BRINGING CULTURAL HERITAGE INTO PRIMARY SCHOOL CLASSROOMS. DESIGNING A VIRTUAL LAB

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Abstract

Can conventional application of web 2.0 tools make a difference when teaching and learning history? Which are the best tools? How could teachers adapt strategies and activities so students get more engaged into their own learning? How can Romanesque Art become alive? How can it be brought into the classroom in a meaningful way?

These challenging questions led the second-year students of the Bachelor Degree of Science in Education at the University of Andorra, from the subjects of “Education in Cultural Heritage of Andorra” and “Communications and Technologies” (TAC) to open a debate about what kind of methodologies or strategies would be the most appropriate for a meaningful learning of history and heritage in schools.

The interdisciplinary project was born from the need to connect the formal curriculum of social sciences in schools, which are normally focused on traditional learning and evaluating activities, with the different possibilities that cultural heritage offers within the environment as a real history laboratory.

The main goal was to design an innovative educational experience to engage students, from Kindergarten to primary schools, into cultural heritage learning, and more specifically into the Romanesque Art. Students were asked to design teaching materials to be used by primary school teachers in Andorra.

Keywords: collaborative work, engaging learning, primary school, university.

1 INTRODUCTION, CONTEXT AND BACKGROUND

1.1 The context

The learning process shall be considered holistically and, therefore, as a process, and not just as an outcome. Therefore, it must include constant interaction, feedback and synergistic transactions both between the learners and the different leaning scenarios. Through this approach teachers acquire a special role as one of the managing agents of the learning process, to design and propose scenarios to promote and foster this process [1].

The boundaries between the various digital devices are becoming blurred. It is expected that in 2010 digital content and application will be delivered almost exclusively online. The enormous potential of ICT requires to review the way the content is offered. Due to this pervasiveness of technology a new digital environment is being generated in which technology has become a central element, and therefore we shall not lose sight of its key role regarding education and culture [2].

Learning in informal environments is, in the broadest sense, a product of the free interaction between visitors and heritage. Informal setting environments offer great potential for communicating social, cultural and scientific information, enhancing attitudes of curiosity and respect, and improving cognitive skills. Digital technologies are allowing these informal educational spaces to become more attractive to the formal educational system [3, 4].

Hence, the informal education system is not meeting the needs of the formal education system. It is necessary to build the necessary bridges to connect them.

Adopting technology in the classroom, which is still an ongoing task, has significantly changed how contents are taught and learned. This is currently overlapping with the need for integrating innovation and technology into the curriculum.

In this occasion, the challenge of having to design a single educational initiative targeted to primary school students aged 3 to 12 years, allowed the UdA students to analyse different methodologies and learning experiences from a purely practical and experimental side. As a result, a platform with an
innovative approach was created. The aim was clear: to show the importance of the cultural legacy of the Romanesque heritage, and at the same time do it in a meaningful, experimental, as well as in an exciting way.

Innovating teachers need to help students to integrate their learning beyond schools by creating opportunities for a ubiquitous learning. Students can develop their critical and creative thinking skills in formal or in non-formal contexts. Culture is everywhere, and therefore providing countless stimulating environments to encourage learning by creating opportunities outside the classroom [2].

The purpose of this contribution is (1) to describe the innovating experience and to outstand the strong and the weak points, (2) to share the experience, and (3) to provide an insightful discussion about which are the most suitable methodologies or strategies for a meaningful learning of history and heritage in schools.

This paper is organized as follows: Section 2 describes the case of study; Section 3 explains the methodology together with the goals, the organization and the structure of the sessions; Section 4 shows results and, finally, Section 5 concludes with a discussion about the essential points for this case study and possible further work.

1.2 The Romanesque Art

The Romanesque Art is one of the most important legacies in the history of Andorra. The landscape of the Andorran mountains is filled with countless testimonies of small Romanesque churches that recall the importance of this period in the history of this small country.

