

Environmental comfort concepts awareness: didactic-pedagogical experience in an Itinerant School

Sensibilização aos conceitos de conforto Ambiental: experiência didático-pedagógica em escola itinerante

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Abstract

The *Escola da Cidade* is an institution that seeks to integrate innovative didactic-pedagogical practices into the Architecture and Urbanism curriculum. Among these initiatives is the Itinerant School, wherein students have the opportunity to embark on a journey each semester to a city or region in Latin America. In this context, this paper aims to share the didactic-pedagogical experience conducted with first-year students during the Itinerant School in the Vale do Paraíba region. An activity was developed to sensitize these students to the concepts of environmental comfort, employing a booklet for answering questions and sketching. An intuitive exercise was created, incorporating icons, and organized into themes guiding the fundamental points of sensory analysis for the understanding of all aspects of the environmental quality of the visited spaces. The results obtained demonstrated a positive impact on sensitizing and expanding the technical repertoire of these students. Consequently, the booklet can be replicated in external activities, such as trips and technical visits, for other Architecture and Urbanism courses.

Keywords: Environmental comfort. Teaching and learning. Didactic-pedagogical proposal. Itinerant school. Vale do Paraíba.

Resumo

A *Escola da Cidade* é uma instituição que, desde sua criação, busca integrar práticas didático-pedagógicas inovativas no currículo de formação de arquitetos e urbanistas. A *Escola Itinerante* é uma dessas iniciativas, na qual os estudantes possuem a oportunidade de realizar uma viagem a cada semestre para uma cidade ou região da América Latina. Nesse contexto, o presente trabalho objetiva compartilhar a experiência didático-pedagógica realizada com alunos do primeiro ano em *Escola Itinerante* realizada no Vale do Paraíba. Foi desenvolvida uma atividade com foco na sensibilização desses alunos quanto aos conceitos de conforto ambiental, por meio de um caderno para preenchimento de respostas e elaboração de croquis. Optou-se por um instrumento intuitivo com a utilização de ícones e divisão em temáticas que conduzissem aos pontos fundamentais de análise sensorial para a compreensão da qualidade ambiental dos espaços visitados. Os resultados obtidos se demonstraram positivos na sensibilização e na ampliação do repertório técnico desses estudantes. Assim, o caderno pode ser replicado em atividades externas, como viagens e visitas técnicas, de outros cursos de Arquitetura e Urbanismo.

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Introduction

The *Escola da Cidade* was established in 1996 as a non-profit entity with the goal of training architects and urban planners. It brings together professionals from various fields who have “[...] as their fundamental purpose the creation of a privileged space for freedom of thought and proposition [...]” (*Escola da Cidade*, 2021a, nonpaged). This institution has the premise of incorporating pioneering didactic-pedagogical practices in the teaching of architecture and urbanism since its inception.

It is worth highlighting some practices that have yielded positive results over the years, both in the engagement of students and teachers and in the teaching-learning process:

- (a) Vertical Studio, a research and design studio that brings together students from different years, fostering the ability to work collectively and exchange experiences;
- (b) External Experience, exclusive for fifth-year students who leave school for six months for an extracurricular activity, choosing between supervised internship, academic exchange, assisted research, and construction studio; and
- (c) Seminar on Reality and Contemporary Culture, in which students are invited, every Wednesday, to discuss and reflect on current topics whose main focus is not architecture.

Within this context and among other practices, the Itinerant School is also included.

In accordance with the Course Pedagogical Project, the Itinerant School contributes to the education of architects with critical and reflective capacities, ready to confront, in their professional practice, the reality of a complex and constantly changing world. The itineraries are guided by the history, cultural heritage, and architectural and urban repertoire of each location. Given that architectural and urban spaces are experienced by society and influenced by various cultural aspects, the *Escola da Cidade* considers spatial experimentation in iconic works of Brazilian and Latin American architecture and urbanism indispensable.

Thus, through the Itinerant School, national and international trips are organized with the aim of providing students with a direct experience, involving on-site observations and analyses, a comprehensive understanding of the social and cultural dynamics of the visited locations, which is often challenging to achieve within the confines of a classroom.

It is noteworthy that participants in study trips develop their observation and interpretation skills through the integrated experimentation of all their senses, including the kinaesthetic sense, which is often neglected (Strmčnik, 2003¹ *apud* Batič, 2011). This is because field trips promote visual and tactile learning experiences, making them excellent teaching tools, especially for architecture students. Such activities are even more valuable when applied to disciplines related to environmental comfort, which focus on the relationship between humans and the environment they inhabit, whether internal or external.

Beyond the tourist aspect, historically, trips have always been instruments of territorial and social recognition and, consequently, have always had an educational bias. Numerous expeditions for the recognition of the national territory were carried out during the period of Portuguese colonization in Brazil, for example. One would be mistaken to believe that such a form of knowledge acquisition is outdated. Some architects, such as Le Corbusier and Tadao Ando, did not have formal education in architecture. Instead, their education was based on their own empirical observations of cities and buildings during their travels abroad (Culver, 2011).

Several recent studies highlight the significance of study tours in higher education, such as Behrendt and Franklin (2014), Liu, Carta and Sopeoglou (2018), Polishetty *et al.* (2018), Pattacine (2018), Hans-Wesson and Ji (2020) and Qadir and Kamal (2022). Nazir (2021) points out that study trips are organized to provide knowledge and information about different places, enhancing students' education. They are motivated to relate theoretical concepts learned in the classroom to the situations they experience, thus demonstrating a positive response to learning. According to the author, such activities can stimulate students' ability to understand the communities visited through collective learning among teachers and colleagues.

Therefore, students take on an active role in their learning processes, opposing more traditional forms of teaching where knowledge is merely passively transmitted by a third party (Zuber-Skerritt, 1992). Thus, study trips become tools consistent with active learning, as defined by Prince (2004) as any teaching method that involves students in the learning process.

¹STRMČNIK, F. Didaktična načela. In.: STRMČNIK, F. (ed.). *Didaktika*. Novo Mesto: Higher Education Centre, Institute for Research and Development Work, 2003.

According to the *Escola da Cidade* (2021b), the three objectives justifying the inclusion of this initiative in the curriculum of the Architecture and Urbanism course are:

- (a) to educate architects as explorers who demonstrate empathy and the ability to understand diverse ideas and landscapes from the perspective of others;
- (b) to educate architects as pilgrims, signifying travellers with the sensitivity to observe the architecture and culture of each location; and
- (c) to educate architects as apprentices who, through curiosity, convert the act of traveling and moving into knowledge.

According to Ewing (2011), some pedagogical justifications for field trips or study tours in the field of architecture include an essential widening or broadening of horizons, formative for development as an architect, exposure to other cultures and societies, architectures and social dynamics, awareness of different climate needs and different building methods and materials, cross-cultural and transformative learning, developing sensitivity to new cultural needs and challenges, exposure to global issues in the built environment, awareness-raising of the impact of climate change.

The National Research Council (USA, 2009) believes that exposing students to practical and real-world activities results in higher rates of learning and an increase in student interest. The Council further asserts that such activities can motivate and engage students, fostering an appreciation for learning and a thirst for knowledge. Additionally, field trips contribute to the social, mental, and physical growth of students, stimulating a sense of discipline.

