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Introduction

Individual work is one of the main forms of organization of academic process for students of IT specialties. Main practical professionally oriented skills and abilities are retained only due to students' hard individual work while doing tasks in programming, algorithmization, designing etc. development of effective academic resources will help students to work individually as well as comfortable ways of delivering such materials with the help of Internet guarantees enhancing the quality of studies. For IT students individual work management in professionally oriented subjects foresees the existence of specific types of resources reflecting their studying aspects. Another peculiarity of IT students' preparation is that their profession foresees constant self-development and that is why it is necessary since the first year of study to form the readiness to gain knowledge in new technologies and it individually. So actual and up-to-day is the question to ground the methodology of forming academic resources for IT students that will be effective for individual work management as well as technologies of delivering these materials to a student. It is necessary to draw our attention to a great significance of formal and informal element in IT students' individual work management, as a great amount of knowledge in new technologies is not received from academic courses.

Main part

To achieve maturity in individual work students depend much on the level of their informative culture, that is on their ability to individually gain, work out and use the information in the process of academic and scientific activities. That is why informative culture forming is a very urgent question not only for higher educational establishments but for secondary schools as well.

V.A. Kozakov defines individual work as a specific type of academic activity, the main task of which is the formation of individual work skills and this formation is done through syllabus and methods of all types of academic lessons [Kozakov 1990].

V.I. Yevdokymov defines individual work as a specially organized students' activity taking into account their personal peculiarities, aimed at individually doing academic tasks of different levels of difficulty as at academic classes and after classes as well. The task of students' individual work management is its focusing at fulfilling a social order that is forming in students the ability to reinforce their knowledge, to orientate themselves in the flow of scientific information [*Organizaciya...* 2000].

Individual work in the system of education can be realized in the form of formal, non-formal and informal elements.

In the terminology dictionary in andragogy it is said that formal education anticipates the existence of structural programs that are recognized by a formal system of education, the probability to receive generally defined certificates and documents [*Osnovy androgogy`ky`...*]. That is this education is based on the structural academic materials, tasks that are made by a teacher according to curricula and branch academic standards.

A big amount of useful information that helps a student's professional development he receives from other sources outside an educational establishment. This form of getting the knowledge is known as a non-formal education. D. Livingston defines a non-formal education as an academic activity determined by educational demands, by youth's ambition to gain the necessary knowledge and abilities and this education is done beyond educational establishments curricula [Livingstone 2001]. This education is associated with one's desire to gain the knowledge and get abilities necessary for one's personal life and for professional work.

Another type of realization of students' individual studies is informal education. V. Lugovyi defines an informal education as education which is not still organized [Lugovyi 2008]. That is such education is based on one's own experience and on the experience of other people. Studies in informal education can be purposeful (for example, watching TV programs, reading books and magazines, meetings) and unplanned as well (accidental as everyday activity).

One of the methods of formal element of individual work management can be making academic resources in some electronic academic course, for example on the basis of CLMS-system platform Moodle. Platform Moodle is oriented on the organization of cooperation between a teacher and students with the help of an electronic academic course where different types of academic resources can be placed for students' individual work. At the beginning of an academic semester students receive an access to electronic academic course and have an opportunity to work with academic resources at any place and at any suitable for students' time. As a result of using electronic academic courses for organization students' individual work students get rid of time-consuming process of thoughtless noting and concentrate their attention on content-related component of academic material which is given by a teacher at a class in the classroom.

Let's study some of such resources which during a pedagogical experiment was conducted with students of Computer sciences; these resources showed the best results, study quality and students' satisfaction.

Video lesson is one of the resources that we recommend in our research. It is a systematic, successive telling of an academic material that does not demand a teacher's personal presence before students, using a wide range of possibilities for working, keeping and transferring audio and video information.

The resource of the type "Video lesson" is widely used for studying professionally oriented courses focused at Computer sciences in the form of a screen cast of work of some program or practical realization of program coding of scripts with obligatory textual and voice supporting (fig. 1).

Video lesson use in individual work enables students to attain the information in individual regime and if needed simultaneously revising what is being demonstrated in the video lesson and the highest effect will be reached using all sources of perception and attaining the information such as visual, audial and kinesthetic.

Another type of resources that will enable individually at one's own speed to gain academic information with the help of visual and audio types of perception. It is a video lecture. We define lecture as a video record of a classroom lecture or a part of it which can last full 90 minutes, or can be divided in parts depending on the theme that is being revealed. Of course during this lecture a teacher can widely use audio and visual means demonstration etc. (fig. 2).

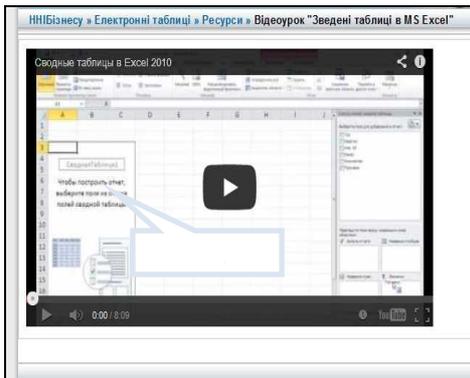


Fig. 1. An example of using a resource of the type "Video lesson"



Fig. 2. An example of using a video lecture

Mentioned types of resources such as a video lesson and a video lecture can be included into passive ones as for controlling individually learned material one need additional test of reflective papers.

Platform Moodle allows to make active resources that anticipate a student's activeness while doing some activity.

One of such resources is "Lesson" that is a structural continuity of pages where a text, graphics, video, text tasks can be placed. An example of such a resource is shown in fig. 3. In the resource "Lesson" we can organize individual step-to-step learning academic material, and the opportunity to revise it impacts on the level of mastering this material.

