

Web based Application for Presentation of Bulgarian Cultural and Historical Heritage under the Protection of UNESCO

Stefka Kovacheva, Ludmila Dimitrova

Institute of Mathematics and Informatics, Bulgarian Academy of Sciences, Sofia, Bulgaria
kovacheva.stefka@gmail.com, ludmila@cc.bas.bg

Abstract. The paper briefly describes the web based application “Me and UNESCO” for the realization of the database “Bulgarian cultural and historical heritage under the protection of UNESCO”, developed in IMI (BAS). The web based application follows a modern learning strategy based on the *Understanding by Design* approach. In a multimedia environment, additional content is provided on study topics commenting on the Bulgarian cultural and historical heritage sites under the protection of UNESCO.

Keywords: Cultural Heritage, Database, Digital Object, e-Learning Content, UNESCO.

1 Introduction

The Internet as a global system for communication between computers is a publicly accessible system of interconnected networks, a network of networks. In addition, this virtual social and media environment offers information environments with links between databases. The trend is to develop reusable environments.

A digital environment representing sites of the Bulgarian cultural and historical heritage under the protection of UNESCO was designed and developed at the Institute of Mathematics and Informatics of the Bulgarian Academy of Science. The environment is multimedia (technology-assisted) and learner-centered and encourages the learners to manipulate information and learn through specific experiences upon research (Kovacheva & Dimitrova, 2018). A web based application “Me and UNESCO” has been developed to work in this environment. The application follows the pedagogical approach Understanding by Design framework (Wiggins & McTighe, 2017) and aims at transferring knowledge (additional content) to academic subjects which discuss Bulgarian cultural and historical sites in the UNESCO List (UNESCO-List, 2017).

2 Information and Communication Technologies – a Tool to Transfer Knowledge and Learning Resources

Information and communication technologies (ICT) allow and are used for web based services, for user interaction, for content use and creation. ICTs have a place at all levels of school education, such as:

- learning tool – independent academic subject;
- information transfer tool;
- knowledge construction and share environment.

ICT work with information but do not provide knowledge. Knowledge is individually constructed in a social context. Electronic education resources expand access to knowledge and represent tools, designed in a pedagogical frame, to develop competencies, skills and cultural change through individual “learning experience”. The requirements for a resource to function in a web-environment are:

- elements (relations and descriptions) in logic consequence;
- simple content update.

Basic characteristics of the Internet as a platform to share digital content among many users are:

- supply and use of digital resources and programs in a web environment;
- co-authorship, forming collective intelligence;
- user enriching experience.

3 Architecture of a Digital Environment for Knowledge Presentation and Transfer (Additional Learning Content)

The architecture of any programming environment for knowledge presentation and transfer typically includes: digital content creation modules (knowledge repositories), links to the academic content repositories, and user interface. The basis of the information model is the content (knowledge) - for the fulfillment of a specific purpose. Digital academic content repositories are databases.

The creator of the program environment and databases it works with is the so-called administrator. The creator of the digital content is the administrator and/or the trainer. Creators of source academic content are learners and trainer. Learners and trainer “in” and “with” the module *I create* generate the source e-learning content through “Me and UNESCO” web based application (Kovacheva & Dimitrova, 2017). End users of the application are the trainer, learners and their parents.

The elements of the digital learning environment for work with the “Me and UNESCO” web based application are:

- **technological platform** – a tool, offering all environment elements and combining hardware and software;
- **resource** (content) – in compliance with education standards and learner’s profile;

- **services** (functionalities) to manage and support users.

Technologies allow for and are used for web based services (sites, social networks, content management systems) for user interaction – as well as for content use and creation.

Digital environment basic functions:

1. **Administrator**– enabling education process management; maintaining a link to repositories; support of various types of users upon the respective access rights;
2. **Trainer's** activities – monitoring of the work with the web application and modeling of trainee activities to create content in a specialized module ***I create***;
3. **Learner's** activities – turning over the pages and examining “Me and UNESCO” web application pages, and content creating in the module ***I create***;

Parent(s) activities – monitoring of the work with the web application and children creations when working with the module ***I create***.

4 Technological Platform

The MediaWiki platform has been selected for the realization of the project: Implementation of the “Me and UNESCO” web application to support learners with an additional resource for the History and Civilization and Man and Society academic subjects in the Bulgarian school. The idea is to present new and/or additional content such as a range of hyper-documents, combined with multimedia components provided on the Internet (Kovacheva, 2016).