It is an artistic style between the X and XIII centuries. For the first time since the fall of the Roman Empire, Europe was unified by the same artistic style. The Romanesque Art was predominantly rural. A favourable context in the middle of the XTH century, with a process of demographic, economic and religious recovery, propitiates the creation of monasteries and temples.

The Church was the main client of the artisans, who commissioned the construction and decoration of churches in many small towns and villages of the time. Thus, religion is the most important feature of the Romanesque Period. The symbolic value, architecture, sculpture and painting were the four main elements of this period. In Andorra, the Romanesque Style is a reflection of Christianization. It develops fully from the second quarter of the XIHI century with the predominance of the traditional rural architecture. Its maximum splendour comes in the XIIHI century and lasts until the XIIIHI century [5].

1.3 The Romanesque Period in the school curricula

A discussion in class on how to approach cultural heritage in primary school led us to the decision to create an educational digital platform. After a research job on didactical materials specifically designed for kids, we reached the conclusion specifically of a lack of didactical materials to teach the importance of the Romanesque Art in class. Therefore, and because of the importance of showing kids the value of the Romanesque Art the whole class agreed on taking this subject as the main issue for designing a digital platform with a didactical approach.

The main goal and challenge of the website designed by the UdA’s students was to show that although this issue is not planned in the primary school curriculum, when designing appropriate didactical materials and suitable activities for kids from 3 to 12 years old, this subject can be taught since early ages.

2 THE CASE STUDY: THE ROMANIC IN ANDORRA PLATFORM

2.1 How can how kids approach to cultural heritage and to history in general?

The challenge was to develop a single and powerful web 2.0 tool to embrace, implement and support an inclusive and multi-disciplinary approach to influence how kids approach cultural heritage and history in general. One of the results of this project has been an improvement regarding a positive behaviour towards learning about cultural heritage.

This site takes participants through a comprehensive and didactic exploration of the Romanesque Art in Andorra using three different approaches based on architecture, painting and sculpture. Each one highlights the main features and provides information as well as activities to make learning more
meaningful. After working through these activities, students from different educational levels become more able to effectively interpret the Romanesque Period.

The website offers resources for educators and students from pre-kindergarten throughout all primary school grades. This multi-disciplinary approach enhances the ability to develop fundamental skills in core academic areas, such as reading, writing, art, geometric or mathematics. These skills are further honed and advanced as children work their way through the educational system.

Finally, the didactic proposal was concreted in the design of a web site on the Romanesque Art with introductions for teachers and digital and hands-on activities for schoolchildren. The structure of the learning proposal site, along with the consensus of goals, activities, knowledge and digital skills, allows one to visualize an approach that seeks to ensure a significant learning process. The site is beneficial to all students to strengthen their knowledge in one of the most important historical and artistic periods. This multi-disciplinary site guides participants through a comprehensive and didactic exploration of the Romanesque Art in Andorra and provides information as well as activities to make learning more meaningful. The site:

- Offers reliable content from across the web
- Offers balanced educational resources for students
- Promotes historical inquiry
- Offers activities designed together with strategies to encourage and support students in their learning process

The process of having to design didactical material required that the students engaged in a strenuous preparation and research in order to decide the best content, and to try to identify the best methods to design the most suitable activities depending upon the age of their audiences. This process guaranteed that students went through a holistically learning process that forced them to work considering the 4Cs: Creativity, Critical Thinking, Communication and Collaboration.

The methodology described by Larraz & Yáñez [6] to certify the achievement of the necessary competences has to be considered. These authors identify certain categories indicators and competencies to assure the proper design and evaluation of digital didactical material on social sciences. These categories are: link “knowledge and information”, and link relating “digital competence”. An additional contribution from this paper is the added category of “learning innovation”.

3 METHODOLOGY

3.1 Goals

The main goal of this project is to create a platform for primary school teachers to bring cultural heritage into the classrooms. The proposed digital platform has been devised from its foundations to introduce students to the importance of Romanesque Art in general, and more specifically in Andorra. The final result is a learning and teaching platform for primary school's teachers and students to bring cultural heritage into the classroom.