When combined with general or specific methods, such field trips can further stimulate the perception, experience, and evaluation of architectural space, all contributing to the appreciation of architecture. Moreover, this allows students' knowledge to be complemented with emotions (Batič, 2011).

Besides that, the inclusion of field trips in university curricula is a way to provide opportunities for visual and tactile learning for those students who do not consider themselves strong audio learners (Nazir, 2011). In other words, those who may not excel in absorbing information through the auditory sense, such as listening to lectures, podcasts, or audiobooks.

As reported by Ewing (2011), despite a certain consensus regarding the importance of study trips and on-site visits for architectural education (in addition to their intrinsic value in shaping an architect's education), there are relatively few institutional models that still incorporate them into the formal educational curriculum.

The aim of this work is to present a replicable didactic-pedagogical experience for sensitizing human senses to the environmental comfort of buildings, leveraging a social and cultural experience through architectural typologies with distinct characteristics and eras. The following specific objectives are sought:

- (a) to guide and condition students' perception for the identification and analysis of comfort strategies used in an environment and relate them to personal and other users' perceptions;
- (b) to review, assimilate, and comprehend the fundamental concepts of environmental comfort taught in classroom during Environmental Comfort courses (I and II); and
- (c) to introduce other important concepts and passive strategies through the analysis of visited environments and the direction of the activity through sensory perceptions.

Itinerant school: itinerary and activities program

For the success of the Itinerant School, many teachers are mobilized to accompany the students, and an itinerary is studied, detailed, and defined in advance, in alignment with the recommendations of Goh (2011), who believes that the success of excursions is linked to the prior establishment of activity objectives. It is recommended that faculty members teaching courses in the semester of the trip relate their themes and develop activities based on the Itinerant School's itinerary. In 2019, the school produced travel guides for the itineraries of the Itinerant Schools, presenting, in an illustrated and informative manner, the buildings and routes visited by the students (Escola da Cidade, 2019a, 2019b, 2019c, 2019d, 2019e, 2019f).

In the second semester of 2022, the proposed trip for first-year students of the course was an itinerary through the Vale do Paraíba region, spanning the states of São Paulo, Rio de Janeiro, and Minas Gerais in the Southeast of Brazil. The name originates from the fact that the region is part of the hydrographic basin of the Paraíba do Sul River. This area has a rich architectural and urbanistic production due to its significant economic contribution to the country in the 19th century, with the dominance of global coffee production (Marquese,

2010). Consequently, the overall market dynamics of the region profoundly transformed the natural, cultural, heritage, and architectural landscape of the Vale do Paraíba, bringing uniqueness to the region.

This edition of the Itinerant School took place between 16th and 23rd October, departing from São Paulo towards the city of Cataguases. The highlighted points visited during the trip are illustrated in Figure 1. The initial destination was the city of São José dos Campos, where students dedicated a day to explore the former Aerospace Technical Centre (C.T.A.), presently recognized as the Department of Aerospace Science and Technology. This architectural endeavour, designed by Oscar Niemeyer, was constructed between 1947 and 1956. In the city, they also visited the Roberto Burle Marx Municipal Park, better known as Parque da Cidade, which occupies part of the former Tecelagem Parahyba, the first textile industry established in the municipality in 1925. The project is attributed to Rino Levi and was federally listed by IPHAN in 2021 (Brasil, 2021). After these visits, the class headed towards São Luiz do Paraitinga, where, the next day, they explored the historic centre of the city and entered constructions such as the Church of Rosário (1921), the Chapel of Nossa Senhora das Mercês (late 18th century), and the Oswaldo Cruz House, where the renowned sanitarian doctor was born in 1872.

On the third day, the itinerary included a visit to Vargem Grande Farm, where a mansion dating back to 1837 stands, featuring colonial architecture and modernist furniture from the 1950s and 1960s. The central area of the farm, once a coffee plantation, now hosts a garden designed by landscape architect Roberto Burle Marx in 1973. The garden is divided into three levels and boasts 19 waterfalls. The landscape architect believed that a garden also required sounds and music, and for this project, he aimed to incorporate the sound of running water (Fazenda Vargem Grande, 2023).

On the fourth day in the morning, the group visited Pau d'Alho Farm, built between the 18th and 19th centuries. It is considered one of the initial establishments devoted to coffee production and processing in Brazil, potentially the first, as indicated by Galvão (2010). In the afternoon, the students travelled to the city of Bananal, where they explored the downtown area, including buildings such as the Railway Station (1882), Solar Aguiar Vallim (constructed around 1850), Santa Casa de Misericórdia (1851), and Pharmacia Popular (1830). They also visited Farm of Coqueiros, built in 1855, which still preserves its slave quarters, mills, and bathroom facilities (Fazenda dos Coqueiros, 2023).

On the fifth day of the Itinerant School, before heading to Cataguases, the students were introduced to Resgate Farm. The main residence of this farm was constructed in 1820 and, according to the Council for the Defense of Historical Heritage (CONDEPHAAT, 2023, nonpaged), “[...] constitutes one of the richest and most refined examples of rural housing from the coffee period in the Vale do Paraíba.”

The sixth and seventh days were exclusively devoted to the city of Cataguases, a small municipality renowned for hosting a notable concentration of modernist buildings. According to Alonso (2012), the inception of modern architecture in Cataguases occurred when Francisco Inácio Peixoto engaged Oscar Niemeyer to design his residence. Subsequently, the city evolved into a modernist laboratory, featuring constructions developed between the 1940s and 1960s.

