

## ВИЩА ШКОЛА

---

---

УДК 378.014

**H. M. Aliksieieva**

Candidate of Pedagogical Sciences,  
Associate Professor at the Faculty of Physical, Mathematical,  
Computer and Technological Education  
Berdiansk State Pedagogical University

**O. A. Chernieha**

Candidate of Pedagogical Sciences,  
Associate Professor at the Faculty of Vocational Education,  
Labor Education and Technology  
Berdiansk State Pedagogical University

### **ELECTRONIC SUPPORT IN DIAGNOSTICS, MONITORING AND EVALUATION OF EDUCATION RESULTS OF FUTURE SOCIAL EDUCATORS**

*Issues of future social educators' professional training at the Pedagogical University are considered in the article. Reforming of higher education in Ukraine is necessary in the context of global trends of globalization and informatization of society. Improving of its quality is a necessary condition for the development of a fully developed, competent, creative, competitive, ready for active self-knowledge and self-improvement individual. The form of organization of students' independent work as a control of knowledge is considered and its efficiency for evaluation of future social educators' level of knowledge, abilities and skills is determined. It has been established that the test allows not only to carry out diagnostics of the student's level of preparation, but also has educational and organizational significance. Testing opens up the possibility to quantify objectively the level of student's knowledge, minimizing the teacher's subjectivity.*

*Some aspects of the development of electronic support for the diagnosis, control and evaluation of educational outcomes of future social educators are exposed. Testing toolkit, in particular computer testing, and psychological and pedagogical aspects of computer pedagogical measurements have been analyzed.*

*The practical experience of developing of professionally-oriented tests in the process of future social educators' of Berdyansk State Pedagogical University training, based on the main areas of testing and the main interrelated functions (diagnostic and educational) has been considered. A "Pilot program for Personality Study", on the basis of which 30 software shells were developed that involve the use of computer technologies for testing, questioning and surveys according to various psychological and pedagogical methods, was prepared.*

*It is proved that Moodle's information environment has effective functions to support future social educators' diagnosis, control and evaluation of educational outcomes. The main distinction of Moodle is the support of modern E-learning 2.0 standards and the focus on students' active participation in the process of knowledge formation and interaction with each other.*

**Key words:** *higher education, professional training, information technologies, testing, information environment Moodle.*

**Statement of a problem.** The reforms of education in Ukraine, that were caused by world tendencies of globalization and informatization of society, are oriented to its upgrading as a necessary condition of formation of all-round developed, competent, creative, competitive, ready to active self-knowledge and self-perfection personality.

A new paradigm of education considers specialist's ability to self-studying, self-sustained searching of knowledge and shaping of his/her need for professional and personal self-improvement as one of the goals of specialist's professional training. The solu-

tion of this task entails an increase in the role of students' independent work

An important element of the organization of students' independent work is the control of knowledge. Practice shows the feasibility of using a combination of various forms of control for this purpose, among which testing is one of the modern forms of control and self-control of the student's independent work. The test provides an opportunity to assess the student's level of knowledge and skills on the subject or section of the course. The test allows not only to carry out diagnostics of the student's level of prepa-

ration, but also has educational and organizational significance. Testing opens up the possibility to quantify objectively the level of student's knowledge, minimizing the teacher's subjectivity

Power inner source of the development of scientific progress is an objective tool of measuring peoples' abilities, determination of their knowledge and skills' level. An important role in this process the systems of diagnostics, control and evaluation of results play. So the introduction of the newest educational technologies, that is based on the newest approaches to giving and mastering knowledge, demand new, modern methods of its measuring and evaluation and is one of the approaches of software engineering.

**The aim of the article** is to reveal some aspects of the development of e-support in diagnosis, monitoring and evaluation of the results of education of future social educators, taking as an example professionally oriented tests in the process of preparing future social educators.

**The analysis of researches and publications.** It is impossible to present modern, scientifically grounded pedagogic without the active use of the objective methods of measuring and evaluation of high-quality testimonials to which the level of knowledge belongs to.

In our time pedagogical technology was enriched by the scientific works of such scientists as: V. Avanesov, M. Afonina, I. Bulah, A. Kalynyuk, N. Kovalska, K. Konopko, T. Korchynska, V. Kozakov, A. Mayorov, Y. Neyman, V. Pereverzev, N. Rozenberg, I. Sizyh, M. Chelyshkova, T. Shmatok, I. Sherbynina and others.

Fundamental researches of testing as the method of pedagogical diagnostics are lighted up in works of S. Avanesov [1], V. Bepalko [2], K. Ingenkamp, Paul Clyne [3], A. Mayorov, L. Doliner and others.

Test control, that carries out a considerable role in organization of educational process, became the object of the detailed study of foreign research workers (A. Anastazi [4], M. Gronland, K. Ingenkamp and others).

