V.A. Slastenina, A.A. Kalybekova, Shch. Khmel, A.A. Kalyuzhnny, R.R. Dzherdimaliyeva, D.M. Dzhushubalyeva, A. Isayeva, G.K. Nurgaliyeva, K.A. Duysembayeva, etc.


Fundamental value to identify a condition of preparation of teachers for: activities to realize innovative technologies of training have the researches devoted stories of formation and tendencies of development of increase system of pedagogical staff in Kazakhstan, to experience of foreign countries; for issues of retraining and professional development of teachers fulfilled by A.B. Almukhanbetov, K.S. Musin, Sh.T. Taubayeva, I.I. Kolesnicheko, A.A. Zhaytapova, etc. However in these fundamental researches the problems of teachers' preparation to realization of innovative technologies of teaching were not fully and detailed revealed and are still poorly explored.

Thus, there were objective contradictions:
- between need of theoretical justification of teachers preparation to realization of innovative technologies of teaching and real condition of readiness of this question in the pedagogical-and-psychological theory;
- between real modern school requirement in pedagogical staff ready to realize innovative technologies of teaching, and in practice insufficiently effective use of opportunities of higher education institutions, IQI in order to implement purposeful preparation of teachers in conditions of technologization of teaching-and-educational process of school [6].

3. The research objective
In this article we will try to show ways of permission of these contradictions. It consists in theoretical substantiation, development and experimental check of the technique providing formation of teacher readiness to realization of innovative educational technologies at school.

In our research we proceeded from the following hypothesis: success of activity of the teacher on realization of innovative educational technologies at school is defined by professional and personal readiness which is formed in innovative activity and provided with the following conditions:
- to include school teachers in process of the intersubject dialogue interaction assuming training generalized project abilities to teachers;
- to operate educational activity of pupils;
- to develop abilities to reveal possibilities of self-improvement by means of an intellectual and personal reflection, to carry out the process of interpersonal interaction [7].

According to the purpose, a problem, object and a subject of research the following tasks are set:
1. to define methodological approaches to research of a realization problem of innovative educational technologies at school;
2. to open the structure of teacher readiness to realize the innovative educational technologies at school;
3. to reveal pedagogical-and-psychological conditions to form teacher readiness to realize innovative technologies of training;
4. to develop and experimentally to check a technique of formation of teacher readiness to realize innovative educational technologies at school.

4. Research methods
Theoretic-methodological analysis of scientific literature and program-and-methodical documentation; theoretical modeling; diagnostic methods (questioning, poll, interviewing, conversations, tests); practical methods (analysis of products of activity; pedagogical-and-psychological experiment; methods of statistical data processing.

In the work we would like to note that in a number of V.A. Slastenin, and L.S. Podymova works it is considered a question of teacher preparation to innovative activity where readiness can be created only in a context of integrity of the main structural components of innovative activity as motivational, creative, technological and reflexive
Also to our research is of interest that the organization of vocational training of teachers on realization of essential tasks requires observance of such principles, as:
- the principle of activity understanding of a profession, according to which any technology of vocational training has to train professional activity and to be based on accurate model of the specialist;
- the principle of reasonable creation of technology of vocational training (the principle of scientific character) demanding the constant analysis and updating continence of vocational training, use in the teaching-and-educational process of innovations: methods, means, forms.
- the principle of compliance of designed technologies of vocational training to current world trends of development of special education: fundamentallization, individualization and humanitarization of education;
- the principle of continuous updating of vocational training contents based on curriculum optimization, exception of an insignificant material from the educational programs, registration of intersubject communications, structurization of a teaching material;
- the principle of optimization of the process of vocational training suggesting achievement of objectives of training with the minimum time and with high quality of specialists training;
- principle of quality standard of study results. Control and self control have to be systematic, rather frequent and reliable, obvious for students, services not only for an assessment of results of their study, but also, first of all for an assessment of correctness of a course of training.

In modern pedagogical-and-psychological researches (K.D.Duray-Novakova, V.A.Slastenin) readiness is considered as complete education of a personality created as a result of the special preparation, integrating in set of motivational, substantial and operational components. Proceeding from it, we consider readiness of teachers for realization of innovative educational technologies as the system of the interconnected and interdependent components: valuable-motivational, substantial, and operational [8].