“Me and UNESCO” uses the current stable **MediaWiki** version (1.32.0) of January 2019. MediaWiki is a free server software, extensible, multilingual with an easily customizable side menu and a user-friendly layout - designed for a website with millions of visits. MediaWiki is a multi-functional platform for **online** collaboration and documentation useful for gathering, organizing, and presenting knowledge. The standard design is managed by content-related features. MediaWiki offers a rich set of basic features and an extension mechanism that provide additional functionalities. The three main features that characterize the platform are:

- possibility to generate content with the active participation of users;
- online collaboration;
- free information exchange.

MediaWiki installation requires the user to have administrator rights on a server working with PHP and compatible type of SQL database.

MediaWiki supports a rich content, generated by means of a specialized syntax.

The software allows work with a variety of media files. The richest functionality is in the sphere of imagery. Galleries with images and thumbnails are used for Wikimedia and Wikimedia Commons media archive.

In “Me and UNESCO”, the images are arranged in „galleries“. The grammatical editor for wikitext is “visible” and accessible on the customized toolbar from wiki syntax. Double square brackets (as part of syntax) are used for creation of hyperlinks to other wiki pages.

The digital environment for working with the “Me and UNESCO” web application is an “attempt” to understand great ideas (identification, interpretation and research) and a **conceptual framework for reflection on experience**. Designed experience is for real ideas with useful knowledge and skills. Learners perceive ideas when working with them. Modern learning is increasingly being developed in environments that foster the understanding and application of knowledge and the development of a new **“learning literacy”**. With ICT, which are tools for transferring knowledge and learning resources, learning is a change based on interaction **“with”** and **“in”** the environment. In a linked environment, the learner manipulates information and shapes knowledge, and this emphasizes the integral nature of learning.

Learning is the “creation” of knowledge and “change” in communication with an environment that includes independent and systematized artifacts rather than static, stored knowledge. To learn something new, the object of learning is changed, new attribute values are assigned and new attributes, if necessary, and the object is explored. Training requires the learner to create a linked environment through which learners interpret, model and create knowledge.

“Multimedia text” is a resource for reasoning in action. It provides potential “key points” (ways to engage with content) and various links (conceptual knowledge) “in” the environment. The digital environment is a learning space where the learner acts (manipulates information), uses tools, and interacts with other learners.

The navigation through MediaWiki is effective, and each page provides visual information and allows moving of other pages. The three main navigation elements of the wiki page are:

- **sidebar** which provides access to important pages on wiki (last changes, file upload); this is an authorized entrance to view the options in the sidebar;
- **links (sections)** in an open page, its related discussion pages, version history and editions;
- **user links** 1. For anonymous user – profile creation; 2. For registered user – user page with preferences.

“Me and UNESCO” digital environment (1) orientates the “view”; (2) directs towards understanding; (3) integrates knowledge of “sites”. It also creates cultural knowledge of new sites by organizing information about them and their significance in the context of the user (learner) that motivates their intellectual search. Some “sites” are rediscovered, others are created and presented, while third ones are collected for subsequent consideration. In this way, their cultural value is redefined and their community impact strengthens the personal experience. After the “experience of the site”, an appropriate regard and social behavior towards it is achieved. More information in detail about described web application could be found in (Kovacheva, 2016), (Kovacheva & Dimitrova, 2017), (Kovacheva, Dimitrova, & Pezhgorski, 2016).

5 The Presentation of the *Rock-Hewn Churches of Ivanovo* by “Me and UNESCO” Web Application

At school, learners “learn” about world and culture, perceive the monuments of the cultural and historical heritage as a “visible past”, and complete “system” of values. Digital tools enhance access to world architectural values, optimize learning processes and help build capacity by working with a huge amount of data. Figures 1- 3 illustrate the presentation of additional learning content for history, civilization, man and society:

The screenshot shows a web page from the "Me and UNESCO" application. At the top, there is a header with the text "Аз и ЮНЕСКО" and "Търсено в 288 страници". Below the header is the UNESCO logo. The main content area has a title "Скални църкви от Иваново (манастир-лавра „Св. Архангел Михаил“)". On the left side, there is a sidebar with navigation links: "Навигация" (Navigation), "Начална страница" (Home page), "Последни промени" (Recent changes), "Случайна страница" (Random page), and "Помощ" (Help). There are also sections for "Уики инструменти" (Wiki tools) like "Качи файл" (Upload file) and "Специални страници" (Special pages). The main content area contains several sections with descriptive text and edit links: "Най-забележителният „паметник“ в археологически резерват-паметник на културата „Скалните църкви при село Иваново и принадлежащият им терен“ е комплексът от скални църкви.", "Включване в списъка на ЮНЕСКО" (Add to UNESCO list), "Кога и защо обектът е включен в Представителния списък на ЮНЕСКО", "Описание на обекта" (Description of the object), "Ивановските скални църкви са своеобразна разклонена мрежа от църкви, параклиси, клепи, скални ниши и кухини, исчезнати на различна височина в скалите на живописния каньон на река Русенски Лом (Поломие) и свързани с пътеки и скални стълби, чиято целост не е запазена в оригиналния си вид.", "Местоположение" (Location), "Ивановските скални църкви са своеобразна разклонена мрежа от църкви, параклиси, клепи, скални ниши и кухини, исчезнати на различна височина в скалите на живописния каньон на река Русенски Лом (Поломие) и свързани с пътеки и скални стълби, чиято целост не е запазена в оригиналния си вид.", "Архитектурни данни" (Architectural data), "Манастир-лавра „Свети архангел Михаил“ има сложно устройство и обединява шест относително самостоятелни групи от скални помещения (т. нар. комплекс) с храм като всеки един от тях.", "Хронология и историческа фактология" (Chronology and historical factology), "Белези за активния живот на монасите са разкритите печи за хляб, заслони, прегради за добитък. Върваш са извали на поклонение. Манастир-лавра край Иваново е основан през 20-те години на ХІІІ в. от монахах Йоаким (по-късно български патриарх). Постепенно лаврата заема цялата долина.", and "Маршрути в и около обекта" (Routes in and around the object).

Fig. 1. Rock-Hewn Churches of Ivanovo as element (object) of the database – presentation of some database attributes and their values by the web application “Me and UNESCO”

Аз и ЮНЕСКО

Търсено в 288 страници



Кога и защо Скални църкви от Иваново (манастир-лавра „Св. Архангел Михаил“) е включен в Представителния списък на ЮНЕСКО

Страница Беседа ★ Преглед Редактиране История

Кога обектът е включен в списъка на ЮНЕСКО? [редактиране](#)

През 1979 г., на сесията на Комитета за световно културно и историческо наследство на ЮНЕСКО (<http://whc.unesco.org/en/49>), състояла се в Кайро и Луксор (Египет), обектът „**Скални църкви край село Иваново (манастир-лавра „Свети Архангел Михаил“)**“ е включен в Списъка на световното наследство на ЮНЕСКО (<http://whc.unesco.org/en/list/49>) под номер 45.

В Списъка на 100 национални туристически обекти на **БТС**, „Скалните църкви край село Иваново (манастир-лавра „Свети Архангел Михаил“)“ са под номер 59a.

Зашо? [редактиране](#)

Създадените в естествени пещери, запазени автентични като форма, материал и предназначение, Скалните църкви край село Иваново (манастир-лавра „Свети Архангел Михаил“) са **уникални** по рода си манастирски комплекс без аналог на територията на България.

Съгласно **Критерии на ЮНЕСКО за подбор**, обектът „**Скалните църкви край село Иваново (манастир-лавра „Свети Архангел Михаил“)**“ отговаря на два критерия:

- Критерий II - Да показва **важна обмяна на човешки ценности** през различни епохи и културни райони на света върху развитието на архитектурата или технологиите, монументалните изкуства, градоустройството или ландшафта;
- Критерий III - Да притежава **уникатно или поне изключително свидетелство** за културна традиция или **цивилизации**, съществуващи или изчезнали.

За Скалните църкви край село Иваново (манастир-лавра „Свети Архангел Михаил“) вписането е:

- Критерий II: Църквите, параклиси, килиите, нишите и кухините в манастирския комплекс са **изсечени в естествените скали** на каньона на **Русенски Лом** през XIII-XIV век.

Фреските в „Църквата“ (XIV век) разкриват **изключителна живопис** от българското средновековно изкуство.

