

Innovative Methods in Education

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Today in Kazakhstan there is an overall modernization of higher education. The current stage of the development of the republic is characterized by its orientation towards the formation of Kazakhstan as one of the competitive countries of the world community. In this regard, education policy is focused on the formation of a national model of education, which will be integrated into the world educational space and will provide training of modern specialists who are competitive in the global labor market. Modern transformations in Kazakhstan society, new strategic guidelines in the development of market economy, openness of the society, its fast informatization and dynamism cardinally changed the requirements for education and its interaction with business environment. This is due to the fact that the education systems of the most of the leading countries of the world for decades are forming objectives, content and technology of education in accordance with the expected results.

Key words: Innovation, Innovative personality, Innovative technology, Innovative education, Innovative educational methods, Educational technology, The technology of modular training module.

Today Kazakhstan is undergoing significant changes in its national educational policy. Therefore, the introduction of innovative methods in the educational process should be seen as the basis of innovative development of Kazakhstan, strengthening its competitiveness. The task of increasing the competitiveness of the Republic of Kazakhstan causes the need for solving the problem of personnel competitiveness, and as a result, compliance with the national education system with global trends of development of the educational process.

Among the global trends that influence the development of the modern educational process is the formation of the information society; democratization of public life and the development of civil society; fundamental structural changes in employment. (Ishchenko EN, 2008)

Innovation of the educational process is to include a variety of new formations in the development of educational technologies; in the transformation of individual innovations into the mechanism of transformation of the educational process, which involves the creation of qualitatively new concepts in the content and methods of education. These new formations are actively implemented by the majority of educational institutions for the development of creative thinking of future specialists, for the formation of

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the needs in moral and professional self-development, development of motivation for future actions, as well as the ability to self-orientation in the vast volumes of information obtained. (Zolotukhina OS 2011)

Thus, innovative methods in education are based on the concept of “innovation” as a way to influence and achieve the necessary pre-planned results.

In the education system the researchers distinguish the following types of innovation:

- a) Intra objective innovations, which mean innovations implemented within studying a particular subject and due to the peculiarities of its teaching, for example, the development of new educational copyright technologies;
- b) General objective innovations, representing the introduction into the educational process of essentially universal, non-traditional teaching methods and technologies;
- c) Ideological, caused by a change in people’s minds, based on the spirits of the time. (Yagolkovsky SR, 2007)

The primary task of the educational institution, which implements in its activity innovative educational methods, is the development of innovative program, aimed at the design, development, implementation and dissemination of innovative methods in education. Thus, the innovative methods in education mean educational innovations that are suitable for implementation or are already implemented in the educational process.

Innovations and the related innovative processes are now used almost in all spheres of human activity, which entails special importance of holistic learning and understanding of these phenomena, including the field of vocational education. The leading condition of the continuing development of modern productive systems is to maximize the use of the innovative factor. It’s the innovative activity in economy that in greater extent leads to economic growth and increased productivity in the leading countries of the world. In relation to the processes of innovation introduction, education is becoming a leading factor in their providing, which creates the necessary conditions and prerequisites, as well as

holistic intellectual background.

Innovative education not only socially protects young people in situations of unpredictable changes in the labor market. It ensures the creation of a strong basis for continuous improvement of professionalism; it provides additional opportunities in the training of highly qualified personnel in various sectors of economic activity.

We should highlight two important conditions that ensure innovation and innovative activity in vocational education.

The first of the conditions is associated with the educational system itself, it supposes: firstly, the need for sequential administration of the experience in creating innovative educational methods and techniques into the structure of vocational education; secondly, the need to learn skills to manage the development of innovation and innovative education in the university’s collective.

The second condition is in close connection with the state educational policy, which should be directed to the state and public support for the programs and projects of innovative vocational education. (Chernilevsky DV, 2002)

Educational innovative technologies are the result of the organization of an educational process, which uses a qualitatively different principles, tools, methods and technologies to achieve an educational effect, consisting of a maximum creativity, mastery of professional competences and a wide range of practical skills (Polat ES, 2002).

