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TEACHING VERNACULAR CONSTRUCTION: A PRACTICAL EXPERIENCE WITH EARTH IN THE TRAINING OF ARCHITECTS IN BUCARAMANGA, COLOMBIA

ENSEÑANZA DE LA CONSTRUCCIÓN VERNÁCULA: EXPERIENCIA PRÁCTICA CON TIERRA EN LA FORMACIÓN DE ARQUITECTOS EN BUCARAMANGA, COLOMBIA

ENSINO DA CONSTRUÇÃO VERNÁCULA: EXPERIÊNCIA PRÁTICA COM TERRA NA FORMAÇÃO DE ARQUITETOS EM BUCARAMANGA, COLÔMBIA

Figure 0. Photo of details inside a residence in El Cogollo, Barichara. Colombia. Source: Prepared by the authors.

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RESUMEN

En Colombia, diversas instituciones de educación superior han incorporado dentro de sus programas de arquitectura la exploración de prácticas y conceptos asociados a la arquitectura vernácula. En este caso, la Universidad Santo Tomás, sede Bucaramanga, a través de su programa de Arquitectura, desarrolló el Taller en Construcción en Tierra, diseñado para estudiantes del tercer semestre al noveno semestre. Esta experiencia pedagógica se centró en la técnica de la tapia pisada y adobe, como sistemas constructivos tradicionales arraigados en la región santandereana. El presente artículo, desde un enfoque cualitativo y descriptivo, busca analizar las principales fortalezas de esta experiencia de aula. Se implementaron cinco fases metodológicas del proceso formativo, que comprenden desde la aproximación conceptual a la construcción en tierra en Colombia, se pasó por la exploración de experiencias regionales y nacionales, hasta la práctica directa en sitio con técnicas como el adobe y la tapia pisada. Estas etapas permiten articular la teoría con la experimentación, que fomentan un aprendizaje integral. Finalmente, la sustentación de resultados abre un espacio de aplicabilidad de estas prácticas en el aula. Como conclusión, se identifica la necesidad de fortalecer este tipo de experiencias como una estrategia pedagógica que integre conocimientos locales en la formación de los futuros arquitectos.

Palabras clave: arquitectura, construcción, vernáculo, enseñanza, diseño

ABSTRACT

In Colombia, several higher education institutions have incorporated the exploration of vernacular architecture practices and concepts into their architecture programs. In this case, the University of Santo Tomás, Bucaramanga campus, through its Architecture program, developed the Earth Construction Workshop, designed for students in their third to ninth semesters. This pedagogical experience focused on the techniques of rammed earth and adobe, as traditional construction systems rooted in the Santander region. Using a qualitative, descriptive approach, this article seeks to analyze the main strengths of this classroom experience. Five methodological phases of the training process were implemented, ranging from a conceptual approach to earth construction in Colombia to the exploration of regional and national experiences, and culminating in direct on-site practice with techniques such as adobe and rammed earth. These stages allow combining theory and experimentation, promoting comprehensive learning. Finally, the sustainability of the results opens the door to the applicability of these practices in the classroom. In conclusion, the need to strengthen this type of experience as a pedagogical strategy that integrates local knowledge into the training of future architects is identified.

Keywords: architecture, construction, vernacular, teaching, design

RESUMO

Na Colômbia, diversas instituições de ensino superior incorporaram em seus programas de arquitetura a exploração de práticas e conceitos associados à arquitetura vernacular. Neste caso, a Universidade Santo Tomás, sede Bucaramanga, por meio de seu programa de Arquitetura, desenvolveu a Oficina de Construção em Terra, projetado para alunos do terceiro ao nono semestre. Essa experiência pedagógica centrou-se na técnica da taipa de pilão (tapia pisada em espanhol) e do adobe, como sistemas construtivos tradicionais enraizados na região de Santander. O presente artigo, a partir de uma abordagem qualitativa e descritiva, busca analisar os principais pontos fortes dessa experiência em sala de aula. Foram implementadas cinco fases metodológicas do processo formativo, que compreendem desde a abordagem conceitual da construção em terra na Colômbia, passando pela exploração de experiências regionais e nacionais, até a prática direta no local com técnicas como o adobe e a taipa de pilão. Estas etapas permitem articular a teoria com a experimentação, o que promove uma aprendizagem integral. Por fim, a sustentabilidade dos resultados abre espaço para a aplicabilidade destas práticas em sala de aula. Em conclusão, identifica-se a necessidade de fortalecer este tipo de experiências como uma estratégia pedagógica que integre conhecimentos locais na formação dos futuros arquitetos.

