

STUDENT EDUCATIONAL PORTALS

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In their bachelor's and master's theses, the students at the Department of Information and Communication Technologies of the University of Ostrava have created successful and efficient web portals. Each portal is aimed at a different topic: raster graphics (Adobe Photoshop), digital video processing, processing and use of sound on a computer or history. The portals are primarily aimed at the education support for the students of the University of Ostrava. Some of them, however, can be used in elementary schools and high schools. Educational portals are based on modern technologies such as HTML, CSS, PHP, MySQL and content management systems (WordPress).

There are a number of modern and technologically advanced tools for creating educational objects. In recent years, there has been a shift from simple computer presentations and HTML-based statistical websites to dynamic websites into which educational objects and multimedia content can be implemented. The tools for the creation of educational objects make the content dynamic, interactive and multimedia. Websites can also help test the acquired knowledge and improve user communication.

Using modern technologies, the students at the Department of Information and Communication Technologies create educational objects and educational web portals which are then used both at the department and other educational institutions.

Creation of Web Portals

Creation of educational portals requires expertise in the multimedia creation area, the HTML and PHP languages, databases and the use of CSS (cascading style sheets). The portals contain not only the educational content in the form of information, but also multimedia objects such as flash animations, video tutorials and audio samples. Interactive objects, multimedia videos, video programs, etc. can be embedded on websites, improving transparency and understanding of the educational content. Moreover, they can draw the user's attention and motivate them. As tests are an integral part of portals and are used for revision of the acquired knowledge, a test created in PHP or java script can be a part of such websites. Communication tools for users can also be created. The most common form of communication is a forum where each user can post their problems and opinions.

ADDIE Model

When creating web portals, rules based on the tested system design models need to be followed. Out of the variety of models, the ADDIE model, which simply and concisely describes the creation of educational tools, programs, e-courses, etc., is the most popular. It describes the 5 phases of development (Pavliček, 2003):

- 1) Analysis – in this phase the main problem is identified. Questions are asked, the problem is introduced, an analysis of needs is conducted, the target group of the project is determined and the main educational goals are specified. This analysis allows for the creation of a tool that can help users achieve the required educational outcomes.
- 2) Design – the educational outcomes are formulated on the basis of set goals. Based on those outcomes, the content of the study material and the content structure are specified. Software tools for the creation of study materials are determined. The evaluation system and graphical environment of the educational tool are designed. The outcome is a prototype of the educational tool.
- 3) Development – the actual creation of the content and educational objects based on the prototype created in the Design phase. Using selected software applications, the following individual educational objects are created: educational texts, demonstrations, interactive educational objects, revision tests, etc. However, various problems might occur, which is why the created objects need to be tested and evaluated in order to eliminate all the errors.
- 4) Implementation – the created educational tool is implemented into the actual education process. In this phase it is important to verify the functionality of the object.
- 5) Evaluation – the quality and errors of the educational tool are determined. The tool is evaluated continuously during all the phases and then again after it has been implemented into instruction by collecting data from users, providing feedback which can lead to the elimination of the errors.

Examples of Educational Portals

“Editing in Adobe Premiere Pro” (Vlček, 2013)

Educational web portal for working with Adobe Premiere Pro CS5.5. 4 hours of high quality narrated video tutorials are an integral part of the educational portal. The video tutorials cover the entire process of digital video editing from import to timeline editing, addition of effects, working with sound to export to file or optical disc compilation. The video tutorials are designed to simulate the actual editing process. It is the first extensive educational portal to contain educational video tutorials in Czech. It was primarily designed as a study aid for the instruction of courses aimed at digital video editing at the Department of Information and Communication Technologies of the University of Ostrava.

