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Bridging Tangible and Intangible: A Pedagogical Model for Mediterranean Cities in Architectural Education

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Abstract

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This study examines an innovative pedagogical approach tested through the course "Mediterranean Cities: Realities vs. Representations" at the Arab Academy for Science, Technology & Maritime Transport (AAST) in Cairo, Egypt, from Fall 2022 to Fall 2023. Involving about 20 students per semester in 4–5 groups, the course explored 16 Mediterranean cities—Naples, Crete Island, Benghazi, Marseille, Oran, Mallorca, Istanbul, Barcelona, Venice, Athens, Valencia, Tunis, Algiers, Palermo, Rome, and Latakia—using a multidisciplinary lens. It blended tangible elements (e.g., urban morphology, architecture) with intangible aspects (e.g., cuisine, literature, cinema) through lectures, group studies, and experiential outputs like fashion mannequins, virtual reality (VR) tours, and cultural booths. A qualitative analysis of student work over three semesters reveals improved understanding of urban and sociocultural dynamics, proposing a framework for transdisciplinary architectural education that enhances critical thinking and cultural engagement across diverse regions.

Keywords: Mediterranean cities, urban identity, architectural education, experiential learning, tangible and intangible city aspects.

1. Introduction

1.1 Background and Context

Architectural education is evolving to address the multifaceted nature of urban environments, increasingly adopting transdisciplinary approaches that integrate diverse knowledge domains. This study situates its pedagogical model within constructivist learning theory, specifically drawing on David Kolb's experiential learning cycle (figure 1) (Kolb, 1984), while also aligning with contemporary frameworks that emphasize learning through direct engagement, reflection, and application in real-world contexts. Complementing this, Donald Schön's reflective practice framework highlights "reflection-in-action" and "reflection-on-action" to refine professional skills (Schön, 1983), a process further supported by recent studies on reflective learning in design education.

Trans disciplinaryity in architectural education bridges architecture with fields like sociology, history, and media studies, enabling a holistic understanding of urban spaces (Aziz Amen 2017; Aziz Amen and Ahmad NIA 2021; Aziz Amen and Nia 2018). The learning process in architecture connects to urban semiotics, which interprets cities through signs and symbols, such as understanding a marketplace as both a physical space and a cultural hub (Gottdiener, 1995). Teaching Mediterranean cities in architectural education aligns with cultural hybridity theories, which explore how diverse influences—for example, Roman, Arab, Ottoman—merge to form unique urban identities (Bhabha, 1994).

By integrating tangible dimensions with intangible aspects, architectural education enriches the interpretation of cities beyond static representations like photos and maps. The intersection of tangible and intangible dimensions is crucial for understanding urban identities such as Mediterranean one, where historical layering creates complex cultural landscapes (Braudel, 1972). This pedagogical approach fosters a deeper appreciation of urban dynamics, preparing architecture students to design in culturally diverse contexts.

This paper employs a qualitative case study design, focusing on the course "Mediterranean Cities: Realities vs. Representations" at AAST Cairo from Fall 2022 to Fall 2023. Conducted over 16 weeks per semester for three semesters, the course examined 16 Mediterranean cities: Naples, Crete Island, Benghazi, Marseille, Oran, Mallorca, Istanbul, Barcelona, Venice, Athens, Valencia, Tunis, Algiers, Palermo, Rome, and Latakia. It culminated in three expos—December 2022, May 2023, and January 2024—where students presented their projects to external evaluators.

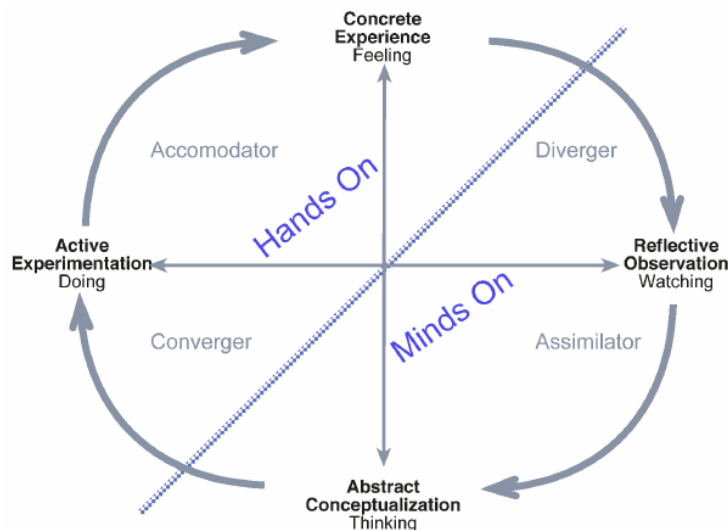


Figure 1. Kolb's learning cycle (Kolb, 1984).

