How to Incorporate New Knowledge in the History Courses for 4th and 5th Grade Pupils

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Abstract. The article describes in brief the database, developed by IMI-BAS to present the cultural heritage sites in Bulgaria under the protection of UNESCO. This database will be used in an e-learning project currently under development, to integrate additional learning content to the "Man and Society" and "History and Civilization" courses. The project follows a contemporary teaching strategy based on the formal structure of the Understanding by Design approach. In the process of gaining knowledge the pupil is transformed from an object of action into a subject of action. This requires a new educational environment in accordance with the needs and interests of the learners. Such an environment will develop their abilities, and they will become active and productive participants in their own education.

Keywords: cultural heritage, database, digital dictionary, dictionary entry, e-course, education environment, UNESCO.

1   Introduction

The paper describes the Database presenting UNESCO World Cultural Heritage Sites in Bulgaria. The Database has been developed at IMI-BAS to provide an extended introduction and understanding of the national cultural and historical heritage for pupils. This Database has been planned and designed in order to integrate supplementary learning content into the "Man and Society" course for 4th and the "History and Civilization" course for 5th grade pupils.

Our project complies with the SER [8, 9] and follows these standards: core learning content "cultural and historical heritage", core learning content "national and world historical and cultural heritage", and core learning content "working with learner's dictionaries".

Besides the standards mentioned above the project also conforms with the standards of another learning content cores: "knowledge sources", "historical sources" and "sociocultural and linguistic competence".

The project to integrate new or supplementary learning content by introducing the e-learning course (a project in development) follows a contemporary teaching strategy, based on the Understanding by Design approach [6].

2 The Learning Process in the Modern Society

The modern training concept requires to integrate into a single system teaching, studying and content and to develop further every course by:

- Updating and supplementing learning content;
- Modern teaching methods, techniques and style, seeking balance between methods, objectives and learning resources.

The learning process consists of teaching and learning. During the learning process the educator and the learner join efforts in different ways:

- In different ratios of intensity;
- In the form of various types of activities.

Teaching and learning require interaction. Using technology provides additional opportunities for faster and broader access to information, its processing in order to achieve a more complete and clearer perception, understanding and mastering. The learning content predetermines the volume and quality of knowledge, skills and abilities.

Teaching aims: presentation of knowledge in an appropriate manner and in an appropriate form, explanation of the main ideas on a topic to the students and organization of learning activities - not just "what you need" to know, but also "how it should be taught".

Learning is a process in which "aids" the learner is assisted to modify their knowledge and understanding of a topic.

Information technology can affect the substance of **ideas**, e.g. to enrich, to reduce and change their significance.

Knowledge, suggested solely by the teacher and the textbook is insufficient, because it does not provoke a thought process, it does not provide for creativity and their justified personal decisions. Modern education should acquire meaning in an interactive environment, which offers selectable forms of learning (*"whenever I am interested and as much as I need"*), diverse learning material and methods of interaction. The modern learning process utilises a large amount of information, which leads to perpetual dynamics in terms of the relation "cognition – practice – knowledge"; working in a network and collective intelligence – *"we too are creators of learning content"* [1].

3 Understanding by Design Approach

The *Understanding by Design* (UbD) approach utilises an approach which illustrates the continuous improvement of both pupils' achievements and teachers' professional skills. The results of modelling - pupil achievements - are the feedback for eventually taking action related to corrections in the proposed by us model in terms of quality

and level of learning process. Thus can be achieved expected from us higher level of understanding information from learning resources.

T**he UbD approach** is used:

- In order to foster awareness and understanding of the national cultural and historical heritage by integrating complimentary learning content;
- Through the application in an environment, that guarantees the establishment of links between knowledge about the objects in the database;
- In order to expand knowledge of the culture and society in the context of national and world heritage, providing independent work with in-database objects with rich illustrations, historical sources and a glossary of key concepts and terms used in the curriculum.

The UbD approach has two sides:

(1) **"Backward design"** – a three step process:

Identification of the desired results: creating a list of essential questions that lead to understanding: What the students will learn and more importantly – what the students will be able to do.

Developing a supplement to the unit and assignments, the implementation of which will show what the learners have understood, e.g. discovering specific information from the database by keyword.

Monitoring the achievements with a program for examination the acquired knowledge and experience, and suggesting supplementary activities (chosen by the student), leading to the desired result, e.g. creating content for the presentation of a cultural historical site (individually or in a group).