Palavras-chave: arquitetura, construção, vernacular, ensino, projeto

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INTRODUCCIÓN

Vernacular architecture comprises a set of construction techniques deeply rooted in the territory that express the cultural, climatic, and material particularities of each region (Guarnizo Sanchez et al., 2025). These practices respond to environmental conditions and the availability of local resources, reflecting the ways of living that have been passed down from generation to generation. For example, in Colombia, cities such as Mompox (Bolívar), with its model of colonial adobe houses, internal courtyards, and tiled roofs, and Barichara (Santander), with its rammed earth walls, tiled roofs, white facades, and wooden carpentry, stand out. Each building is transformed into a tangible testimony of the community's intrinsic identity and its link to the surrounding environment. The use of a diverse range of materials is sought, starting from the general concept of traditional architecture, revealing the versatility and adaptability of these construction techniques across the country in a contemporary way (García Villar & Rolón, 2023).

A contemporary example of the successful application of the earth-based construction technique is found in the Santander region, located in the northeast of Colombia, where buildings that use this technique are living testaments of the rich local architectural heritage, but also stand out for their ability to integrate into contemporary constructions, which create a unique symbiosis between traditional and modernity. For example, in the cities of Barichara, El Socorro, Girón, and Piedecuesta, their buildings use the rammed earth technique, complemented by the use of local materials such as wood and stone, which provide stability, durability, and a harmonious integration with the natural environment (Vargas Osorio & Agelvis, 2001).

Through a descriptive qualitative analysis, the intention is to present the experience of the academic community of the Santo Tomás University, Bucaramanga Campus, through its Faculty of Architecture, in its workshop on the use of earth, which ran from 2017 to 2022. This theoretical-practical academic space was created as an elective inter-semestral course for students from the third and ninth semesters, who could study it at any of these levels, focusing on the study of and construction with earth. The course addressed the theoretical and practical aspects of traditional construction, including adobe and rammed-earth wall construction. As a final phase, the students prepared a design proposal presented in both plans and models, which provided a basic approach to integrating knowledge and skills into a tangible project.

This experience allowed the exploration and in-depth study of the construction technique in the academic environment, providing the teaching staff with the invaluable opportunity to generate practical academic and scientific products throughout the program (Estévez Suárez, 2018). The students who participated in the course acquired competencies and practical skills in earth-based construction techniques (Rivero Bolaños, 2007).

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Figure 1. Photograph of a residential facade - City of Mariquita, Colombia. Source: Prepared by the authors.

The result of this experience was significant growth for the students and teachers, who were able to build on the knowledge acquired during the course in practical, theoretical, and academic ways (Gallego Jorreto, 2018). Conducting the construction technique in situ also led to the development of creative and reflective skills (Guarnizo Sánchez et al., 2025), thus consolidating in students a conscious vision of sustainable architecture, focusing on resolving real problems from an integral perspective.

Vernacular architecture and value in construction

Vernacular architecture, at its essence, is manifested as an organic and authentic architectural testimony that emerges directly from the needs and specific characteristics of local communities in each region. It is a living reflection of the adaptation to the environment and to the particular conditions of the habitat that define each place (Fonseca Martínez & Saldarriaga Roa, 1992). The uniqueness of vernacular architecture lies in its origin: local communities develop and perfect construction methods adapted to their environment, the result of observation and accumulated experience, which allows them to optimize the use of available resources and ensure the resistance of buildings to geographical conditions. The accumulated knowledge was then transmitted in an ancestral way and has been skillfully applied in constructive techniques that, although they incorporated adaptations from the European colonies, remain deeply rooted in the cultural and aesthetic identity of regions such as the Coffee Axis, the Andean Region, and the Pacific Coast (Figure 1).

