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Reconnecting with nature: Biophilic interior design strategies in Izmir-Turkey

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Abstract

As urban environments become increasingly detached from nature, interior spaces must be reimagined to restore human-nature connections for the sake of individual well-being, ecological responsibility, and cultural continuity. Biophilic Design, which is an approach that integrates natural elements into built environments, has emerged as a critical strategy to address this disconnection. This international workshop hosted by the Department of Interior Architecture and Environmental Design at Izmir University of Economics and with the joining of faculty and students from the Department of Architecture in Chiba University, Japan, explores how biophilic principles can be contextually embedded into interior architecture within Izmir, a city known for its biodiversity and culturally layered identity. Focusing on the design of a biophilic library at the Izmir Culture and Arts Factory, participants engage with interdisciplinary themes such as material tactility, sensory engagement, passive lighting and ventilation, native flora integration, and cultural sustainability. Bringing together Turkish and Japanese students and faculty, the workshop also fosters cross-cultural collaboration and shared design knowledge. This work positions biophilic design not merely as an aesthetic and sustainable strategy, but as a guiding philosophy that cultivates multisensory well-being, ecological literacy, and a design ethos attuned to the challenges of an ecologically precarious future.

Keywords: Biophilic design, interior architecture, sustainable design, cultural context, Izmir

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1. INTRODUCTION

Urban development continues to densify cityscapes, leading to interior environments at the risk of becoming increasingly detached from nature, compromising human well-being, ecological awareness, and design quality. This international workshop, set in Izmir, a Mediterranean city known for its biodiversity, cultural richness, and progressive design sensibility, offers a timely platform to explore how biophilic interior strategies can reconnect urban dwellers with their natural surroundings. Through hands-on design activities, interdisciplinary collaboration, and site-specific exploration, the workshop investigates how natural materials, environmental systems, and local sensorial cues can be integrated into interior environments. Participants analyzed Izmir's ecological identity and vernacular design heritage, applying biophilic design patterns to develop sustainable, sensory-rich, and culturally grounded interior concepts.

Focusing on the Izmir Culture and Arts Factory, a landmark site recognized for its commitment to sustainability and public engagement, the workshop challenged the student participants to design a biophilic library and multimedia center. The design brief called for a space that supported learning, restoration, and creative recovery, with key themes of the workshop including; Nature-Inspired Materials and Forms (e.g., stone, cork, clay), Natural Light and Airflow (passive strategies for comfort), Vegetation Integration (using Izmir's native flora), Sensory Engagement (tactile, auditory, olfactory cues), Cultural Biophilia (Aegean craft and spatial memory), Cultural Sustainability (design that preserves identity over time). By bridging Turkish and Japanese design perspectives, the workshop organized by Izmir University of Economics, Faculty of Fine Arts and Design, fostered intercultural and interdisciplinary learning at the intersection of ecology, interior design, and social wellbeing. Project outcomes involved visual presentations, site-specific concepts, and biophilic design concept statements, contributing to ongoing conversations on sustainable design education and the transformative potential of biophilic interiors in shaping the future of Izmir. The workshop was finalized with presentations of each group, an exhibition, and a certificate ceremony.

2. BIOPHILIC DESIGN AS A CRUCIAL COMPONENT IN SUSTAINABILITY EDUCATION

The term "biophilia," derived from the Greek meaning "love of nature," was initially introduced by the social psychologist Erich Fromm (1964). The concept received renewed scholarly attention in the 1980s when the American biologist Edward O. Wilson drew attention to the implications of human disconnection from the natural environment. Wilson advanced a theoretical framework emphasizing the necessity of reestablishing humans' relationship with nature, and defined biophilia as an inherent emotional affinity that humans possess toward other living organisms (Wilson, 1984).