(2) **"Teaching for understanding"** – a prerequisite for consistently designed curriculum **for interaction of the learner with the learning content,** with clear distinction between big ideas and essential questions:

Defining big ideas and essential questions;
Formulating performance requirements and evaluation criteria;
Describing incentives aiming at understanding the big ideas and answer the essential questions.

4　What Our Project Proposes

E-learning exists thanks to the Information Technology (IT). The main advantage of E-learning is that it ensures interaction between the learner, the teacher and the learning content, using the Internet and the IT as knowledge "suppliers", the priority of self-control of the learner over the tutor's control [5].

Our project, under development, is based on the academic approach "Understanding by design". The integration of new or supplementary learning content into the

courses for pupils is the subject of an e-education course, which will allow the learner to:

- utilize their own experience in order to complement the curriculum learning content;
- decide to edit/review the input data in order to create new knowledge output;
- establish the capacity to form links between data sources and of knowledge, derived from these data.

The **big ideas** of our project, specially oriented towards the youngest pupils, are defined as follows:

- expanding the knowledge of young pupils;
- stimulation of their interest towards history as a science;
- creating conditions for independent work and individual expression;
- adoption of standards for universal values
- shaping of behavior for conservation, preservation and promotion of the cultural heritage.

Verification of understanding

The degree of understanding will be established by assignments and supplementary activities that are part of the e-course (eg, creation of tests by the learners themselves or based on the resources in the database) using the verbs: understand, know, detect, notice, comprehend, discern.

Architecture of the software environment

The architecture of every software environment, designed to create and manage an e-course usually includes: modules, intended to ease the creation of learning content, links to repositories of learning material (databases) and users' interface. The base of the information model is the learning object (an independent part of the learning process, aiming at achieving a specific educational purpose). The repositories of learning objects are databases, containing learning materials (learning content in electronic format). The users of this medium are the tutors, the learners and their parents.

The creator of the program environment and its database is the so called administrator. The creator of the initial learning content is the tutor. The creator of the output learning content can be the tutor, the learners and their parents.

Main features of the software environment

1) Administrator's activities – providing opportunities to control the learning process; providing connection with the repositories; operation of different types of users with corresponding access rights; provision of means of search and communication;

2) Tutor's activities – design the learning process; creation of learning modules, related to the database objects and assessment assignments – questionnaires, tests, quizzes;

3) Learner's activities – comprehend and complete the assessment assignments while using the training modules to acquire data; create output learning content alone or in a group based on the set criteria;

4) Parents' activities – monitor their children's individual work and progress;

Technology platform

The Web 2.0 platform has been selected for the implementation of the project – an e-course to aid the pupils in the fourth and fifth grade (in development). Our idea is to present the new or supplementary learning content as a set of hyper-documents, combined with multimedia components, delivered as learning materials via Internet [4].
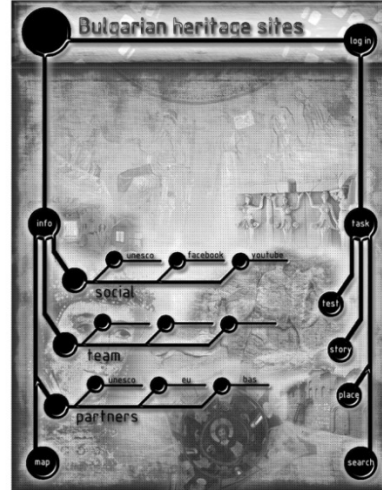

Fig. 1.

Fig. 2.

Fig. 3.

Fig. 4

The Figure 1 shows Category "History": sample button marked "History" in the sub-category "town" – Ancient City of Nessebar. The Figure 2 shows Category "History": initial deployment of subcategories.

The Figure 3 displays a screenshot Category of "test" and the Figure 4 displays a screenshot "info" menu with "site map" menu on standby.

5 Database Presenting UNESCO World Cultural Heritage Sites in Bulgaria

Why Was the Database Developed?

Because we presume that at this age (when the children have less experience and great enthusiasm to seek expression outside the textbook) it is appropriate to gain intimate knowledge of the values that provoke a sense of pride in our Homeland;

Because the objects hold an exceptional cultural and historical significance to the common heritage of mankind, thus they should be promoted and be preserved for future generations; all this needs to be known and remembered!

Because throughout the duration of the lesson IT provides the means necessary for each child to "see" the objects they are being taught about probably for the first time.

We presume and understand that not every pupil possesses a lot of encyclopedias or dictionaries at home. Therefore we attempt to compile information from the different dictionaries (the dictionaries of foreign words in Bulgarian, spelling dictionaries, thesauri, explanatory dictionaries, dictionaries by several authors' panels or different publishing houses and editions) to prepare a digital dictionary covering the area.