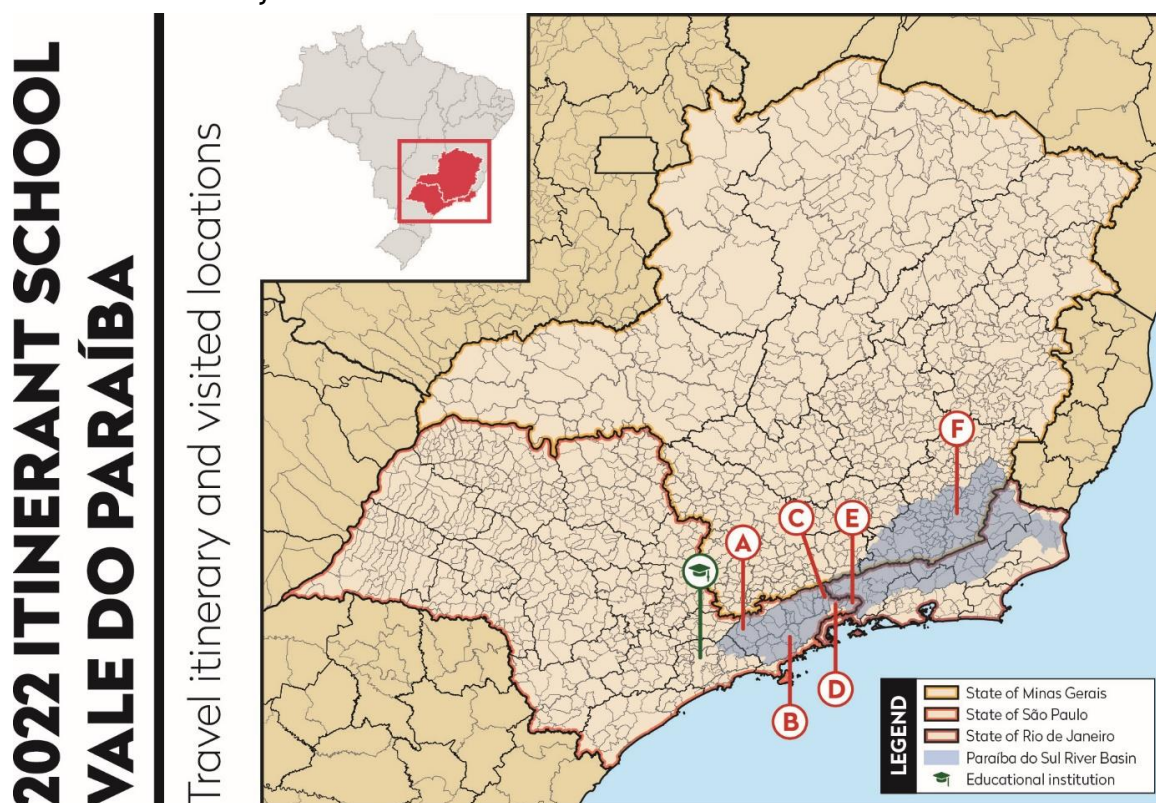
The group of students explored the entire historic centre and other points of interest slightly more distant from the central region. Among these locations, notable sites include the Dom Silvério Educational Centre, the Cataguases School, the Manoel Inácio Peixoto Square, the Chácara Dona Catarina Museum, A Nacional Building, the acoustic shell, the Irmãos Peixoto Industries, the Monument to José Inácio Peixoto, Cia Industrial Working Village, and the Francisco Inácio Peixoto Residence, the starting point of the modernist movement in the small city. After this entire experience and absorption of technical, artistic, cultural, and social knowledge, the first-year student group returned to São Paulo.

Given the diverse characteristics of the buildings to be visited by the students, spanning various eras and contexts, it became extremely relevant for the learning experience to incorporate an activity focused on environmental comfort. In this semester, the same class enrolled in the course Environmental Comfort II, whose syllabus covers the following topics:

- (a) deepening of solar geometry concepts;
- (b) shading elements; and
- (c) deepening of concepts and definitions of natural and artificial lighting.

It is worth noting that since the Itinerant School occurs in the middle of the semester, not all content had been covered at that point.

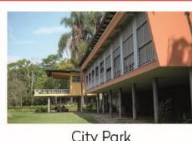
Figure 1 - Travel itinerary undertaken during the 2022 Itinerant School - Vale do Paraíba, highlighting the locations visited by students



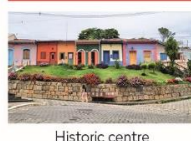
A São José dos Campos - SP



Aerospace Technical Centre



City Park



Historic centre

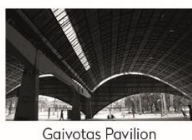


Nossa Sr.ª do Rosário Church

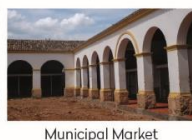
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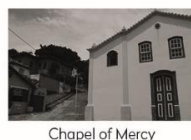
Vargem Grande Farm



Gaivotas Pavilion



Municipal Market



Chapel of Mercy



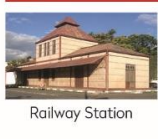
Oswaldo Cruz House (Museum)

D São José do Barreiro - SP



Pau d'Alho Farm

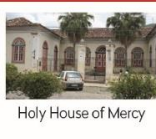
E Bananal - SP



Railway Station



Comendador Aguiar Vallim Mansion



Holy House of Mercy



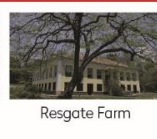
Lucio José de Almeida Mansion



Pharmacia Popular

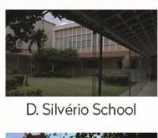


Coqueiros Farm



Resgate Farm

F Cataguases - MG



D. Silvério School



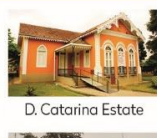
Cataguases College



Acoustic Shell



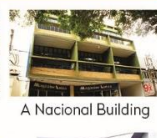
Manoel I. Peixoto Square



D. Catarina Estate



Edgard Cine Teatro



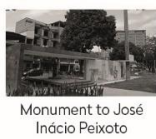
A Nacional Building



Cataguases Weaving Factory



Irmãos Peixoto Industrial Housing Complex



Monument to José Inácio Peixoto



Cia Industrial Workers' Village



Francisco Inácio Peixoto House



Nanzita Salgado House



Mauro Carvalho Ramos House

Source: based on Abreu (2022a, 2022b, 2022c).

The group of instructors responsible for the Environmental Comfort course understood that, as the activity would focus on raising awareness about the environmental quality of spaces and user perception, it was also an opportunity to revisit the concepts learned in the previous semester with the course Environmental Comfort I. It is observed that the content of this course is composed of:

- (a) basic concepts of thermal, acoustic, visual, and ergonomic comfort;
- (b) vernacular architecture, bioclimatic architecture, and climate diagnosis;
- (c) bioclimatic strategies with an emphasis on natural ventilation;
- (d) thermal behaviour of materials and construction components; and
- (e) introduction to solar geometry.

It is important to mention that, in the institution in question, the acoustics course is taught only in the 4th year of the program. Therefore, the concepts of acoustics were superficially introduced in the activity, focusing solely on the students' perception and without the inclusion of technical terms. The approach considered significant encompasses all aspects related to comfort, allowing students to train their senses and realize that environmental comfort is fully integrated in all its aspects and variables.

It is also relevant to note that, throughout the entire undergraduate program, six trips of approximately one week each are planned – each class travels to a different location each semester –, and the cost associated with the Itinerant School is included in the monthly tuition, ensuring the participation of all students.

Method

To design an effective activity for itinerant settings, where students would frequently be in transit and walking, it was essential for the task to be as intuitive as possible and not time-consuming, considering that there were other demands to be fulfilled during the trip. Therefore, it was decided to create a booklet in which students would select only three of the visited buildings for analysis. To achieve this, a methodological approach was adopted with the following steps: studying the itinerary and buildings, defining general themes, listing key comfort aspects, incorporating strategies, elaborating the booklet, conducting the Itinerant School, and analysing the submissions. The methodology was systematized by the flowchart presented in Figure 2, and each step is described below.

Study of the itinerary and buildings

The itinerary, along with the buildings to be visited, was communicated in advance to all professors teaching the 2nd semester. Thus, the itinerary was studied to understand the routes, structures, landscapes, and climates the students would encounter, aiming to comprehend potential connections with the environmental comfort discipline. The diverse architectural typologies from different eras that students would visit were noted. Consequently, the activity needed to encompass any building, since the choice of students was voluntary.

Definition of assessment topics

General themes

Based on the study of the outline and the prior knowledge the students had acquired in the first semester of the course, where the Environmental Comfort I discipline was taught, the general themes to be addressed in the activity were defined. The chosen themes were:

- (a) General Building Data, to allow students to create references;
- (b) Overall Perception, for them to compare with each other and understand that the perception of comfort is personal and subjective;
- (c) Lighting and Insolation; and
- (d) Thermal and Ventilation.

