

The need for pedagogical diagnostics of the educational process in distance learning

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ABSTRACT

The innovations in the process of distance learning during the pandemic, the effectiveness of the educational process in using electronic learning platforms and applications, objective and reliable data of scientific achievements in developing curriculum, the process of using pedagogical diagnostic software, their advantages and opportunities are analyzed and scientific research works which are carried out in this field, are studied in this article.

Keywords

Qualimetric diagnostics of pedagogical processes, pedagogical software, pedagogical process, PISA (International Student Assessment for Program), TIMSS (Third International Mathematics and Science Study), ICILS (International Computer and Information Literacy Study), PIRLS (International Reading Literacy Study), international assessment and pedagogical diagnostics

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1. Introduction

World experts acknowledge that the strict quarantine rules which are introduced because of the pandemic, have created new opportunities for education, in particular higher education. In particular, the iUniversity, Moodle platform, Google Hangouts Meet, Cisco Webex, Avaya Spaces, Blue Jeans and Slack apps of universities which allow distance learning in countries around the world, have started to run continuously. Using augmented reality technology (AR – augmented reality) in Russian higher education institutions has become an innovation in education. The pandemic period became the basis for the need the effectiveness of the educational process and the objective and reliable data of the scientific achievements in developing curricula. This requires to search for new forms and methods of assessment. Nowadays, electronic resources and pedagogical software tools which allow using non-standard tasks in various types for the implementation of qualimetric diagnostics of pedagogical processes in print and online educational form, are being created and put into practice on the basis of international assessment systems.

Pedagogical diagnostics is still a actual topic for carrying out researches around the world, and this topic is gaining additional relevance with the development of distance learning. According to the innovative nature of distance education, the development of theoretical and methodological bases of improving the quality of distance education is at the early stage. In particular, analyzing the results of the educational activities of university students in the content of distance learning is fully carried out only at the end of training achieved results. The specific features of distance learning should be taken into account in order to use a set of diagnostic procedures, to preserve previously planned education activities. Considering the system of principles of pedagogical diagnostics has significant importance, pedagogical diagnostics serves as tool for managing and activating the educational activities of university students in distance learning context.

The main part

If we look at the history of pedagogical diagnostics, we observe that it was carried out only by assessing the knowledge of the student in

past centuries. It was founded in 1864 by American scientists D.Fisher and R.Ress [1], and since 1908, scientist O.Stone [2] introduced a system of testing knowledge of students in arithmetic through testing. The German scientist Karlheinz Ingenkamp also has a special place in the history of "Pedagogical diagnostics" which becomes an important component of the professional activity of teachers. Because, only Karlheinz Ingenkamp proposed to use the concept of "pedagogical diagnostics" in education in 1968. According to the approach of P.I.Tretyakov [4], I.M.Rasulov [5] created a series of didactic tasks for pupils (students) to work independently in the lessons which are organized in order to develop a culture of personal design with creatively using computer technology in his research works. The attention is focused to create a series of didactic tasks on the basis of pedagogical requirements which require the creative use of computer tools.

I.P.Podlasiy [6] described that "pedagogical diagnostics is the identification of all aspects of the educational process and the clear definition of all its consequences" in his fundamental work which is devoted to the problems of didactics and educational theory. It is impossible to effectively manage the learning process and achieve optimal results for the existing conditions without diagnostics. Together with this, I.P.Podlasiy formulated the following three basic principles of pedagogical diagnostics. Objectivity, consistency and appearance.

M.I.Bekoeva [7] described as the main principles of selection: systematic, objectivity, visibility, regularity in her researches which are devoted to the stages of implementation of pedagogical diagnostics. A group of scientists (N.V.Zolotix, D.I.Nesterenko, G.A.Lyubimova) who have studied the possibility of using pedagogical diagnostics to assess educational achievements of students divided into the main principles: objectivity, optimality, efficiency, consistency.