Biophilic Design is an effort to incorporate the human tendency to connect with nature (called Biophilia) into the design of our buildings and environments (Wilson, 1984; Kellert, 2005). Biophilic design focuses on shaping built environments that support human health and well-being by recognizing our innate connection to nature. By incorporating elements that respond to this natural affinity, biophilic design seeks to enhance both physical and mental health, as well as overall well-being in modern living spaces (Kellert & Calabrese, 2015; Bakır Küçükkaya & Hasirci, 2025). Biophilic design integrating natural elements and processes into the built environment, emerged as a vital approach within sustainability education. Based on the biophilia hypothesis, Browning et al. (2014) developed the "14 Patterns of Biophilic Design," a framework that integrates principles from human biology and nature into the design of built spaces and offers practical strategies to enhance design practices that promote health and well-being (Kellert et al., 2008). Within interior design education, the incorporation of biophilic principles is essential for preparing designers to create spaces that are both environmentally responsible, human and nature-centered, addressing indoor environmental quality issues (Hasirci, 2024).

3. METHOD AND MATERIALS: CASE STUDY

3.1. Aims, Background, Rationale

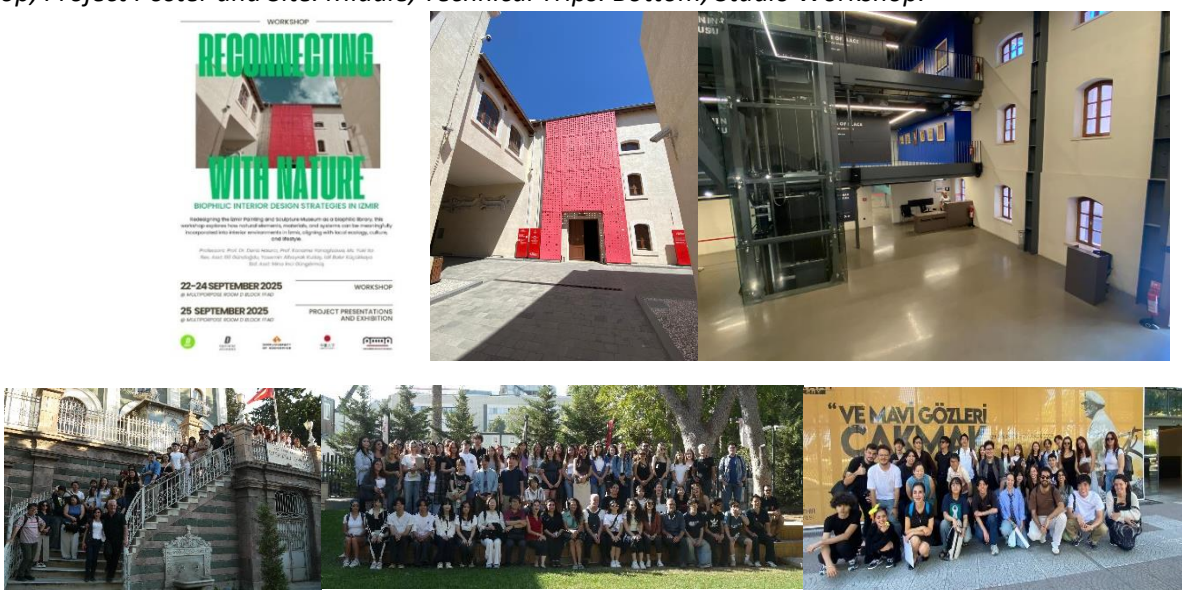
The workshop title highlighted, biophilic design, the city of Izmir, and the need to remain connected to the biophilic affinity of human beings towards all that is living; “Reconnecting with Nature: Biophilic Interior Design Strategies in Izmir”. The aim was to regain sensitivity toward nature remembering that human beings are a part of nature and inseparable from it, and achieve an understanding as a designer that each choice makes a difference throughout the design process. Taking place throughout a week in Izmir, Turkey, as the Aegean Region's Ecological and Cultural Hub, objectives of the workshop included; introducing the principles of biophilic design, examining Izmir’s natural and architectural identity as a foundation for design inspiration, exploring sustainable, sensory-rich, and locally relevant interior solutions, and encouraging hands-on experimentation and interdisciplinary collaboration. The key themes of the workshop contained concentration on; Nature-Inspired Materials and Forms: Use of local stone, wood, clay, and recycled materials in interiors; Natural Light and Airflow: Passive design strategies to maximize comfort and connection to the outdoors; Vegetation Integration: From vertical gardens to plant-based partitions through utilizing Izmir’s native flora; Sensory Engagement: Tactile, auditory, and olfactory design for holistic well-being; Cultural Biophilia: Traditional Aegean design elements that reflect a deep-rooted harmony with nature; and Cultural Sustainability: Cultural values that last, are protected and sustained over time. Five teams of six were formed, mixing Turkish and Japanese students.