1.2 Problem Statement and Research Gap

Teaching cities in architectural education traditionally prioritizes tangible elements—such as physical infrastructure, urban morphology, and architectural styles—while often sidelining intangible aspects like cultural traditions, literary narratives, and cinematic representations (Lefebvre, 1991). This imbalance restricts students' ability to fully comprehend urban identity, particularly in Mediterranean cities where intangible elements, such as Bnghazi's oral storytelling, Venice's Carnevale festivities, or Oran's Rai music, are vital to historical and cultural continuity (Bhabha, 1994). The scarcity of experimental studies and pedagogical models that bridge these dimensions through hands-on learning limits a holistic engagement with urban environments, a gap emphasized by the need for experiential pedagogy in architecture (Schön, 1983). This is especially evident in Mediterranean urbanism, where cultural hybridity plays a pivotal role (Bhabha, 1994).

The lack of such integration stems from curriculum designs that favor technical skills over sociocultural awareness, often leaving students unprepared for the cultural complexities of urban design. Current educational practices rarely incorporate tools like virtual simulations or community storytelling sessions, which could reveal the symbolic layers of cities. This study addresses these deficiencies by proposing an experiential learning model that combines tangible and intangible dimensions, drawing on student interactions with their analysed cities to enrich their understanding. By fostering cultural immersion and critical reflection, this pedagogical approach aims to develop architects capable of navigating diverse urban contexts, bridging historical narratives with cities urban reality's challenges, and responding to the geopolitical intricacies of Mediterranean cities.

1.3 Hypotheses and Objectives

This study hypothesizes that bridging tangible and intangible aspects of Mediterranean cities through experiential learning provides a richer, more nuanced interpretation of urban identity compared to conventional methods like books, photographs and maps. This hypothesis is grounded in constructivist learning theories, which emphasize that experiential methods engage students in active, reflective processes, connecting theory to practice and revealing cultural meanings embedded in physical forms (Kolb, 1984; Schön, 1983). Urban semiotics supports this, suggesting that integrating physical structures with symbolic elements deepens understanding of cityscapes—for example, interpreting Algiers' Casbah as both a physical labyrinth and a symbol of resistance in *The Battle of Algiers* movie (Gottdiener, 1995). Cultural hybridity studies further underscore the importance of intangible narratives in shaping urban identity, particularly in Mediterranean regions where historical interactions create layered cultural landscapes, as seen in Marseille's multicultural fabric blending French, North African, and Provençal influences (Bhabha, 1994). The study seeks to advance global architectural education by promoting culturally responsive urban design practices that preserve Mediterranean heritage while addressing modern challenges such as rapid urbanization, cultural homogenization, population growth, and the pressures of tourism development. Our objectives are comprehensive: to raise social awareness about the historical and cultural significance of Mediterranean cities, encouraging students to value their diverse heritage; to demonstrate the effectiveness of experiential learning through hands-on activities like creating VR tours, cultural booths, or interactive documentaries, fostering critical thinking and cultural immersion; to develop a replicable pedagogical framework for integrating tangible and intangible urban dimensions in curricula; to evaluate the impact of multidisciplinary approaches on students' design skills and sociocultural sensitivity; to explore how experiential learning addresses urban issues, such as preserving, for example, Athens' classical sites amid tourism pressures or adapting Bnghazi's urban fabric post-conflict; to assess the role of technology, including AI simulations for analyzing Istanbul's historical districts, 3D mapping of Palermo's markets, or virtual reconstructions of Roman forums, in enriching urban analysis and cultural representation; and to investigate community engagement, such as

collaborating with Tunisian weavers, Venetian glassmakers, or Alexandrian storytellers and finally, to ensure authentic representation of Mediterranean urban identities.