The last two were important for students to apply the technical knowledge gained in the disciplines.

List of key comfort aspects

The primary elements associated with the chosen themes of environmental comfort for the booklet were identified to direct all senses toward environmental perception and comprehension. This approach sought to

sensitize students and progressively foster a more natural and intuitive analysis of buildings. The compiled list included the following aspects: activity and clothing, accessibility, orientation, surroundings/masking, external and internal shading devices, openings and types of ventilation, wall thickness and roof type, building layout on the plot, sound perception, presence of a ceiling, colour of external finishes, among others.

Inclusion of strategies

It was decided to incorporate, in addition to the aspects related to the themes, some passive design strategies. Due to their specificity, these strategies were intended to direct the students' focus to specific aspects of the visited buildings and introduce technical terminology. The selection of strategies was based on Gonçalves *et al.* (2021), considering the buildings slated for visitation during the Itinerant School. The chosen strategies encompass shading, natural ventilation, radiation reflection, thermal insulation, thermal inertia, minimization of exterior exposure area, passive solar heating, evaporative cooling, access to global solar radiation, and access to diffuse solar radiation.

Creation of the booklet

The booklet (Figure 3) was crafted in an A5 size, designed to be as inviting and user-friendly as possible, aiming to motivate students to actively engage with it. Various icons were incorporated, and questions utilized perception value scales ranging from 0 to 100, facilitating potential quantitative assessments in the future. The booklet allocated space for the analysis of three buildings, with each analysis organized into the following sections:

- (a) general building data;
- (b) general perception;
- (c) lighting and insolation;
- (d) thermal and ventilation;
- (e) environmental sketch and environmental strategy detail; and
- (f) identified strategies and notes.

It's important to highlight that the first four sections were aligned with the previously chosen themes.

Figure 2 - Methodology flowchart

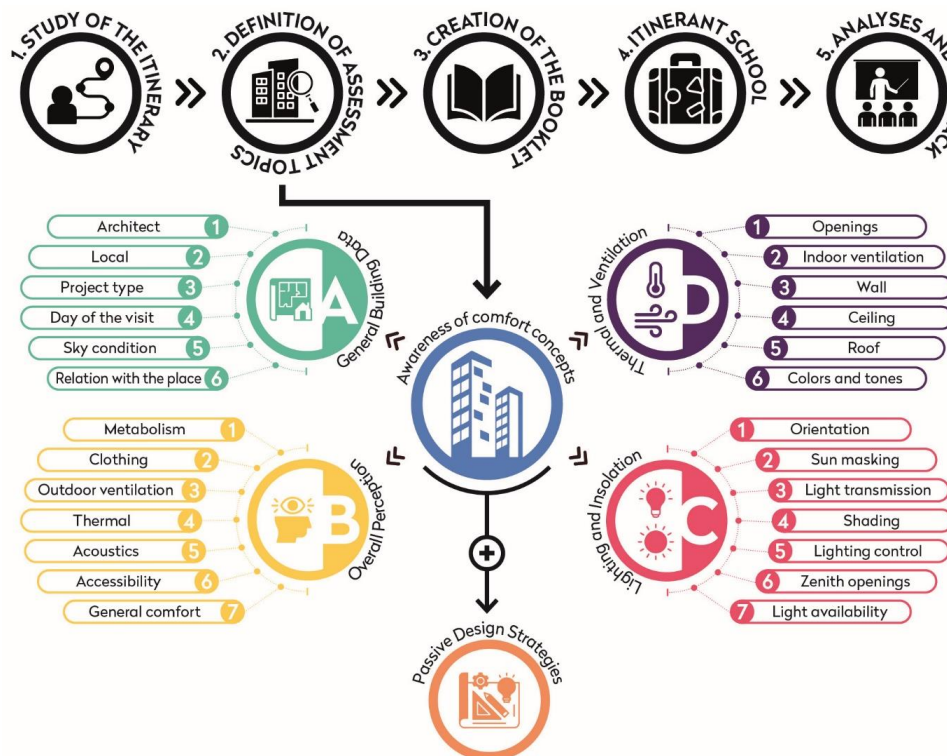


Figure 3 - Booklets ready to be handed over to the students



In the initial section, (I) general building data – illustrated in Figure 4a – the student identified the chosen work, the architect who designed it, and the city where it is located. Other points, such as latitude, day, time, air temperature, and sky condition, were also clarified to relate climatic conditions to user perception in the subsequent section. In the second section (Figure 4b), the student filled in how they felt regarding temperature, wind, sound, accessibility, and overall comfort, relating it to the activity they were performing and the clothing they wore that day.

In Sections 3 and 4, the student is required to respond to questions about lighting and insolation and thermal and ventilation, respectively, relating their perception of the environment to these aspects. Thus, in the lighting and insolation part (Figure 5a), the student is prompted to evaluate:

- (a) the immediate surroundings of the project and its influence on the analysed building;
- (b) the quantity of transparent and opaque elements on the facades;
- (c) the quantity and quality of shading devices, as well as skylights; and
- (d) whether the design solutions are sufficient to provide natural light for the internal environment.

In the thermal and ventilation section (Figure 5b), the student is guided to check: the openings of the building – whether they exist, if they are open or closed, what type of opening they are, and how the airflow occurs; and the materiality of the construction through the thickness of the walls, type of roof, presence of ceilings, and the colours and shades of external finishes.

In the sections of environmental sketch and environmental strategy detail, presented in Figures 6a and 6b, spaces are provided for students to draw the selected building and an architectural element or detail, aiming to assess the project environmentally. In the section on identified strategies, the tactics of passive natural conditioning, as outlined in the subsection titled *Inclusion of Strategies* above, are included in this item. In the end, a space for additional notes was included, in case the student wanted to emphasize other relevant issues.

It is worth noting that the first pages of the booklet provide filling instructions and drawings with examples of sketches, along with a glossary of terms that may generate doubts. A compendium with all the icons used and their respective meanings is also provided.

The booklet was handed out in the last class before the trip to Vale do Paraíba, where all the instructions for proper completion were presented, and any doubts from the class were addressed. The opportunity was also essential to outline the expectations of the teachers regarding the exercise proposal and its importance in shaping students in Architecture and Urbanism, encouraging the learning of issues related to the environmental quality of spaces beyond the teaching environments.

Figure 4 - (a) Section 1: General building data; (b) Section 2: Overall perception

general building data

chosen project: _____

architect: _____

city: _____

latitude: _____

day: _____

time: _____

air temperature: _____

°C: 10 15 20 25 30 35 40

sky condition:

proximity to water bodies: near far

positioning on the plot:

contact with the terrain:

project type:

Which is it (are they)?

☐ residential ☐ public facilities

☐ commercial ☐ others, which one? _____

☐ leisure

overall perception

air temperature: cold neutral hot

metabolic rate:

clothing:

natural ventilation: no wind breeze wind

sound: silence loud noisy

accessibility: there is not committed accessible

do you feel comfortable?