Fig. 2. “Me and UNESCO” – screenshot of the page with the answers of the questions *WHEN* and *WHY a given site is included*

Аз и ЮНЕСКО

Търсено в 288 страници



Хронология: „Скални църкви от Иваново (манастир-лавра „Св. Архангел Михаил“)“

Страница Беседа ★ Преглед Редактиране История

В археологическия **резерват**-паметник на културата „**Скалните църкви от Иваново**“ са открити изсечени в скалите около 20 скални църкви, параклиси и над 300 помещение (XI-XIV век), обитавани от монаси. Белез за активния живот на монасите са разкритите пещи за хляб, застолни, прегради за добитък. Вървани са извали на поклонение. Манастир-лавра край Иваново е основан през 20-те години на XIII в. от монах Йоаким (по-късно български патриарх). Постепенно лаврата заема цялата **долина**.

• Първите писмени сведения за съществуването на религиозния комплекс датират възникването му към XIII в. (**според историческите източници**). От житието на Търновския патриарх **Йоаким I** се разбира, че с трима свои ученици е построил първата скална църква, която здешно се оставялите в местността „Писмената“ образуват големия скаплен **манастир „Свети Архангел Михаил“** (XIII в.).

• По време на Второто българско царство **Йоаким II** (1280-1292), който се нарича **български лъв**, създава **манастир „Свети Архангел Михаил“**. Комплексът от богослужебни, жилищни и стопански сгради, където живеят в уединение монаси или монахини. 2. Религиозна общност от монаси или монахини, която има своя устав и се разводи от игумен. 3. Отделна църковно-стопанска организация на религиозна общност.

Изсеченините в скалите църкви край Иваново са създадени по различно време, от различни майстори. **Общото помежду им** са културните традиции, новите художествени (живописни) търсения, плеядната връзка между отшелничество и **исихазъм**.

Ивановските скални църкви са значим паметник на българската религиозна култура.

Fig. 3. “Me and UNESCO” – screenshot of the page with *chronologic site description* and the link to the Glossary entry **манастир /monastery/, providing additional learning content**

6 Concluding Remarks

One of the key skills for success in the technology knowledge society in the context of globalization is the ability to learn. “Learning how to learn” is an essential tool for lifelong learning that gives learner autonomy for development with the help of innovative learning environments (Kovacheva, Dimitrova, & Pezhgorski, 2016). All technologies have high integration potential to support this process.

Educational paradigms are changing to learning outcomes, i.e. it is necessary to introduce practical experience in the curriculum. This requires the introduction of learning approaches that promote learning and develop learning skills.

“Learning how to learn” is predominantly understood as a method in action: learners are involved in the activity itself, that is, they learn how to learn. It is useful to develop working learning environments. The learning environment should inspire learning. Technology has an increasingly important role in day-to-day school practices and allows learners to participate in the development and selection of their own learning environment. Each learning site develops their functional literacy and transversal skills, and they are the basis of their key competencies.

References

- Kovacheva, S. (2016). Presentation of UNESCO Bulgarian Cultural Heritage Sites as Knowledge System in a Learning Environment. *Digital Presentation and Preservation of Cultural and Scientific Heritage*. 6, pp. 179-188. Sofia: IMI-BAS.
- Kovacheva, S., & Dimitrova, L. (2017). An E-Learning Environment – a Tool for Presentation of Knowledge about Bulgarian Cultural Heritage Sites. *Digital Presentation and Preservation of Cultural and Scientific Heritage*. 7, pp. 169-179. Sofia: IMI-BAS.
- Kovacheva, S., & Dimitrova, L. (2018). Knowledge-Based E-environment for Bulgarian Cultural Heritage with Focus on Learning. *Digital Presentation and Preservation of Cultural and Scientific Heritage*, 8, 177-185.
- Kovacheva, S., Dimitrova, L., & Pezhgorski, K. (2016). E-learning environment UNESCO Bulgarian Architectural Heritage Sites. *Digital Presentation and Preservation of Cultural and Scientific Heritage*. 6, pp. 191-198. Sofia: IMI-BAS.
- UNESCO-List. (2017, June 13). *UNESCO World Heritage Centre*. Retrieved from UNESCO List: <http://whc.unesco.org/en/list/>
- Wiggins, G., & McTighe, J. (2017, March 3). *Understanding by Design framework. Expanded 2nd ed.* Retrieved from http://www.ascd.org/ASCD/pdf/siteASCD/publications/Ubd_WhitePaper0312.pdf

Received: June 05, 2019

Reviewed: June 24, 2019

Finally Accepted: July 01, 2019

