

# CULTURAL VALUES OF EARTHEN ARCHITECTURE FOR THE SOCIETY OF THE FUTURE. WORKSHOPS FOR CHILDREN IN THE SUMMER SCHOOL OF THE UPV

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## Abstract

Vernacular architecture heritage, both local and global, is one of the mainstays of cultural structure. This heritage is currently in a state of disrepair and abandonment, resulting mostly from a lack of awareness and good judgement on the part of the people. Therefore, one of the key actions for the promotion of proper assessment is education on cultural, social and environmental values. Educating the society of the future, our children and youth, is the key to success in this cultural recovery process.

Earthen architecture in particular is unknown to many and forgotten by others. However, it represents the history, the present, and the future of many different cultures. At times, this architecture is considered to be poor, uncatalogued and worthless. We have taken on the task of changing this perception, promoting this building technique and working towards earthen architectural heritage being recognised as part of our constructive knowledge.

This article presents the activities and workshops on earthen architecture held for children aged eleven and twelve at the summer school of the Polytechnic University of Valencia (UPV) in July 2015.

The content of the workshop was divided into four training blocks: *earth*, *adobe*, *earthen architecture* and *adobe construction*. Activities were divided into two sessions lasting an hour and a half each. The first two blocks were included in the first session while the last two were left for the second. Approximately two hundred students, organised into eight groups of twenty-five children each, took part in these activities.

The block dealing with earth as a material was the most theoretical in the activity. It allowed children to understand the properties of earth and its characteristics and to support this through their own experience. In the section studying adobe, children worked on the construction technique of adobe, by making their own raw earth bricks. When studying earthen architecture, students learnt about other cultures and different geographical realities. In addition, students were generally able to identify earthen architectural heritage. Finally, by working on the block on construction with adobe, skills in the technique were improved. At the end of the session, students built a wall using their handmade bricks. This encouraged teamwork and an overall sense of belonging within the group.

During the activities, quotes from students included statements such as “*We do not have to underestimate this architecture, even though it looks dirty and worthless. It requires hard work and many people have been involved*”. This shows how the workshops made these young students aware of this architecture, an architecture which respects the environment and promotes camaraderie and creative work.

Keywords: Learning by doing, earth architecture, children's workshops.

## 1 THE CULTURAL VALUES OF EARTHEN ARCHITECTURE

Architecture is a major part of the cultural expression of a country, region or a specific geographical area. The materials used in the construction of a specific region are a basic reflection of its culture. In the particular case of earthen architecture with its different constructive variants, it is an essential part of our culture due to its remote origin, technological variety and adaptation to natural and cultural surroundings. However, earthen architecture and its construction techniques have gradually disappeared, either abandoned or replaced by new standard techniques, especially during the second half of the 20th century. This was the result of the lack of knowledge and loss of prestige of traditional architecture, considered to be of poor quality and associated with underdevelopment. This situation led to dwindling awareness of earth, a construction material which can be used to work on numerous cultural and social values linked to sustainability and the current management of available resources. Earthen

architecture is intrinsically linked to concepts such as local tradition, the development of trades, adaptation to the environment and 0 km architecture; and it is through the learning of earthen architecture that discussion on all these subjects can be encouraged.

Therefore, by learning about this type of architecture its cultural, social and environmental values are further incorporated into society. In addition, educating children and young people, representatives of future society, is essential so that this process of cultural recovery can be progressively developed. This is in agreement with pedagogical studies [1] which have confirmed that in childhood the brain is much more receptive to new experiences and all sorts of learning. Children are often dominated by their subconscious need to absorb new information through different observation, participation and exploration processes [2]. With these highly receptive children in mind [3], a series of didactic and training activities were designed specifically for children as part of the summer school at the UPV.

Children's education is undoubtedly one of the main tools for bringing about the necessary social changes to ensure sustainable development. For this reason, making a series of proposals encouraging early stimulation and learning about earth as a construction material contributes to a growing awareness of and contact with the material among children, as well as encouraging the learning of more contemporary concepts such as issues relating to economic, social, cultural and environmental sustainability [4].

## **2 SUMMER SCHOOL AT UPV**

At the time of its foundation in 1986 the summer school at the Polytechnic University of Valencia (UPV) was a pioneer experience among public universities. It was born from an initiative of students at the university as a response to the concerns of professionals and teachers of the university community about the problems caused by the way in which the school holidays of their children and relatives affected their teaching duties at UPV in the month of July. It arose as a different alternative, where children, siblings or relatives of the university community could enjoy their holidays through cultural, creative and sports activities designed specifically for each age group. Due to the great success of this initiative this summer school continues to be held and to this day is considered one of the best summer schools in Spain and one of the most appreciated university services [5].