Today, the construction and development of an educational process based on the needs and abilities of each student, is possible by using innovative educational methods, as traditional methods of teaching, which are based on explanatory and illustrative methods does not guarantee the disclosure of all the student’s abilities to learn, motivating him to training activities, which in turn, affects the quality of his knowledge and skills.

One of the unconventional methods in education that can ensure the implementation of these requirements in the actual teaching process is the technology of modular training (TMT), which is based on the idea that ties them in practice, and the teacher only controls the learning process.

TMT is of interest to students and is very effective, because it provides an opportunity to successfully combine innovative approaches to learning, leads to greater awareness of the material being studied, so the transition to training according to TMT has high requirements not only to students, but also to the teaching staff of the university, who are responsible for the learning process.

METHOD

Let us analyze the main aspects of the TMT. According to V.S. Senashenko, the module is a complete part of the training material, including a block of information, an algorithm of actions, using guidance, which ensures the achievement of the assigned objectives by learners and teachers. A mandatory element of the training module is to assess the level of its assimilation by the learners themselves, which allows us to distribute the control measures in a specific period of learning, stimulating students to constant work throughout this period. Thus, the training modules are space-time systems, which can generally be considered as structural units of the content of vocational education with different time periods of their application (Senashenko, V.S., 2005). Therefore, the modules are complete complexes of knowledge and skills, which include the totality of components necessary for stud: from the formed training aims and up to final exams and evaluation of the module's quality by the learners. The structure of the curriculum provides a specific set of compulsory modules for each year of study.(S.V. Sokolova, 2005)

The most significant components of TMT are:

- a) Block (modular) structure of the studied material;
- b) A primary importance is given to independent activity of the students in mastering knowledge and skills in the classrooms under a direct control and guidance of teachers;
- c) Based on the reflection of the teacher and the students, a simultaneous realization of self-control and external control in the implementation of training activities and mastering the teaching material. (Oleinikova O. N., 2010)

Thus, the essence of TMT is that the student can independently work according to the proposed individual educational program, which includes a target plan and didactic purposes of the actions.

Interdisciplinary feature of the modular approach is that the core of each module is the basic theme, all the other types of module work subordinates to the main one. It indicates the general direction of modular training and specifies the subject area of the study and the corresponding set of disciplines. All objects in the module are connected to each other and complement each other, so that one main subject may be absent, but there may be an integrated set of domains that are essential for solving specific professional problems, which may the specialist face in the future in his professional activities. (Bayburova O. R., 2011)

Modularity gives flexibility for structuring the content of vocational education. Programs-modules may be independent, and components of the course. Modular training ensures: continuous training and continuity of training in high school; the ability to choose and combine training modules, depending on the programs of study, level of training, number of hours; the possibility of combining traditional and innovative learning technologies: systematization of the students' knowledge. (Kleimenova, E.V., 2009)

TMT has the following advantages

Firstly, the use of TMT suggests the existence of regular feedback with the employers' requirements in relation to the knowledge and skills of future professionals; secondly, within one module there is a comprehensive study of knowledge and skills within the development of a specific competence, ensuring the implementation of a specific professional function, in contrast to traditional teaching methods, in which we study one subject (module) in isolation from other knowledge and skills; Thirdly, the student may receive continuing education; he may learn to be responsible for the results of his studies, and in the future for his professional and career development; Fourth, there is an integration of theoretical and practical components of training: there is redefining of the value and place of theoretical knowledge in mastering of competencies, ordering and systematization of

competences that, in turn, leads to an increased learning motivation during their mastering; Fifth, there is a possibility of rapid updating or replacing specific modules at possible changes to the requirements of future specialist because of innovations in technological processes and methods of work organization, that provides improvement in training and competitiveness of future professionals in the labor market; Sixth, there is a possibility of using the same modules to study a number of educational programs; Seventh, there is an opportunity to make learning individual for each of the students, according to their level of knowledge and skills, as well as to the results of their prior learning, using a combination of the required modules; Eighth, quality control of the acquired knowledge and skills is not only evaluating the level of mastering specific subjects, but also in evaluating the competencies obtained by the learners. (Zorina Y. A., 2011)

RESULTS

A pedagogical experiment to analyze the effectiveness of using TMT was carried out on the basis of the experimental and control groups of students of the 3rd year, studying the same specialty. Accordingly, in the experimental group TMT was implemented.