3.2. Project Site

The location was Izmir Culture and Arts Factory, as a point of historical and industrial significance and culture. The fact that the site used to be the Tekel tobacco factory, one of the first after the foundation of the Republic of Turkey in 1923, enriched students’ concepts statements. The Painting and Sculpture Museum was chosen, with the significance of the site being to be a sustained source of knowledge over the foreseeable future, through culture and art, and preserving the city’s historic memory (Figure 1).

Figure 1

Top, Project Poster and Site. Middle, Technical Trips. Bottom, Studio Workshop.



3.3. Intrinsic Biophilic Design Brief and Technical Trips

The design brief and design challenge involved the request to design a biophilic library and multimedia center that supports learning, relaxation, sensory balance, and creative recovery. Students needed to consider the biophilic design patterns, along with textures, views, lighting, and indoor vegetation that reflect Izmir's natural surroundings. Regarding the workshop goals, the first is distinct from the biophilic design project. It focuses on bringing together Turkish and Japanese students and faculty to foster cultural exchange. Moreover, the goals include, collaborating at an advanced, international, multicultural, multi-layered, and multidisciplinary level, through design.

Within the project context, learning goals included; comprehending Biophilic Design as a philosophy, resulting in a concept statement to govern all project design decisions; utilizing the Biophilic Design Patterns as a guide and as a base for the concept statement; understanding contemporary libraries and how they could be a center for biophilic wisdom; supporting circadian rhythm through the understanding of light and natural ventilation; introducing biophilic learning (green partitions, water elements); designing with respect towards the site's special place in the city's history; celebrating the Aegean flora through landscape and interior plant selection; making use of local crafts for tactility. The technical trips included Kemeraltı, as a historical part of central Izmir, and enabled students to experience the local textures, tastes, and significant interior spaces in Izmir. Students took several photographs which they included into their projects. The second visit was organized to the Izmir Culture and Arts Factory site where students analyzed the building, and the third trip was to an exhibition at Izmir Fairgrounds, where students were able to see Refik Anadol's digital work (Machine Hallucinations: Aegean and Sense of Healing) as well as an exhibition (Ve Gözleri Çakmak Çakmaktı) on Mustafa Kemal Atatürk's legacy.

3.4. Format

The format included all design work to be reflected on two A2 Boards; concept Statement and Biophilic Pattern(s) applied; site analysis and progress stages sketched; conceptual plans, sections, and perspectives; photographs of the 3D visuals of the main areas in the building; and the approach to the building and façade design. The presentations were done through the two projected boards as well as any other research that the students wished to share. It was important to have different versions of the boards prepared for the students' portfolios and organizers' archives. In the eight weeks preceding the workshop, the organizing team (Izmir University of Economics-IAED, Chiba University- Architecture, and coordinators at the Izmir Culture and Arts Factory) held a series of planning meetings to align intended learning outcomes, activities, and assessment in line with constructive alignment. Responsibilities were distributed across a small steering group (logistics, site access, permits, safety brief), a pedagogy group (objectives, critique etiquette), and a content group (biophilic theory lectures). Intercultural collaboration and supporting a community-of-practice dynamic among mixed

teams (Lave & Wenger, 1991; Cross, 2004) were encouraged during the process. Mixed Turkish-Japanese teams were intentionally created to bring out different design habits, and the outcome was a cross-cultural synthesis in which biophilic strategies were co-constructed rather than simply adopted, reflecting contemporary co-creation methods in design education (Dhadphale & Wicks, 2022; Sanders & Stappers, 2008).