Figure 5 - (a) Section 3: Lightning and insolation; (b) Section 4: Thermal and ventilation

lighting and insolation

thermal and ventilation

what is the orientation of the main facade?

☐ N ☐ NE ☐ E ☐ SE ☐ S ☐ SO ☐ O ☐ NO

how much does the surroundings block the sun access?

little much

how transparent is the main facade?

little much

what shading devices do you identify?

☐ ☐ ☐ ☐ ☐ others?

are there internal lighting control devices?

☐ ☐ ☐ others?

if zenith openings are identified, what type are they?

☐ ☐ ☐ ☐ ☐ others?

during the visit, what was the lighting condition?

☐ ☐ ☐

is the availability of natural light sufficient?

insufficient sufficient glare

are there openings for natural ventilation? Open or closed?

☐ ☐ ☐ ☐

what type(s) of openings does the project have?

☐ ☐ ☐ ☐ others?

what types of ventilation have been identified?

☐ ☐ ☐ ☐

how efficient do you judge the natural ventilation to be?

little much

what is the thickness of the walls?

☐ ☐ ☐ ☐

if identifiable, what type of roofing is used?

☐ ☐ ☐ ☐ ☐ others?

are there ceilings (plaster, wood, gypsum etc.)?

☐ ☐

what are the color and the tone of the external finishes?

☐ red ☐ orange ☐ yellow ☐ green ☐ blue ☐ purple

light dark

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Figure 6 - (a) Section 5: environmental sketch; (b) Sections 5 and 6: environmental strategy detail, identified strategies and notes

The figure shows a template for an environmental strategy booklet. It is divided into two main sections, (A) and (B). Section (A) is titled 'environmental sketch' and contains a large grid for drawing. Section (B) is titled 'detail of an environmental strategy' and contains a grid for drawing, followed by a section titled 'identified strategies' with icons for various environmental factors (sun, wind, rain, etc.) and a section titled 'additional notes' with a grid for writing.

Conduction of the itinerant school 2022 - Vale do Paraíba

The journey commenced from São Paulo (SP) and extended to Cataguases (MG), providing students with the opportunity to halt and explore various constructions and cities in route – as depicted in Figure 7. It's noteworthy that no environmental comfort professor was designated to accompany the excursion. Additionally, based on student feedback, the dynamics of the Itinerant School underwent slight variations at each visited location: in some instances, teachers offered more detailed explanations about the historical, construction, and design aspects of the buildings, while in others, students were granted greater freedom to experience and explore the surroundings.

Delivery and analyses

Out of the entire class, approximately 60 students, 43 completed the proposed activity. Despite not being included in the final semester grade, it was made clear that this work would be used for evaluating potential recovery cases, which contributed to the success of the submissions. On that day, some students also provided feedback on the activity and the trip, enabling an understanding of certain aspects of the dynamics and other crucial points for a more accurate evaluation. Subsequently, an analysis of the submitted booklets was conducted, thereby identifying the strengths and challenges of the exercise. Additionally, a discussion session was held with some students to comprehend what they observed and absorbed from this experience.

Results

From the works that were submitted, six locations were selected to clarify the expectations for students when undertaking the proposed activity. It is worth noting that, due to the large number of visited locations and the complete freedom of choice for the students, statistical data was not produced, as it was not possible to collect significant samples from each visited work. The examples provided stem from diverse students and various architectural creations, with the intention of articulating an individual's perception while experiencing a particular building and its intricacies during the completion of the booklet. Figure 8 illustrates the six works analysed by the students in the examples presented subsequently.

Structural Laboratory of the Aeronautics Technical Centre

The first filled booklet example, illustrated in Figure 9, stems from a visit to the Structural Laboratory of the Aeronautics Technical Centre, designed by Oscar Niemeyer in São José dos Campos (latitude 23° South). During the project exploration, the sky was clear with no clouds, and the air temperatures were high, around 29 °C. The urban facility was intentionally placed in isolation on the plot and maintained full contact with the ground. The student noted a sensation of warmth concerning the temperatures, with the metabolic rate corresponding to that of a person engaged in light walking and wearing light clothing. At that moment, the environment was accessible, characterized by breezes, and tended to be relatively quiet, despite a certain level of noise. Overall, the student felt comfortable.

Figure 7 - Photos of the students during the activities of the Itinerant School 2022 - Vale do Paraíba



Photos: Carol Godefröid.

Figure 8 - Works analysed by the students in the examples



Photos: (A) Seth Emanuel; (B) Nelson Kon; (C) Nivaldo Vieira de Andrade Jr; (D) Murilo Romeiro; (E) Marco André Briones; (F) Pedro Mascaro.

Figure 9 - Example of a booklet filled out by a student during a visit to the Structural Laboratory of the Aeronautics Technical Centre, designed by Oscar Niemeyer

dados gerais do projeto

obra escolhida: Laboratório de Estrutura
arquiteto: Oscar Niemeyer
cidade: São José dos Campos
latitude: 23° 57' S
dia: 16/10
hora: 13h27
temperatura do ar: 27°C
condição de céu: parcialmente nublado
disposição no lote: [diagrama]
assentamento no lote: [diagrama]
uso do projeto: [checkboxes]
Qualidade? [checkboxes]

percepção geral

temperatura do ar: [escala]
taxa metabólica: [escala]
vestimenta: [checkboxes]
ventilação natural: [escala]
você se sente confortável? [checkbox]
acessibilidade: [checkboxes]

iluminação e insolação

qual a orientação da fachada principal? N NE E SE S SO O NO
quanto mascaramento o entorno promove? [escala]
quão transparente é a fachada principal? [escala]
há dispositivos de sombreamento? de que tipos? [checkboxes]
há dispositivos internos de controle luminoso? [checkboxes]
caso identificadas aberturas zenitais de qual tipo(s)? [checkboxes]
durante a visita, a iluminação do local era: [checkboxes]
a disponibilidade da luz natural (apenas é suficiente)? [checkboxes]

térmica e ventilação

há aberturas para ventilação natural? Como estão? [checkboxes]
qual(is) os tipo(s) de abertura(s) do projeto? [checkboxes]
qual(is) os tipo(s) de ventilação identificada(s)? [checkboxes]
quão eficiente você julga ser a ventilação natural? [escala]
qual a espessura das paredes (em palmos)? [escala]
caso identificável, qual o tipo de cobertura? [checkboxes]
há forros (estruque, madeira, gesso etc.)? [checkboxes]
qual a cor e a tonalidade dos acabamentos externos? [checkboxes]

croqui ambiental

detalhe de estratégia ambiental

estratégias identificadas

notas adicionais

Y sempre pode ventilar no ambiente.
Apesar de estar fechado inter-namente, para regular temperatura por conta do telhado alto.

Note: the content described by the students was fully translated into the body of the article.

Regarding natural and artificial lighting aspects, the main facade faced northeast and had minimal transparency, shielded by cobogós. The student observed that the surroundings caused significant masking of the sky dome, but natural lighting was deemed sufficient in the location. As for ventilation openings, they were of the guillotine type and were kept open, facilitating a highly efficient airflow through cross-ventilation on opposite facades. Lastly, the construction's materiality featured sturdy, white-painted walls with a vaulted roof and no ceilings.