Over 1,200 children aged between 4 and 15 registered last summer, with over 100 experienced monitors to ensure the summer school is an unforgettable experience for everyone.

As a teaching innovation, the last school, held in July 2015, incorporated the programme *experimenta.upv* [6], a new project concentrating its attention on the work of the different schools and research laboratories of the university. With over twenty activities specifically designed for each age group, the aim was to bring science closer to the participants of the summer school. To do so different departments collaborated by allowing access to installations or laboratories, providing first-hand knowledge on the possibilities the university offers. Activities included building an electric car, a biotic arm, a lava lamp, finding out more about the vegetable garden, designing the urban plan for a city... always using participatory activities adapted to every level.

## **3 AIM OF THE EARTHEN ARCHITECTURE WORKSHOP**

This new initiative from the summer school through the *Experimenta* programme provided an opportunity to bring the values of traditional earthen architecture to children. Approximately 200 eleven- and twelve-year-olds took part in the earthen architecture workshop in the UPV Summer School held in July 2015 in collaboration with the UNESCO Chair of Earthen Architecture, Building Cultures and Sustainable Development.

In this time, eight groups of approximately twenty-five children passed through the "earth corner", as the small plot of land in the university where this activity was carried out became known, working in two one-and-a-half-hour long sessions.

Children learn about what surrounds them, what they see on a day-to-day basis. Unfortunately, earthen architecture is not part of the day-to-day of most children living in large cities. Those who are aware of earthen architecture frequently associate it with decay and poverty and it is important to shed these prejudices by getting to know this architecture and all that it entails. This activity was carried out so that children could find out about the cultural wealth of this sort of architecture.

There are two main goals to this activity: finding out about and identifying earth as a construction material and getting to know the intrinsically social values of this architecture. Therefore, the activity was divided into four theoretical-practical blocks to work on each of the different specific objectives, explained below.

## 4 DEVELOPMENT OF THE ACTIVITY

“Learning by doing” is a process in which the conventional pedagogical model is inverted. Based on a specific activity to be carried out it is possible to deduce the rules that have made it possible, and the theory about a specific object of learning can be deduced and acquired through direct experience.

This work method based on experimenting was the guiding force of the entire activity and was reinforced with other learning methods such as role games and play, combining teamwork and individual tasks. It should be noted that although this activity was designed to acquire knowledge relating to earthen architecture and its values, it also took place in a summer school during the holidays where entertainment, fun and enjoyment were key elements.

The four training blocks composing this activity -earth, adobe, earthen architecture and adobe construction- are presented below. The first two were carried out in the first session, while the last two were developed in the second. Each of the blocks included minor learning activities in which the different goals proposed were covered through experience and play.

### 4.1 Block 1: Earth

Earth is a material whose characteristics and properties can all be learnt by experimenting with the five senses. Sight is used to roughly identify the different particle sizes of the earth, touch helps perceive its composition, smell allows us to distinguish the humidity level of each type of earth, and hearing can be used to perceive texture. The plasticity of a specific type of earth can be observed by adding water, identifying mud as a cohesive element, while its compressive capacity can be observed by compacting a fistful of earth.

The specific objectives proposed for this training block concentrated on finding out about the properties of earth and its behaviour and identifying earth as a construction material. This block is the most theory-based part of the activity, where children have the chance to learn more about earth in a simple, immediate and intuitive manner through small exercises in which they get their hands dirty.

Although some properties such as plasticity are harder to understand -only one child was able to establish that in earth this capacity depended on its mud content when reacting to water- the general idea extracted from direct experimentation was clear and all the children realised that the earth did in fact stick to their hands once it was wet, but not when it was dry.



Fig. 1. Learning about earth.

## 4.2 Block 2: Adobe

In this block, thanks to “learning by doing” children become familiar with a specific construction technique with earth, adobe, and manufacture their own. The adobe made and the tools used were adapted to the children's ages. Although no real construction tools were used, equivalent adaptations were used to in an attempt to be as faithful as possible to the original ones, and in combination with the raw material this ensured an experience that was as realistic as possible for the children.

In order to ensure everyone took part in some way, each child was assigned a role of vital importance at some point in the activity: master builder, in charge of the earth, in charge of the sieve, in charge of the mix or in charge of the adobe. Each of these roles was important in each step of the manufacturing process for adobe and as a result the participants felt part of the group taking an active part in tasks. Teamwork was thus combined with individual work and the group could not complete the task unless the student with the role in question completed the relevant part.

During this block, the children became acquainted with the different phases of the construction process, preparing the earth, the mix and finally manufacturing the adobe.

In this activity it was interesting to observe how the children's behaviour evolved. When faced with the mix their initial reaction was some disgust and refusal to get their hands dirty. Subsequently, they saw it as a game, associating it with laughter and fun. Finally, they understood the importance of what they were doing and even went so far as to correct each other if they saw mistakes in the adobe manufacturing process.