These objectives could equip students to design in global contexts by enhancing their ability to navigate complex urban narratives and apply culturally sensitive solutions. The approach fosters a deeper appreciation of Mediterranean cities' geopolitical intricacies, preparing architects to balance heritage conservation with modern development needs, such as sustainable housing in Valencia or resilient infrastructure in Crete. By integrating diverse perspectives, the study positions architectural education as a tool for cultural dialogue, addressing the challenges of globalization while honoring local identities across the Mediterranean region.

1.4 Significance and Structure of the Paper

This study offers a novel contribution to architectural education by proposing a pedagogical model that bridges tangible and intangible urban dimensions, with implications for urban planning, cultural preservation, and transdisciplinary learning. It provides educators with a framework to integrate sociocultural narratives into design curricula, fostering culturally sensitive architects equipped to address global urban challenges. The paper is structured as follows: Section 2 details the materials and methods, Section 3 presents results with a focus on general findings and diverse examples, Section 4 discusses findings, and Section 5 concludes with implications and recommendations.

2. Materials and Methods

2.1 Study Design and Setting

This qualitative case study examines the pedagogical framework implemented in "Mediterranean Cities: Realities vs. Representations," an undergraduate course conducted by the researcher at AAST's Sheraton Campus between Fall 2022 and Fall 2023. Over three 16-week semesters, and four hours per lecture, students investigated 16 Mediterranean cities and their urban centers (including Naples, Istanbul, Barcelona, and Tunis) through a blended curriculum of theoretical instruction, collaborative workshops, and culminating in three faculty exhibitions. These expositions (figure 2) served as both an assessment platform and community engagement initiative, facilitating critical discourse on Mediterranean urban identity.



Figure 2. Course posters for two of faculty expositions (Spring 2023 and fall 2023) (by Author).

2.2 Subjects

Approximately 20 undergraduate architecture students participated each semester, organized into 4–5 groups. Each group selected a city to analyze, ensuring diversity in urban contexts—from the historical ports of Naples to the modern grid of Barcelona, the war-torn streets of Benghazi to the ancient ruins of Crete. This collaborative structure fostered peer learning and critical dialogue, enhancing engagement through group discussions, shared research, and joint project development, which encouraged diverse perspectives and interdisciplinary problem-solving.

2.3 Materials and Equipment

The course incorporated a series of 16 lectures, covering topics such as urban elements, public spaces, cultural dialogue, and sustainability in urban design. Students used curated readings on Mediterranean urban history, architecture, and culture to build their foundational knowledge, including works by Braudel on the region's historical dynamics and Gottdiener on urban semiotics (Braudel, 1972; Gottdiener, 1995). Readings also included : A Trip to the Orient, the Story of a Mediterranean Cruise, by Robert Urie Jacob (2010), The City Assembled: The Elements of Urban Form Through History by Spiro Kostof (2005), Modern Architecture and the Mediterranean: Vernacular

Dialogues and Contested Identities, edited By Jean-Francois Lejeune, Michelangelo Sabatino (2010), and Cities of the Mediterranean: From the Ottomans to the Present Day Edited by Biray Kolluoğlu and Meltem Toksöz (2010) Experiential tools were central to the course, including fabrics and mannequins for fashion design, software for creating VR city tours, and exhibition materials for cultural booths. Additionally, students engaged with Mediterranean by preparing dishes emphasizing communal culinary traditions, which enriched their understanding of cultural identity through taste and preparation. These tools enabled hands-on exploration, aligning with Kolb's emphasis on concrete experience and active experimentation, and supported the creation of multimedia outputs like videos and interactive displays (Kolb, 1984).

