Presentation of UNESCO Bulgarian Cultural Heritage Sites - a Methodological Framework for Designing a Web based Application as a Didactic Resource in an Information Environment

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Abstract. The paper describes a methodological framework for designing a web based application that present integrated knowledge about historical sites of cultural heritage as a didactic resource in an information environment. The tool realizes database containing information about seven world-famous historical sites of the Bulgarian cultural heritage under the protection of UNESCO. The *I create* module, oriented towards creation of well-organized content (knowledge) of new site of the national heritage that allows learners to show what they *know*, *can do* and how they have *created* their *product*, is also presented. The database and the web application were designed and developed in IMI (BAS).

Keywords: Cultural Heritage, Database, Web Based Application, Methodological Framework, UNESCO.

1   Introduction

The idea of creation of a web application in the field of competence *World and national cultural heritage* is related to provision of integrated knowledge of seven world-famous historical sites of the Bulgarian cultural heritage.

The purpose of the web application is to respond to the need of sustainable *knowledge* and formation of an *attitude* towards the cultural heritage by assigning an efficient learning model in a digital environment by positioning the learner in the role of "*researcher*" and "*creator*" and increase his interest, activity and motivation to "*know*" (discover knowledge), "*explore*" in depth and "*create*".

The tasks of the web application *Me and UNESCO* (using the tools of the Information and Communication Technologies) aim an educational initiative to achieve acquaintance with the cultural heritage and encouragement of respect and responsibility for its preservation by means of:

- *involvement of the multidimensional cultural heritage* as a substantial resource for development of competencies and skills summarized as a formal educational experience;

- *promotion of the role of the cultural heritage* for the society and *establishment of mass awareness* thereof;
- *assessment of specific aspects of the cultural heritage* as a shared source of historical memory.

2   Innovative Pedagogical Approach *Understanding by Design* in a Digital Environment

The web application has been developed using the innovative approach *Understanding by Design* (UbD for short) (Wiggins & McTighe, 2012), its objectives being intensification of the learners' understanding and development of their skills and habits of learning in a digital environment as part of a new educational culture. The *UbD* approach uses contents (stored in a database (shortly DB, (Kovacheva S. , 2016)) both as a resource and a tool for the *study* of cultural heritage sites of world importance and *generation of contents* (resources) for other nationally important sites. In non-linear access to content, the practical significance of key competencies requires targeted training with a pedagogical approach, leading to the transformation of declarative into procedural and conceptual knowledge through *processing* of information. That's why we chose the *UbD* approach. Understanding and finding meaning in the contents of the information resources in the *online reading* require: (1) a combination of digital literacy (including browsing skills) with traditional offline reading (of printed text); (2) navigation in a sequence of interrelated web pages with different types of visual information (photographs, tables), in addition to dynamic specifications (video clips).

The web application is a means of use and of creation. It provides a framework and connections between objects of education. Its dynamics provides an opportunity to *accumulate* educative experience and to turn *contents* into *knowledge* and to subsequently utilize the methodological skills of studying a site in any educational activity as learning skills.

The **conceptual structure** of the web application combines:
- **DB**, providing data on seven world-famous Bulgarian cultural heritage sites by means of structured integrated knowledge and substantiated statements, curious facts, hypotheses and events related to them;
- **Environment (information),** encouraging both the *exchange of knowledge* outside the educational system (for the learners) and development and dissemination of *good pedagogical practices* (among the learners).

The process of design of the web application is influenced by the contents as a *resource* and the audience as a *user*, which requires the clarification of:
- **Key ideas** – formation of an *attitude towards the Bulgarian history* and interconnectedness of the national and the *world history*;
- **Key concepts** related to the ideas and their understanding;
- **Expected results** (achievement) embedded in the educational activity (performance) and related to the *key competences and skills of the 21st century* in a separate module with the use of *authentic resources* (for the *World and National Cultural Heritage* domain).