The valuable-and-motivational component carries out regulatory function in readiness structure, expresses the conscious relation of the teacher to realization of innovative educational technologies and their role in solution of actual problems of modern education as only adequate to the purposes of innovative activity motivation provides harmonious disclosure of this activity and self-disclosure of the teacher personality.

As a criterion we allocate "personal-significant sense of realization of innovative technologies of training" [9]. Indicators of this criterion are:
- understanding by the teacher of the social importance and need of introduction of innovative technologies of training;
- need for pedagogical-and-psychological innovations;
- orientation of the teacher to realize innovative technologies of education.

The following component of readiness of the teacher to realization of innovative technologies of training is the substantial component which along with motivational one enters into operating part of action. As the substantial component assumes the valuable relation of the teacher to knowledge of modern technologies of training, as this criterion we allocate "theoretical and methodological knowledge of innovative educational technologies" which is expressed in the following indicators:
- knowledge of object of teacher’s activity, features of management of technology realization of pedagogical-and-psychological process;
- knowledge of essence, specifics, types of pedagogical-and-psychological technologies;
- knowledge of methodological bases of pedagogical-and-psychological technologies, characteristic signs, classification, features of realization.

The operational component is a set of ways of the teacher activity on realization of innovative educational technologies.

As a criterion we allocate "skills of the teacher on realization of pedagogical-and-psychological technologies" which indicators are:
- ability of the teacher to operate the pupil activity;
- design abilities of the teacher;
- ability to use devices of control and diagnostics;
- ability to organize interaction of pupils with tutorials;
- adjustment abilities of the teacher.

The substantial characteristic of valuable-and-motivational, substantial and operational components, and as well as criteria and indicators of their formation commonly made structural and-level model of readiness of the teacher to realization of innovative technologies of training (figure 1).

The substantial characteristic of valuable-and-motivational, substantial and operational components, as well as criteria and indicators of their formation in the set made structural and-level model of readiness of the teacher to realize innovative technologies of training (figure 1).
The analysis of each criterion included in the structure, indicators of readiness of the teacher to realize innovative technologies of training led to determination of the following levels: adaptive, reproductive, heuristic and creative [10]. Below we provide the characteristic of levels of expressiveness of being investigated readiness of teachers.

Adaptive level characterizes the initial level of manifestation of readiness of the teacher to realize innovative technologies of training. The relation to possibility to realize innovative technologies is indifferent as knowledge of teachers in the field of technologies haven’t been created yet, therefore they apply traditional ways of training.

Reproductive, or the low level is characterized by the steady valuable relation of the teacher to innovative technologies and forming informative interest in them in the absence of personal nature of understanding of realization of these technologies. Knowledge of essence and specifics of innovative technologies starts being formed, however is superficial, and isn’t systematized. As a whole, for teachers the reproducing activity is typical, but with elements of new decisions search in standard pedagogical-and-psychological situations.

Heuristic, or the average level is characterized by purposiveness, resistance of motivations of teachers to realization of innovative educational technologies, sensibleness of need of their application in practice, vivid aspiration of realization of these technologies. The latter is caused by existence of knowledge of essence, the contents, ways of a realization of innovative pedagogical-and-psychological technologies; features of management of pedagogical-and-psychological process and knowledge of the technique of subject teaching. Teachers of this level are characterized by completed formation of design skills and abilities to control educational activity of pupils, and also reproduce and to operate technological links of algorithms of innovative educational technologies.

Creative, or the high level of readiness reflects a vivid professional orientation on application of innovative approaches to implement teaching-and-educational work, strong conviction of teachers in need to increase efficiency of modern educational process and creation of author's technologies of training.

Substantial component of this level of manifestation of readiness of the teacher is presented by profound knowledge on object of teacher activity, management features, knowledge of the technique of subject teaching, profound and versatile knowledge on innovative educational technologies, their intrinsic and specific characteristics, types, signs, algorithms of realization that as a whole causes creative activity of this level teachers which is carried out from innovative technologies realization creative approach position, and also abilities to control educational activity of pupils, possession of the ways of diagnostics of training technological effectiveness and teaching-and-educational process effectiveness, ability to model innovative technologies of pupils training.