S.K.Kaldibaev [8] proposed a system of the following principles in the study of the essence and meaning of pedagogical diagnostics:

objectivity, systematic, single exactness, comprehension, individual, differentiated and educational character, appearance and causality.

A slightly different system of principles of pedagogical diagnostics is presented in the research work of K.S.Orlova: scientific, systematic, individual approach, ability, unity of mind and activity, development of education, positive, appearance, optimality, objectivity, economics, simplicity, informativeness, duality, individuality, technology, integrativeness, communicativeness. In our opinion, the principles of this system are redundant, because some principles duplicate each other (appearance and informativeness, individual approach and individuality, optimality and integrativeness) [9].

When the scientific research of the above-mentioned scientists are analyzed, it can be concluded that there are not main aspects and general conception about single set of principles and interpretation of pedagogical diagnostics. This can be explained by differences in research goals, objectives, and focus of our attention. Thus, the works of I.P.Podlasogo and S.K.Kaldibaev are usually didactic in nature, and the work of M.I.Bekoeva reflects the peculiarities of the use of pedagogical diagnostics in secondary school. The works of Orlova are devoted to diagnostics as a means of developing mental abilities of students in teaching foreign languages [10].

Extensive research works are being conducted to diagnose and evaluate the quality of education which are focused to study development of abilities and talents of educated youth on the basis of PISA (International Student Assessment for Program), TIMSS (Third International Mathematics and Science Studi), ICILS (International Computer and Information Literaci Studi), PIRLS (International Reading Literaci Studi) and other international assessment programs in the world educational community. Such scientific developments are being carried out by the Australian Consortium for Pedagogical scientific researches (Ager), the U.S. Pedagogical researches testing service (ETS) and the National educational research institutes of Japan. In

addition, the researches have been conducted by international evaluation, diagnosis and identification of qualifications in educational system on the basis of TALIS, CIVIC, ICCS- (International CIVIC and Citizenship Education Study) programs in developed countries such as the United States, Great Britain, Japan, Germany, China, Singapore and South Korea. Implementing information technologies in the educational process creates favorable conditions for gaining quality education throughout human life, improves skills of students for education and helps to develop their intellectual and creative abilities [11].

Pedagogical diagnostics is a set of monitoring and evaluation methods which are focused to optimize the learning process, differentiate students, as well as improving the curriculum and methods of pedagogical influence (namely, testing and evaluation) [12]. Pedagogical diagnostics is inseparable part of pedagogical activity, namely, the implementation of educational processes requires assessment, analysis and consideration of the results of these processes. Assimilation learning materials of students directly depends on the exact level of their knowledge and personal development, it is determined by the measure of the formation of their mental activity. Educational outcomes depend on the teacher's qualifications, that's why, the pedagogical diagnostic method examines not only students but also teachers.

Nowadays, pedagogical diagnostics is considered inseparable part of teacher's professional activity. At the present stage, researches are being conducted to improve the educational process in all forms of education in order to determine its essence, content, methods, specific features and conditions. Nowadays, development and improvement of pedagogical diagnostic practice in the education system is considered urgent scientific-pedagogical and practical task in connection with the growing modern requirements for the professional and personal qualities of graduates. The goal is focused to improve the quality of education.

In the pedagogical literature, various names of tests are used in order to determine the quality of knowledge of students: "pedagogical tests", "didactic tests", "thematic tests", "learning achievement tests", "tests of educational success". We believe that all of them can be generalized in one concept: the "pedagogical tests" which will be used in the future. Pedagogical tests should be considered in three dimensions: as a system of test assignments, a system for pre-defined test technology and for checking the results, for reprocess and analyze results.

One of the important means of ensuring the quality of education is considered pedagogical diagnostics on the basis of modern computer technology. Pedagogical diagnostic information technologies provide great opportunities and tools for the teacher, the head of the educational institution for managing the educational process, at the same time it imposes strict requirements for the selection and formulation of educational goals and content. Implementing pedagogical diagnostics using information technology requires diagnostic and computer training of the future teacher.