Domestic researchers and pedagogues-practitioners' considerable attention to mentioned above problem has been attracted due to its importance. In particular, we can refer to the works of S. Goncharenko, V. Bykov, G. Kedrovych, V. Lozova, O. Kovalenko, I. Zakharova, M. Lazaryev, V. Kozakov, T. Dmitrenko and others. The problems of organizing learning activities for students and pupils, as well as advisable forms and methods of managing them are considered in these works. At the same time, in our opinion, insufficient attention is paid to the application of highly effective modern information technologies in this case.

With the development of hardware there were new directions in testology, in particular computer testology, the introduction of which needs also the detailed theoretical researches [5].

Important value in research of such questions as: "educational-measurement", "educational-diagnosis", "educational technology", "computer-assisted-testing", "computer-assisted-diagnosis", "expert-systems", has works of foreign research workers: G. Vayner "Adapting computer testing" (1990), T. Adger "From dialogical instruction to dialogical testing" (1990), R. Hamblton "The theory of independent questions" (1991), M. Feraris "One of the aspects of the usage of computers in the educational test systems" (1991), L. Harmon "All about tests" (1989), S. Bunder-son "Four generations of computers in pedagogical measurings" (1989), M. Watkins "From interpreters to experts system" (1991), V. Skunmen "Learning of computer adapting testing" (1989), A. Lezgold "Towards intellectual testing systems" (1989).

Such set of tools was created during the last one hundred years and it is being perfected now. Its dependence on the development of scientific and technical progress from one side and influence on the development, from the other, can not be estimated.

**The aim of the article** is to reveal some aspects of the development of e-support in diagnosis, monitoring and evaluation of the results of education of future social educators, taking as an example professionally oriented tests in the process of preparing future social educators.

**The presentation of the main material.** At the beginning of XX century in the methods of measuring and evaluation of knowledge mastering, in particular in test development, the differentiating between psychological and pedagogical directions is observed. The development of the first pedagogical test belongs to the American psychologist E. Thorndayk. Exactly with the development of testing in psychology and pedagogic mathematical methods are started to use which influence on development of software engineering facilities on the conditions of application modern educational technologies in the educational process of higher educational establishment. This period is characterized by the increase of interest to testing, as to the mean of estimation of academic abilities. From this moment, testing develops in two main directions [6]:

- creation and use of tests of intellectual development and questionnaires on the basis of psychological and pedagogical methods [7];

- creation and use of pedagogical tests, that are intended to estimate academic abilities and knowledge.

The pedagogical testing in higher educational establishment executes three basic interrelated functions: diagnostic, educational and up-bringing [8]:

- A diagnostic function consists of the exposure of the level of knowledge, abilities, skills of students. It is basic, and the most obvious function of testing. It is objective, rapid and excels all other forms and methods of pedagogical control.

– An educational function of testing consists of the motivation of students to work activation in mastering of educational material. The primary purpose of teacher's work is not a control (measuring the level of knowledge), but effective process of studies. Testing procedure allows student independently to find out omissions in the structure of his knowledge, to take measures for their liquidation, to get necessary information. In such cases considerable educational potential of test tasks, practical realization of unity principle are exposed.

– An up-bringing function appears in periodicity of test control. It disciplines, organizes and directs activity of students, forms aspiration to develop their abilities [9].

Different foreign and home scientists name diagnostic tests in a different way: tests of educational achievements, tests of progress, didactic tests, pedagogical tests and even teachers' tests. Presently there is no the unique determination of concept "test of progress", which would be perceived by all researchers without changes and additions. On the whole, scientists believe that pedagogical tests (tests of progress) are short, standardized or not standardized tests which allow to estimate a degree and quality of aim's achievement of studies of every student for a short period of time [1].

The special place in the educational process of higher educational establishment in future specialists' training has students' mastering of abilities and skills of computer pedagogical diagnostics. For example, teacher, in the context of vocational guidance work, helps students in professional self-determination, conducts diagnostics of features that form motivational sphere of students, exposures problem areas in the process of professional self-determination (lack of knowledge about the world of professions and others) with subsequent interpretation of results by preparing recommendations [4]. In our research such methods of diagnostics are selected: questioning, supervision, tests which will be realized by form methods.

The analysis of scientific research allowed to say, that for realization of computer technologies, namely network technologies in professional training of future specialists, the most perspective is the use of LMS (Learning Management Systems), which is a leader among an informative environment of Moodle [19]. Educational possibilities of informative environment of Moodle lately are actively probed and come into question on scientific conferences and seminars. The main difference of Moodle is support of modern standards of electronic network studies of E-learning 2.0 and orientation on pedagogic of constructivism, which foresees an active involving of students in the process of knowledge's forming and their cooperation. One of basic concepts in the informative environment of Moodle is a concept of a course as a

mean, which helps to present educational material, to organize the process of studies and environment for network intercourse of course's participants [12; 11].