Theoretical validity of the allocated by us criteria and indicators of the teacher readiness to realize innovative training technologies was almost confirmed during stating experiment by students and teachers of South-Kazakhstan and Kyzyl-Orda regions schools.

The developed “readiness model” as well as the analysis of teachers work were the basis to carry out the stating experiment aimed to reveal the initial condition of teacher readiness to realize innovative training technologies. That resulted in the following:

<table>
<thead>
<tr>
<th>Component</th>
<th>Level of manifestation of readiness of the teacher to realization of innovative technologies of training</th>
</tr>
</thead>
<tbody>
<tr>
<td>Adaptive</td>
<td>Readiness to possibility of realization of innovative educational technologies as a whole.</td>
</tr>
<tr>
<td>Reproductive</td>
<td>Readiness to possibility of realization of innovative educational technologies in the form of new decisions search.</td>
</tr>
<tr>
<td>Heuristic</td>
<td>Readiness to possibility of realization of innovative educational technologies in the form of new decisions and algorithms.</td>
</tr>
<tr>
<td>Creative</td>
<td>Readiness to possibility of realization of innovative educational technologies in the form of new decisions and algorithms, and also the production of new technologies.</td>
</tr>
</tbody>
</table>

Figure 1. Structural- and-level model of readiness of the teacher to realization of innovative technologies of training
Table 1. Initial levels of formation of readiness of the teacher to realization of training innovative technologies (in %)

<table>
<thead>
<tr>
<th>Levels</th>
<th>Students</th>
<th>Teachers</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Till 5 years</td>
<td>Till 10 years</td>
</tr>
<tr>
<td>Adaptive</td>
<td>67,3</td>
<td>54,6</td>
</tr>
<tr>
<td>Reproductive</td>
<td>32,7</td>
<td>45,4</td>
</tr>
<tr>
<td>Heuristic</td>
<td>14,1</td>
<td>13,7</td>
</tr>
<tr>
<td>Creative</td>
<td>1,4</td>
<td>1,9</td>
</tr>
</tbody>
</table>

Apparantly from table 1, the essential distinctions in the condition of forming of the studied number of students and teachers aren’t revealed. The obtained data allow to claim that lack of a special preparation of students in the course of training in higher education institution affects levels of their efficiency to this aspect of pedagogical-and-psychological activity.

The analysis of school work also showed that teachers experience significant difficulties when realizing innovative educational technologies. As stating experiment testifies, difficulties when realizing modern technologies are similar. These conclusions are confirmed by similar ones in researches of O.A.Abdulina, M.V.Klarina, L.S.Polyvova, V.A.Slastenin, A.E.Abylkasymova, L.M.Narikbayeva, S.M.Dzhakupov, L.S.Kulzhabyeva that indicates the need to change in the process of preparation of future teachers and formation of readiness of the teacher to realize innovative educational technologies at school.

Proceeding from the essence of indicators of teacher readiness to realize innovative educational technologies at school, the following pedagogical-and-psychological conditions necessary to form this quality were determined:

- formation of the personal-and-creative concept of professional teacher activity assuming personal assignment of pedagogical-and-psychological values and technologies;
- teacher orientation to development of professionally personal self-realization in the course of pedagogical-and-psychological activity;
- development of the personal position in relation to pedagogical-and-psychological innovations, individual style of activity;
- ensuring unity of personal, creative and reflexive-and-technological components;
- formation of the innovative environment and inclusion of teachers into research work on experimental platforms of schools innovative types;
- preparation of teachers for innovative activity has to have the system constructed on the basis of the reflexive program focusing on understanding and correction of individual and group pedagogical-and-psychological activity.

In our research the activity process, the content of the teacher activity (system of actions), activity result (table 2) formed the basis for their identification. These conditions data were put in the modular program on formation of the teacher readiness to realize innovative educational technologies.

Table 2. Pedagogical-and-psychological conditions of the teacher activity on realization of innovative educational technologies at school.

