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NAUCZANIE KURSÓW INFORMATYCZNYCH ZA POŚREDNICTWEM KURSU E- LEARNINGOWEGO

Streszczenie: W niniejszym artykule przedstawiono realizowany projekt "Multimedialne wspomaganie procesu nauczania przedmiotu Informatyka w programach studiów licencjackich w UPJŠ 'Medical School' w Koszycach". Projekt ten koncentruje się na multimedialnym wsparciu tradycyjnej formy nauczania wybranych przedmiotów. Artykuł koncentruje się na strukturze kursu e-learningowego, jego celach i spodziewanych efektach.

Słowa kluczowe: edukacja, studia informatyczne, kurs e-learningowy, LMS Moodle.

THE TEACHING OF SUBJECTS ON IT STUDIES THROUGH E-LEARNING COURSE

Summary: The paper presents the subject-matter of a grant research project titled "*Multimedia support of the Teaching Process of Subject Informatics in Bachelor Study Programmes at Faculty of Medicine at Pavol Jozef Šafárik University in Košice*", i.e. enhancing the traditional physical-attendance-based teaching process adopted in this course with multimedia support. The paper focuses on the structure of the e-learning course, its objectives, and the expected contribution.

Keywords: education, IT studies, e-learning course, LMS Moodle.

1. Introduction

Abundant numbers of fast-paced discoveries, inventions and technologies cause rapid obsolescence of knowledge. In this period of vigorous learning towards a knowledge-based society, it is necessary for the education process to be conditioned not only by the wide availability of information resources, but also by the organizational and technical and/or technological tools supporting lifelong learning [1]. In order to build a positive relationship to further, lifelong, learning, i.e. learning to learn, it is necessary to develop students' competence in the field of information

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and communication technologies (hereinafter ICT) use as well. However, in current education, this is not given due attention [1].

The concept of e-learning has been developing for several years in the same way as the technologies "the use of which has been one of the most important tools for implementing modern trends in educational and training processes in the past decade" [2]. By applying e-learning tools and teaching methods intended to support self-education and creative learning in the traditional class, we will release students possessing the knowledge and competencies applicable in real-life conditions.

The on-going computerisation of public administration, education, or healthcare has shown that our society is not sufficiently capable of using digital technologies (DT) to the desired extent. Research in Slovakia showed that insufficient digital literacy is a serious issue, especially in the elderly, less educated, economically inactive population, mostly living in rural areas, who often lack sufficient motivation or opportunities for digital education [3]. Based on our personal experience, however, we argue that the problem is also the 'Three-X' generation, namely students of medical and healthcare fields of study coming from non-technical secondary schools. This is to a certain extent due to lack of interest in ICT and the fact that the teaching of IT courses in the traditional educational environment is predominantly based on a traditional physical-attendance-based method. By introducing ICT into the teaching/learning process, we try to "divert" from a traditional concept of teaching; however, the mere replacing of traditional teaching tools with modern technologies will not automatically cause a change in a student's approach to self-education in the field of digital technology (DT). At present, the use of ICT is often limited to the presentation of static digitized texts and their distribution, i.e. placement on the Internet. This makes the updating and accessing of information significantly easier, but it does not fully exploit its educational potential.

An e-learning course is one of the forms of e-learning that is used in the teaching/learning process to support active learning. In addition to making the teaching material available, a student can actively enter the learning process under the teacher's/tutor's guidance, using different communication elements (chat, blog, ...) and various activities that are aimed at consolidating, disseminating, or testing their theoretical knowledge and practical skills.

2. The aim of paper

The aim of this paper is to present the subject-matter of a grant research project "*Multimedia Support of the Teaching Process of Subject Informatics in Bachelor Study Programmes at Faculty of Medicine at Pavol Jozef Šafárik University in Košice*". It deals with multimedia support applied in the traditional physical-attendance-based teaching in the form of an e-learning course and with its implementation in the IT Studies (Informatics) teaching process for students of medical and healthcare study fields at Pavol Jozef Šafárik University (hereinafter PJŠU) Faculty of Medicine in Košice. By creating online study materials with multimedia content, making them available in the "anytime and anywhere" manner, and enabling students to be involved actively in the learning process, we support the interest in self-education and further lifelong learning in the IT and computer studies.

3. The teaching of IT subjects at the Faculty of Medicine

Students start their university studies with a different level of computer skills. This poses a significant problem for creating the curriculum of the course in terms of the extent of the current curriculum. Thus, the teacher faces the situation when the class is composed of students with minimal computer skills (this is, of course, directly proportionate to their interest in ICT, but also of students with computer skills at a higher level. With regard to the allotted number of classes and to the above, the course in question is set to achieve a level of computer skills that respects students' minimal entry knowledge, which, to some extent, inhibits further developing of students' digital literacy.

At the PJŠU Faculty of Medicine, the courses on IT Studies are run by the Department of Medical Informatics (DMI). The main objective of this course is to increase digital literacy in students of medical and healthcare fields of study in bachelor study programmes, so that they reach a level that will allow for the effective use of basic ICT resources in various kinds of assignments, academic tasks, specialized study activities, as well as end-of-study and research papers. The emphasis is put on working with a personal computer in the Windows operating system (OS), Internet information resources, Internet security, MS Office and Office 365 applications to raise awareness of online collaboration opportunities.