Throughout history, humans have explored and used the materials available in nature to meet their needs for shelter and habitability. Elements such as stone, due to its solidity and durability, or materials of vegetable origin, such as bamboo, have played an essential role in the development of diverse construction techniques. In Colombia and in nearby countries such as Ecuador, they have adapted the material vulgarly known as *guadua* (Angustifolia Kunt) for construction; it is a kind of giant bamboo, with the capacity to grow up to 20 meters in length and acquire considerable diameters, which makes it a material traditionally used in rural housing (Sornoza-Tituano et al., 2022).

A representative example of this relationship between construction technique, sustainability, and social context is found in the Quindío, Caldas, Risaralda, Tolima, and Cundinamarca regions, and other parts of Colombia, which have used *guadua* as the main material for housing construction, due to its economic value, its seismic flexibility, and its low environmental impact (Castilla Ceballos & Garzón Castañeda, 2023). Nowadays, this knowledge has been reinterpreted by architects and academics, who have investigated new applications of the material in construction processes that seek to merge tradition with innovation.

Another material used has been earth, especially in systems such as adobe and rammed earth. These techniques, long-standing in rural and sub-urban contexts, have been characterized by the use of large compacted or molded earth blocks, which provide solidity and stability to the buildings. Their use has endured over time due to the resource's availability, low cost, and excellent thermal performance, especially in hot and dry climates (Saltos-Solórzano & Mendoza-Gracia, 2024).

Earth has a remarkable responsiveness to high temperatures, thanks to its thermal inertia, which allows it to keep indoor environments cool without resorting to mechanical air conditioning systems. In addition, its plasticity facilitates adaptation to simple, straight, and curved construction shapes, which favors efficiency in the building process and allows for maintaining an austere yet functional aesthetic (Do Prado Rocha & Melo de Oviedo, 2019).

Indigenous tradition and colonial contributions in Colombian vernacular construction

The indigenous peoples who inhabited the vast territories of Colombia developed an advanced empirical knowledge of natural materials such as earth, stone, wood, palm, and *guadua*, applying them skillfully in the construction of their homes and community spaces.

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Figure 2. Photo of details inside a residence in El Cogollo, Barichara. Colombia. Source: Prepared by the authors.

Outstanding examples of these constructions are the hypogeums of Tierradentro (Cauca), a manifestation of native architectural skill. These underground tombs are arranged as underground galleries with funerary roles, carved in rock, and adorned with pictography that narrates stories and fundamental beliefs of their culture (Aroca Araújo, 2013).

Another manifestation of this type of construction is the Tairona in the Sierra Nevada de Santa Marta, Colombia. Its architecture reflects a deep understanding of its natural environment. Using local resources, these settlers erected structures that integrate harmoniously with the landscape, demonstrating a symbiosis between human activity and the surrounding nature. The buildings were not only functional, but also fulfilled a ceremonial and symbolic role, demonstrating the spiritual richness of these communities (Medina, 2016).

During the occupation of the region by the Spaniards, the colonization process began during the 16th century, which led to the implementation of urban and architectural regulatory instruments under the Laws of the Indies in 1573, titled "The order to be had in discovering and populating", considered the first urbanism laws, inspired by Vitruvius and Alberti (Guarnizo-Sanchez & Mosquera-Muñoz, 2024). Over time, knowledge and

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techniques fused, combining native construction methods, such as earth, wattle and daub, *guadua*, and palm, with European contributions, such as stone masonry, adobe, clay tile, and wood carpentry. This process of architectural miscegenation generated hybrid solutions that responded both to local environmental and material conditions, as well as to the aesthetic and functional norms imposed since colonization on the foundational settlements of the Andean region, such as Ibagué (Tolima), Tunja and Villa de Leyva (Boyacá), or Barichara (Santander) (Figure 2).

During the 17th and 18th centuries, a regional exploratory process began through the political-administrative framework. Navigation along the Magdalena River and the organization of trans-Andean roads facilitated urban and architectural development, which in turn guided regional growth (Arbouin Gómez, 2012). This type of architecture, spread across several regions of the country, has been preserved to the present day and is considered cultural heritage. Its value lies in both its stylistic characteristics and its construction techniques, which reflect its history and enrich Colombia's historical and architectural heritage. This includes the railway stations, which mostly had a simple neoclassical and republican style, with brick masonry walls and stone foundations, symmetrical facades, high windows, and sloping clay tile roofs (Zambrano Pantoja, 1994).