<table>
<thead>
<tr>
<th>Task of the teacher activity</th>
<th>Content of activity</th>
<th>Result of activity</th>
<th>Realization conditions</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Self-assessment: writing of objective and subjective experience of the process</td>
<td>Understanding of own problem, definition of stages of action, formation of amount, organization of ways of their solution, definition of changes on the basis of conditions with own experience, definition of conditions which are necessary for an illustration.</td>
<td>Conscious choice of educational technology.</td>
<td>Minimal of the teacher in process: understanding; deliberation; development of ability to reveal possibilities of self; improvement by means of an intellectual and personal reflection.</td>
</tr>
<tr>
<td>2. Self-completion: election of innovation design</td>
<td>Understanding of the technologies in a scientific, modeling, development of its essence in relation to own practice, definition of indicators of an acquisition of result.</td>
<td>Developmental of the objectives of realization of innovative educational technologies.</td>
<td>Training the generalized abilities of design and abilities to operate a self-concept of educational activity.</td>
</tr>
<tr>
<td>3. Self-education</td>
<td>Understanding of opportunities of pupils, variants and conditions of purposes, contents realization, the organization at independent activity of pupils, definition of difficulties in mental process, reflex own activity and pupils.</td>
<td>Achievement of the objective of realization of innovative educational technologies.</td>
<td>Development of ability to reveal possibilities of self; improvement by means of an intellectual and personal reflection, making of the basic in self-government of pupils activity.</td>
</tr>
</tbody>
</table>

When developing the program of experimental work we were guided by the idea that the process of formation of readiness for realization of innovative educational technologies has to model structure of innovative pedagogical-and-psychological activity. In this connection, we put forward one of conditions of preparation of the teacher in this direction: innovation development has to take place in modeling of a context of this innovation, i.e. the preparation to realization of innovative technologies has to be carried out within these technologies. Thus to modeling has to be exposed as subject-and-substantial and social-psychological aspect of training [11].

For carrying out a special work on preparation of teachers we developed the modular program "Innovative Pedagogical-and-psychological Technologies and Their Realization" which provided covering of theoretical and practical aspects of a problem (figure 2).
Introduction of this course was caused also by that teachers have got necessary theoretical knowledge and seized administrative abilities and skills to realize innovative technologies of training.

Forming experiment included: pedagogical-and-psychological aims of lessons during acquaintance of students with the program of course preparation in a problem context, theoretical studying of essence, the content of innovative educational technologies, training of teachers in a technique of the organization of pair, group, collective forms of educational activity of school students, abilities to project and operate educational activity of the teacher, to reproduce and project realization of technological links of educational technologies [12].

Preparation was conducted on the educational module consisting of three structural parts; introduction, dialogical and total. The introduction - input in the module, subject. The dialogue part - organization of carrying out informative activity mainly through dialogical communication, both on theoretical, and on practical training. The total part - control of quality and volume of the material assimilation.

Each educational module includes a different number of hours. It depends on the hours which have been taken by educational program on a subject, block of subjects or section. The most optimum is the educational module consisting of 7-12 hours. On introduction and total parts at any number of hours it is taken for 1-2 hours. All rest of time is taken away on dialogue part.

In the introduction it is carried out the acquaintance to module structure, the purposes and the tasks facing students. Further follows the short explanation supported by a sign model (a scheme, a table, an art product, etc.) of all the material intended for studying during the entire module.

At lessons of the dialogue part it was made the repeated study of a training material allowing by means of numerous return to the contents (on all subject or section) to better acquire a new subject of the module.

The total part of the module is control. In the total part the listener has to show knowledge, abilities and skills acquired in the dialogue part. The form of knowledge control is expressed in use of the received knowledge in practical, and also a term paper.

In process of the experimental approbation of this course 83% of teachers noted confidence and independence in further studying and application of knowledge on the problem "Modern educational technologies".

In order to reveal the extent of mastering by teachers of theoretical knowledge on the special seminar according to results of forming experiment we developed and carried out the test on G.N. Shibanova's technique. In the analysis of formation of the students' abilities needed to realize innovative educational technologies, we used T. Orlova's technique (table 3, figure 3).