Results obtained in the experimental group were compared with the results obtained in the control group, where TMT was not used, i.e. they used traditional training.

They also evaluated the groups included in the experiment groups on such indicators as the level of thinking and self-esteem. Comparison of the average indicators of thinking level and self-esteem, characteristic for each group showed that the existing differences between the groups of students are not significant.

According to the results of questionnaires and interviews it was found that at the initial moment of the experiment, for almost all the student, the studied discipline on which modules have been developed, was one of the preferred subjects. Almost all students highly evaluated the significance of knowledge obtained from this subject in their future profession. This attitude to the subject was primarily due to the

peculiarities of teaching. In the first ones, we noticed a trend to study common regularities and concepts rather than a specific factual material. In the second, during this time were teaching was carried out with a systematic use of methods of problem-based learning in combination with other methods, such as explanatory and illustrative ones.

The system of problematic tasks was also divided into several blocks according to the units in the knowledge system of this subject. Between these blocks we made fixing of the knowledge mastered by the student, using methods of explanatory and reproductive education.

Comparison of experimental and control groups is carried out according to certain parameters.

First, we assessed the level of mastering of the pilot course materials (informational, personal), and mastering techniques of academic work, the ability to build a complete image of the studied object. To this end, during the experiment students were offered various tasks of problem presentation, the results of which will make a secondary diagnosis of the experiment.

Secondly, we have studied changes in the use of TMT compared to the control of personal-semantic attitude of the subjects under test to the studied material and their own cognitive activity.

Third, during the experiment such personal indicators of the subjects as the level and flexibility of thinking and self-esteem, memory, intellectual mobility were analyzed. To assess changes in the level of thinking we used a set of techniques that allow to identify the student's ability to highlight the essential features of the objects, phenomena ("Highlighting essential features" method), to determine the types of abstract relationships between objects ("complex analogy" method) and to build logical connections ("flexibility of thinking").

Student self assessment was determined during testing at the beginning and the end of the experiment. Thus, we performed a comprehensive assessment of TMT in pedagogical and psychological perspectives.

The obtained results were assessed qualitatively and quantitatively by statistical processing of data using Student's criterion

DISCUSSION

During the implementation of the experiment to evaluate the effectiveness of using TMT in the experimental and control groups were held, such control forms as: laboratory and practical classes, practical tasks, test papers, which were based on the methods and forms of TMT.

This complex of knowledge control was formed, taking into account the knowledge base and skills in the mastered topics of the studied discipline.

The use of teaching materials of TMT in the experimental group on the basis of the knowledge control results, compared with the control group, showed that the studied material is mastered much faster, more intelligently and deeper, if the students reach any truth by themselves.

In the beginning of the activities studying, to determine the levels of knowledge in mastering the studied material we carried out a knowledge check in both classes, which showed that the mastering of the material in the control group is slightly lower than in the experimental one. Compared with the control group, in the experimental group we obtained better results in both the number of works performed on the "excellent", and in the least number of unsatisfactory ratings. The successful of the implementation of different types of tasks by subjects of the experimental group: to reproduce regularities and identify the reasons, for the solving of search problems using certain knowledge, in the ability to provide relevant examples of this phenomenon - it also indicated the depth and sustainability of their knowledge in the studied discipline.

After the experiment we made a repeated diagnostics

In a repeated diagnostic experiment, the level of knowledge was determined by the results of the final tests, evaluating the systematic work of the students in seminars and laboratory studies, observations. Better results in these types of training activities have been observed in the experimental group. This can be explained by a greater qualification and level of knowledge in the studied material.