3 Development of a Methodological Framework for Design of a Web Application in the Area of Competence *World and National Cultural Heritage*

The use of the integrated *UbD* approach in a digital environment requires development of a methodological framework (logical consequence of steps and recommendations for creation of an information environment for active learning) for design of a web application in the field of competence *World and National Cultural heritage*. The purpose of the methodological framework is to create a set of rules for acquisition of *formal educational experience* in each of the educational activities on the basis of *methodological skills* for *study* of a site; collection and organization of *information*; *data transfer* in the study of sites.

The set of rules follows the steps listed below:

1) **Description of the objectives in terms of choice of software, resources and users**

- The grounds for **choice of software** are the requirements towards presentation of the resources: accessibility of information on the Internet, non-linearity and visualization of the information and user-environment interaction;

- **Contextually oriented resources in the web application** are designed as *tools* which develop competencies through educational *experience* (in the study of a particular site). Administrators and trainers provide content in the form of a network through links and resources;

- **User profile** – the contemporary learners prefer to review and study actual sites and to use clear models and options for information modeling. The trainer uses the resources in order to develop procedural and conceptual knowledge through opportunities to *create*. The administrator (trainer) organizes the resources as a form and contents of the encyclopedia. *Page opening* follows both the *logic of the contents* and the *logic of learning* of integrated knowledge, understanding and concept extraction.

2) **Implementation of DB for seven world-famous historical sites of the Bulgarian cultural heritage through a web application**

The concept of creating **DB** for an educational resource is based on the abilities of the technologies to support the implementation of the leading idea of ***formation of an attitude towards the world cultural heritage*** by means of:

(1) Mastering of **convertible and integrated** knowledge on the basis of interdisciplinary connections in a *semantic network* (**DB**);

(2) Developing **skills for orientation and interpretation of contextual information** such as *knowledge* (in **DB**) and *experience-based knowledge* (in a specialized module);

(3) Implementation of an individual *achievement* (in a specialized module);

(4) Formation of a new type of **learning culture**.

The idea of developing a web application for implementation of the DB is based on the following arguments: the attitude towards the cultural heritage is formed in the in-

teraction between the user and content in an environment; the functionality of the application requires specific structuring and design of the information resources and the finished product respectively; the graphic conceptualization of the elements of visual design requires typographic solution in the modeling of the texts in the information resources in the DB; the segmented offering of information (the use of hypertext) orients and ensures an "entrance" of the user into the contents of the information resource and extends the user audience.

3) Pedagogical aspects in information resource modeling

Texts are modeled in accordance with the state educational standard of cognitive booklets, textbooks, teaching aids and electronic editions (ORDINANCE № 10 Effective from 28.04.2020, 2020). The standard requires: inclusion for educational purposes of media formats (text, photo images, maps, tables, video records, references), not represented in the press; the use of different approaches (by the trainer) and learning through practice (by the learner) with a possibility for personal achievement; an overall idea and stylistic unity of the included texts and media formats corresponding to the content – the texts are graded by priority and the media formats visualize specifications of sites from the cultural heritage.

The suggested methodological framework ensures a wide ranging and sufficiently functional design of the web application – purpose, objectives, add ressee. It includes both the layout activities (specification of the model, selection of elements for a particular typographic layout), and the process of content creation (development of prototype pages and connections between the components of the environment). The learners have the opportunity to master a **conceptual model for well-organized knowledge** (*good orientation, fast selection, systematization, hierarchy of highlights in the content*), used in any type of context, which supposes flexible adaptation to new environments (*transversal skills*).

4 Development of a Specialized Module for Creation of Cultural Content (Knowledge) – *I create* Module

The specialized *I create* module is a *learning tool* and an *environment for modeling* of a new site from the national cultural heritage under the set model, with fragmented fields for conceptualization of the attributes for site description and research trend, directed towards content creation (Kovacheva & Dimitrova, 2018). The learners create their *own content* on the basis of trustworthy written texts (regardless of the format) within a suitable *context*, learning to interpret the cultural significance of artifacts for the selected site of the national cultural heritage. Content creation presupposes integration of facts and evidence in response to the key questions **what, why, when, where, how** (conceptual knowledge). This imposes finding of suitable information (declarative knowledge) and **skills where and how to search information** i.e. efficient use of methodological skills for studying a site (procedural knowledge).