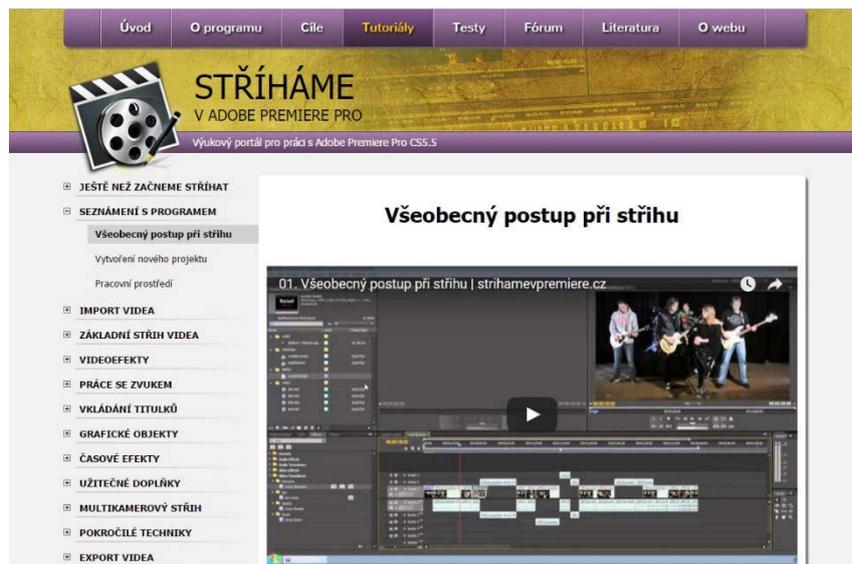


Fig. 1: Editing in Adobe Premiere Pro

The video tutorials are extensive and understandable enough, with graphic processing, transparency and easy navigation being other advantages.

Based on a questionnaire research and posts on a discussion forum, other video tutorials on the following topics have been created: advanced working with sound – adding an audio effect to the entire audio track, connecting the editing room with Adobe Audition, mixing audio channels into the 5.1 surround sound, anonymization of face (advertising, license plates) and voice.

As the educational web portal has been met with a positive response from the general public, its development will continue. The portal is available at: <http://strijamevpremiere.cz/>.

“Educational Portal for Adobe Photoshop CS5” (Wiejacki, 2014)

A web portal aimed at photo editing in Photoshop CS5. It contains 42 video tutorials (4 hours). The tutorials include instruction manuals for both beginners and experienced users. It contains the basics such as distribution of panels or tools as well as advanced functions such as selections, layers, masks and retouching. The portal has become the first high quality educational portal that explains and shows the user how particular things work (something text content cannot do). It was primarily designed as a study aid for the instruction of courses aimed at photography and raster graphics at the Department of Information and Communication Technologies of the University of Ostrava.



Fig. 2: Adobe Photoshop CS5

The portal is available at the public server: <http://upravujemephotoshopu.cz> and has been included in the instruction of courses aimed at photography at the University of Ostrava. It contains tests which can help students test their knowledge about the Adobe Photoshop program.

“Sound and Computer” (Pastyřík, 2013)



Fig. 3: Sound and Computer

Within the scope of a bachelor's thesis a web portal was created which is now used in the instruction of the Sound and Computer course at the Department of the Information and Communication Technologies of the University of Ostrava.

The portal has made the course coherent by providing unified information on sound editing on a computer. The entire curriculum is divided into 10 chapters which contain information about the physical nature of sound and music acoustics, ways of sound recording, converting sound into digital form, hardware requirements of computers concerning sound editing (sound cards, headphones, microphones), sound formats, ways of sound editing on a computer, creation of MIDI tracks, creation of surround sound and the software used by DJs. The portal also contains multimedia elements created in the Flash application aimed at practicing and revising the curriculum and practical examples created in the Wink program. Moreover, there is a final test through which the students can test their knowledge of the curriculum. The educational web portal has been met with a positive response from the general public. As a result, besides the University of Ostrava, it is now used in the instruction of informatics in high schools. It is available at the university server: <http://hucak.osu.cz/zvukapocitac/>.

“World War I” (Šubrt, 2014)



Fig. 4: World War I

A portal about World War I primarily designed for elementary school students. Texts in this portal have been designed to be understandable for elementary school students. Aside from the main topics, the portal also contains subtopics related to the war – weapons, technology, portraits of main figures and other interesting facts. Moreover, it contains texts enabling students to test their knowledge, photographs, statistical graphs and animations. The students can also comment on the individual articles.

The web portal has been used and evaluated by a number of teachers and updated based on the questionnaire research results. It is available at the university server: <http://hucak.osu.cz/ww1>. It has been tried out by history teachers at 19 elementary schools and has been met with a positive response. A new version of the portal, which will be launched soon, is now being developed.

Conclusion

Modern web technologies provide a plethora of possibilities in developing educational tools. In their theses and dissertations, the students at the Department of Information and Communication Technologies use those technologies to create educational web portals aimed at educating various target groups such as the University of Ostrava students, elementary school and high school students, but also those eager to learn in the fields covered by the web portals.

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