METHODOLOGY

A qualitative, descriptive approach has been adopted. The study focuses on the teaching dynamics of the earth-based construction course, approached from a theoretical-practical perspective that fosters connections to the environment while strengthening the ability to analyze and solve everyday architectural problems (Popper, 1993). These conditions made it possible to formulate a methodology applied in five phases, focused on course development. The first was the theoretical and conceptual foundation; the second, the exploration of previous experiences; the third, the practical part, using equipment to build the masonry at 1:1 scale; the fourth, the architectural design at 1:50 scale; and finally, a fifth integration phase that consolidated the learnings. This allowed the projects to include fundamental design concepts, approached transversally from the first semesters of their education, which constitute the basis and essence of learning in architecture (Guarnizo-Sánchez & Gualdron-Camacho, 2024).

The workshop's structure comprised five phases:

- **Phase I. Basic concept of earth-based construction in Colombia:** In this stage, the origins of earth-based construction are addressed, highlighting the role of techniques such as rammed earth, wattle and daub, and adobe masonry, which have been fundamental in the development of vernacular architecture in Colombia. These constructive typologies show adaptation to the environment and the use of local materials, and also

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allow analyzing their constructional differences, recognizing the advantages and disadvantages related to durability, maintenance, and resistance to environmental factors.

- **Phase II. Exploration of experiences in the Santander region and Colombia:** This stage of research identifies the leading exponents of earth-based architecture in Santander and Colombia, facilitating exploration of the concepts, approaches, and methodologies applied in their work. It also enables the analysis of the diversity of projects in the region and the country, which show how the earth-based construction tradition has been reinterpreted from a contemporary perspective, linking sustainability, cultural identity, and new expressions of architectural design.
- **Phase III. On-site practice:** The third phase consisted of an initial experience with the material, where students participated in the learning process in the field. In this stage, they had the opportunity to experiment directly with traditional materials and tools for earth-based construction, providing a practical approach that promoted hands-on learning.
- **Phase IV. Preparation of rammed-earth walls and adobe masonry:** During this stage, the two earth-based construction components are used at 1:1 scale: Adobe masonry (compressed earth blocks) and rammed-earth walls (compacted walls in wooden formwork). Tools such as *simbarra* (to create compressed earth blocks) and *pisón* (rammer/tamper) were used, along with materials such as earth and lime. In addition, the resistance, setting time, moisture behavior, and aesthetic evolution of the material from the beginning to the end of the process were analyzed.
- **Phase V. Supporting the results.** Finally, in the final phase of the course, students design prototypes at scale (1:50) in which they apply a constructive system, either adobe or rammed earth, in a reduced format in two and three dimensions, drawing on the knowledge and skills acquired throughout the previous stages. This phase not only facilitates the understanding between the conceptual design and its physical materialization, but also addresses proportion, functionality, and the project's overall aesthetics. The prototypes must be properly represented by detailed technical drawings and physical models, which ensures technical communication in the design process.

RESULTS

Basic concept of earth-based construction in Colombia

Earth-based construction has been, throughout history, one of the most widely used techniques in the world due to the abundance of the material and its adaptability to different climates. In Colombia, rammed earth and wattle and daub have been consolidated as construction