The *I create* module is oriented towards creation of **well-organized content (knowledge)** of a site of the national cultural heritage (learner's competence in a specific domain according to (Algarabel & Dasi, 2001) in the form of:

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- *content* (achievement) from a learner;
- a series of *information resources* from a trainer.

1) Competences as expected results from the activity in the *I create* module:

Knowledge, which the learners will acquire as a result of their work in *I create* module, are: integrated and not fragmented knowledge; bits of information connected with scientific concepts; conceptualization outside the reviewed content. Skills which will be shown in the learner's behavior as a result of their work in the *I create* module:

- shows understanding of several integrated elements – finds connections *between* and a reason for separate facts, connections *between* facts and theory, connections *between* action and purpose;
- summarizes results – applies a concept of known topics in different situations (compares or opposes, explains, integrates, analyses, applies);
- transfer – transfers summaries in different areas (theoretically substantiates, summarizes, creates hypotheses, generates ideas);
- understands the reasons for the interactions in a certain system as well as the connection between learning and development;

2) Results from learning in a digital environment (increasing levels of understanding of content in information resources).

In the module the **learner's achievement** is experience – a variety of competences, knowledge and skills which set the landmarks for his future civil culture. The created site in the *I create* module has the following results searched for:

- presentation of a *"new" site*;
- building of *cognitive strategies* derived from the interaction of the learner with non-specific subject-oriented knowledge.

The activities of the user learning in the *I create* module lead to development of *skills for analysis* of a textual resource (description) as a framework for formulation of one's own idea:

- *reading* of text descriptions;
- *understanding of content* – determining the trustworthiness of the descriptions: clarification of the meaning of unclear concepts (vocabulary) and contextualization in time and space;
- *extraction* of the necessary information and determination of *key concepts*.

The provision of information about a site in an original manner guarantees its better perception and assimilation (understanding) and construction of one's own text in respect thereof. Understanding (extraction of meaning) is performed by means of interaction between the learner (reader) and content (text) – a process presupposing the availability of basic knowledge and experience. In order to describe a site of the cultural heritage using key concepts (attributes in a conceptual frame), the learner, after getting oriented in the *information flow and building content*, understands the interpretative qualities of knowledge and forms cognitive skills for the following:

- **critical study** of sources, interpretation of topics and connections *in* and *between* sources, development of hypotheses and their revision – the learner selects appropriate information and interprets facts for the relevant attributes for description of a selected site, creating an elementary model of his site on the basis of the conceptual model of DB;

- **finding meanings**, perspectives and points of view in a context – the learner creates with suitable vocabulary (content for information resources) of the selected site, offering explanations for differences found in the sources; identifies key information about the site and finds facts defining attributes not included in the conceptual scheme of DB;
- **inclusion of new relevant** information **(content)** in the study of the selected site – the learner critically assesses and if necessary, synthesizes data from various sources, and presents a complex description of the selected site, which is the basis of content of information resources realized jointly with the trainer.

5   Conclusion

In this paper we described a methodological framework for designing a web based application *Me and UNESCO* for presentation of integrated knowledge about historical sites of cultural heritage as a didactic resource in an information environment. The tool follows the innovative *UbD* approach and realizes DB, containing information resources of seven world-famous historical sites of the Bulgarian cultural heritage. The *I create* module is a learning tool and an environment for modelling a new object. The answer, constructed in the *I create* module, allows learners to show:
- What they *know*, what they *can* do and how they *created* their "product";
- *Created "products"* (texts for new information resources);
- The wide range of cognitive processes used in considering perspectives and formulating hypotheses.

The constructed answer gives the students a good opportunity to demonstrate an understanding of the content (when reading) in the context of the task "Description of the site of the cultural and historical heritage with local, regional and national significance".

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