In the sketches, the student depicted the airflow within the building, identifying passive strategies such as cross-ventilation, radiation reflection, and thermal insulation. Another highlighted aspect was the height of the ceiling, which promoted convective movement, creating cooler and more pleasant environments.

Olivo Gomes Residence

The second presented example, illustrated in Figure 10, was also developed in the city of São José dos Campos, but for a house designed by Rino Levi and Roberto Cerqueira: the Olivo Gomes Residence, built in 1949. During the visit, temperatures reached 27 °C, and the sky was partially cloudy, according to the student's assessment. The project is oriented to the northeast, is isolated on the plot, and is partially embedded in the terrain. It is interesting to note that the house is located near bodies of water (two large lakes), as observed by the student, highlighting evaporative cooling as a potential passive strategy for thermal conditioning.

The student's perceptions point to a situation of warmth, even though there is a metabolic rate typical of a person sitting and wearing light summer clothing. Ventilation is primarily provided by breezes, with no strong winds observed at the location. The sound environment is considered noisy, and accessibility is compromised. However, the respondent judges the overall situation as comfortable.

Regarding lighting issues, solar access is hindered by the surroundings, which, according to the student, considerably mask the sky dome. The relationship between transparent elements and opaque closures indicates a prevalence of glazed surfaces. Among the shading devices, three were identified: *brises-soleil*, eaves, and vegetation. Internal lighting control, however, cannot be done by the user due to the absence of elements with this function, and no zenithal openings were identified. While at the site, the student notes that only natural lighting was used, and it was sufficient to illuminate the space.

Figure 10 - Example of a booklet filled out by a student during a visit to the Olivo Gomes Residence, designed by Rino Levi and Roberto Cerqueira

Note: the content described by the students was fully translated into the body of the article.

Ventilation openings were present, with identified openings established by sliding, guillotine, and pivoting windows, favouring very efficient cross-ventilation. The house's materiality indicates heavy walls, a fibre-cement roof, the presence of ceilings, and orange and yellow finishes of medium hue.

The produced sketches indicate the environmental quality of the location, highlighting the facade composed of operable frames and the presence of dense vegetation in the surroundings. Among the passive strategies identified are shading, natural ventilation, thermal insulation, access to global solar radiation, reduction of exposed surfaces, passive heating, evaporative cooling, and thermal inertia.

Gaivotas Pavilion

Still in São José dos Campos, a third student evaluated the Gaivotas Pavilion (Figure 11), also designed by Rino Levi. At the time of the visit, around 2:00 pm, the sky was partially overcast, and the air temperature was around 29 °C. According to the student, the building is detached from the ground and is used for leisure. Additionally, the main facade is oriented to the north, and it is not located near water bodies.

Based on the student's overall perceptions, including information that he had a metabolic rate corresponding to a person sitting and was wearing a T-shirt and pants, he felt warm in the location. The building was assessed as accessible, and the present winds were of low speeds, like breezes. The site had a high level of noise – on a scale of 0 to 100, where 0 is Silent and 100 is Noisy, the student marked 70. Despite the temperature and noise, the student expressed feeling comfortable in the Pavilion.

Regarding lighting and insolation, the surroundings provide little masking of the building, and the main facade features a balanced proportion of opaque and transparent elements. Regarding the shading devices used, the student marked "other" and drew the roof of the location, which is plausible, as it is an open space shaded by this roof. In identifying zenithal openings, the student also made a representation of a translucent tile that runs the entire length of the structure. Although the tile does not qualify as an opening, it allows natural light to access, leading the student to assert that the lighting in the location is entirely natural and sufficient for the activities carried out there.

Figure 11 - Example of a booklet filled out by a student during a visit to the Gaivotas Pavilion, designed by Rino Levi

dados gerais do projeto

obra escolhida: Pavilhão Gaivotas proximidade a corpos d'água: sim

arquiteto: Rino Levi

cidade: São José dos Campos

latitude: 23°17' S

data: 16/10

hora: 14h06

temperatura do ar: 26

condição de céu: parcialmente nublado

disposição no lote: isolado

assentamento no lote: isolado

uso do projeto: residencial

Quantos cômodos? 3

Quantos banheiros? 2

Quantos quartos? 2

Quantos outros? 0

percepção geral

temperatura do ar: 26

ventilação natural: sim

você se sente confortável? sim

taxa metabólica: sedentária

son: silêncio

acessibilidade: sim

vestimenta: camisa

iluminação e insolação

qual a orientação da fachada principal? N N E S E S O O N O

quanto mascaramento o entorno promove? baixo

quão transparente é a fachada principal? baixa

há dispositivos de sombreamento? de que tipos? nenhum

há dispositivos internos de controle lumínico? nenhum

caso identificadas aberturas zenitais, de qual tipo(s)? nenhum

durante a visita, a iluminação do local era: insuficiente

é disponibilidade da luz natural (apenas) é suficiente? insuficiente

térmica e ventilação

há aberturas para ventilação natural? Como estão? abertas

qual(is) o(s) tipo(s) de abertura(s) do projeto? abertas

qual(is) o(s) tipo(s) de ventilação identificada(s)? abertas

quão eficiente você julga ser a ventilação natural? baixa

qual a espessura das paredes (em palmos)? 1

caso identificável, qual o tipo de cobertura? nenhum

há forros (estruque, madeira, gesso etc.)? nenhum

qual a cor e a tonalidade dos acabamentos externos? branco

croqui ambiental

detalhe de estratégia ambiental

NÃO HÁ PAREDES!

APENAS OS PILARES QUE SUSTENTAM ESTA GRANDE COBERTURA METÁLICA

E HÁ UMA ABERTURA ALTA NAS FACHADAS LATERAIS, PORTANTO A VENTILAÇÃO SE DÁ TAMBÉM POR ALÍ

estratégias identificadas

Quais estratégias? nenhuma

notas adicionais

Note: the content described by the students was fully translated into the body of the article.

In the thermal and ventilation section, the student states that there were openings for natural ventilation, and they were open. A schematic drawing of these openings is also provided, considering that they are not conventional and illustrated by icons. Ventilation enters the internal space through the lateral openings present along the entire length of the pavilion and through an upper opening in the main facade, in the shape of a seagull. Thus, all types of ventilation available in the booklet are identified, highlighting the efficiency of this strategy by the student. Additionally, the roof in the Pavilion is metallic, there is no presence of a ceiling, and the colour of the external finishes is white.

In addition to the small representations made throughout the questions, the student also provides a brief explanation of the project, stating that it has no walls, only pillars supporting the metal roof. In the sketch, the structure is well represented, as well as the potential flows of natural ventilation. In addition to shading and natural ventilation, the student also identified other environmental strategies, such as radiation reflection and access to diffuse solar radiation.

Oswaldo Cruz House

The fourth example pertains to a visit to the Oswaldo Cruz house in São Luiz do Paraitinga (latitude 23° South) – Figure 12. The temperature at that time was around 26°C, and the sky condition was partially overcast. The project, whose author is unknown, is oriented to the west, isolated on the plot, facing the street, and is fully grounded. Despite being originally designed as a residence, it currently serves a tourist function as it has been converted into a museum.

