



METHODOLOGY OF USING SOFTWARE TOOLS IN PREPARING FUTURE PHYSICS TEACHERS FOR PROFESSIONAL ACTIVITY

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Abstract

This article discusses the preparation of students for design, construction, research and professional activities using software, as well as in addition to the types of software tools and their types, the direction of education is studied software engineering for the creation of pedagogical software products.

Keywords: software tools, electronic resource, animation, software package, software product, professional activity, technology, project, construction.

Introduction

Educational reforms require each teacher to be able to regularly study information related to his science and the education of a competent generation and consistently apply them in his labor activities.

Didactics in the environment of modern software tools, the widespread use of educational activities aimed at the effective assimilation of knowledge through the active use of modern software tools, develops didactic thinking in this environment, the capacity and capabilities of the individual, his skills and skills in the education of Information Culture in it.

For the purposes of personality development in a modern informed society, it is envisaged to improve the selection and methodology of organizational forms, methods, content of education and the development of the intellectual potential of the student.

Since the process of educational and educational work is a complex process, integrity in the interaction of the team of the educational institution, teacher and students is ensured in it. Now this process is in harmony with pedagogical software tools – official websites, literature in electronic formats, audio and video materials, teaching computer programs. In this situation, educational processes are more directly related to the internal capabilities of the student, intellectual potential, the ability to receive and assimilate information.

Among the advantages of pedagogical software tools, one can include aspects of information concentration, exhibitionism, that is, the availability of various presentation opportunities, the use of animations, the provision of information





corresponding to the age and physiological characteristics of educators. Through pedagogical software tools, the development of creative thinking, educational skills and competencies in the student is of particular importance with the presence of an opportunity for a comprehensive deep assimilation of resources.

It should be noted that in education and upbringing, electronic resources serve as a means of increasing the educational opportunities of the teacher, but it is natural that they cannot take the place of the teacher. It is known that in pedagogical research, more attention is paid to didactics, that is, to the justification of the content of educational material, organizational forms and methods of teaching. The teaching process is based on didactic principles – consistency and systematicity, expressiveness, comprehensiveness, science of educational material. E-learning resources are also created on the basis of the mentioned principles. They do not deny the sequence and consistency of traditional educational activities, but complement its content on the basis of modern computer technologies. For this reason, the process of introducing software tools into the educational and educational work system of educational institutions is integrative in nature.

The application of pedagogical software tools in the educational process, based on the above points, contributes significantly to the increase in the teacher's educational opportunities, on the other hand, to the activation of students' creative activity, the elevation of their practical experience, interest in scientific innovation and the formation of professional competencies. In addition, it creates opportunities such as obtaining information about the degree of their spiritual maturation, observing their dynamics, predicting, making adjustments if necessary. All this is aimed at improving the educational system of the educational institution and preparing students for professional activities.

In our opinion, the following can be cited as the main tasks of introducing software tools into continuous educational processes:

creation of the necessary material and technical base for the implementation of software tools in the educational process;

design, development and application of pedagogical software tools for the educational process;

formation of knowledge and professional skills of future physics teachers in the development of software tools;

improving the readiness of future physics teachers for professional activities on the basis of modern software tools.

In our country, pedagogical software products are being developed by engineers using software tools such as Power Point, Macromedia DreamWeaver, Microsoft





FrontPage, HTML muharirs and Adobe Photoshop, CorelDraw, Director, Macromedia Flash, programming languages such as s++, Visual Basic, Delphi, Python [1,3,4].

Currently, educational processes in prestigious higher education institutions in Europe and America, including in higher education institutions of our country, are widely used by such programs as Crocodile Physics, Crocodile Technology, Crocodile Chemistry, Phet, Interactive Physics.

In the states of the Commonwealth of independent states, pedagogical software tools such as “MARS”, “Physikon”, “Repititor physics”, “Jivaya physics” are currently used in addition to the educational process.

Lecture, practical and laboratory classes using various programs are taught at Tashkent University of Information Technology and its branches, these programs (multicellular electronic textbooks, modeling programs, applied mathematical software packages) are: Crocodile Physics from Crocodile-Slips, Crocodile Technology, Crocodile Chemistry, Crocodile ICT software tools, in addition to beginners of Electronics, Interactive Physics, WorkingModel, Electronics Workbench, Multisim, PhET Simulations, Pintar virtuallab wave, MATHCAD, matlab, Maple, Mathematica software packages and other software tools.

Modern programming languages are not used, while there is no work dedicated to the methodology of teaching programming languages using them in the educational process, taking into account the professional activities of future physics teachers.

At the same time, education aimed at preparing future physics teachers for scientific research and design professional activities by teaching mathematical and natural-scientific subjects on the basis of software tools has not been carried out. Although there is an opportunity to develop pedagogical software products that support distance education in the higher education system, the shortcomings in the development of such programs and the use of developed pedagogical software products in the educational process have not yet been eliminated.

Thus, the preparation of students of the higher education direction for the types of project-design and research professional activities, firstly, by improving the methodology for teaching mathematical and natural-scientific subjects using software tools, and secondly, by teaching students to develop pedagogical software products in programming languages, and involving them in research, serves to eliminate the above problems.





References

1. Pokasov V.F. Quality management of modern school education (methodological materials) // author-composition. - Stavropol. 2012. – 145 p.
2. Alad'ev V.Z., Kharitonov V.N. Programming: Maple or Mathematica. – Tallinn, 2011. -415 p.
3. Khamidov V.S. About 4 programs that caused a sharp turn in the education system. "Infocom.uz", - Tashkent. 2010, No. 1, pp. -54-57.
4. Shoshtaeva E.B. Integralnaya technology of education as the basis of povysheniya kachestva obrazovatel'nogo protsessa: avtoref. dis. sugar ped. science //E.B. Shoshtaeva. – Karachaevsk: 2003. – S. 23.
5. Ismailov D.M.
<http://www.idpublications.org/wpcontent/uploads/2020/06/Full-Paper.METHODS-OF-SCIENTIFIC KNOWLEDGE-AND-RESEARCH-IN-THE CONTENT OF SECONDARY EDUCATION.pdf>
6. Ismailov D.M. Factors of ensuring integrity and continuity of education //Sovremennoe obrazovanie (Uzbekistan). - 2019. - No. 11 (84). - S. 3-7.
7. Ismoilov D. M. Methods of scientific knowledge and research in the content of secondary education in physics // European Journal of Research and Reflection in Educational Sciences. – 2020. – T. 8. – No. 8. – P. 92-99.
8. Ismoilov, D. M. (2021). THE PLACE OF INTERDISCIPLINARY COMMUNICATION IN PROFESSIONAL COMPETENCIES. In Innovation in Technology and Education (pp. 96-98).
9. Makhmadalievich, Ismoilov Davron. "DEVELOPMENT OF METHODS OF SCIENTIFIC KNOWLEDGE AT THE MODERN STAGE." The 4th International scientific and practical conference "Fundamental and applied research in the modern world"(November 18-20, 2020) BoScience Publisher, Boston, USA. 2020. 1036 p.. 2020.