2.4 Data Analysis

Data were gathered from student deliverables, classified into tangible and intangible categories. Tangible data included analytical sheets comparing urban layouts, timelines of sociopolitical shifts (e.g., Rome's imperial to Renaissance transition), scale models of public spaces (e.g., Athens' agora), a comparative analysis of skylines highlighting architectural diversity—such as Algiers' mosque-dominated silhouette, Tunis' Medina roofs, Latakia's port view, and Venice's basilica spires, VR simulations of markets (e.g., Tunis' souk), and cultural booths displaying artifacts like Tunisian rugs, Venetian masks, Maltese lace, Cretan pottery, and Barcelona's modernist tiles. Intangible data encompassed essays on toponyms from novels like *The Alexandria Quartet* by Lawrence Durrell (1957–1960, Alexandria), *The Leopard* by Giuseppe Tomasi di Lampedusa (1958, Palermo), and *My Name Is Red* by Orhan Pamuk (1998, Istanbul), and cinematic depictions, where cinema brought cities to life, tying cinematic and literary dimensions with real urban contexts to reveal aspects beyond photos and maps.

Students further engaged with cultural dimensions by creating fashioned mannequins and exploring cuisine, reflecting both tangible and intangible aspects of Mediterranean cities: For instance, they dressed mannequins in Venetian carnival costumes adorned with intricate lace to represent Venice's festive heritage, and in Oran's Berber-inspired textiles dyed with natural indigo, showcasing traditional craftsmanship. In terms of cuisine, they recreated Marseille's bouillabaisse, a fish stew symbolizing the city's maritime culture, using local recipes, and crafted Mallorca's ensaimada pastries, highlighting Arab culinary influences through their spiral shape and powdered sugar topping. These outputs were analyzed to understand how students translated cultural elements into experiential formats, bridging historical traditions with contemporary interpretations and deepening their engagement with urban identities. Furthermore, qualitative content analysis identified themes—urban morphology, architectural styles, cultural practices, historical layering, community resilience, and sustainability challenges—focusing on integrated narratives. Student reflections via journals, presentations, peer reviews, and discussions offered insights, while expo evaluations by architects, urban planners, cultural historians, educators, and artisans provided external perspectives on project impact.

3. Results

3.1 Presentation of Key Findings

The course facilitated a comprehensive exploration of 16 Mediterranean cities, yielding diverse student projects that integrated tangible and intangible urban dimensions across three semesters. Students produced detailed timelines tracing sociopolitical, economic, and cultural evolution—such as Rome's shift from an imperial capital to a Renaissance center, Naples' growth as a maritime hub since Greek colonization, and Tunis' transformation from a Phoenician trading post to an Islamic cultural center under the Hafsid dynasty—while mapping urban morphologies to understand spatial patterns, noting Mallorca's preserved medieval layout with its Gothic cathedral, Valencia's 19th-century modernist grid reflecting industrial expansion, Algiers' organic Casbah layout shaped by Ottoman governance, and Barcelona's Eixample district showcasing planned urban growth.

Cultural artifacts highlighted local identities across the cities, with each project reflecting unique historical and social contexts. Palermo's Norman-Arab crafts, like mosaics in the Palatine Chapel, reflected its multicultural past; Oran's Berber textiles with geometric patterns showcased traditional craftsmanship; Latakia's projects explored its agricultural heritage through olive oil production; Rhodes' studies emphasized medieval fortifications built by the Knights Hospitaller; Istanbul's work focused on Ottoman landmarks like the Topkapi Palace, Hagia Sophia, and Süleymaniye Mosque, highlighting imperial influences; Benghazi addressed conflict-driven urban changes, like makeshift housing and destroyed markets; Athens centered on the classical heritage of the Parthenon and Acropolis as symbols of democracy; Marseille analyzed its port as a cultural exchange hub linking Europe, Africa, and the Middle East; and Crete emphasized Minoan palaces and ruins influencing modern tourism.

The three expos—December 2022, May 2023, and January 2024, with faculty expositions—displayed these efforts, earning praise from external evaluators for their depth, creativity, and cultural sensitivity. For instance, Crete's Minoan-inspired pottery with bull motifs reflected ancient craftsmanship; Barcelona's modern design objects, inspired by Gaudí's organic forms like the Sagrada Família, showed innovation; Tunis' booth featured handwoven rugs dyed with natural saffron; Algiers' display included copper lanterns with arabesque designs; and Alexandria's booths showcased Hellenistic jewelry and papyrus scrolls, reflecting its cosmopolitan history. VR tours of Venice's canals captured its unique urban fabric with Gothic palazzos, while Oran's medina walks highlighted vibrant street life. These

outputs demonstrated enhanced student engagement through experiential methods, fostering a holistic understanding of urban identity across diverse Mediterranean context.