Regarding the perceptions, the student judged not to feel either cold or heat in the environment, considering the metabolic rate of a person sitting and clothing corresponding to a T-shirt and pants. Airflows were present through breezes, and the sound environment ranged in a middle level between silence to noise. There was no accessibility on-site. Overall, the student felt comfortable.

Figure 12 - Example of a booklet filled out by a student during a visit to the Oswaldo Cruz House, of unknown authorship

dados gerais do projeto

obra escolhida: Casa de Oswaldo Cruz
 arquiteto: Oscar Niemeyer
 cidade: São Paulo de Piratanga
 latitude: 23°
 dia: 17 de outubro
 horário: 14:59
 temperatura do ar: 25°C
 condição do céu: [cloud icon]
 proximidade a corpos d'água: [scale]
 disposição no lote: [diagram]
 assentamento no lote: [diagram]
 uso do projeto: [checkboxes]
 quanto andar? [checkboxes]
 O residencial? [checkboxes]
 O comercial? [checkboxes]
 O lazer? [checkboxes]

percepção geral

temperatura do ar: [scale]
 taxa metabólica: [scale]
 ventilação natural: [scale]
 você se sente confortável? [thumbs up/down]
 vestimenta: [scale]
 acessibilidade: [scale]

iluminação e insolação

qual a orientação da fachada principal?
 N NE E SE S SO O NO
 quanto mascaramento o entorno promove? [scale]
 quanto transparente é a fachada principal? [scale]
 há dispositivos de sombreamento? de que tipos? [checkboxes]
 há dispositivos internos de controle luminoso? [checkboxes]
 caso identificadas aberturas zenitais, de qual tipo(s)? [checkboxes]
 durante a visita, a iluminação do local era: [checkboxes]
 a disponibilidade da luz natural (apenas) é suficiente? [checkboxes]

térmica e ventilação

há aberturas para ventilação natural? Como estão? [checkboxes]
 qual(is) tipo(s) de abertura(s) do projeto? [checkboxes]
 qual(is) tipo(s) de ventilação identificada(s)? [checkboxes]
 quanto eficiente você julga ser a ventilação natural? [scale]
 qual a espessura das paredes (em palmos)? [checkboxes]
 caso identificável, qual o tipo de cobertura? [checkboxes]
 há forros (testuque, madeira, gesso etc.)? [checkboxes]
 qual a cor e a tonalidade dos acabamentos externos? [checkboxes]

croqui ambiental

detalhe de estratégia ambiental

estratégias identificadas

notas adicionais

Note: the content described by the students was fully translated into the body of the article.

Concerning aspects of natural and artificial lighting, solar access on the facades was not hindered by the surroundings. Regarding the main facade, transparent elements and opaque closures were well balanced, with the proportion of illuminating areas slightly smaller. The facade is shaded by an eave, and the student identified another type of internal lighting control device, representing a wooden louver in the booklet, without ventilation and with an opening towards the interior, common for the construction period. Despite having well-distributed windows on the facade, natural lighting, according to the student, was not sufficient, stating that during the visit, it was supplemented by artificial lighting.

Ventilation openings are defined by guillotine-type frames and remained open during the visit, promoting unilateral and/or cross-ventilation depending on the room in the residence. On a scale of 0 to 100, where 0 is Inefficient and 100 is Very efficient, natural ventilation, for the student, received a magnitude of 80. Regarding materiality, external walls are heavy, with 3 or more handspans in depth, painted white with blue details, the roof is ceramic, and there are ceilings in the internal spaces.

In the environmental sketches, the student emphasizes that the west facade receives direct radiation only in the late afternoon (lower solar heights) due to its eave and because of the great thickness of the walls, making a schematic cut with this information. The student also points out the importance of green masses in shading the north and south facades. Another point raised by him is the issue of thermal inertia, reporting a thermal delay in heating the environment and a damping of temperature peaks. Thus, the passive conditioning strategies identified by the student are shading, natural ventilation, passive solar heating, and thermal inertia.

Vargem Grande Farm

The last examples presented here refer to two farms originally created for coffee production, visited during the Itinerant School, with architecture and surroundings quite distinct from the previously mentioned examples. The visit to Vargem Grande Farm, located in the rural area of the municipality of Areias (SP), took place on the third day of the trip, in the late afternoon. The air temperature was around 25 °C, and the sky was cloudy. According to the student who filled out the booklet (Figure 13), the layout of the property on the plot

is semi-detached on more than one facade, and the building is partially grounded, with parts dissociated. Additionally, the project has mixed use, with a residential predominance.

The general perception of this student regarding air temperature, on a scale from 0 to 100, where 0 corresponds to cold and 100 to heat, a value of 70 was selected, despite being seated and wearing light clothes such as a tank top and shorts. Natural ventilation was evaluated between no wind and a breeze, accessibility was compromised, and in terms of acoustic issues, the location was considered by the student as quiet, with a low level of noise. Overall, the student felt comfortable on-site.

In the section on lighting and insolation, it is noted that the surroundings provide little masking of the building, and the main facade has more opaque elements than transparent ones. Shading devices such as cobogós, pergolas, and vegetation were observed, as well as zenithal openings in the form of skylights. The student did not observe any internal lighting control devices, but despite this, the solely natural lighting was assessed as somewhat dazzling. Natural ventilation was assessed as very efficient, where the student reported openings in the facades, which were open at the time of the visit, promoting cross-ventilation through casement windows. The construction walls were robust, and there was the presence of a ceiling in the internal spaces.

As a sketch, the student presented the garden of the property, designed by the landscape architect Roberto Burle Marx, and as a detail of environmental strategy, made a simplified drawing of the strategy that stood out the most in the built ensemble, the cross-type natural ventilation. In addition, strategies such as thermal insulation and minimizing the exposure area to the exterior were also identified.

Pau d'Alho Farm

On the fourth day of the Itinerant School, the group of students and teachers visited Pau d'Alho Farm, in São José do Barreiro (SP), around 12:30. The air temperature was 22 °C, and it was raining at the time. The student who responded to the selected booklet (Figure 14) with this example noted that the construction is relatively close to bodies of water, isolated on the plot, and entirely grounded. Although it was initially designed for residential use, today the farm serves a tourist function.

Figure 13 - Example of a booklet filled out by a student during a visit to the Vargem Grande Farm

Note: the content described by the students was fully translated into the body of the article.