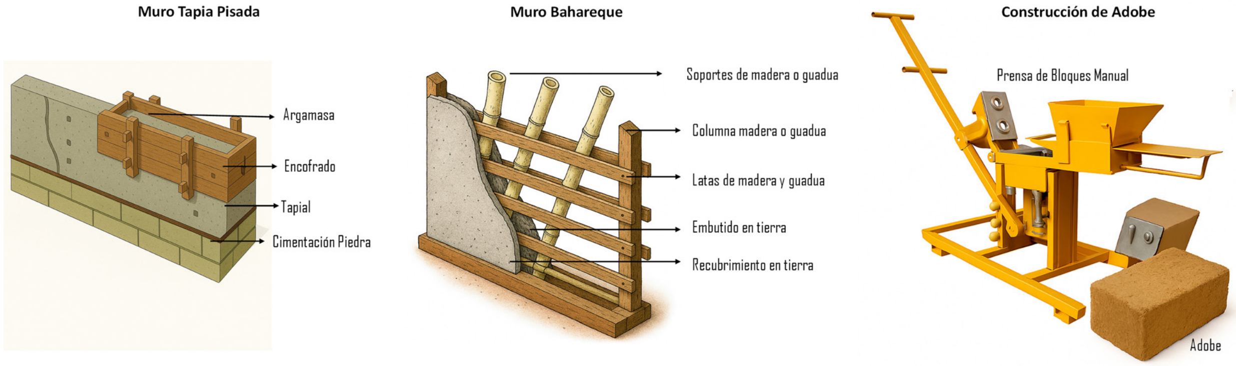

Figure 3. Types of Earth-Based Construction. Source: Prepared by the authors.

systems in both rural contexts and urban settlements, and are part of the country's architectural and cultural heritage.

In the case of rammed earth, this consists of the manual compaction of layers of earth within wooden formworks, known as *tapiales*. The process involves pouring wet earth into successive layers that are rammed to form massive, really thick walls, usually between 40 and 80 centimeters thick. This thickness provides structural stability and excellent thermal and acoustic insulation, making it a technique used in cold, warm, and temperate climate regions. From a constructive point of view, rammed-earth stands out for its durability; it can remain standing for decades if adequately protected from moisture by elevated foundations, facade coatings, and the possibility of seismic rehabilitation (Gómez, López & Ruiz, 2016).

Wattle and daub, on the other hand, is known as a form of "architecture without architects", since, due to the practicality of its construction methods, it was the indigenous and peasant communities who devised and perfected these techniques over time. It is based on a *guadua* or wooden structure arranged as a framework or with a mesh, which is filled with earth mixed with vegetable fibers. Once applied, the wall is coated with clay or lime plaster, which improves its finish and resistance (Archdaily, 2018). In this construction system, the ceiling and floor beams are almost always made of *guadua* or wood, taking advantage of their strength and workability. The columns are mainly made of *guadua*, although in some instances, sawn wood is used as a structural alternative. On the other hand, foundations are usually made of stone, brick, or reinforced concrete to provide stability and ensure adequate protection against the soil's moisture.

Adobe, as a vernacular building material, is made using earth mixed with water and vegetable fibers, molded into rectangular blocks, and dried in the sun. Its artisanal preparation is characterized by being an economic, sustainable, and low-impact system, as it uses local resources and requires little energy in production. These blocks are used primarily in rural housing and colonial buildings.

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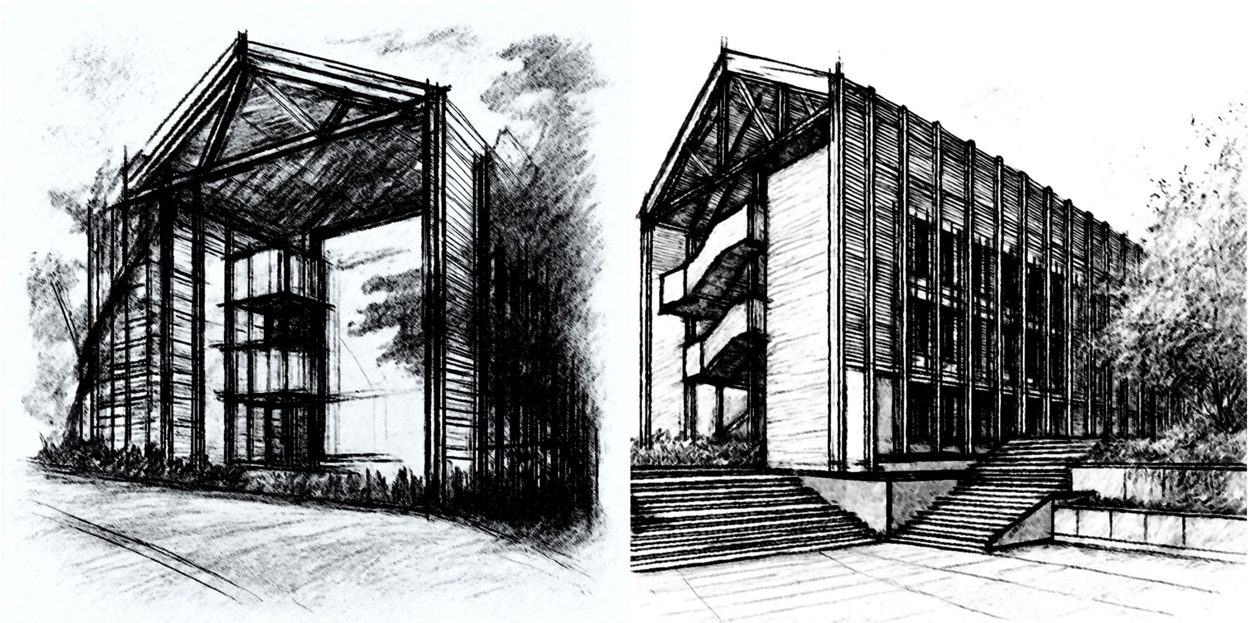