3.2.1 Tangible Elements

Students examined a wide range of tangible aspects across the 16 cities, beginning with history and sociopolitical timelines that shaped their development. Venice’s maritime dominance was established with the Arsenal shipyard in 1104, while Crete faced a German occupation in 1941, impacting its coastal defenses; Rhodes endured an Ottoman conquest in 1522, leading to fortified walls; and Benghazi’s 2011 conflict resulted in makeshift housing amid urban disruption (Lefebvre, 1991). Topography influenced urban layouts, with Marseille’s port featuring a steep incline toward the sea, shaping its trade hub status since 600 BCE, Naples’ port reflecting its Greek origins as Neapolis in the 6th century BCE, and Latakia’s coastal terrain driving its port-centric growth. Climate played a key role in shaping physical structures, as Oran’s Mediterranean climate, with 300 mm annual rainfall and temperatures from 15°C to 30°C, influenced its flat-roofed sandstone buildings and narrow streets, while Barcelona’s temperate conditions supported its dense urban fabric.

Urban morphology analyses revealed diverse spatial patterns, with Istanbul’s organic growth from Byzantine and Ottoman expansions, Malta’s fortified Valletta grid designed in 1566 for defense, Athens’ radial expansion around the Acropolis, and Tunis’ concentric Medina layout from the 7th century. In Algiers, The timeline of urban morphology is always changing along with transportation infrastructures development (figure 3). Comparative skylines highlighted architectural contrasts, juxtaposing Barcelona’s modernist spires with Rhodes’ medieval fortress silhouette, Marseille’s port cranes against Palermo’s baroque domes with Istanbul’s minarets (figure 4).

Architectural styles showcased regional diversity within the city landmarks, with Tunis’ Islamic architecture featuring horseshoe arches and stucco work in the Zitouna Mosque (732 CE), Venice’s Gothic style evident in the Doge’s Palace’s pointed arches, and Naples’ neoclassical San Francesco di Paola (1839) using white Carrara marble (Braudel, 1972). Building construction reflected local resources, with Rhodes’ fortifications using limestone, Algiers’ Casbah homes built with rammed earth and brick, and Marseille’s Notre-Dame de la Garde basilica (1864) utilizing green limestone and volcanic stone. Economic analyses showed Rome’s €12 billion tourism economy from the Colosseum, contrasting with Latakia’s agricultural focus amid 84.9% inflation in 2022 (World Bank, 2022). Architectural landmarks like Valencia’s glass-and-steel City of Arts and Sciences (2000s) underscored modernist innovation.

These tangible findings are crucial for students as they provide a foundational understanding of Mediterranean cities’ physical evolution, enabling informed design interventions. Analyzing Marseille’s port topography and Rome’s tourism infrastructure, as noted by Lynch (1960), helps students grasp how spatial configurations influence urban functionality and cultural preservation, preparing them to address challenges like over-tourism or port redevelopment. Similarly, studying Oran’s climate-adapted architecture and Barcelona’s population-driven housing, per Gottdiener (1995) per Gottdiener (1995), equips students with skills to design resilient structures amid climate change and demographic shifts. This knowledge fosters a practical approach to urban planning, aligning with Lefebvre’s (1991) emphasis on space as a social product, empowering students to navigate the region’s complex urban landscapes effectively.

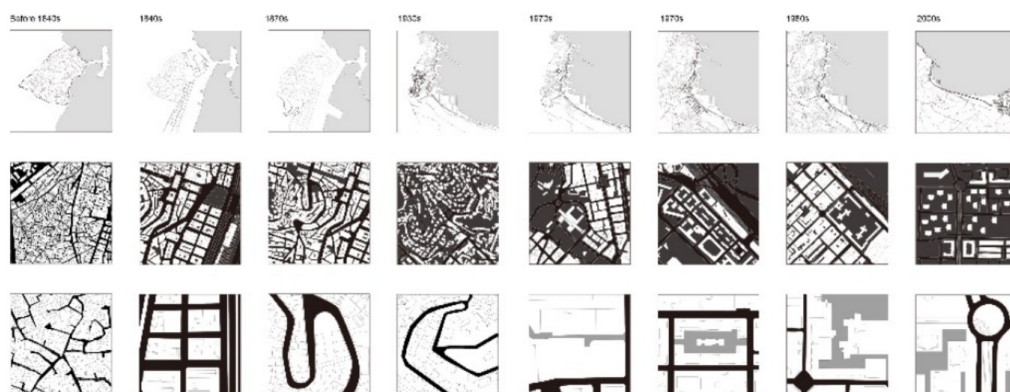


Figure 3. The evolution of Algiers urban morphology analyzed by the course students (by Author).