The assessment included both formative feedback (design critiques and peer reviews) and a summative exhibition, that had two A2 boards with a concept statement, a site analysis sketch, plans and sections, three 3D visuals, and material and plant palettes. The overall criteria examined contained: (a) conceptual clarity and cultural grounding; (b) coherence of biophilic integration and environmental reasoning; (c) spatial planning and practicality; and (d) clarity of communication and teamwork. This combination enhanced constructive alignment and acknowledged learning as both individual competence and collective engagement (Biggs & Tang, 2011; Lave & Wenger, 1991). The program involved; Day 1, Introduction, Site Trip, and Initial Ideas, Day 2, From Analysis to Schematic Design, Day 3, Design Development and Communication, Day 4, Exhibition, Discussion, and Certificates. Across the four days, several consistent educational insights emerged. First, place-based immersion (Kemeraltı walk and on-site readings) informed ecological literacy and improved the relevance of subsequent biophilic choices, validating the experiential cycle supporting the workshop (Kolb, 1984). Second, treating biophilic patterns as reasoning tools supported clearer concept foundations and more culturally grounded proposals (Kellert & Calabrese, 2015). Third, the encouraged cross-cultural communication and collaboration strengthened team reflection, aligning with intended gains in intercultural competence (Deardorff, 2006), reinforcing the value of constructive alignment for biophilic interior education in cross-cultural settings.

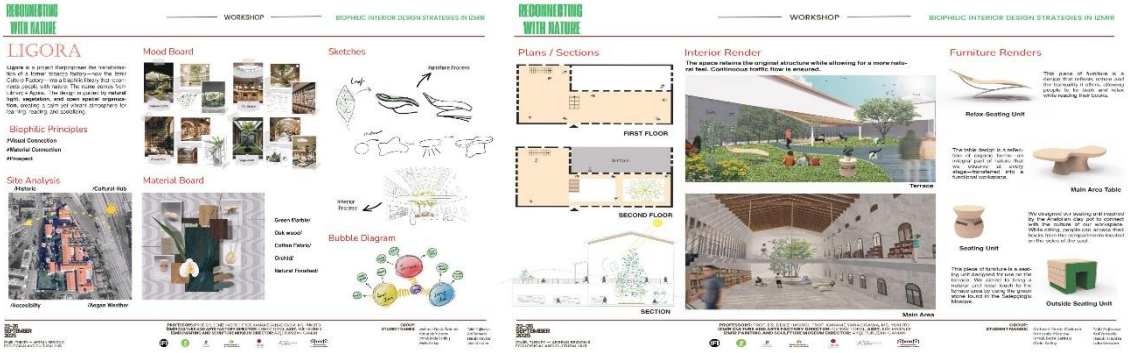
3.5. Project Outcomes

The technical trips provided each student with a sense of culture, environment, and biophilic design strategies necessary to produce conceptual biophilic design solutions.

Group 1: The group named their project Ligora -a word combination of Library and Agora. Natural light, vegetation, and open spatial planning is employed to create an environment which provides learning, reading, and socialization. Visual and material connection and prospect are utilized, with the presentation includes a moodboard showing the implementation of natural light, vegetation, co-space, and social hub. The students showed a variety of materials from green marble to oak and sketched the interior environment which shows their proposed biophilic ideas, natural daylight and vegetation integrated with the library and creates spaces where human interactions could occur (Figure 2).

Figure 2

Left, Biophilic principles, space planning. Right, Plans and section.