A book [4], also available in a digitized form, has currently been published to provide study material for this course. Teaching is supported both by static digitized learning texts [5] as well as by video demonstrations [6], [7] published on Portal of PJŠU in Košice Faculty of Medicine (Fig. 2). This portal is the official platform of PJŠU in Košice Faculty of Medicine for publication of electronic versions of educational works and multimedia materials to support education in clinical and health care disciplines. Its main objective is to make all electronic teaching materials which have been created at PJŠU available. Apart from publication of teaching, the portal provides space and technical support for these materials to be published on-line [8]. All teaching materials are accessible to all students as well as staff of PJŠU Faculty of Medicine. As lecturers of this course, we have received a positive feedback on the given teaching material, especially on video demonstrations.

In view of the current state of the issue in the field of teaching the course on IT Studies at PJŠU Faculty of Medicine in Košice, the main goal of the conducted project is multimedia support of the teaching process in the form of an e-learning course that should allow for:

- adjusting the course form and contents to the individual students' needs,
- increasing the interaction between the student and the teacher,
- making available the information beyond the scope of the course.

4. E-learning from design to implementation

In the designing of an e-learning, we used model ADDIE [9], consisting of five phases: Analysis, Design, Development, Implementation and Evaluation (Fig. 1).

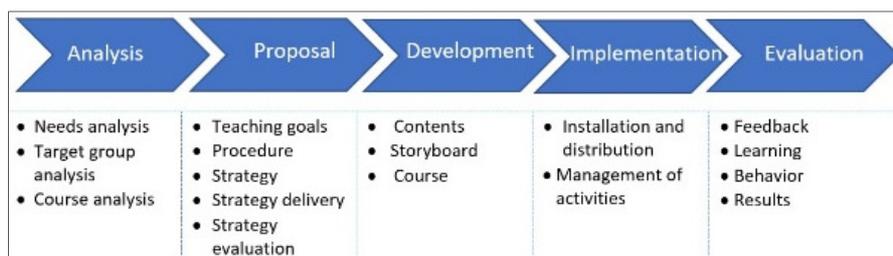


Figure 1. ADDIE model designing the e-learning [9]

4.1 Analysis

In initial this phase of the project execution, the research team members focused on the analysis that helped to identify the main shortcomings of the teaching process. Its objective was to evaluate the current state of existing materials, in order to assess their relevance; demand for educational material with multimedia content, in order to make the course more attractive; students' level of knowledge and skills in work with available technologies, in order to adapt the contents of teaching to the individual students' needs.

4.2 Proposal

The outcome of phase proposal is a plan based on which the study material will be designed in line with the aims specified in the "Analysis" section. The plan also defines the *e-learning course structure* (schedule, lessons and activities) and the choice of the *teaching method*.

Structuring the e-learning course

The contents of the e-learning course will be divided into the following 6 thematic areas:

- Instructions on how to use the course (not included as a thematic unit),
- Working with a personal computer and managing files,
- Microsoft Word text editor,
- Microsoft Excel spreadsheet editor,
- Microsoft PowerPoint presentation editor,
- Working with the Internet and Internet safety,
- On-line services in Office 365.

Each thematic unit will be structured in modules and will consist of a basic and expanded module. The contents of the basic modules fully correspond to the course description specified in the Course Description form (which is the necessary part of the documentation certifying the accredited status of the study branch/program).

Expanded modules will cover the information that is beyond the basic modules. The module will be divided into the following parts (Fig. 3):

- Explanatory section – includes study material in the form of static text (textbooks) as well as visual multimedia materials (commented video tutorials). Multimedia-content-based study materials will be created in the virtual environment of SonyVegas.
- Completed tasks – the knowledge gained in the explanatory section is applied to solve particular problems. This section will contain mainly visual multimedia material.
- Self-test – an activity aimed at testing the acquired theoretical knowledge and practical skills; the option of getting feedback from the teacher will be available.
- Tasks – activities requiring students to suggest their own solutions to the problem.
- Creative workshop – an activity aimed at disseminating study material in all forms among students.
- Bibliography and Further Reading.

The activities within "Completed Tasks", "Tasks", and "Creative Workshop" sections will be supplemented with the feature of student-teacher interaction support through interactive multimedia, such as chat, discussion forum, and blog.

Teaching method

We plan to implement the e-learning course in the teaching/learning process by combining the physical-attendance-based method and e-learning method (so called Blended learning; *b-learning*).

4.3 Development

The mere contents of the e-learning course will be developed during the development phase. We plan to use the following elements for content creation: text with uniform formatting for the entire e-learning course; hyperlinks; images; videos with subtitles and/or audio commentaries; downloadable documents: PDF, PPT, DOCX, XLSX, videos.