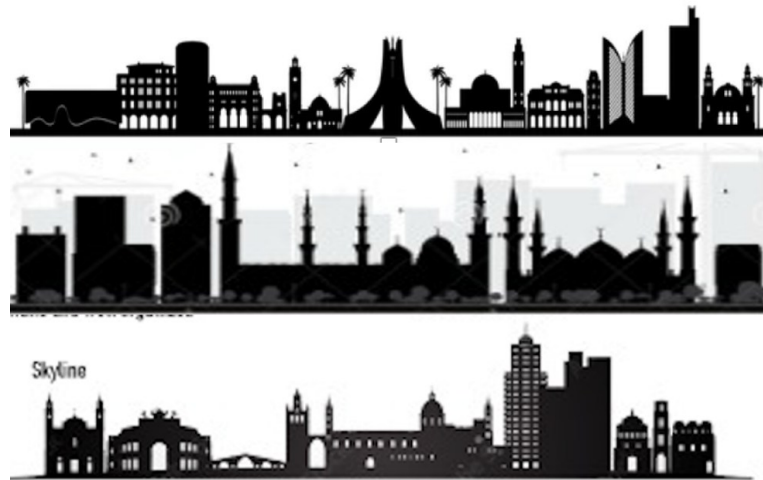


Figure 4. Comparative skylines for Algiers, Istanbul and Palermo by the course students (by Author).

3.2.2 Intangible Elements

Intangible dimensions were explored through cultural practices, enriching Mediterranean urban identity. In Venice, students studied Carnevale masks crafted since the 12th century and gondola songs tied to canal heritage, while Barcelona's human towers, castells, built during 18th-century festivals, symbolized community strength. Athens' rebetiko music, born among early 20th-century workers, and Istanbul's whirling dervish dances, rooted in 13th-century Sufi traditions, highlighted cultural depth (Bhabha, 1994). Malta's Ġhaxaq village feasts, with 16th-century religious processions, and Alexandria's Ramadan storytelling sessions, preserving trade route oral histories, added richness (Medina, 2020). These practices deepened students' understanding of local traditions.

Culinary traditions provided a flavorful insight into Mediterranean identity. Valencia's 19th-century saffron-infused paella, Mallorca's Arab-influenced ensaimada pastries, Naples' UNESCO-recognized Neapolitan pizza for communal preparation, and Tunis' shakshuka with spiced eggs reflected diverse flavors. Crete's kalitsounia, cheese-filled pastries with Byzantine roots, and Oran's Rai music blending Arabic and French influences since the 1920s, alongside Latakia's wedding dabke dance, showcased vibrant culinary and musical heritage (Medina, 2020). Students analyzed these traditions to uncover their historical and social significance across the cities.

Literary works offered nuanced urban narratives. Naples' gritty neighborhoods were mapped through Elena Ferrante's Neapolitan Novels, Benghazi's pre-colonial trade routes via oral storytelling, and Rhodes' poetic landscapes through Lawrence Durrell's *Reflections on a Marine Venus* (Gottdiener, 1995). Alexandria's cosmopolitan past was explored via Constantine Cavafy's early 20th-century poems, Algiers' post-colonial identity through Kateb Yacine's *Nedjma* (1956), and Mallorca's rural life in Llorenç Villalonga's *The Olive Tree* (1956). These analyses revealed the cities' cultural and historical layers.

Cinematic representations captured Mediterranean essence. Rome's romantic allure shone in *Roman Holiday* (1953) (figure 5) and *La Dolce Vita* (1960) with Trevi Fountain scenes, while Marseille's gritty port featured in *The French Connection* (1971). Palermo's Sicilian dynamics emerged in *The Godfather Part II* (1974), Alexandria's waterfront in *Sayeh Bahr* (1985), Crete's resilience in *Zorba the Greek* (1964), and Barcelona's modernist charm in *Midnight in Paris* (2011) with Gaudí settings (Bhabha, 1994). These films enhanced students' grasp of urban narratives.

