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PROBLEM OF QUALITY OF VOCATIONAL TRAINING OF COLLEGE STUDENTS

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Abstract

In the article, the problem of selection of the adapted training technologies and methods of estimation of integrative qualities of students within requirements of educational standards of the third generation of colleges is analyzed. The point of view of domestic and foreign scientists about understanding the term "pedagogical technology" is considered. Methodological requirements for pedagogical technologies are noted. Stages of development of pedagogical technology and levels of an assessment of its efficiency with and without information and communication technologies are described. The following issues are considered in detail: the technique of formation of universal educational actions of first-year students; end-to-end technology which focuses on assessing the degree of formation of students' general and professional competences in the form of numerical characteristics, starting from the second and subsequent years of study; the method of the prolonged estimation by means of the mark and rating system allowing one to trace step by step the students' level of knowledge, abilities, the degree of formation of practical experience, readiness and ability to carry out a certain activity throughout the entire period of studying the corresponding subject matter; the method of calculation of absolute progress, and also an indicator of full assimilation of a training material.

Keywords: Vocational Education Institute (VEI) students; pedagogical technology; teaching results; numerical characteristics of teaching results.

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1. Introduction

The main contradiction of the modern education system is contradiction between the rapid rate of increment of natural science knowledge in the modern world and limited abilities of its learning what dictates the need to focus on creating basic conditions for realization of "teacher-student" interaction. In this interaction teaching forms, the student's willingness for conscious perception of training information, actuates intellectual activity and develops creativity of students. The key condition of successful training of future specialists is the active using of new adapted learning technologies. In turn, students' progress can act as an individual characteristic of effectivness of choice of one or another training technology for one student, or a generalizing characteristic for the group of students. Obviously, selection of tools to ensure the most impartial assessment of knowledge, abilities and practical skills of students, that are imposed on them in the education system, is not a less significant problem than selection of one or another training technology. In this connection, the material of this article is devoted to analysis of technologies that allow conducting the qualitative assessment of educational material, assimilated by students**.**

2. Problem Statement

The reform of the Russian education system, accompanied by the introduction of the new education standards, requires the searching for solutions of issues, related not only to changes in the design of the content of educational disciplines, but also to the procedure for assessing the formed competencies in students, which cause difficulties for teachers.

3. Research Questions

There are a number of questions that are to be solved in the course of the study:

- analysis of scientific literature for understanding the "method" and "pedagogical technology" concepts by domestic and foreign authors;

- identification of the requirements that pedagogical technology must satisfy;

- definition of the criteria of efficiency of the pedagogical technology, which should be taken into account at the stage of designing the educational process;

- definition of the stages of development of pedagogical technology and levels of assessment of its efficiency, using information and communication technologies and without them;

- generalization of the experience of domestic practice of using methods and technologies, adapted to the requirements of the professional educational standard, for assessing the results of students' training.

4. Purpose of the Study

The purpose of the current research is to analyse the methods and pedagogical technologies, allowing one to receive more objective quantitative assessment of results of training and progress of students.

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5. Research Methods

In the domestic science, the «pedagogical technology» category has recently appeared and is understood differently by different authors and, therefore, does not have a definite interpretation. Western practice, unlike Russian, distinguishes the two approaches to the definition of "pedagogical technology." The first approach (a narrower one) is associated with using different equipment in a pedagogical process; the second approach (more general one) is based on the integrated use of technical and human resources.

The majority of researchers agree that the concept of "pedagogical technology" can be considered as a systematic method of creation, application and determination of the whole process of teaching and learning, subject to technical and human sources, as well as their interaction, which is aimed at the optimization of methods and forms of education (Mikhaylenko, 2017).

It is necessary to mention that any pedagogical technology must satisfy the basic methodological requirements, such as conceptual, systematic, efficiency, reproducibility, controllability (Gilmeeva, 2017). In addition, learning technology as a system category should be focused on the didactic application of scientific knowledge, scientific approaches to the analysis and organization of the educational process in view of the empirical innovation and orientation to achieving the expected results in the development of the personality of a student in accordance with a certain structure (Gilmashina, Kamasina, 2013).