The results of the test works done by the students of the experimental group throughout

their independent research activity are higher than in the control group. This fact confirms that the use of TMT creates the necessary pedagogical conditions conducive to the mastering of the knowledge systems on the studied subject.

This conclusion is confirmed in the comparative analysis of the texts of test works, performed by students of the experimental and control groups. The members of the experimental group were more guided by the knowledge acquired earlier. Their answers were more laconic, concise, logically constructed, they reflects the essence of the issue. They used adequate solutions to the problems; they showed a greater flexibility and dynamism in their use.

In the control group subjects, answering questions of test works, especially if there were supposed to solve problems, often did not even mentioned the acquired knowledge in the relevant subject . The tasks were presented to them as completely strange. They were forced to re-find a way to solve them, which reduced the efficiency of work, in relation to time and quality. It was difficult for them to distinguish from the proposed facts and to formulate for them the problem posed in the task.

All the above mentioned results were reflected in the change of the performance of the experimental and control groups during the training process.

As the final evaluation is to some extent a reflection of not only the quality of training of the students on this particular subject, but also his attitude, stability, interest in the studied discipline, the formation of the learning motivation, we can assert, based on the considered results that the use of TMT, along with traditional methods of learning ensures the development of all types of indicators.

The conclusion formulated above is confirmed during the analysis of changes of such indicator as the activity of the students of both groups in seminars.

In both groups a test was performed called "emotional coloring of the situation on the lesson." The results obtained in the experimental group, compared to the results of the control group, confirmed the mentioned above conclusions. All members of the experimental group, compared to control one, had positive emotions at work, 88.3%

of them like groupware solution of educational problems on the basis of the studied material, 72.4% of the members of the experimental group said they did not experience negative emotions while doing independent work. In all these indicators, the results in the control group are either below or not higher than in the experimental group.

Taking into account all this, it seemed to us interesting to analyze the use of TMT in terms of changes in the level of communication between the students themselves, their thinking skills, and self-esteem. Comparison of experimental and control groups in the survey of other teachers showed that in the experimental group to the end of the study there was a most favorable situation in the relationship between learners' in general cultural terms, in terms of personal relationships, and in terms of the emotional background. In the control group throughout the experiment were no significant changes in the emotional and psychological climate. In our opinion, these results convincingly demonstrate that the TMT in its long-term use provides the best level of emotional background.

No less important indicator of personal nature that provides not only the success of training, but also the ability of the student to adapt to the surrounding world, to see the prospects of his own development, is self-esteem. And training, in our opinion, should contribute to the establishment of its adequacy, as inflated as well as especially understated self-esteem may be the cause of the inability of students to deal with specific personality problems. Based on the results of the re-diagnosis, we can confidently assert that the use of TMT in the educational process, to a greater extent during its prolonged use, lets you in the course of learning to adjust the self-esteem of the students.

Thus, the comparison of the experimental and the control class has showed that the use of problem-based learning has a positive value in terms of improving the quality of mastering of the educational material, as well as a distinct developmental and educational effect.

CONCLUSION

Assessing the TMT, we should highlight its importance in enhancing learning and cognitive

activity of the students, in the organization of educational activities to obtain professional scientific knowledge and skills.

The application of TMT in the learning process leads to an increased independence of the students in the study of the curriculum sections. Thus, the TMT to a greater extent than traditional training develops the students' skills of self-education. At the same time, in using the TMT, the student always has the ability to get help, advice and evaluation of his work from the teacher.

In addition, the TMT leads to an increased activity of the students, motivating them to acquire knowledge; it also increases the teachers' activity, forcing them to improve their own teaching skills.

The implementation of TMT helps to improve the educational process in higher education, as it allows moving from informational and informing teaching to the teaching that simulates and generates the upcoming professional activity of the future specialists.

The implementation of TMT in the educational process of higher education contributes to a significant rise in the quality of knowledge of the graduates, as it enables teachers to more effectively manage the learning activities during training, and the students to operate independently, while receiving advices from teachers.