In addition, comparing *Zorba the Greek* (1964, Athens) with *La Trago wala Esteslam* (2010, Baltim, Egypt) (figure 7), or *Eat Pray Love* (2010, Naples) with *Sayeh Bahr* (2004, Alexandria), through photomontages, students highlighted contrasts in urban settings, traditions, and lifestyles between European and Egyptian Mediterranean cities, fostering an appreciation of cultural uniqueness.



Figure 5. Urban cinematic analysis for Roman Holiday Movie (1958) made by the course students (by Author).

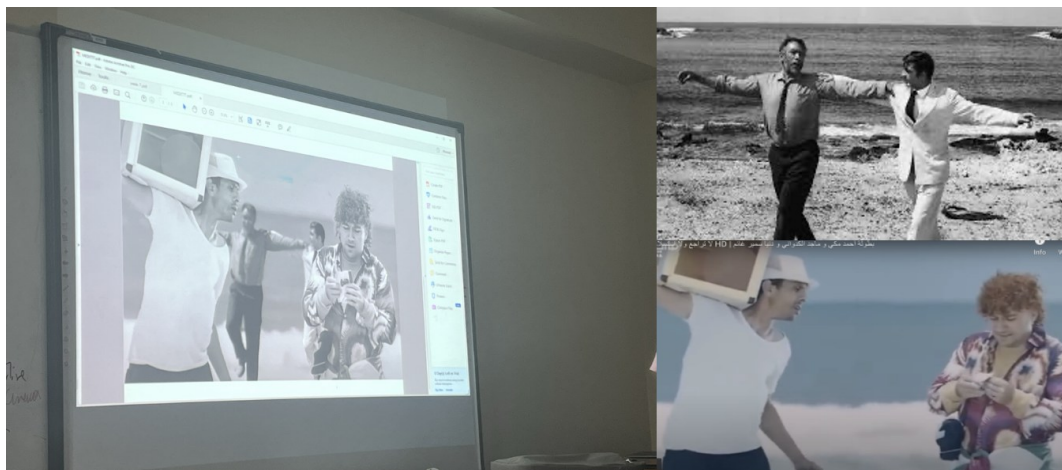


Figure 6. Photomontages showing the urban contrast comparing Zorba the Greek (1964, Athens) with *La Trago wala Esteslam* (2010, Baltim, Egypt) designed by the course student (by Author).

The intangible findings are vital for students, offering insights into cultural narratives that shape Mediterranean cities' identities, essential for culturally sensitive design. Exploring Venice's Carnevale masks and Athens' rebetiko music, as highlighted by Braudel (1972), aligns with Kolb's (1984) experiential learning cycle, where students engage directly (concrete experience) with traditions, reflect on their cultural significance (reflective observation), conceptualize their role in urban vitality (abstract conceptualization), and experiment by integrating them into designs (active experimentation). Analyzing Valencia's paella and Alexandria's Cavafy poems, per Bhabha (1994), supports Schön's (1983) reflective practice, as students adapt designs during projects (reflection-in-action) and evaluate post-project to preserve heritage (reflection-on-action). This approach fosters designs that respect historical narratives, equipping students to address cultural homogenization and enhance community engagement in cities like Rhodes or Oran.

3.2.3 Experiential Outputs

Students synthesized their findings into a diverse array of experiential outputs that bridged tangible and intangible dimensions, demonstrating their ability to apply theoretical knowledge in creative formats. Analytical sheets compared urban morphology, such as Latakia's port trade layout with its historical warehouses, to cultural narratives like oral tales of Syrian merchants, providing a structured framework that highlighted the interplay between physical and symbolic elements. They crafted traditional outfits on mannequins (figure 7), including Naples' lace gloves from the 18th-century Bourbon court, Istanbul's kaftans with intricate Ottoman embroidery, Tunis' Sefsari scarves made of yellow silk, and Rhodes' medieval-inspired tunics reflecting Hospitaller influences, requiring detailed research into historical textile techniques. Cultural booths displayed a wide array of artifacts (figure 8): Oran's handwoven rugs with Berber patterns, Valencia's ceramic tiles from the 14th-century Almoina workshop, Crete's olive oil jars from

Minoan traditions, Barcelona’s contemporary design souvenirs like Gaudí-inspired lamps, and Marseille’s Provençal pottery with lavender motifs, showcasing the blend of tradition and modernity.