Figure 4. Sketch of the D. Industrial University Building of Santander, Socorro Campus. Source: Prepared by the authors.

In this stage, students must differentiate among earth-based techniques from regions and contexts across the country and present the specific preparation processes and constructive methods, along with their advantages and disadvantages. These differences are evident in the tools and equipment used and in the execution itself, which reflects the richness and variety of constructive solutions. In this phase, students will specifically experience the traditional construction techniques applied in Santander, such as rammed earth and adobe (Figure 3).

Phase II. Exploration of experiences in the Santander region and Colombia.

The students of USTA's Faculty of Architecture investigate the leading exponents of earth-based architecture in their region, analyzing the theoretical concepts and the practical experiences of architects whose works have left a significant imprint on the local and Colombian context. Professionals such as Daniel Bonilla (Figure 4), Jaime Higuera, Laura Angarita Pinzón, César de Salgar Navarro, and the Ark-Terra collective have established themselves as referents in earth construction, both in residential architecture and in residential and institutional equipment projects (Velosa Araque, 2022). Their contemporary proposals have transformed the perception of this ancestral material, highlighting not only its constructive and aesthetic qualities but also its sustainable potential.

At the same time, their works maintain a strong connection to the cultural and territorial context, serving as examples of how their designs have combined the construction tradition of using earth

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Figure 5. Students exploring earth-based materials. Source: Prepared by the authors.

Figure 6. Students engaging with tools and rammed-earth formworks. Source: Prepared by the authors.

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with avant-garde elements, creating spaces that reflect the identity and cultural richness of Santander (Figure 4).

Phase III. On-site practice.

In this phase, the activities take place on the Piedecuesta campus in a space equipped with the conditions needed for construction experimentation and practical learning. During this process, students interact with the material in their first experiments, exploring its components in different states, such as color, texture, and physicochemical properties. By mixing these elements, they discover how the earth acquires a malleability that makes it an ideal resource for producing adobe and designing rammed-earth walls. This experimentation process provides them with a deep understanding of the material's characteristics and its creative possibilities in the architectural field (Figure 5).

For example, Figure 6 illustrates how, under the instructor's guidance and students' active participation, a rammed-earth wall is built. Initially, the roles of the construction system's key elements are explained, such as the floor, formwork, and earth, which form the basis of the process. Similarly, students' participation in preparing the masonry allows direct contact with traditional techniques, fostering a practical understanding of theoretical concepts and ensuring the involvement of all participants.

In this way, students consolidate an interactive process that provides them with an understanding of the material's essence and its application onsite. Through this practical experience, they acquire a solid knowledge of how to use earth and tools as construction elements. This process facilitates experimenting with this resource in a practical way.

Phase IV. Preparation of Adobe and Rammed Earth masonry.

In this phase, the necessary tools are available and used outside to prepare the adobe. Among them, the *simbarra* stands out as a fundamental instrument for molding and standardizing masonry units, ensuring uniform, high-quality pieces. The practical session is organized into four main steps that allow students to progressively understand the construction process, from preparing the material to obtaining the final block, promoting comprehensive learning based on direct experience (Table 1).

