



ECO BUILDING

The Story of Our Journey to Embrace a Sustainable Future

At Açı Schools, we believe in the importance of approaching the environment with sensitivity and adopting sustainable lifestyles. As Açı Schools we are determined to take steps by embracing an environmentally conscious approach in all our practice. To this end, we decided to transform Wake - up cafe building , located in our high school campus, into an ecological building in the 2023-24 academic year.

This ambitious and significant endeavor is led by 18 volunteer high school students, who are passionate about making a positive impact on the environment and are inclined towards careers in architecture and engineering, alongside their advisor Dr. Nilüfer Özak (Architect Ph.D). Their goal is not only to transform the cafeteria into an environmentally friendly space but also to inspire all our students on this journey toward sustainability and to involve them in the process.

Our project, "Eco Building," is designed to ensure environmental sustainability within our school by achieving high energy efficiency, a low carbon footprint, minimizing waste production, creating comfortable and healthy indoor environments, enhancing user experience with green spaces and natural landscaping elements, and establishing a living space in line with sustainability principles.

Our lessons took place throughout the year within the framework of the "Eco Building Project," every Wednesday from 14:20 to 16:10.

In our annual plan, the first twenty weeks were supported by theoretical lessons, workshops, and field trips.

Theoretical Lesson Contents:

- The Role of the Architect in Sustainable Architecture and Design
- How to Create Environmentally Conscious Design? (Concept of Sustainability, Carbon Footprint, Zero Waste, Energy Passport, Energy Supply, Renewable Energy Sources)



- Sustainable Building Design Certifications Valid Worldwide
- 3D Architectural Drawing Programs
- Water and Waste Management
- Sustainable Materials in Interior Design
- Construction Techniques
- Shortcomings in Traditional Construction Techniques (Materials, Heat Losses, etc.)
- The Importance of Materials in Environmentally Conscious Buildings

- **Our Workshops**

- **Workshop-1: Wake-Up Cafe Existing Condition Freehand Plan Work/Photo/Analysis/Current Situation Assessment**

This workshop was designed to teach our students how research can be integrated into the design process. Our students learned how to feed the design process with information and how to obtain the necessary data. The workshop was conducted in five groups of four students, and each group collected data to analyze the architectural aspects of the current Wake-Up Cafe, preparing a presentation based on this data. In this way, our students understood the importance of research during the design process and learned how to integrate this information practically into their designs.

- **Workshop-2: Facade in Sustainable Architecture**

In this workshop, our students focused on the architectural facade details of the iconic Al Bahar Towers* designed by AEDAS and tried creating a facade model. This workshop emphasized energy efficiency and the correct use of daylight in buildings, allowing students to explore the intricacies of facade design from the perspective of sustainability. The workshop also aimed to equip our students with the knowledge and skills to create environmentally conscious and aesthetically pleasing facades that dynamically respond to the natural environment.

*The Al Bahar Towers are a proof of innovative architectural solutions with a dynamic foldable shading system that adapts to the constantly changing position of the sun.

- **Workshop-3: Basic Concepts in Sustainable Architecture**

This workshop offered our students a great opportunity to explore fundamental concepts related to sustainable architecture and discuss how they can integrate these into their designs. Each student selected a concept to research and worked on it, allowing them to explore their personal interests and prepare an original presentation. This process helped students take individual responsibility while also enhancing their ability to collaborate in a

group. Such an activity laid the foundation for students to understand sustainability-related concepts and apply this knowledge to practical design projects, creating a platform for future architectural and environmental designs. Concepts covered in the workshop: acoustics (sound absorption with vegetation), double doors, vertical gardens, alternative water sources, wind barriers, mass and orientation, biomimicry, natural ventilation, energy efficiency, biophilic design, thermal mass, cisterns, heat transfer, U-value, solar orientation and photovoltaics, green roofs, passive solar heating.

- **Workshop-4: Wake-Up Cafe Mass/Form Study**

This workshop provided our students with an opportunity to work on real-world applications based on sustainable architectural principles. Our students examined the environmental and functional issues of the current Wake-Up Cafe and developed new design proposals with a problem-solving approach. They worked on a site plan, considering scale, form, mass, environmental harmony, and sustainable design principles, using freehand drawing or tools like SketchUp. The detailed presentation of the group design and the creation of a physical model gave students the chance to develop both individual and collaborative skills. During the presentation, the advantages and disadvantages of the design were discussed by the class.

- **Workshop-5: Sustainable Building Materials**

This workshop aimed to help our students research building materials using sustainable architectural design principles and examine the CO₂ emissions of these materials. Each group conducted research on a material assigned by the project manager and focused on sustainability values. The materials to be examined were wood, earth, stone, concrete, and steel. In the second week, the groups shared their research findings in the form of a class presentation. The research was conducted based on the CO₂ emission values of architectural projects and the materials per kilogram. All these research findings and the CO₂ values of the materials were analyzed.

This study helped our students develop the ability to evaluate the environmental impact of materials used in architectural projects and inspired them to make more conscious decisions.

- In addition to our theoretical lessons and workshops, we organized a trip to the Sakarya Prowatt Factory. The aim of the trip was to better understand solar panel production and electricity generation from solar energy and to show our students PV production activities.
- Over the course of 20 weeks, the knowledge learned in theoretical lessons was applied and developed in workshop activities and projects. There are five student groups that each created a different project for Wake-Up Cafe. Throughout the design process, our educators provided feedback at every stage, and continuous revisions led to the final presentation stage. Our students presented their projects to the final jury, and they were evaluated according to the established criteria. Projects that met the criteria will be presented to school



stakeholders, and a selection survey will be created. The selected project will be implemented as a student project at our school, aiming to create a sustainable living space. The contribution of everyone involved in this process is valuable and will be a great source of pride for our school.