The conducted pilot study showed that the use of the TMT would greatly improve the quality of education in general and the development of objective thinking in particular, resulting in a positive change in the performance of the students, regardless of their abilities, in creating and maintaining of positive motivations for cognitive activity and various methods of teaching work, in the development of the students' skills to build a complete image of the studied object, and in readiness for the expansion of the combined activities with teachers and other students. When using the TMT there are conditions that contribute the transition of the students from the level of external information in relation to his life experience to the level of his personal knowledge. Such knowledge becomes the basis of the operational system, which helps to successfully solve theoretical, practical and life tasks.

Using TMT provides the development of such qualities as independence and critical thinking, skills of independent search for knowledge, creative approach to new non-standard tasks, increase their activity in the classroom. During the training, there are conditions for the formation of self-esteem adequacy, and on this basis - an increased confidence in his own capabilities, in the abilities of his own intelligence, awareness of the directions of his further personal development. In the traditional teaching there is no significant effect on these parameters.

In a prolonged use of TMT a favorable emotional and psychological climate is formed in the school team, bullish mood dominates; balanced relations with mutual courtesy and tact are built.

Thus, the introduction of TMT will have an impact on the innovative development of higher education, as its advantages include: 1) the development of productive thinking; 2) the possibility of self-control of the education by the student as well as the teacher's own activities; 3) activation of cognitive activity; 4) the possibility of self-esteem; 5) the formation of self-sufficiency.

Thus, modular training, which has a main objective to achieve an effective result in mastering scientific knowledge and in the formation of professional and personal qualities of future specialists, can be regarded as a promising means of improving the educational process in high school.

REFERENCES

1. Bayburova, O. R., Development of modular programs based on problem-oriented learning. Innovations and modern technologies in the education system: Mater. International Scientific-practical. Penza, Yerevan, Shadrinsk: SRC "sociosphere", 2011.
2. Belgorodskiy, V.S., The role of innovative education in the development of Russian society. *Philosophy of Education*, 2007; **2**(19): 22 - 27.
3. Bykova, E.S., Innovations and modern education. Innovations and modern technology in the education system: Mater. International Scientific-practical. Penza, Yerevan, Shadrinsk: SRC "sociosphere", 2011.
4. Zolotukhina, O.S., Innovative development of educational institutions as a way to improve the quality of education. Innovations and modern technologies in the education system: Mater. International Scientific-practical. Penza, Yerevan, Shadrinsk: SRC "sociosphere", 2011.
5. Zorina, Y.A., The role of modular technologies in the education system. Innovations and modern technologies in the education system: Mater. International Scientific-practical. Penza, Yerevan, Shadrinsk: SRC "sociosphere", 2011.
6. Ischenko, E.N., Innovations in Education. *Vestnik VSU. Series: The problems of higher education*, 2008; **2**: 53-54.
7. Kleimenova, E.V., Pedagogical conditions of the realization of variable training of university students. Contemporary problems of science and education (attachment "Pedagogical sciences"), 2009; **6**: 8.
8. Oleinikova, O., Modular Technologies: Design and development of educational programs: tutorial - 2nd ed. M: Alpha-M; Infra, 2010.
9. Polat, E.S., New pedagogical and information technologies in the education system. M.: The Academy, 2002; 272.
10. Pruss, N.M., Ahmina, G.A. & Savushkin, M.V., Module-rating system as an innovative mechanism for the reorganization of the educational process in the light of the requirements of the Bologna Process. *Academy of Management "TISBI"*, 2010.
11. Senashenko, V.S., On the relation of credits and modular structure of the educational process. *Info. Bull. UMO. SPb.*, 2005; 6.
12. Sokolova, S.V., Modular competency based studying. *Vocational education*, 2005; **10**: 19-20.
13. Chernilevsky, D.V., Didactic technologies in higher education. Moscow: UNITY, 2002.
14. Yagolkovsky, S.R., Innovation as a subject of psychological research (review of English-language literature). *Psychology. Journal of Higher School of Economics*, 2007; **4**(2): 123 - 133.