In our dictionary we give a full description of the concept/ term including definition, origin, orthography, different meanings and usage characteristics.

The review of all textbooks in "Homeland", "Environment", "Man and society", "History and civilization" (for first to fifth grades, by different publishers) shows that the different editions contain parts of the full explanation of terms (in articles such as "My vocabulary", "Glossary", "New words", etc.).

For this reason we describe such terms and add: **new terms**, derived from the curriculum's learning content for each class; **terms**, related to the specifics characteristics of objects in our database, which the learners will be able to describe (with full understanding and clarity); **interesting information** about the foreign words, that have a literal translation; **orthography** and **grammar** of the terms – to continue developing literacy; **synonyms** and **homonyms** – to enrich the vocabulary of the learners and to clarify its proper use. This data will help learners to describe new objects, close to their location, cultural and historical sites or Bulgaria's nominations to be entered into the World List of UNESCO, etc. **Abbreviations** or specific combinations of words, such as **collocations**, which appear in the learning units, are represented as separate dictionary entries.

World Heritage Sites in Bulgaria Protected by UNESCO

The **seven cultural monuments (architectural and historical sites)** are inscribed in the UNESCO list in accordance with the UNESCO Criteria for Selection [7].

The first four cultural monuments, meeting the criteria set, were inscribed in the list with sites under UNESCO protection in 1979: **Boyana Church, Madara Rider, Thracian Tomb of Kazanlak and Rock-Hewn Churches of Ivanovo.**

The next two sites were inscribed in 1983 - **Rila Monastery** and **Ancient City of Nessebar**.

The final one – **Thracian Tomb of Sveshtari** – was inscribed in 1985.

Sites included in the UNESCO **Tentative Lists** will be used to create output learning content alone or in a group based on the set criteria (as part of the functionality of the program environment concerning individual training).

Structure and Attributes of the Described Sites

According to [7] the observation of the UNESCO sites lays emphasis on certain characteristics (such as bearers of values, shape, material, location, etc.). The elements comprising the Database (i.e. the object of the database) are the sites in Bulgaria, placed under the protection of UNESCO.

The Database is presented in a tree structure (refer to the Figure 5).

There are six types of objects in the Database: *city* (Ancient City of Nessebar); *monastery* (Rila Monastery); *church* (Boyana Church, Rock-Hewn Churches of Ivanovo); *tomb* (Thracian Tomb of Kazanlak, Thracian Tomb of Sveshtari); *relief* (Madara Rider), and *dictionary*.

All objects in the Database are complex objects. In order to describe an object of the Database, we use metadata – a great number of attributes, set on several levels, which have specific values. The values of the attributes are texts and images, containing learning content. The attributes used to describe an object in the Database are divided into three groups. The first group is comprises the attributes that correspond 100% to the characteristics described in [7]. The second group includes the attributes, which hold new (supplementary) knowledge, which is not referred to in [7], however it will certainly wake the interest of this age group (history of the monument, depiction in literature, artefacts, found at the site, etc.). The third group contains attributes, which are specific to certain object types (frescoes – churches and monasteries, environment – Madara Rider and Rock-Hewn Churches of Ivanovo). The object DICTIONARY is a set of dictionary entries and its description is in correspondence with the lexicographers' standard requirements of defining dictionaries. We follow the model of presentation of a dictionary entries described in [2, 3]. The information to be included in dictionary articles is collected from [10] to [20] and is adapted for the purpose of an e-course (for examples refer to Table 1):

Table 1.

базилика *същ. ж.;* 1. Зала с колонада само за светски цели – съдебни дела, търговски сделки и др. [от гр. „царска къща" чрез лат. и нем.] . 2. *ист.* Седалище на архонт-базилевс в древна Атина. В древния Рим, правоъгълно здание за съдилище, търговия и др.; 3. *ист.* Постройка, която е разделена на няколко части – кораби, от които средният е по-широк и по-висок и се осветява от прозорци, разположени на страничните кораби; двукорабна църква; 4. *архит.* Християнски храм в правоъгълна форма с множество колони; **Образец на базилика е Софийската църква Света София**.