At the end of this process, students, under the instructor's guidance and in a controlled manner, use traditional tools to obtain a compact, uniform, and high-quality adobe. This result depends not only on the correct handling of the instruments but also on the precise dosing of the earth and water, as well as on the application of the technique. The practical activity offers students the opportunity to understand first-hand

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Stages of Adobe Masonry Construction	Procedure	Result
Preparation of the mud	Earth and water are mixed until a homogeneous and malleable mass is obtained. The ratio of clay, sand, and water will depend on soil quality and climate.	
Molding	The mixture is placed in a bowl that has the shape and size of the adobe bricks. It is compacted well so that the mass is uniform and cracks do not form.	
Sun-drying	Once molded, the adobe bricks are left to dry in the sun for several days, turning them regularly so that they dry evenly. It is important to protect them from rain during this process.	
Storage	Once the adobe bricks are completely dry, they can be stored in a dry, well-ventilated place until they are ready for use in construction.	

Table 1. Stages of adobe masonry construction. Source: Prepared by the authors.

Figure 7. Preparing adobe masonry and walls - 1:1 scale. Source: Prepared by the authors.

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Figure 8. Removing the rammed earth wall formwork - scale 1:1. Source: Prepared by the authors.

the physical and mechanical principles involved in the production of adobe, such as material cohesion, compaction, and controlled drying. In this way, the exercise becomes a pedagogical experience that combines technical and practical knowledge (Figure 7).

In the case of rammed earth, the process begins with preparing the ground where the wall will be erected. For this purpose, it is recommended to lay a soil-cement base and, on it, a layer of bricks. This prevents the wall from coming into direct contact with soil moisture, which could compromise its strength and durability (Figure 8). Subsequently, the formwork is installed, inside which the previously selected soil mixture is deposited. With the help of the rammer, this earth is gradually compacted into a solid, homogeneous block that will give the wall its shape.

According to the teacher's instructions, this process proceeds sequentially, as shown in Table 2, which outlines the practical steps that help students understand the technique in its whole constructive dimension.

Phase V. Supporting results

This is proposed as a final product: the development of an architectural solution in adobe or rammed earth that responds to the needs of the

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Stages of Adobe Masonry Construction	Procedure	Result
Leveling of the ground	Removal of plant material Leveling is checked with a hose or a laser level	
Foundation	Excavation of trenches according to the structural design. Laying of stone with earth or lime mortar. Manual compaction between layers.	
Preparation of soil mixture	Selection of soil with good clay content. Work is done with a mixture of sand, gravel, and stabilizers (lime). Controlled wetting and manual or mechanical mixing.	
Compaction	The soil mixture is poured in layers of about 20-30 centimeters and compacted using a tool called a pisón (rammer). Each layer is compacted until it is very firm and uniform.	
Erection of walls	Repetition of the formwork and compaction process by levels. Control of vertical and horizontal joints. Integration of reinforcements if necessary (wood, cane).	
Finish	Once the desired height is reached, finishes can be made on the exterior surface to protect the wall from the elements, such as lime coating, stone, or cement.	

Table 2. Stages of adobe masonry construction. Source: Prepared by the authors.

context and the conditions of the place at a graphic scale of 1:50. The main objective of this exercise is for students to be able to design a proposal that articulates the principles of sustainability in all its stages: implementation in the territory, architectural design and construction process (Figure 9). Also, as a proposal, the project can integrate basic accessibility solutions, the design of pedestrian paths, and the incorporation of complementary landscape elements, which strengthen the relationship between the proposed architecture and its immediate surroundings (Ariza Rodríguez & Guarnizo Sánchez, 2022).