Two specific goals are underlined. The first goal deals with the aim of using the Romanesque Art remains, which are spread throughout the Andorran territory, as a primary source to provide students with a window into the past, bringing the youngest students in close contact with heritage. The second goal is to develop a single, powerful web 2.0 tool to embrace, implement and support an inclusive and multi-disciplinary approach to influence in how kids could reach an approach to cultural heritage and to history in general.

3.2 Competencies

Working from the development of competencies implies a pedagogical model based on the constructivist paradigm, in which students are active agents of their learning and where they prioritize the ability to understand and apply theoretical knowledge, and the ability to transfer knowledge to new situations. Therefore, the ability to develop critical thinking skills [7].

The development of this task allows students to:
• Document and witness the processes of individual and team activities through classroom training and evaluation activities.

• Analyse the methodology and resources used in the classroom, as well as the methodology used in the evaluation process.

• Make an efficient and eminently practical use in the designing of educational materials that allow and foster an approach between formal education (schools) and non-formal education (museums and heritage).

• Create 21st century learning environments and opportunities, which are essential to prepare all students for the 21st century challenges in education.

• Ensure ongoing innovation in education, and more specifically in cultural heritage education.

• Inspire kids and teachers about the importance of their Romanesque heritage throughout a digital innovating platform.

This specific assignment, from a constructivist learning point of view which enhances students not only to work on the specific competences of their bachelor degree, which are essential as future teachers, but also the UdA cross-curricula competencies. The purpose of this challenge is that students become capable of transferring knowledge to new situations or scenarios they develop critical thinking abilities [6].

Students preparing to become teachers should be able to effectively tackle the new educational needs and demands. Practical knowledge should be integrated into academic knowledge so the potential teachers can create their own pedagogical knowledge. This entails having rooms for reflection on thinking and performance, which should promote self-awareness and the development of a personal didactic model [8].

The core competencies identified are accomplished regarding goals, methodologies and activities.

<table>
<thead>
<tr>
<th>Specific</th>
<th>Cross curricula</th>
</tr>
</thead>
<tbody>
<tr>
<td>Understanding the curriculum content</td>
<td>Personal responsibility</td>
</tr>
<tr>
<td>Manage the process of teaching &amp; learning</td>
<td>Focus on quality</td>
</tr>
<tr>
<td>Design and implement ICT in teaching and learning situations</td>
<td>Learning to learn</td>
</tr>
<tr>
<td>Promote teamwork and involvement in group projects</td>
<td>Personal responsibility</td>
</tr>
<tr>
<td>Understanding the content and its teaching</td>
<td>Knowledge management and autonomy at work</td>
</tr>
<tr>
<td>Transmitting culture and values</td>
<td>Lifelong Learning</td>
</tr>
<tr>
<td>Promoting democratic education for active citizenship</td>
<td>Entrepreneurship and teamwork</td>
</tr>
<tr>
<td>Communication</td>
<td></td>
</tr>
</tbody>
</table>

3.3 Participants

This is an interdisciplinary work developed by students of the second year of the Bachelor of Science in Education at the University of Andorra. This case study shows the interdisciplinary work developed within the subjects of “Cultural Heritage Education” in Andorra, and the subject of “Communication Technology (TAC)” under the guidance of the professors from both subjects. Students developed their learning through practice, and a series of follow-up support and evaluation. This activity is based on a previous pilot experience [6, 9].

3.4 PBL Methodology

The Learning by doing theory led us to the methodology of Project Based Learning (PBL). With a progressive spiral approach to the problem, and through discovery learning, the goal is to encourage the use of research and analysis of information. This process develops and promotes critical thinking among students while encouraging the use of creativity in order to reach a final product [10, 11].
The main objective in the design of educational activities is to understand what should be the expected from each student’s learning experience. Therefore, together with the identification of goals, an analysis and forethought in which the students have to link the specific objectives to the activities is required. Since students are of different ages, the most appropriate methodologies must be considered as well. This methodological process enhances the association of specific goals to activities and to competences as well. All this planning and preparation is essential and will be useful in designing parallel evaluation rubrics for each activity.