базилика
[17] – ж. 1. истор. Зала с колонада само за светски цели. 2. архит. Християнски храм в право- ъгълна форма с множество колони. 3. Католически храм, който се ползва с особени привиле- гии, дадени от папата. (гр. βασιλιχη)
[18] (гр. basilike „царска къща“) 1. ист. Зданието, което било седалище на архонта базилевс в древна Атина. 2. Древногръцка и римска обществена сграда във форма на правоъгълник, разделена надлъжно чрез колони на три или пет кораба, от които средният е най-висок и се осветява с прозорци над страничните кораби. 3. Християнски храм с такава форма (образец на базилика е софийската църква „Св. София“)
[19] ж. (чрез нем. Basilika от лат. basilica от гр.) 1. ист. βασιλιχη (ιίχία) „царска къща“ 1. ист. Постройка, която е разделена на няколко части – кораби, от които средният е по-широк и по- висок и се осветява посредством прозорци, разположени на страничните кораби. 2. ист. Седа- лище на архонт-базилевс в древна Атина. ист. В древния Рим, правоъгълно здание за съдили- ще, търговия и др. 4. Храм с правоъгълна форма.
[20] ж. истор. 1. В древния Рим – правоъгълно здание за седалище на съд. 2. Християнски храм в правоъгълна форма с множество колони (гр.→лат.→нем.)
[10] – ж. [гр.] В античния свят – обществена сграда за съдебни дела или търговски сделки, а в християнско време – храм в правоъгълна форма с множество стълбове или колони.
[11] - ж. [гр.] В античния свят – обществена сграда за съдебни дела или търговски сделки, а в християнско време – храм в правоъгълна форма с множество стълбове или колони.
[12] – ж. 1. В античността – обществена сграда с издължена правоъгълна форма, която слу- жела за съдебни дела или търговски сделки. 2. Християнски храм с правоъгълна форма и множество стълбове или колони. [гр.]
[13] – ж. 1. В античността – обществена сграда с издължена правоъгълна форма , която слу- жела за съдебни дела или търговски сделки. 2. Християнски храм с правоъгълна форма и множество стълбове или колони. [гр.]
[14] – ж. 1. истор. Зала с колонада само за светски цели. 2. Християнски храм в правоъгълна форма с множество колони. 3. Католически храм, който се ползва с особени привилегии, дадени от папата.
[15] – базилика
уникален *прил.* уникалния(т), уникална, уникално, уникални; 1. *книж.* Единствен, изключителен, неповторим; **уникален случай** [от лат. unicus; в бълг. от рус. уни- кальный] 2. *прен.* Оригинален, странен, чудат, безподобен
уникален
[17] – *прил.* 1. Единствен, неповторим. 2. *прен.* Оригинален, странен, чудат. **У н и к а л н а с т о к а – икон**. Стока, която може да се потребява само от един индивид. (лат. unicus)]
[18] (от лат. unicus) *книж.* Единствен, неповторим
[19] – Уникален, -лна, -лно, мн – лни, прил. (рус. уникальный по лат. unicus „едничък“) Книж. Единствен, неповторим. уникалност – ж.
[20] – прил. 1. Който е единствен неповторим. 2. прен. Който е оригинален, странен (лат.- рус.)
[15] – уникален, уникалния(т), уникално, уникално; уникални.
В [10, 11] – няма тълкувание;
[12] – прил. книж. Единствен, изключителен, неповторим. Уникален случай. [от. лат]
[13] - прил. книж. Единствен, изключителен, неповторим. Уникален случай. [от. лат]
[14] – прил. 1. Единствен, неповторим. 2. прен. Оригинален, странен, чудат.
[16] – уникален *книж.* – единствен, неповторим, безподобен

6   Dictionary Entry Structure

Dictionary entries have a tree structure (Table 2).There are 3 types' entries in our dictionary:

1)   headword – a *single word* (artifact, basilica, unique) – **entry1**

2)   headword – a **word group** (Bulgarian Renaissance, School of Magna Aula, cultural heritage) – **entry2**

3)   headword – an **abbreviation** (EU, NATO, UNESCO) – **entry3**.

The **abbreviation** is a word formed from the initial letters or syllables of complex names and is a short (abbreviated) form for recording and/or reading complicated (and/or long to write) denomination. There are no points in the abbreviations. The abbreviations help fight the text (to occupy less space). We use two types of abbreviations:

Type1 = **letters** like **UNESCO** **United Nations Educational, Scientific and Cultural Organization**

Type2 = **syllables** like UNICEF **United Nations Children's Fund**.

Table 2.