Similarly, it is sought that the outcome includes analogous graphic

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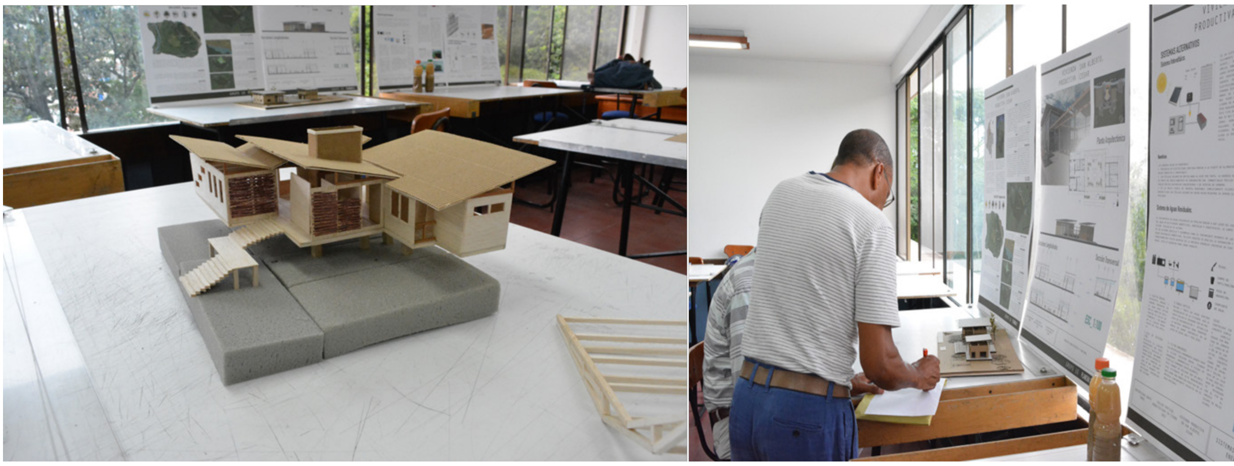

Figure 9. Results of the proposals based on the experience of the Earth materials workshop. Source: Prepared by the authors.

Figure 10. Ecological kitchens construction manual. Source: Estevez-Suarez (2018).

resources, such as physical sketches, models, and outlines, as well as digital versions with 3D models, renders, and technical drawings, to complement these. This strengthens the student's projective and communicative competencies across various stages of learning (Guarnizo Sanchez, 2024). Also, as a scientific product for the teaching staff, the "Construction: Ecological Kitchens" manual by Estévez Suárez (2018) offers a practical guide to constructing sustainable kitchens, focusing on the use of local materials and traditional techniques that promote energy efficiency and environmental sustainability. The work combines theoretical concepts with instructions, including diagrams, plans, and recommendations for this functional area of the house (Figure 10).

Finally, the objective was to promote the sensitivity and importance of implementing constructive heritage techniques, given that numerous cases across the country show that inadequate conservation has increased the vulnerability of these assets, making them increasingly prone to destruction (Guarnizo-Sánchez & Gualdron-Camacho, 2024). However, this situation can also become an opportunity for the architecture and construction industry by opening spaces for research, innovation, and the generation of projects that promote the preservation, adaptation, and resignification of these traditional techniques and knowledge in the contemporary context.

CONCLUSIONS

The process of understanding the dynamics of earth-based architecture in Colombia proved fundamental, as it allowed exploring the history, construction systems, and concepts that have supported this type of building over time. Its symbolic and cultural value has left a significant mark across various regions of the country, constituting itself not only as a testimony to identity and tradition, but also as a resource that dialogues with the sustainability and relevance of using local materials in contemporary architecture.

By engaging with the characteristics and uses of the earth as a construction material, the students were able to appreciate not only its technical versatility but also its relevance in contemporary architectural practice. Through theoretical, research, and practical experiences, they developed specific skills to understand fundamental concepts, recognize referents, handle tools, and work directly with this material. This learning process was consolidated as a key initial experience, which, in addition to strengthening academic competencies, awakened in students from different semesters a particular sensitivity towards natural and sustainable materials by fostering a critical and responsible vision in the face of the challenges of current architecture.

In addition, this educational process of directly experimenting with ancestral earth-based construction techniques establishes an invaluable link between academic and traditional knowledge. The earth, in this context, is not only a construction material but a vehicle of memory, culture, and sustainability. By understanding this, future architects not only develop technical skills but also a respectful vision regarding the architectural legacy of their communities, thus promoting a more humane, responsible, and rooted architecture in its context.

CONTRIBUTION OF AUTHORS CRediT

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