The design and subsequent evaluation of these activities foster creativity and interdisciplinary relationship between the different areas, as well as the ability to ask questions, evaluate different solutions and become capable of making decisions. Learning happens as a result of the challenge to solve a problem and not only from an abstract statement. This process promotes the involvement of other areas of previous experience such as pattern recognition, memory, problem solving, decision making and learning.

In order to ensure that students had acquired and mastered all competencies, networking, and mentoring were basic mechanisms to support students through their learning process. Therefore, a scenario needed to be established to encourage the interactions between the multiple learning agents [12].

### 3.5 Organization

With a clear desire to foster "teamwork" and peer mentoring intergroups, five working groups were created. All five groups are linked to the primary school structure (by years):

- Group 1. Kindergarten Group (3-5 years)
- Group 2. 1r cycle (6-7 years)
- Group 3. 2ncycle (8-9 years)
- Group 4. 3r cycle (10-12 years)
- Group 5. Website managers

Each group was integrated by four members and each member was assigned a role:

- **Activator**: Activates/turns on the work of all the members of the group. Organizes and coordinates meetings in order to track the progress of the different actions carried out by the group.
- **Spokesperson or Foreman of the group**: In charge of communicating the results of the work. Coordinates with the rest of team members to know the details of the different actions.
- **Secretary**: Coordinates the writing and the form on behalf of all the members of the group of the letter of commitment. This letter implies the obligation of each member to comply with the agreements of the group.
- **Transversal Support**: Gives the necessary support to all members of the group and coordinates with Group 5 in charge of uploading the information to the platform in a coherent way.

### 3.6 Structure

The literature suggests that cultural heritage education fosters the students' personal development [13, 14, 15, 16]. In this mentoring process, an atmosphere to enhance critical thinking skills was developed. Different types of sessions were organized:

- **Theoretical sessions** that alternated the theory with the method of discovery induced through text, graphics, maps, images, news from newspapers and specialized websites.
- **Practical sessions** with a methodology to analyse curricula materials, classroom situations, preparation and analysis of different materials and learning activities.
- **Personalized individual mentoring sessions** to monitor the task.
- **Mentoring in group sessions** to analyse the evolution of the task.

All students had the chance to expose their individual point of view as future teachers. The peer mentoring evaluation was carried out in these sessions. students and the teacher, highlighted the
strengths and the weakness of every student’s proposal. The idea of sharing different points of views, and reaching to a common decision validated by the majority of the group helped the students to work on tolerance, empathy and respect.

Each group worked on their own in their proposal. Several collective sessions were carried out through the semester in order to share the progression of each group. In these sessions, the whole class, as a group, had to negotiate and reach an agreement on several issues:

- A common and shared structure regarding the information architecture in the website.
- A make-believe character (mascot): the kind of animal as well as the name. A make-believe character was created to accompany young students in their adventure to discover the Romanesque Art in Andorra. This make-believe character evolves throughout the different stages. The animal was a silk worm and the final name voted and agreed by consensus was “Romand” as a result of putting together the words Romanesque and Andorra.

4 RESULTS

4.1 Evaluation methodology

With the willingness of reaching the quality and excellence, two evaluations were foreseen:

A. Internal evaluation

- Mentoring in group sessions to analyse the evolution of the task, in which answers are given individually or by the groups to methodological questions and content in front of the class group and the teacher guides group by group, student by student. This space favours a debate atmosphere, and offers teachers the possibility of knowing first-hand how the work progresses, which is necessary information to provide as an appropriate orientation to each group [17], and to make a real accompaniment of it. Exhibitions are important and useful to guide and redirect the work when necessary and helps prepare the final presentation. The key strategy for promoting formative evaluation is the feedback provided by teachers oriented to improve their learning [18, 19]. Feedback must be important and must be provided immediately after their expositions.