Dictionary entry for a single word headword	**Dictionary entry for a complex headword**
< entry1>	**<entry2>**
<headword>text</headword>	<headword>**component**1**, component**2, …, **component**n</headword>
<POS>text</POS>	<definition>**text**</definition>
<synonym> synonym1, synonym2, …</synonym>	< etymology-component1>**text**</etymology>
<structure-1>	< etymology-component2>**text**</etymology>
<definition>text</definition>	…
<example>text-1</example>	< etymology-component**n**>**text**</etymology>
<example>text-2</example>	<example>text-1</example>
<etymology>text</etymology>	<example>text-2</example>
</structure>	</**entry**>
<structure-2>	**Dictionary entry for Abbreviation**
<definition>text</definition>	**<entry3>**
<example>text-1</example>	<headword>text</headword>
<example>text-2</example>	<definition>text</definition>
<etymology>text</etymology>	<type1>UNESCO </type>
</structure>	<type2> UNICEF</type>
</**entry**>	<etymology>text</etymology>
	</**entry**>
Presentation of homonymy:	**Presentation of homonymy:**
I<**entry1**>	II<**entry1**>
<headword>text</headword>	<headword>text</headword>
<POS>text</POS>	<structure-1>
<structure-1>	<definition>text</definition>
<definition>text</definition>	<example>text-1</example>
<example>text-1</example>	<example>text-2</example>
<example>text-2</example>	<etymology>text</etymology>
<etymology>text</etymology>	</structure>
</structure>	</**entry**>
</**entry**>	

7   Conclusion

The paper discusses the Database presenting UNESCO World Cultural Heritage Sites in Bulgaria. This Database provides an integration of an additional e-learning content for the "Man and Society" course and "History and Civilization" course. Currently a new object is included – object Dictionary – a set of the terms and concepts facilitating e-learning process.
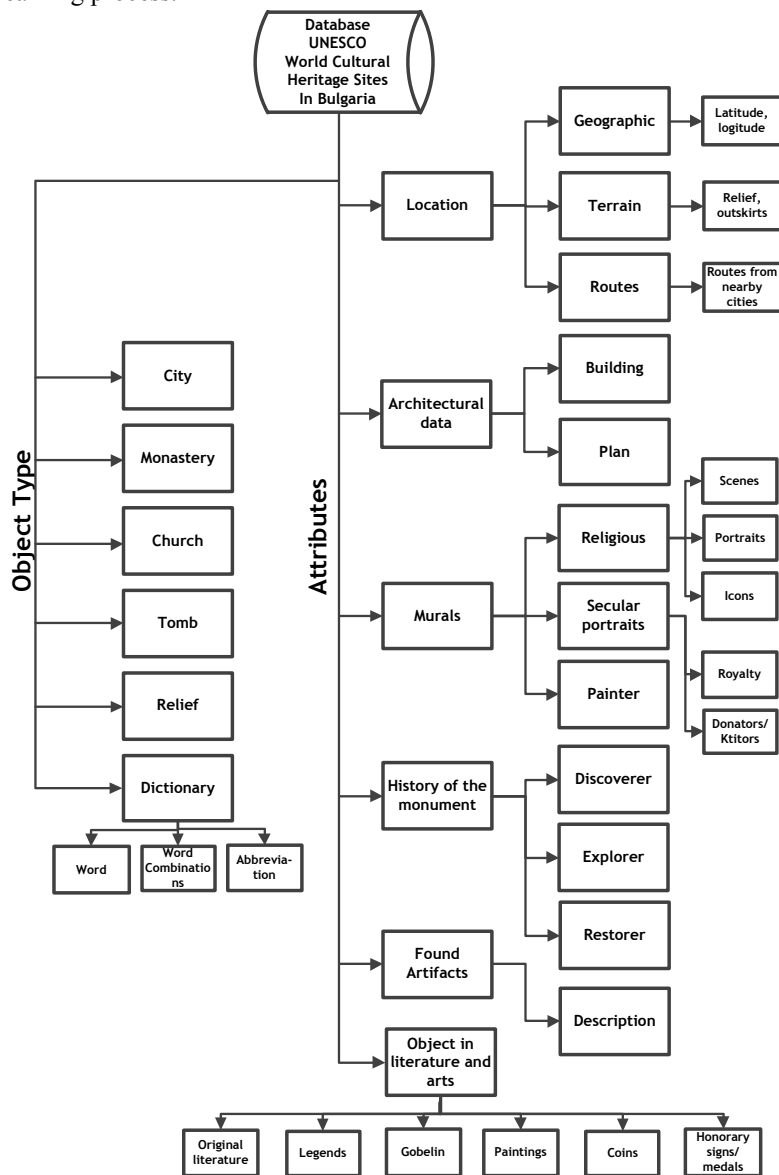
Fig. 5.

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