Using of distance learning systems such as Moodle to control students' knowledge requires a significant amount of teacher's time during the creation phase, but at the same time, significantly reduces the time of training, providing with a lot of statistical material.

The following algorithm of organizing students' self-study at Moodle can be suggested: material is studied by a student either independently or under the tutor's guidance, then testing is carried out, Moodle creates a detailed report with recommendations for further course study.

In our opinion, it is important to give students the opportunity to do tests on a small amount of material (for example, on one topic or section) and give them several attempts. After each attempt, the student has an opportunity to analyze his/her mistakes, study the theoretical material one more time and do the test again.

It is also important to use tests to prepare for practical classes and seminars, before which the student has to understand theoretical material, take a test and be ready for the lesson. Using the capabilities of the Moodle system, the teacher can always see how well each student has studied theoretical material, which is not always possible during the lesson. Due to this system, the teacher will have more time to explain the most difficult material which was not understood by students, will be able to help lagging students, etc.

In accordance with it was electronic support of the career-oriented tests developed on the base of the system of distance education of "Moodle", that is a programmatic realization of some forms of modifications of the main system, where it is possible to work with the help of Web-browser, without an address to the paper transmitters of information. Modification will allow to define inclinations of personality to the certain values, to set professional abilities. Development of modification for "Moodle" was executed according to the formulated requirements to the career-oriented tests and questionnaires.

In the context of our research we will consider professional training of students to implementation of different professional functions of social teacher, which foresees a decision of tasks which imitated the abilities of different types of social and pedagogical work. Taking into account that social teachers participate actively in a management and advise administration, they have to make sociological, social and pedagogical researches in pedagogical, student's, paternal collectives with the purpose of acceptance of adequate administrative decisions; to participate in the conflicts between educational establishment, students and parents, to understand social reasons of their origin. So the "Reference program

of personality's study" was developed, which had 30 shell programs and used computer technologies after different psychological and pedagogical methods for passing of testing, questionnaires. Method "Square of personality's abilities" finds out directions of development of a person to promote or to correct his subsequent perfection. On the basis of computer questionnaire it is possible to draw to a conclusion about the most developed abilities of personality and those ones which do not need development. A computer gives possibility after passing the test to get the expected coefficient of orientation of personality's abilities (physical, sport, organizational, mathematical, designer-technical, emotionally graphic, actor, communicative, musical, artistically graphic, literary). It is considered, that the nearer coefficient is got to 1,0, the higher is the level of display of abilities of certain direction. This information gives to a social teacher possibility to understand the structure of personality's abilities and to find out simultaneously the level of their display, to send development of a person in necessary direction. Option "Help" is accessible for future social teachers and gives advices in carrying out a questionnaire, putting results into a screen, acquaintance with the current version of the program, maintenance of the results on a server and acquaintance with the results of other students. For the best capture of computer technologies by the students "Mode of creation of a new test" was developed, which allowed to fill a shell program with new, but similar tests, questionnaires taking into account different psychological and pedagogical methods.

**Conclusions.** So, due to such features of the development of distance courses, namely electronic support of the career-oriented tests which are intended to realize the process of network studies on the base of electronic platform Moodle the possibilities appear for the increase of efficiency of students' professional education by facilities of the software engineering in the process of future specialists' training in higher educational establishment.

Assessment of learning outcomes is an important means of stimulating students' learning activities. According to practice, attempts to exclude control of student's activities from the educational process in whole or in part, lead to a decrease of the quality of education. Nowadays, "the functions of pedagogical assessment are not limited only to identifying the disadvantages of the organization of educational process, but are considered to be a critical analysis conducted to improve learning outcomes and improve the quality of education" [10].

Despite the fact that the possibilities of the developed testing complex in our institution are somewhat limited by the possibilities of participants in the experimental pedagogical foundation, the availability of the necessary software and staffing, their use makes it possible:

- to intensify the educational process;
- to realize an effective combination of new and traditional training technologies based on the use of ICT [12, p. 156];
- to form skills of independent study of educational material;
- to simplify the functions of control of students' level of knowledge, skills and abilities;
- to conduct continuous monitoring of students' progress;
- to save teacher's time on preparation to the classes, creation of handouts.

Thus, students' professional training to perform various professional functions of a social educator, which involves solving tasks simulating the abilities of various types of social and pedagogical work, should be accompanied by an electronic support for the diagnosis of their professional knowledge, skills and abilities. This kind of control does not allow teachers to deviate from discipline curriculum and gives more attention to the quality of students' preparation.