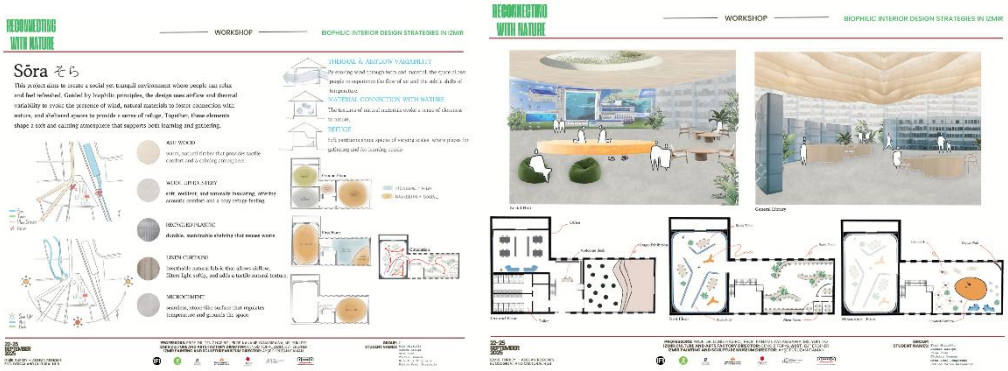


Group 2: This group aimed for an environment where people can relax and feel refreshed in a social yet tranquil space. Called Sora, the project employs natural airflow and thermal differences to create connections

with nature and enclosed spaces supply a feeling of refuge. This space was designed to provide an atmosphere for learning and gathering and of design elements to provoke indoor air flow for subtle temperature shifts. Students presented their project with a material board where they listed all the materials and their properties used in their study. Ash wood was chosen for its warm and natural properties that provide tactile comfort and a calmness. Recycled plastic was adopted for shelves in the library as upcycled items, and natural elements were considered to provide exposure to nature (Figure 3).

Figure 3

Left, Site and transportation analysis and materials. Right, Renderings of social hub area.



Group 3: This project aimed to create a space that provides learning, tranquility, tactile equilibrium, and healing. The students approached the project creating three patterns; direct, indirect and abstract. Dynamic and diffused light involves varying degrees of light and shadow that creates natural light conditions. Biomorphic forms and patterns explore symbolic references to natural contours, patterns, and textures. Refuge describes a space that allows withdrawal from environmental conditions (Figure 4).

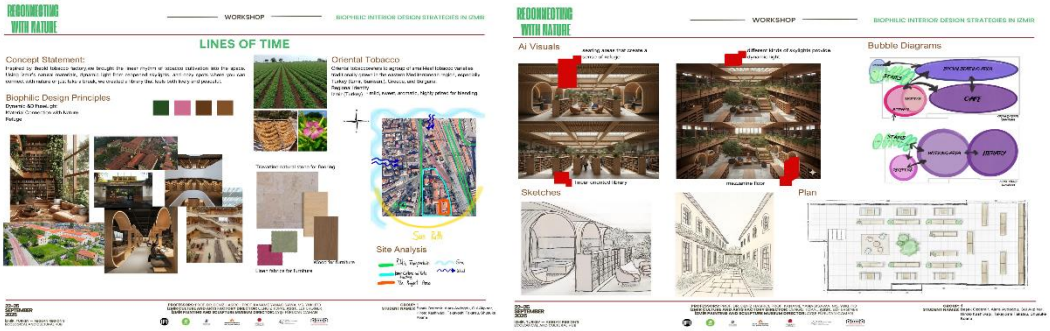
Figure 4

Left, concept, bubble diagram, analysis. Right, materials, plan, perspective sketches.

Group 4: This group of students named their project ‘Lines of Time’. Their focus is on the linear rhythm of tobacco production, bringing the materials found in Izmir city, light and comfort is used to create a connection between nature and library users. Dynamic and diffused lighting, material connection to nature, and refuge were their selected biophilic design principles (Figure 5). Tobacco leaf as the symbol of the project, ivy for wall gardening, grapevine to provide a sense of outdoor atmosphere are selected as indoor plants. Olive trees for being evergreen, bougainvillea for its vibrant colors, and lavender for its relaxing fragrance are chosen for outdoor plants.

