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Usage of Modern Information Technologies in Learning and Research Activities

Abstract. The article is conditioned by the necessity of development of students' cognitive interests via interactive educational environment. The authors dwell on the possibilities of usage of the Internet network services, communication means and modern software in educational and research process.

Key words: interactive educational environment, modern information technologies, learning, research and development, cognitive interests.

Introduction.

The objective terms of personal self-realization in professional activity at the beginning of XXI century is availability of essential educational-informative field, students' provision with not only prepared knowledge, but with methods of receipt, comprehension and use of this knowledge in their professional activity. Modern civilization with its humanization and democratization of public relations, rapid change of technique and technologies, intellectualization of production processes foresees the necessity of the wide use of computer technologies in the process of studies.

Social changes induce teachers to search innovations and include them into the educational process aiming at the development of cognitive interests of students. For this reason, a modern pedagogical idea foregrounds the necessity of the reformation of professional education system in the direction, defining a student as the central figure of educational process, thus putting his cognitive interests in teachers' spotlight and means of study.

Analysis of the previous investigations.

The works of distinguished scientists, pedagogues and psychologists V. Bezpalko, I. Bekh, P. Gal'perin, D. El'konin, A. Ziaziun, M. Klarin, V. Kremen, L. Pirozhenko, S.

Podmazin, O. Pometun, I. Yakimanska are devoted to the research of an active position of a person in the educational process.

Actuality of the problem.

Actuality is predefined by the necessity of the students' cognitive interests development with the help of interactive educational environment.

Objective of the research.

The given article is aimed at a review of the possibilities to use Internet services, means of communication and modern software in the educational process.

Exposition of basic material.

The scientific and technical progress as well as the society informatization caused the development of informative provision for all social groups. Swift development of telecommunication facilities on the basis of Web-platform was accompanied by the appearance of enormous amount of various Web-services, which have considerable pedagogical possibilities for the development of the students' cognitive interests and the formation of knowledge, abilities and skills for their future professional activity [1].

Nowadays particular attention must be paid to the use of network social services in the pedagogical activity, as a program means with the purpose of intercourse and co-operation of participants by the set of standard services [2].

Let us examine the interactive pedagogical possibilities of the Internet network services and their use for the development of students' cognitive interests using the telecommunication means.

As an example, let's examine the teacher's blog structure, offered by us, which is the prototype of informative educational environment formed with the help of telecommunication means and Web-services.

The category «Lesson Materials» contains hypertext references to the educational materials arranged accordingly to professions and subjects, developed within principles of cloudy calculations and placed in the Google Docs files' depository.

The possibility of placing comments into the educational material, which is present in the teacher's blog category «Lesson Materials», is favorable to feed-back adjusting which agrees with the interactive learning principles and the possibility of insertion of hyperlinks and other resources in the text might be helpful for students to realize intercommunications and context of knowledge, their constructing and mastering, which favor the students' cognitive interests development. Hyperlinks are used as additional arguments for any posts or comments which are published by the blog's author – teacher, or the blog's correspondents –

students. References to sources can help the reader to decide, if the author's posts correspond to his own persuasions.

Electronic presentations are used in educational materials which are carried out to a separate category «Presentation materials» for searching and work convenience. Files of the presentations, by an analogical to educational material method, are developed in the cloud calculations technology and placed at Google Docs Web-service.

We consider that a substantial advantage of the use of Google Docs Web-service in any educational process is that in the process of transition from presentation of education-methodical materials by a local electronic education-methodical complex to a blog, one does not need to convert the document files and presentations. Google Docs system has files import functions, created by means of Microsoft Office software (Microsoft Word, Microsoft Excel, Microsoft Power Point) from the teachers' local computers. Files, created by Google Docs means may be exported to a teacher's or student's local computer due to the files export function.

The visualization of educational material into its maintenance, except for presentations, includes a considerable amount of the screen-casts. Screen-casts are placed on the sites of social video-services, which are intended for free storage, revision, commentation and video data editing, most popular of which are Youtube (www.youtube.com), Fox Interactive (www.fox.com), Yahoo (www.video.yahoo.com), Viacom (www.viacom.com) and other.

The teachers' blog category «Map of Knowledge» contains the materials for systematization, generalization and deepening of separate theme materials and educational subjects on the whole. The technology, which lies in the basis of creation of such structuring means, is called «mind-mapping» – a comfortable and effective technique of thought visualization and alternative record [3].

The knowledge maps are actualized by us as diagrams, where concepts, ideas, tasks etc. are connected with branches of a central knot. The principle of «radiant thinking» which concerns the associative mental processes, is fixed in basis of this technique, a starting point or tangency of which is a central object. It shows the endless variety of possible associations and inexhaustibility of brain possibilities. The similar record method allows a load map to grow and complete without limits [4].