The effectiveness of innovative educational technologies is determined by the ratio of the achieved results to the spending of time and resources (material, technical, informational and human) (Meskhi, Efremova, 2016).

In the case of using informational and communicational technologies in the educational process, the procedure of assessment of their effectiveness is concretized, depending on the technical equipment of the educational institution (Rabadanova, 2016). Innovational methods of assessment of the results of training allow obtaining efficient data of the level of acquisition of the educational material by the students for the teacher, and for the learners - to understand more clearly their achievements and lack of knowledge, adjust their own activity, etc. This is especially topical in the context of transition of the national education system to the new educational standards and competences, as a result of education. In this case, educational technologies should act as a way of forming competencies, and evaluation means should act as a tool of proving achievement of the claimed results of education.

As practice shows, part of the teachers of natural science disciplines in institutions of secondary vocational education use the *method of forming universal learning activities* in the process of transition to educational standards of the third generation (Ivanova, 2015).

Mastering universal learning actions by the students of the first course, taking place in the context of studying natural science subjects, induces these students to learn new knowledge, skills and abilities, including the independent organization of the learning process (i.e. the ability to learn independently). This ability is ensured by the fact that universal learning actions, considered as a generalized methods of action (Soboleva, Obdalova, 2015), open the possibility for students to broadly orient themselves in different subject areas as well as in the process of the learning activity itself, including realization of its goals orientation, along with value, semantic and operational characteristics.

Practice shows that the majority of teachers consider it necessary to start forming competencies among students from the first days of their education in the system of vocational education, despite the

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fact that, in accordance with standards SVE of third generation, the teachers are focused on the formation of general and professional students competencies only from the second year.

6. Findings

The procedure of assessment of competencies in practice causes certain difficulties for teachers. A successful solution of the problem of assessing learning results in the form of competencies, in the authors' opinion, is the *end-to-end technology* suggested by the teacher and experimenter, O.B. Russkova (Ji, 2013). This technology focuses on determining the result of learning (i.e., student progress) in the form of numerical characteristics, since the level of formation and subsequent development of students in certain competences is most fully defined through a numerical index in qualitative aspects.

Valuation specificity of the end-to-end technology of assessing learning results, proposed by O.B. Russkova, focuses on:

- detection of the coefficient of the semi-final form of attestation τ;

- consideration of the type of final certification in the discipline - test / examination (i.e. $\tau = 1$ - pass or $\tau = 0$ - fail). If an examination is provided for this discipline in the end of the semester, τ will be equal to the mark received by the student at the exam in accordance with the requirements for the structure of the main educational programs of FSES SVE3 for each discipline and the list of competences (cultural, generally vocational and vocational competences), generated within the limits of one or another discipline.

Thus, any taught discipline has its own weight, expressed in hours allocated for the studying of the discipline according to the training plan and is expressed in laboriousness - *T*.

Taking into account the fact that the same competence can be formed both during the first year of training and during subsequent years, it is necessary to determine the levels of assimilation of competencies (λ) at each stage of its formation. At the same time, it is necessary to take into account that lecture and practical classes, taught during the first year, provide only the initial level of mastering competences. The fifth and sixth levels (during the third year of study) can be reached when students are engaged in work practice or graduate qualification work.

It should be mentioned that the coefficient of competence development – W - reflects the part, to which one or another discipline or multidisciplinary course is contributed while forming the general level of formation, in this case, vocational competence VC 1.1. This analysis for each student of a certain group or for a group of students of a certain course (for example, according to the average score of the group) gives an objective assessment of the quality of teaching various disciplines from the viewpoint of forming competencies (Ji, 2013).