Figure 5

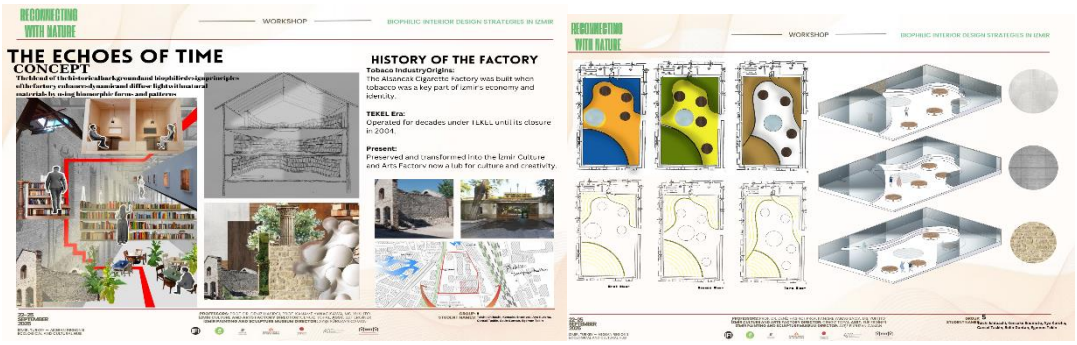
Left, Concept, biophilic design principles, color palette, materials. Right, Spatial planning.



Group 5: The last project is called 'The Echoes of Time'. Using biomorphic forms and patterns, the group designed their project to enhance the dynamic and diffuse light in the Izmir Art and Culture Factory. Site analysis consists of wind and sun path study, public transportation, and building site. The design for this project revolves on a large opening on the ground on each floor (Figure 6). All projects reveal that students formed a strong base for their works, researched and exchanged knowledge about culture, environment, and biophilic design principles, supported by the technical trips.

Figure 6

Left, Concept and the history of the building. Right, Floor plans, renderings, and materials.



4. DISCUSSION, CONCLUSION, AND FUTURE DIRECTIONS

This international workshop framed biophilic design as an instrument of education rather than a final objective, employing a workshop-as-studio format based on experiential, constructivist, and community-of-practice methodologies. Learning activities were organized into cycles of experience, reflection, conceptualization, and application (Kolb, 1984; Kolb & Kolb, 2005). The approach to teaching emphasized place-based inquiry and the adaptation of local ecological and cultural information into interior strategies, in accordance with studio traditions that prioritize learning by making (Cross, 2004; Hettithanthri & Hansen, 2022). The workshop's objective for learning was threefold: (1) to build ecological literacy in interior architecture through biophilic patterns; (2) to guide design thinking through material and environmental reasoning; and (3) to develop intercultural competence through bilingual, collaborative teams. Findings showed a commonality in biophilic choices and awareness. Each project also exhibited unique qualities in terms of highlighting a different aspect of the biophilia. Even when the same pattern was utilized, the interpretation was nuanced and led to original solutions. The study may be situated among educational and participatory studies in design education with a focus on nature, and is unique in the sense that, the aim is for

the educational period to be a beginning rather than an end to immerse oneself in biophilic behavior, adopting fully intrinsic biophilic design.

The ongoing relationship between the two universities has repeatedly proven fruitful in terms of strengthened relationships between faculty and students, leading to official agreements and several projects. Students achieve a chance to closely observe another culture, with habits, perspectives, and particularly approach to design. Chiba University Architecture students have a human centered approach and Izmir University of Economics, Dept. of Interior Architecture and Environmental Design students with their basis in biophilic design and openness to intercultural connections bring another set of skills, leading to design solutions with a high level of conceptual thought and a comprehension of ecological, cultural, and social sustainability. Apart from a clear understanding of the local vegetation and other natural aspects, students were fascinated by the project site and building's history as a tobacco factory, and connected to that heritage, through inspirations from the tobacco plant as well as industrialization within the city. The fact that there were architects, interior architects, industrial designers involved allowed for multi scale interactions, enabling the application of the design concept from the largest to the smallest scale. Focusing on biophilic design led to environmental awareness, and despite the brief period, projects reflected acute sensitivity and mindfulness brought through leaders' critiques, workshop studies, research, and cross-cultural friendships that will endure well beyond the workshop.

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