**Prospects of future work in the direction of the research.** The distance course is examined as special, based on network technology, form of presentation of maintenance of educational discipline and facilities for realization of network forms and methods of studies. Possibilities of Moodle from placing of educational material are large enough and allow to place material of any formats. In addition, an informative environment supports permanent update of educational material, which is important in the study of disciplines in connection with the rapid rates of development of information technologies which are a powerful instrument for application of programmatic engineering's facilities in the process of future specialists' training in higher educational establishment.

#### References:

1. Аванесов В. С. Теория и методика педагогических измерений. URL: <http://www.testolog.narod.ru/Theory4.html>.
2. Безпалько В.П. Образование и обучение с участием компьютеров (педагогика III тысячелетия). Москва: Воронеж: Изд. Московского психолого-социального института, 2002. 352 с.
3. Клайн Пол. Справочное Руководство по конструированию тестов. Перевод Е.П.Савченко. Москва: «ПАН Лтд.», 1994. 283 с.
4. Анастаси А., Урбина С. Психологическое тестирование. 7-е изд. Санкт-Петербург: Питер, 2005. 688 с.
5. Груздева М.Л., Козицын А.Л. Тестирование как форма организации самостоятельной работы студентов. *Современные наукоемкие технологии*. № 7-1 (2016): 118–121.
6. Pelgrum W. J. Obstacles to the integration of ICT in education: results from a worldwide educational

- assessment. *Computers & education*. 2001. Т. 37. №. 2. С. 163–178.
7. Гуревич Р.С., Кадемія М.Ю. Управління навчальною діяльністю учнів і студентів засобами сучасних інформаційних технологій. *Проблеми інженерно-педагогічної освіти*. Збірник наукових праць. Випуск 12 (2006): 270 с.
8. Олендр Т.М. Моніторинг якості природничо-наукової освіти в університетах США: дис. Редакційно-видавничий відділ Тернопільського національного педагогічного університету імені Володимира Гнатюка, 2011.
9. Кадемія М.Ю. Електронний навчальний посібник: проблеми створення та використання. Педагогіка і психологія професійної освіти: результати досліджень перспективи: Збірник наукових праць / За редакцією І.А. Зязюна та Н.Г. Ничкало. Київ, 2003. 680 с.
10. Karmanova E. et al. Modeling of students' competency development in the higher education distant learning system. *Information Technologies in Science, Management, Social Sphere and Medicine*. Atlantis Press, 2016.
11. Woodson S. Method and system for evaluating the performance of an instructor of an electronic course: пат. 6789047 США. 2004.
12. Welsh E. T. et al. E-learning: emerging uses, empirical results and future directions. *International Journal of Training and Development*. 2003. Т. 7. №. 4. С. 245–258.

**Алексеева Г. М., Чернега О. А. Електронна підтримка діагностики, контролю та оцінювання результатів освіти майбутніх соціальних педагогів**

У статті розглядаються питання професійної підготовки майбутніх соціальних педагогів у педагогічному університеті. Реформування вищої освіти в Україні необхідне в контексті світових тенденцій глобалізації й інформатизації суспільства. Підвищення її якості є необхідною умовою становлення всебічно розвинутої, компетентної, творчої, конкурентоспроможної, готової до активного самопізнання та самовдосконалення особистості. Розглянуто таку форму організації самостійної роботи студентів, як контроль знань та виявлено її ефективність для оцінювання рівню знань, умінь і навичок майбутніх соціальних педагогів. Установлено, що тест дозволяє не тільки проводити діагностику рівня підготовки майбутніх фахівців, але має також навчальне, виховне й організаційне значення та відкриває можливість об'єктивно і, головне, кількісно визначити рівень знань, умінь і навичок студента, зводячи до мінімуму суб'єктивізм викладача.

Розкриваються деякі аспекти розробки електронної підтримки діагностики, контролю та оцінювання результатів освіти майбутніх соціальних педагогів. Проаналізовано інструментарій тестології, зокрема комп'ютерної, та психолого-педагогічні аспекти комп'ютерних педагогічних вимірювань.

Розглянуто практичний досвід розробки професійно-орієнтованих тестів у процесі підготовки майбутніх соціальних педагогів Бердянського державного педагогічного університету, спираючись на головні напрями тестування та основні взаємозв'язані функції (діагностичну, навчальну і виховну). Підготовлено «Орієнтовну програму вивчення особистості», на основі якої було розроблено 30 програмних оболонок, що передбачали використання комп'ютерних технологій тестування, анкетування та опитування за різними психолого-педагогічними методиками.

Доведено, що інформаційне середовище Moodle має ефективні функції підтримки діагностики, контролю та оцінювання результатів освіти майбутніх соціальних педагогів. Головною відмінністю Moodle є підтримка сучасних стандартів електронного мережевого навчання E-learning 2.0 та орієнтація на активне залучення студентів у процес формування знань та взаємодію між собою.

**Ключові слова:** вища освіта, професійне навчання, інформаційні технології, тестування, інформаційне середовище Moodle.