Fig. 2. Preparing the mix for manufacturing adobe.



Fig. 3. Image of the adobe bricks manufactured during the workshop

## 4.3 Block 3: Earthen architecture

In this block, using play as a learning method the children learnt about some examples of architectural heritage from different parts of the world. Various pictures were handed out in the groups and the children had to spot the clues that helped them classify the images by continent. With this seemingly simple game they completed a deduction exercise based on their prior general knowledge of geography and architecture. It is important to take into account the prior knowledge of participants in these subjects for this exercise, as proposing pictures that were too easy would make children lose interest in the

exercise, while if these were too difficult they would find it impossible to complete the activity and would lose heart [7].

Most of the time the children made mistakes, mainly based on prejudices. For example, they associated the more luxurious buildings with Europe, confusing dwellings in Chile with homes in Germany or France, and identifying more humble architecture as African, including some examples of decaying rural homes from central Spain.

This exercise aimed to encourage reflection on equality among young children, avoiding ideas linking earthen architecture with underdevelopment and promoting the idea of the vast traditional heritage of this material in Spain. Another important reflection is that even today earthen constructions can satisfy contemporary needs, both in terms of aesthetics and comfort.

#### 4.4 Block 4: Construction with adobe

The aim of this final block was to learn about the details and execution of adobe by building a wall approximately one metre high and with no set design to encourage creativity.

While the previous blocks were taught in classes organised in small groups all the children taking part in the activity built the wall together. This meant that close to two hundred children worked together on the construction of a single wall. This helped them feel that they were part of a collective, understanding that what they were doing had an effect on the others and the final success.

A 3D puzzle or model was built to scale, was used to figure out the details of the positioning of the adobe bricks, the bonding of the wall, and the execution of the work. This was the part of the activity that the children enjoyed most as they were able to see how the adobe bricks they themselves had made in the previous session were going to shape a larger construction. They saw how they could progress from individual to collective work piece by piece.

As several groups had collaborated in the construction of the wall the first participants completed their activity before the wall was finished. It was very exciting to see how interested the children were in going back to see if the final group had completed its work and seeing the finished wall.

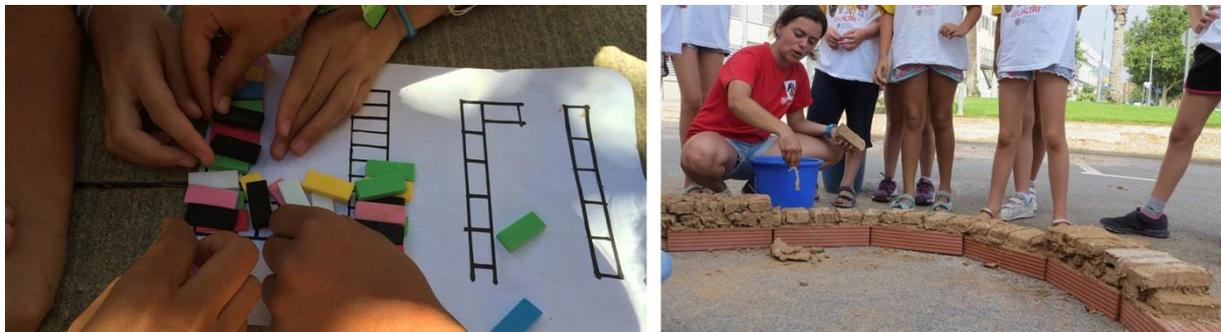


Fig. 4.L: Analysis of the bonding of the wall. R: Start of the wall construction.



Fig. 5. Images of the wall construction



Fig. 6. Image of the wall construction

### 3 REFLECTIONS AND RESULTS OF ACTIVITIES

The activities carried out as part of the programme of the UPV Summer School have been a highly satisfying experience for teachers and organisers as well as for participants. The main aim throughout the entire workshop was to structure active learning on the topic of earthen architecture and its cultural and social values through a guided, participatory, and practical learning process.

After learning about earth as a construction material the children are able to make small adobe bricks and identify examples of earthen architecture on their own. However, the biggest achievement of the activity is undoubtedly being able to tackle the prejudices generally associated with this type of architecture. Reflections such as “We do not have to underestimate this architecture, even though it looks dirty and worthless. It requires hard work and many people have been involved” show how it was possible to create awareness of different architecture among children. They were able to learn a bit more about other cultures whose entire life takes place among earthen constructions.

The students who took part in this workshop displayed an increasing level of acceptance, enthusiasm and attention to the issues discussed. This is a very positive result as the good reception given to the proposed activities is undoubtedly important feedback, as well as a motivation to continue to develop these educational proposals.

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