

работы и укажите, удалось ее достичь и в какой степени; при изменении параметров виртуальной модели обязательно обратите внимание на те ситуации, в которых происходила смена режимов его поведения.

18. Если работа с моделью носила исследовательский характер, то определите цели дальнейшего исследования: цели следующего реального эксперимента; цели дополнительного виртуального эксперимента; цели модификации компьютерной программы.

19. Подготовка отчета о работе.

Перед тем, как предложить ту или иную виртуальную модель в качестве инструмента для самоподготовки, преподаватель должен самостоятельно провести предварительное тестирование модели, в частности провести оценку уровня достоверности результатов моделирования на основе сравнения с табличными данными, результатами натурального эксперимента и тому подобное. Так, например, проведя полный анализ двух виртуальных работ по темам «Определение коэффициента внутреннего трения жидкости методом Стокса» [1] и «Определение ускорения свободного падения при помощи математического маятника» [2], мы обнаружили, что только во втором опыте результаты искомой величины достоверны (близкими к табличному значению): относительная погрешность результата исследования составляет 1,6%. При определении коэффициента внутреннего трения различных жидкостей (воды, ацетона, бензола, керосина) методом Стокса с помощью виртуальной модели мы обнаружили, что независимо от жидкости значение η составляло около 2,6 Па•с, притом, что эти числа даже приблизительно не соответствуют табличным данным.

Поэтому, как видим, виртуальные лабораторные работы, схожие с опытом по определению коэффициента внутреннего трения жидкости, могут использоваться только в качестве симулятора, благодаря которому студент сможет освоить основные принципы работы с установкой для дальнейшего использования усвоенных знаний в процессе выполнения реального эксперимента. А некоторые виртуальные модели, такие как опыт по определению ускорения свободного падения методом математического маятника, могут служить в качестве полноценного эксперимента, который выдает достоверные результаты.

Заключение. Таким образом, сочетание виртуального и реального эксперимента обеспечит качественное восприятие студентами учебного материала по физике. А использование разработанных нами конструктивов позволит перевести самоподготовку к выполнению реального физического эксперимента посредством ознакомления с виртуальной моделью на качественно новый высокий уровень.

Литература

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IMPLEMENTATION OF EDUCATIONAL INNOVATION IN TRAINING OF SPECIALISTS OF LIFE SAFETY IN UNIVERSITIES

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Today, it is recognized throughout the world that intellectual resources are defined the face of human civilization. Consequently, the role of education is increased in the developed countries.

Universities are now not only educational institutions that are realized the government order, but entities of management that are realized the needs in competitive activity.

According to the constant changes in market conditions, appearing of new technologies, various services, the significant reduction of the number of students, etc., the universities are interested in conducting a search of capabilities for improving the training of students and future professionals. Therefore, the success of the educational institution depends the most on internal conditions to guarantee the quality of training and employment for future professionals. The information environment of the university is one of the key elements of the educational institution towards its successful development. The implementation of competency-based approach in the teaching and learning activities of the university is one of the ways to solve these problems.

The need to increase the productivity and quality of educational work are necessitated the computerization of universities that is to create a modern information structure, mechanisms of electronic management of educational institutions and collaboration of institutions, and also it highlights the problem of the formation and development of information competence of students and members of staff. One of the main directions of reforming the national education became the competency-based approach.

Competency-based approach, as I. Zymnyaya notes, serves the new effectually and objective basis of education [4, p. 75]. It should be based on a set of human sciences, taking into account the psychological, educational, cultural, sociological and other laws of the individual development. The determination of educational, psychological and methodical conditions of the formation of professionally important qualities and competencies of future specialist it is devoted the researches of I. Zymnya, E. Zeyer, A. Larionov, M. Nechayev, J. Raven, V. Serikov, L. Spenser, Yu. Tatur, A. Khutorskyy, V. Shadrikov and others.

The key concepts of competency-based approach in education are the "competence" / "competency" of the emotional-volitional field of personality (E. Zeyer) [5].

In the scientific literature the following definitions of competencies/competences can be found:

- motivational skills (J. Raven) [6];
- personal trait, characteristics, and qualities of personality (I. Zymnyaya) [4];
- criterion of readiness to activities (A. Verbytskyy) [2];
- human condition (I. Buvina, Yu. Vardanyan) [1];
- the capability that is needed to solve problems and to obtain the required results of work (S. Uiden);
- Knowledge, skills, experience in activity, and also motivation.

Taking into account the specifics of work of future professional of life safety, in accordance, his work takes place with the information: search, collection, processing, saving, protection and destruction of information – so the information competency is released.

We consider the fact that in the process of training teachers and students deal with the relevant processes, and interaction between members of staff and students should ensure the quality of training of future professionals. To this end, universities are established information and education portals that display educational materials; internal tools of distance learning based on competency and modular approaches with credit-modular system; e-learning courses and modulating system are developed; visual modules of the official portal of the university are updated; the employability of students is highlighted; professional development of teachers; electronic database of teaching subjects is updated; educational and scientific system of video conferencing is improved, interactive and multimedia audiences are created; LANs are used; support of network services is established; control and statistics on the use of the Internet are made and others. Thus, the interaction of the academic and administrative units shows that

information technologies and developed infrastructure are the important tools, which allow you to create an advantage in a competitive environment and form a competent specialist.

This provides the opportunity to implement the contextual study that promotes assimilation and modelling of professional activity by cadets' (students') in university.

As A. Verbytskyy notes, contextual study is the learning in which on the language of science and with the help of the entire system of forms, methods and means of education - traditional and new –subject and social content of professional activity of students are modeled. Including the forms of an academic type of training, professional and educational-professional activities, a plurality of intermediate, by ensuring the transition from one base to the other with using semiotic, imitation and social teaching models. The purpose of contextual study is formation of an integral professional activity of future graduates in the field of their preparation [3, p. 231]. The work of Virtual University of Lviv State University of Life Safety can be as the example of such study, it contains the Web sites of institutes and departments and relevant materials that allow doing professional training. In addition, it is established and operated the television station of Lviv State University of Life Safety, «Safety TV». The channel is functioned based on Internet TV. IPTV is a new technology that can effectively transmits the TV channel through the public Internet. Unlike the traditional types such as terrestrial digital television, cable or satellite - IPTV is a fully interactive service that operates on the Internet (address of Safety TV: <http://yatv.ru/safetytv>).

However, the expansion of needs of the universities, the increasing of opportunities of staff members and done work allow nominating new objectives. In this process, institutions, faculties, and departments should participate more actively in the development of e-learning content and use it actively in the teaching and learning activities.

One of the major problems is the relevance and reliability of the information on the official website. The access to resources should be the freest by using wireless technologies, and this, in turn, requires a system of continuous professional development of teaching personnel of university in the field of information technology. All this gives the opportunities to expand the boundaries of Internet-representation of university, to involve interaction by using information environment of school-leavers, parents, students, graduates, listeners in professional development courses, employees of the various structures of this field of training.

Thus, the process of development of the university and its IT infrastructure is a complex problem, solution of which will help the training of IT competent professionals.

Reforming of higher education in Ukraine includes the transition to the training of future professionals of life safety on competence basis. One of the ways of this process is the formation of IT competence of teaching personnel and students, the introduction of contextual study, the formation of the integrated system of professional activity of a particular profession in future specialists. All this requires the realization of a set of conditions that were above-mentioned.

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