As E. Patarakin mentions, the knowledge maps allow the study process to accelerate the educational materials, work out personal and business projects, promote the information memorizing degree. The conception of human brain work principle lies in the basis of the mental maps: associative (nonlinear) thinking, visualization of images, integral perception

(model), for stimulation of which the special, «comfortable» for a brain, «radiant» diagrams, making the tree of ideas are used. The construction of the map begins with the central image – a task which must be solved; the idea which requires development; the project planning of which must be executed; information which must be memorized. The central image is a «trunk » of a tree from which the branches of decisions disperse. A few thick branches of this tree correspond to basic ideas which are associatively related to the central image. The second-rate ideas-associations, from which the associations of lower level «grow», branch off them. So, the associability and hierarchy of thinking will be realized in mental maps - from general to partial. The important feature of mental maps is their richness in visual images and effects [5, p. 56].

We provided quality, efficiency and interactivity of knowledge maps by color, pictures, symbols, abbreviations, hypertext references to the Internet resources, and also with the help of granting the card with three-dimensional depth, which allows raising the interest, attractiveness, originality and efficiency of diagrams, students' cognitive interest by means of telecommunications.

The next structural element of teacher's blog which deserves paying attention is the «Knowledge Testing» category, which contains materials for self-control and students' knowledge quality control. In most cases all its technical realization is carried out by the various test systems which considerably simplify the process of monitoring of knowledge quality and are used in training and testing exercises.

Materials of «Knowledge testing» category are divided into two groups: the first of them is used for the purpose of self-control and correction of students knowledge, and other - for control of educational achievements in the interactive study process.

Tests of the first group are worked out with the use of the Test-W2 control-diagnostic system. The program is used for the local knowledge control, that is why students only need to copy test module and test tasks from the blog, using the reference to the proper archives, which are placed by a teacher in the «Knowledge testing» category. Tests of this group are worked out in the diagnostic mode that allows students to see the answer choice correctness in the test process what permits to define and liquidate gaps in knowledge, preparing to lessons on his owns.

Conversion to the open education, broadcast of materials in local and global computer networks requires a stable work from all of its elements in on-line mode. And this in turn puts not a simple task before the developer: to create a base of test tasks, available in on-line mode and to give an opportunity to a teacher to get the students test results and carry out their

analysis in the static mode. Among software, that allows to execute such operations the on-line software «Master-Test» tool should be allocated. A base of test tasks for the carrying out knowledge test control of students in the interactive mode, is developed by us with the help of this on-line resource and composes other tasks group of the «Knowledge testing» category.

Management of site work is carried out by a navigation menu, which contains sections for work with tests, questions to the tests, individuals, groups of students, the results of their testing according to the selected operating mode: «Teacher» or «Student».

Students have the opportunity to register in the system by an interactive form on the teacher's invitation to get and complete the tests. The system gives the opportunity to the teacher to invite students to registration, to unite them in groups accordingly to the selected profession, to create the test tasks of different types, to activate them and to give an access for the students of certain groups at a clearly fixed time for performance, to get and look over a report on the results of testing each student and a group as a whole.

The «Software» category of teacher's blog related to the basic file exchanger the Internet system of hypertext links and allows to download the installation packages of software which is used in an educational process and students future professional activity.

The categories of «Olympiads», «Competitions», «Students' Works» and «Upbringing hours», are developed as book-marks of the teacher's blog and contain posts with the information about the carrying out different types of out-of-class competitions, reports, materials reflecting their results, references to students' works, educational hours and others like that. Students have the opportunity to add materials and comment on the posts of these categories in the interactive mode.

The «Group» category executed as an Internet service which functions on the basis of wiki-technology and extends the possibilities of the blogs during the interactive communication of the educational process participants. With the help of wiki-technology, it is possible to place various educational web-resources, exchange opinions, use the placed materials repeatedly, and create the powerful source of educational resources on the basis of deposit of many participants quickly and with no effort [6].

As an environment of wiki-encyclopedia realization we suggest using the system of DokuWiki, which differs from the MediaWiki system in all known Wikipedia.

Wiki-technologies are only getting their popularity in education, but we can confidently say, that teachers switching to the level of network association participant will give a splendid possibility not only to use telecommunication technologies in professional activity more effectively, but also increase professional level and keep step with the newest technologies.

The Ukrainian-language Wiki-service research makes us sure that they will become the foundation for the newest educational environments construction which will meet the requirements of time concerning granting and distribution of knowledge.

The use of wiki-encyclopedia has serious pedagogical potential which must be thought over by the professional community and brought into practice.

Conclusion. Thus modern educational Internet resources enable students to study theoretical materials as well as conduct various investigations, train their practical mastery and skills, organize self-control in the interactive mode with the use of telecommunication means and open educational environment which promote students' cognitive interests development.

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