Along with the considered end-to-end technology of assessment of the results of students' learning, the method of prolonged assessment with the help of the rating system, especially with active use of elements of informational and communicational technology, can be considered as a successful method in solution of the problem of qualitative and impartial assessment of knowledge and integrative qualities of students (Shigapova, Kamaleeva, Gruzkova ,Sofinskaya, 2017).

The method of prolonged assessment, as well as end-to-end technology, is focused on the detecting numerical characteristics. However, unlike the first one, the method of prolonged assessment allows one

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to track the level of knowledge, skills, the formation of one or another practical experience, willingness and ability to do one or another activity during the entire period of studying the discipline or multidisciplinary course (i.e. at lectures, seminars, while doing laboratory and other forms of work) step by step. Based on the results of the studied discipline or multidisciplinary course, the index of the student's progress rating in points is converted into a five-point system, and the index of knowledge quality can also be calculated, if it is necessary (Chigirinskaya, Andreeva, Bochkin, Gorelik, 2016).

Let us consider the using of *the method of prolonged assessment* in studying the professional module "Control and metrological provision of tools and automation systems" (Chigirinskaya, Andreeva, Bochkin, Gorelik, 2016). The content of this module provides the studying three interdisciplinary courses by the students: MDC.01.01. - MDC.01.03. For the purpose of more objective "assessment of the volume and level of mastering one professional module by students, the teacher, before starting to teach, produces the initial «test» of residual knowledge (the entrance test) for students (based on the results of the studied general educational disciplines, as well as a number of general vocational disciplines). Further, during the course of studying, teacher enters (using *Microsoft Office* program) the results (in points) of the verification of the mastery of lecture material, seminars, laboratory and practical work in the electronic database.

Based on the results of each lesson, the maximum score received by a student in a group during doing a task is taken as a maximum (for each class of courses) (Chigirinskaya, Andreeva, Bochkin, Gorelik, 2016, pp.77-78). This approach makes it possible (in the opinion of O.V. Sofinskaya, a teacher and an improver) to avoid understating or overstating the grades due to imperfections of the methodology or tasks that are inevitable in the period of formation of the system of monitoring and assessing the quality of mastering the competences, specified in the work program of the multidisciplinary course.

"The rating is updated depending on the number of classes per week, as well as during entering regular student scores (points). Missed seminar, practical or laboratory works are processed and their results are also entered in the rating table. In turn, the presence of gaps deprives the students of the opportunity to get score points during school hours. This will require an additional training. This perspective reduces the number of absenteeism of classes for unexcused reasons during the semester, which allows one to reduce the workload during the week of tests and provides the learner with the opportunity to prepare better for a high-quality retake. ... In addition, the demonstration of the rating allows students to plan their activities, to correlate their success with the overall level of achievements of the group of students, to independently monitor their academic progress" (Shirokova, Shirokova, 2016).

7. Conclusion

One of the main conditions for successful preparation of students in accordance with the requirements of the new educational standards is the selection of new adapted teaching technologies. The selection of a teaching technology is determined by a number of factors: the priority of the goals of education; specificity of the content of the learning material; feature of the membership of students; the level of development of the technical equipment of the educational process (Samigullina, Waliev, Shigapova, 2014).

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In this research, the selection of pedagogical technologies was materialized based on the principle of complete mastery of educational material, which provides for the achievement of the established level of cognitive activity for each training course.

It was also found that in the domestic practice, a number of methods for determining numerical characteristics are used to assess the integrative qualities of students (knowledge, skills, practical skills and competences) (Figure 01). They are *methodology of formation of universal learning actions, end-to-end technology of assessing learning results* (which allows one to calculate the numerical index of the development of the competence of interest), *the method of prolonged assessment* (rating system (Romanchenko, 2017)), as well as methodology for calculating absolute progress and the indicator of the complete mastery of the educational material.