4.4 Implementation – E-learning platform

Course management and student management use various platforms, the Learning Management System (LMS) or Learning Content Management System (LCMS). At PJŠU in Košice, the virtual environment of Moodle LMS (Modular Object Oriented Dynamics Learning Environment) is used for e-learning. It is an open-source software package designed to create, distribute and manage electronic study materials and courses based on web technologies that allow access to study materials in “anytime-and-anywhere” way [10].

In order to support the education of administrative, academic, clinical staff, as well as students in other study programs at PJŠU Faculty of Medicine in the field of information and computer sciences, we also plan to publish selected study multimedia-content-based materials at the PJŠU Faculty of Medicine portal.

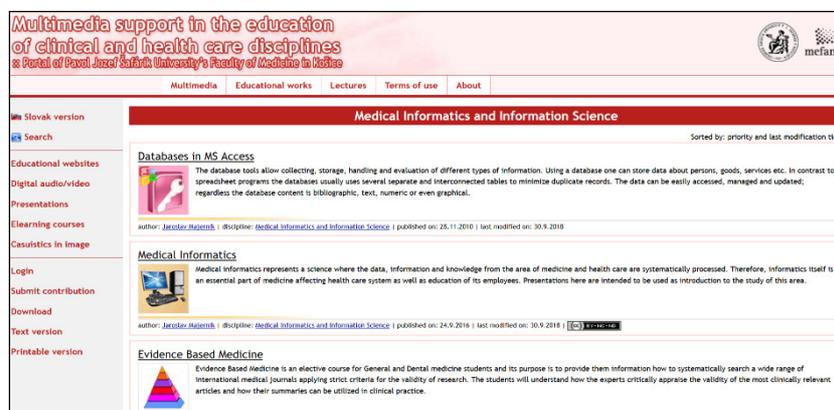


Figure 2. Virtual environment of faculty's portal

4.5 Evaluation

The implementation of the newly created e-learning course will be evaluated from the following perspectives:

- students' feedback – whether they liked the course; by means of the questionnaire or directly during the classes,
- learning outcomes – whether they have reached the course objectives, the desired knowledge, skills; by means of tests or observation,
- actual usage – whether the students are using new knowledge, for example, when writing and presenting assignments or end-of-study theses, or in the real-life practice.

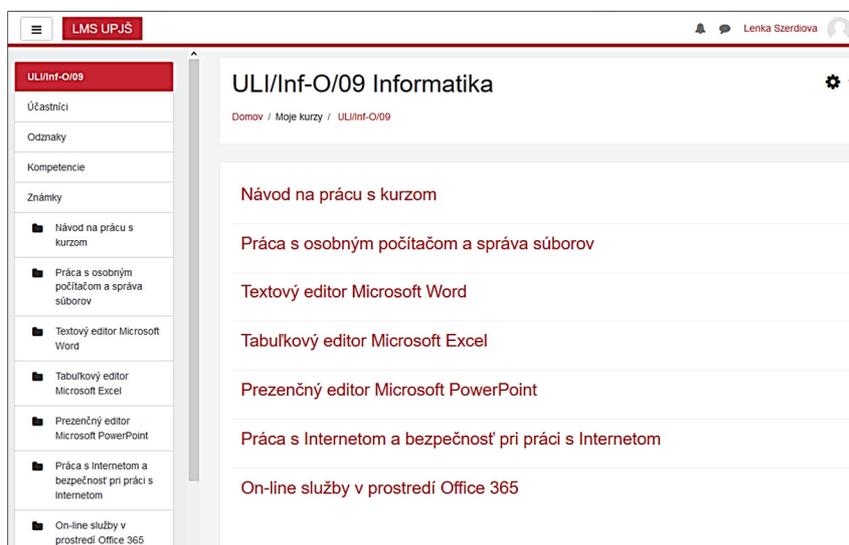


Figure 3. E-learning course structure in Moodle LMS virtual environment

5. Conclusion

The successful implementation of the proposed e-learning course into the teaching/learning process opens space for attaining the following benefits for students, teachers/tutors, but also for the practice and the mere science:

- revising, updating, and extending the textbooks used in the teaching process today [4], [5], [6], [7],
- creating space for dynamic updating of text and multimedia materials,
- creating visual multimedia materials (commented video tutorials) depicting selected procedures in MS Office applications in order to increase the clarity of the explanation of the given issue and to promote the individual pace of learning,
- creating space for structured self-study planned in a modular system, consisting of basic and expanded modules in each thematic unit,
- developing active learning methods; a student accepts the responsibility for his/her education,
- creating space for getting to know and actively using different new communication elements (chat, blog, discussion group) for student-teacher interaction,
- creating a feedback area for students to improve and expand the e-learning course,
- making selected e-learning course materials available to MUDr-degree students, doctoral students, as well as employees of Košice PJSU Faculty of Medicine, i.e. not the primary target audience of the course, PJS University Faculty of Medicine portal
- creating space for the proposing bachelor thesis topics that would deal with the extension of the existing e-learning course,
- enhancing the awareness of e-learning in the form of scholarly publications related to the creation and implementation of an e-learning course in the teaching process,
- motivating other employees to create multimedia-based learning aids,
- increasing computer literacy of teachers, students, and employees of PJS University Faculty of Medicine.

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