- Oral presentation and joint evaluation evaluation conducted by at least two teachers. Students must present the final product with elaboration by highlighting the feasibility of the project and explaining how to put it into practice, as well as the benefits and limitations of the implementation. Through the feedback on the work presented, students are committed to improving and strengthening those aspects remarked by teachers, whether in terms of content, design, or in the best adaptation of activities for each age. The final goal is to show a coherence in the learning process of the Romanesque Art from Kindergarten throughout primary school.

B. External

- Group of experts, the work is presented for a second time to those responsible for the specific areas of social sciences of Andorra at the Ministry of Education in Andorra.

<table>
<thead>
<tr>
<th>Knowledge and information</th>
<th>Digital competence</th>
<th>Learning &amp; Innovation</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Information Architecture</td>
<td>1. Informational Literacy</td>
<td>1. Creativity</td>
</tr>
<tr>
<td>2. Feasibility</td>
<td>2. Technological Literacy</td>
<td>2. Critical Thinking</td>
</tr>
<tr>
<td></td>
<td>4. Communicative Literacy</td>
<td>4. Communication</td>
</tr>
</tbody>
</table>

Table 2. Main methodological categories to consider when designing, implementing and evaluating digital material.
4.2 Results

In this project, student learning is at the epicentre. This project aims to enhance the acquisition of the XXI\textsuperscript{st} century skills students should have. Such competencies are necessary to adapt to the new way of understanding and learning in a digital world. As Salinas points out, the constant evolution between the scenarios requires a permanently changing teacher profile, much more characterized by the connectivity [21].

The idea of learning by doing leads students to a much more self-confident learning. The introduction of new learning scenarios provided by the cultural heritage and museums makes learning better: much more durable, more effective, more affective, more experiential and finally more engaging.

All the research and designing processes led to design an educational platform on the “Romanesque Art in Andorra” (see Fig. 1). With the final objective to meet the goal of bringing the cultural heritage into the classrooms, this web page was included in the UdA website. The link to the website has been submitted to the Andorran ministry of Education and it was offered to schools through the website of the University of Andorra.

![Figure 1. The Romanesque Art in Andorra educational platform: http://aial1511.wixsite.com/el-romanic.](image)

It has been a real challenge for both, teachers and students, to design a new learning environment to encourage an active involvement of students, with a focus where the child is the true protagonist and activities are designed to playfully and attractively enhance their skills.

The work developed by students allowed them to:

- Get a comprehensive analysis of how to implement ICT in learning activities.
- Get a snapshot of the Romanesque Art in general, and in particular in Andorra.
- Get an understanding of the state of the current educational materials and the implementation of technology in museums in Andorra.
- Get a general overview of the current Romanesque Art didactic materials available.
- Be able to develop a methodology and improve proposals with a set of tools to engage children in learning.

This website was built by students studying to become teachers. Therefore, the pedagogical aspect in the transmission of knowledge, as well as the activities that have been done, are designed from a didactic point of view and are available to any teacher interested in developing this subject in the classroom.
5 CONCLUSIONS, DISCUSSION AND FURTHER STEPS

Given the exceptional quality of the didactical proposal, with the aim of giving the maximum disclosure to the work done, but above all in order to make it available to the teachers of primary education, the page was linked and made accessible through UdA’s website as an example of an innovative educational practice and the need to transfer knowledge to society.

The creation of this online digital cultural material on the Romanesque Art/Period in Andorra becomes an access point to introduce primary students to this issue through the many resources available (books, photographs, exhibits, audiovisual works, archived documents, museum works of art, architectural and archaeological heritage, etc.).

It provides an excellent opportunity to showcase the cultural heritage of the Romanesque Art in Andorra, as well as enhances the accessibility to the specific knowledge of this heritage.

The digitalized access to cultural heritage and the online accessibility is essential in order to highlight said cultural heritage, to inspire the creation of content, and to encourage new online services to emerge.

A future challenge is to: (1) enrich this platform in further academic years with new academic proposals; (2) create and design new materials; (3) improve the digital activities and skills with a wider range of web 2.0 tools.

This is a first version on which we hope to continue working, and expand to be able to carry out the necessary process of knowledge transfer from the University to society.

REFERENCES