Figure 14 - Example of a booklet filled out by a student during a visit to the Pau d'Alho Farm

dados gerais do projeto

obra escolhida: fazenda Pau d'Alho
arquiteto: [blank]
cidade: São José do Bonfim
latitude: 23°S
dia: 14/10
hora: 12:26

temperatura do ar: [scale from 10 to 40]
condição de céu: [scale from 0 to 100]
proximidade a corpos d'água: [scale from 0 to 100]
disposição no lote: [scale from 0 to 100]
assentamento no lote: [scale from 0 to 100]
uso do projeto: [scale from 0 to 100]

percepção geral

temperatura do ar: [scale from 0 to 100]
taxa metabólica: [scale from 0 to 100]
vestimenta: [scale from 0 to 100]
ventilação natural: [scale from 0 to 100]
você se sente confortável?: [scale from 0 to 100]

iluminação e insolação

qual a orientação da fachada principal? [scale from 0 to 100]
quanto mascaramento o entorno promove? [scale from 0 to 100]
quão transparente é a fachada principal? [scale from 0 to 100]
há dispositivos de sombreamento? de que tipos? [scale from 0 to 100]
há dispositivos internos de controle lumínico? [scale from 0 to 100]
caso identificadas aberturas zenitais, de qual tipo(s)? [scale from 0 to 100]
durante a visita, a iluminação do local era: [scale from 0 to 100]
a disponibilidade da luz natural (apenas) é suficiente? [scale from 0 to 100]

térmica e ventilação

há aberturas para ventilação natural? Como estão? [scale from 0 to 100]
qual(is) o(s) tipo(s) de abertura(s) do projeto? [scale from 0 to 100]
qual(is) o(s) tipo(s) de ventilação identificada(s)? [scale from 0 to 100]
quão eficiente você julga ser a ventilação natural? [scale from 0 to 100]
qual a espessura das paredes (em palmos)? [scale from 0 to 100]
caso identificável, qual o tipo de cobertura? [scale from 0 to 100]
há forros (estrupe, madeira, gesso etc.)? [scale from 0 to 100]
qual a cor e a tonalidade das acabamentos externos? [scale from 0 to 100]

croqui ambiental

detalhe de estratégia ambiental

estratégias identificadas

notas adicionais

Note: the content described by the students was fully translated into the body of the article.

Regarding the general perceptions of this student, he considered himself neutral in terms of temperature, experiencing neither heat nor cold; the location was quiet, accessibility was evaluated as compromised, and natural ventilation was perceived as a weak breeze. It is worth mentioning that the student had a metabolic rate consistent with walking and was dressed in a T-shirt and pants; overall, they did not feel comfortable during the visit.

The main facade of the building faces the Northwest and has few transparent elements compared to opaque ones; the surroundings also provide little masking for the construction. Despite the absence of internal devices for lighting control, external shading devices such as pergolas, eaves, and vegetation were observed; nonetheless, natural lighting was assessed by the student as somewhat dazzling.

Ventilation openings, made through casement windows, were open during the visit, promoting unilateral and cross-ventilation – opposite and adjacent. Thus, the student evaluated this strategy as very efficient. Ceramic tiles were identified on the roof, and there were no ceilings in the internal spaces. Additionally, the predominant colour of the external finishes is a light shade of red. In the sketches, the student drew the built ensemble of the farm with the perceived wind flows and also detailed the *brise-soleils* inserted in some windows.

Discussion

These six examples demonstrate that the proposed activity achieved its objective. Drawing on the knowledge acquired in the Environmental Comfort I and II courses, the students were able to identify, without the interference of comfort-focused professors, the bioclimatic strategies applied in the visited works. The experience of bioclimatic strategies becomes an active learning experience, allowing the student to verify what they have learned and facilitating the incorporation of knowledge into their design practice, in addition to expanding their repertoire of architectural solutions. Besides, the booklet developed to stimulate students' awareness of environmental comfort concepts proved to be a suitable didactic resource for the teaching-learning process, with a focus on its innovative character when compared to the materials provided to students during study trips such as the one presented in this paper.

Some issues raised in discussions with the students should be mentioned. A disadvantage pointed out by them was the absence of a comfort professor accompanying the Itinerant School and guiding discussions and perceptions towards a more technical approach. Some students reported that this guidance was missed, especially regarding questions that arose only on-site. Furthermore, the presence of an environmental comfort professor could encourage and stimulate less engaged students in carrying out the activity. It was also observed that most booklets presented buildings visited at the beginning of the Itinerant School, showing a greater interest in filling out the booklet and more effort when analysing the drawings, at a time when students were not yet tired from the trip. This issue can be addressed by including a pre-established time for completing the activity during the itinerary.

Another point that can be reconsidered concerns the possibility of freely choosing the works. An option to be studied would be the prior selection by the professors of the buildings to be analysed. In this way, each case study would have a considerable sample of evaluations, enabling subsequent statistical analysis that could be presented and discussed with the class. Thus, the numerical scales adopted in the booklet would be better utilized.

In addition, by making such a selection, the professors involved in the Itinerant School activities could be instructed to pay closer attention to comfort issues and to stay in the spaces for a longer time, as some students mentioned that it was challenging to balance paying attention to explanations, evaluating spaces, and completing the booklet. However, the downside would be the rigidity of an activity that aims to sensitize the student in a light and relaxed manner, as well as making it more difficult to reschedule in the itinerary of any unforeseen circumstances that may prevent its execution.

As also reported, students often did not have time to make sketches on-site, needing to photograph the environment and details to draw later. Therefore, it is important to evaluate the real need for two sketches (one general and one specific) and whether it would be interesting to also request photographic documentation of certain environmental strategies for later discussion in the classroom.

A suggestion made by the students themselves is to try to develop the activity in groups. In this format, the perception questions of space would be carried out individually, but the analyses and design surveys of the work would be done together, encouraging discussion among them.

Analysing the submitted booklets, it was noticeable that a large portion of the students judged themselves to be comfortable in the conditions analysed. However, from this, an improvement area for future applications of this activity was identified, as it was noted that there was no option in the booklet to indicate the main reason why students felt uncomfortable in certain environments.

Another issue to be implemented in future itineraries concerns the on-site measurement of microclimate variables, such as temperature, relative humidity, wind speed and direction, sound pressure level, and illuminance levels, for subsequent discussion with the students. Thus, in addition to sensitizing students to environmental comfort concepts qualitatively, it would also be possible to have a quantitative understanding of the environmental conditions of the visited spaces.

Conclusions

The environmental comfort is a discipline that deals with human senses, well-being in different environments, and all aspects related to health. In the education of architects and urban planners, it is of utmost importance to include activities focused on experience, so that students can feel the spaces, observe how light affects them, hear the noises and sounds present, touch the materials and elements that constitute them to understand their texture and accumulated heat.

Furthermore, these experiences allow future professionals to assimilate new cultures, social spaces, and architectural references. In this sense, the multiple benefits of actions such as the Itinerant School of the *Escola da Cidade* are emphasized. For first-year students, external experiences take on an even greater dimension, as at this moment, students are still learning to train their eyes and other senses for the built environment and all its details and functionalities.

The activity garnered positive feedback from both students and accompanying professors. The engagement of students, along with their inquiries and questions, prompted the educators to adopt a fresh perspective on the visited architectural buildings. Furthermore, despite its simplicity, the exercise presented here demonstrated itself as a highly effective extracurricular tool in cultivating the observational skills of students as they embark on their journey into the field of Architecture and Urbanism.

Therefore, an intuitive and stimulating exercise was carried out to guide these senses and sensitize students to the different architectural spaces they encountered throughout the Paraíba Valley. The results obtained in the booklets, as well as the feedback from the students, were very positive and demonstrate that the graphic quality and proposed activities contributed to the sensitization and perception of the environments. The exercise also brought contributions to the academic and professional future of these students, with some reports about the change in the way they perceive and analyse buildings and internal and external spaces. From this didactic proposal and with this more accurate observation, students will expand their technical and artistic repertoire.

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