Pedagogical diagnostics has a broad conception and it includes monitoring, verification, evaluation, collection and analysis of statistical data, as well as identification of dynamics and prediction of further development. Currently, several types of traditional means of pedagogical diagnostics exist, they include the followings:

control work-objectively assesses knowledge, skills and qualifications, demonstrates the ability of each student;

test is one of the innovative methods of pedagogical diagnostics. Nowadays, it is one of the most diagnostic methods which exist today.

The problem of pedagogical diagnostics is actual and important for improving the educational process and solving the problems of continuous professional development of the subjects of the educational process. Pedagogical diagnostics not only reveals the level of professional knowledge of students, but also

provides a basis for identifying difficulties in the learning process, helps to understand and search for optimal ways of learning them.

We observe the effectiveness of independent learning in the "Moodle" system for students of the course "Methods of teaching informatics" as an experiment of pedagogical diagnostic activities through researches in this area.

In general, we conclude by evaluating traditional diagnostic methods that the most effective Moodle interactive communication services have a number of advantages:

- high transparency of the system (the influence of subjective factors is excluded);
- knowledge of the students can be determined by assessing them through test questions;
- high efficiency of the test (it allows to assess the knowledge of large groups which have been trained with rapid reprocessing of results);
- it allows to evaluate how accurate the result is.

Thus, the modern paradigm of objective evaluation of educational achievements which are main tasks of controlling the knowledge, remains as follows:

- objective assessment of the level of students in achieving educational standards;
- formation of stable positive stereotype about the need and inevitability of the widespread implementation of objective indicators of educational achievement in the practice of adopting management decision in students, educators, society;
- objective assessment of the level of access to education of students according to the qualification requirements;
- formation of stable positive stereotype about the need and inevitability of the widespread implementation of objective indicators of educational achievement in the practice of adopting management decision in students, educators, society;

- development of scientific basis for the creation, study and application of tests;
- implementation of standardized tendencies in order to monitor as tendencies of objective assessment of educational achievements;
- providing the necessary diversity in adapting test opportunities to the needs of students, teachers, educational institutions, education authorities in solving their specific professional tasks (creation of filling set of education departments).

In today's conditions, the need has accomplished to teach students to independently study in higher education institutions, to use e-learning systems and software in the ICT environment. In particular, we can see that using e-learning systems and software gives positive effect on effectively organizing independent study hours of subjects by students. In this regard, practical works by Moodle distance learning system are carrying out by increasing effectiveness of independent study of students in the framework of the project "New pedagogical technologies in higher education institutions of Uzbekistan" in Karshi State University on the basis of the AIF fund of the World Bank.

Despite the active use of modern methods of transmitting and receiving information by students in the Moodle system, tasks of independent study on the subject are also used in the form of written sources of paper (notebook) lectures and practical (seminar) lessons. Students write tasks in their notebooks and then take a picture and enter them into the system. Creating new opportunities for students, the quality of teaching and the development of the student's cognitive activity in the study of a particular subject is considered useful.

Nowadays, when the software products which pedagogically diagnosed and developed on the basis of information technology, are analyzed, they are focused to the development and diagnosis of individual characteristics of the child. Such software products include "РАЗВИТИЕ", "ИСТОКИ", "МИР ОТКРЫТИЙ" and others.

These pedagogical diagnostic programs are used to study the identification of students (it gives opportunity to control the process and speed of mental development of each student, to identify its specific features and potential opportunities, to organize psychological and pedagogical correction in time) and to identify the characteristics of study groups (learning process management) [12, 13].

Conclusion

At present time, the conditions have been created for information-technological training of modern personnel in all profiles by pedagogical diagnostics of the educational process, increasing the quality of education and improving the knowledge of students in higher education institutions of our republic.

The objective and reliable system of evaluating the effectiveness of the educational process and students on the basis of digital technologies will be created from the pedagogical-diagnostic system which will serve to increase their independently working creativity, intellectual and creative abilities and motivation of students in distance learning. Assimilation of learning materials of students, their knowledge and personal development will effectively impact.

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