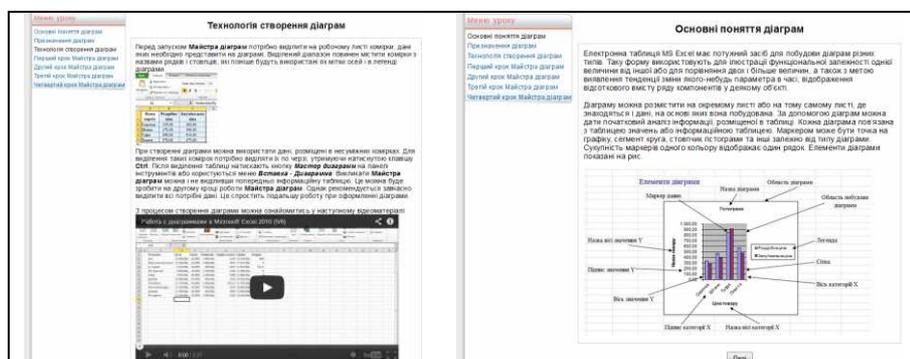


Fig. 3. Example of pages of resource "Lesson"

Between informative parts of a lesson we can place testing tasks for periodic testing of individually learnt material. Having the wrong answer a student can be backed to the lesson page where the information giving the opportunity to answer the question corrected is situated or to come back to the beginning of the lesson. Thus we receive an effective instrument for students' individual mastering the learnt material (fig. 4), that helps do a current testing and provide students' work assessment automatically that frees a teacher from checking students' done task.

This resource will let a student individually check received knowledge and get an according result (fig. 5).

Besides the revealed methods of organization of formal element of individual work, in a modern informative society there are widely used instruments for providing non-formal education, one of which is a social net. A social net is structure that is based on people's relations or mutual interests. As an Internet service a social net can be considered as a platform helping people make connection and group themselves according to their interests. Tasks of this site are to provide the consumers with all possible ways for interaction such as video, chats, pictures, music, blogs etc.

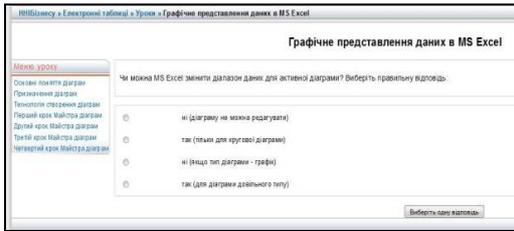


Fig. 4. An example of using testing tasks in resource “Lesson”

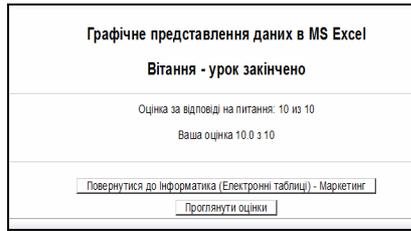


Fig. 5. An example of getting results for mastering a lesson

Using social nets, IT specialists can get new knowledge individually as they have a free access to professionally-oriented information, that is revealed in magazines, books, video, blogs etc. to make a quick exchange of information between the participants of groups who are users of social nets and have mutual professional interests, discuss questions that touch the sphere informative technologies. One of the examples of groups that are united to discuss professionally interesting questions in the sphere of IT technologies is a programmer blog (a social net “Vkontakte”) and it is given in fig. 6.

Blog is the most effective instrument of non-formal education that enables to conduct Internet register of events, online diary in the form of notes that are constantly added, containing a text, pictures or multimedia. Future specialists can not only familiarize themselves with professional programmers’ experience but can ask questions, share their achievements, take part in discussions and projects etc. besides social nets there are special professionally focused sites in the sphere of IT, containing a big amount of users’ instructions, code examples, links for downloading programs, debatable forums, blogs etc. For example, resource DeveloperWorks reveals themes from open industrial technologies (Java, Linux, SOA, PHP etc.) to products IBM (fig.7), resource Microsoft MSDN thematically focused at Microsoft goods, though it is characterized with less filling.



Fig. 6. Blog picture of a programmer in a social page “Vkontakte”



Fig. 7. Professionally oriented web-site

To familiarize users with new informative technologies leading educational centers in the sphere of IT conduct webinars, for example in the educational system Microsoft in the academic center CyberBionic Systematics etc. [Diznajtes` pro osviti...; Vebinary`...].

Webinar is an interactive seminar or a training using a computer, Internet and means of communication, broadcasting video, audio, documents sharing voice and text chat – all this helps a teacher conduct a class on the high level interacting with the audience. Students joining the webinars are another effective methods of individual work management.

Summarizing

The existence of great number of modern informative technologies and resources that can be used for IT students' individual work management encourages teachers to change the methodology of teaching using more effective methods of students' individual work. Results of the conducted research show a direct dependence of a quality of studying from the effectiveness of students' individual work. And effectiveness of individual work depends on methods and instruments that are used for its organization. Using specially made academic resources such as a video lecture, a lesson in electronic academic courses enables increasing effectiveness and students' satisfaction of academic process. Such non-formal instruments for gaining new knowledge and abilities as professionally oriented sites, thematic webinars widen students' opportunities in self and professional development.

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Abstract

Informational and educational resources for independent work of students today are one of the most effective means. Technique of creating and using these tools requires constant research through the intensive development of new information technologies. The present article describes the most effective tools and technologies for creating Internet resources for independent work of students of IT-specialties. Methods of their use in the educational process are The present article describes the most effective tools and technologies for creating Internet resources for independent work of students of IT-specialties, substantiated methods of their use in the educational process substantiated.

Key words: independent work, formal training, informal learning, Internet resources, video tutorial, video lecture, social networking, webinar.