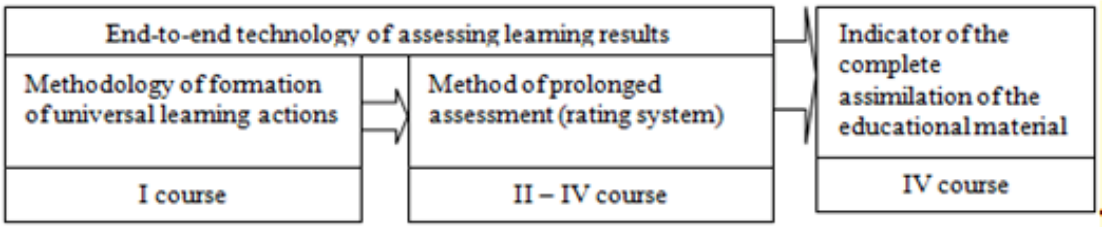

Figure 01. Methods and technologies of assessment of student's progress results in form of numerical characteristics

In general, the methods and technologies for assessing students' learning results (Figure 01) are positively reflected in the "cognitive activity of students, form their responsibility for the result of their own activities and, which is important, allow one to reduce the formality of control (Gryaznov et al., 2016), which is consistent with the requirements of educational standards of the third generation".

References

Chigirinskaya, N.V., Andreeva, M.I., Bochkin, A.M., Gorelik R.E. (2016). Context and interactive learning technology as a means of forming the information and communication competence of the future engineer: by the example of the “Mentor” control and training system. Modern problems of science and education, 5. Retrieved from https://www.science-education.ru/en/article/view?id=25297

Gilmeeva, R.H. (2017). Technological model of the formation of the research competence of student of secondary vocational education of the pedagogical profile. Kazan Pedagogical Journal, 8, 101-110.

Gilmashina, S.I., Kamasina, A.R. (2013). Preparation of students for professional activity of the teacher in accordance with the requirements of the third generation standard. *International Journal of Experimental Education*, 4-1, 85-88.

Gryaznov, A.N., Gruzkova, S.Yu., Sharafiev, Ed.S., Cheverikina, E.A., Mukhametzyanova, L.Yu., Kamaleeva, A.R., Gilmeeva, R.Kh. (2016). The International Journal of (IJESE), 11(15), 8343-8349.

Ivanova, I.V. (2015). Informal education is investment in human capital. Bulletin of Tomsk State University, 390, 179-184.

Ji, D.P. (2013). Human activities and social groups as a natural assessment environment: thinking of learning and assessment in the 21st century. Education’s issues, 1, 73-106.

Meskhi, B.C., Efremova, N.F. (2016). Assessment of qualifications of graduating students in the sphere of life safety. Contemporary problems of science and education, 5, Retrieved from https://www.science-education.ru/en/article/view?id=25399

Mikhaylenko, O.I. (2017). General pedagogics. Section didactics. Retrieved from http://kpip.kbsu.ru/pd/index.html#did_11

Rabadanova, A.A. (2016). The use of ICT in the formation of cognitive activity in students of universities and SVE. Modern high technology, 2 (1), 140-143.

Romanchenko, M.K. (2017). Improving the quality of education as a result of effective scientific and methodological work. Vocational education in Russia and abroad, 1 (25), 139-144.

Samigullina, G..S., Waliev, M.R., Shigapova, N.V. (2014). Formation of the creative pedagogical system of continuous environmental education. Life Science Journal, 11(8s), 449-453.

Shirokova, S.Yu., Shirokova, A.Yu. (2016). Using of interactive learning technologies in the educational process. Modern high technology, 2 (1), 184-187.

Shigapova, N.V., Kamaleeva, A.R., Gruzkova, S.Yu., Sofinskaya, O.V. (2017). Effect of selection of technologies for the implementation of natural science and vocational training on the effectiveness of the educational process, Recent trend in Science and Technology management, V2. SCIEURO, London.

Soboleva, A.V., Obdalova, O.A. (2015). Organization of the process of formation of intercultural competence of students, taking into account the cognitive styles of students. Bulletin of Tomsk State University, 392, 191-198.