Table 3. Changes in formation of readiness of the teacher to realization of innovative technologies of training

<table>
<thead>
<tr>
<th>Levels</th>
<th>Stating experiment</th>
<th>Forming experiment</th>
<th>Check experiment</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>KG</td>
<td>EG</td>
<td>KG</td>
</tr>
<tr>
<td>Adaptive</td>
<td>43,4</td>
<td>45,7</td>
<td>41,1</td>
</tr>
<tr>
<td>Reproductive</td>
<td>48,2</td>
<td>49</td>
<td>46,5</td>
</tr>
<tr>
<td>Heuristic</td>
<td>8,4</td>
<td>5,3</td>
<td>12,4</td>
</tr>
<tr>
<td>Creative</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>

Figure 2. Structure of the modular program "Innovative pedagogical-and-psychological technologies and their realization"

Figure 3. Changes in formation of readiness of the teacher to realization of innovative technologies of training
5. Conclusion

On the basis of the developed theoretical provisions and the data obtained during the experimental work, we drew the following conclusions and recommendations:

1. Insufficient readiness of the problem of teachers’ preparation to realization of innovative technologies of training and its pedagogical-and-psychological importance on the present stage caused the need to define the essence, contents and structures of formation of the mentioned readiness.

2. The studied professional quality spontaneously isn't formed, a specially organized purposeful activity in process of training of future teachers, preparations and retraining of teachers in Qualification Developing Institutions is necessary.

3. Stating experiment of the experimental work on formation of teachers’ readiness to realize innovative training technologies showed that the level of the mentioned readinessness as the professionally significant quality of the teacher personality is on the low level; such condition is a consequence of the system of the pedagogical staff preparation.

4. The experimental work organized for the purpose of approbation of the developed technique of the teacher preparation to realize the innovative training technologies is confirmation of the model objectivity, its criteria and indicators, the proof of reality of existence of levels formation of the above-mentioned quality.

5. Reliability of the research hypothesis made by us is confirmed by results of the experimental work.

6. In order to form the teacher readiness to realize the innovative training technologies it is useful to apply the developed by us techniques which assumes observance of the following conditions:
   - understanding by teachers of need, importance and significance of realization of innovative technologies of training;
   - assimilation by them of methodological and theoretical knowledge of these technologies;
   - existence of the informative interest to the considered technologies and outworking of personal-and-significant sense of their realization;
   - inclusion of the teacher in process of intersubject dialogue interaction;
   - training of the teacher in design abilities and abilities to exercise reflexive control in the educational process;
   - development of abilities to reveal possibilities of self-improvement by means of intellectual and personal reflection;

7. The results of the experimental work allowed to mark out the set of main innovative pedagogical-psychological conditions of the teacher preparation, to which belong: formation of the personal-and-creative concept of professional and pedagogical-psychological teacher activity assuming the personal assignment of pedagogical-psychological values and technologies; orientation of the teacher on development of professionally personal self-realization in the course of pedagogical-psychological activity; development of the personal position in relation to pedagogical-psychological innovations, individual style of activity; development of integrity of innovative activity [13]; ensuring unity of personal, creative and reflexive-and-technological components; formation of the innovative environment and inclusion of teachers in research work on experimental platforms of innovative schools types; preparation of teachers for innovative activity has to have the system constructed on the basis of the reflexive program, focusing on understanding and correction of individual and group pedagogical-and-psychological activity.

8. Formation of the teacher readiness to realize innovative training technologies has to be carried out in the course of training of students in higher education institution, in order to achieve high levels of formation of the researched aspect of readiness by the completion.

9. The offered technique of teachers’ preparation to realize innovative training technologies can be used in practice of higher education institutions work, on courses of QDI and QDF of the Republic of Kazakhstan aimed to improve professional training of specialists to pedagogical-psychological activity.

Corresponding Author:
Dr. Bimaganbetova, Ahmed Yasawi International Kazakh-Turkish University, 29 B.Sattarkhanov Avenue, 161200 Turkistan, Kazakhstan bimaganbetova-alina@inbox.ru

References
4. Intercultural Learning for European Citizenship.