Figure 7. Samples of the mannequins fashioned by the course students reflecting Mediterranean cities identities (by Author).

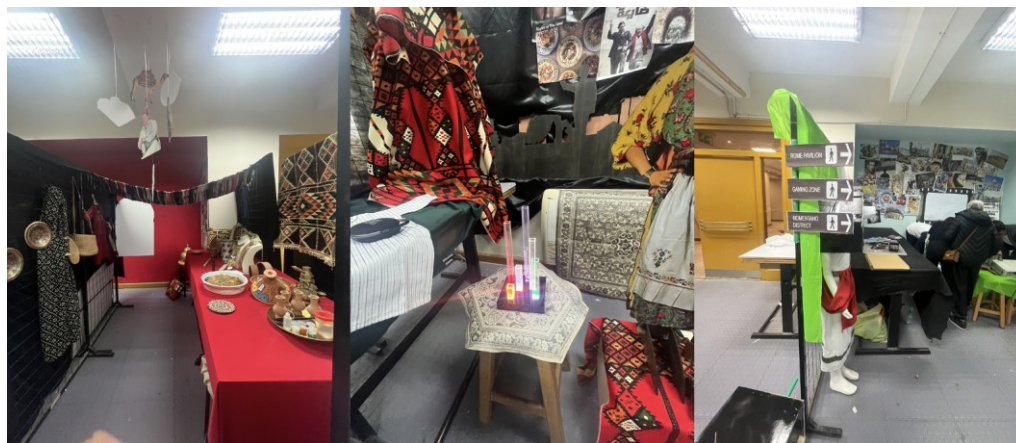


Figure 8. Cultural booths in the faculty expositions displaying a wide array of artifacts.

VR tours offered immersive experiences, such as walking through Athens’ Acropolis with its ancient temples, exploring Palermo’s bustling Ballarò market with its Arab-Norman stalls, navigating Rhodes’ medieval streets lined with Hospitaller fortifications, and gliding along Venice’s Grand Canal with its Baroque palazzos, enhancing students’ spatial understanding through technology. A short video from the January 2024 expo captured the vibrancy of these projects, with students presenting their work to peers and external evaluators, who praised the creativity, cultural authenticity, and technical skill of their outputs, noting specific strengths like the interactive VR elements, the detailed craftsmanship of the fashion displays, and the innovative booth designs that bridged historical and contemporary narratives.

These experiential outputs proved highly useful for students, serving as a practical bridge between theoretical learning and real-world application in understanding Mediterranean cities. The analytical sheets fostered critical thinking by encouraging comparisons of urban forms and cultural stories, preparing students to design with historical context in mind. Mannequins and booths provided hands-on engagement with cultural heritage, enhancing empathy and cultural sensitivity, while VR tours offered spatial immersion that improved their ability to visualize and adapt to complex urban environments. Their importance lies in aligning with Kolb’s (1984) experiential learning cycle, where active experimentation with these outputs solidified students’ grasp of urban dynamics, and Schön’s (1983) reflective practice, enabling iterative refinement of their designs. This approach equipped students to tackle challenges like heritage preservation in Tunis or sustainable tourism in Crete, fostering a deeper, actionable understanding of the region’s diverse urban identities.

4. Discussion

4.1 Interpretation of Key Findings

The integration of tangible and intangible dimensions profoundly deepened student learning, serving as a dynamic catalyst for engaging with the complex urban identities of Mediterranean cities. Guided by Kolb’s experiential learning cycle (Kolb,1984) and contemporary frameworks, students embarked on concrete experiences by mapping Naples’ historical port, a testament to its Greek origins, or analyzing Marseille’s topography, a steep incline shaped by

centuries of trade. This hands-on engagement transitioned into reflective observation during group discussions, where they pondered the cultural significance—Naples’ maritime traditions as a lifeline of commerce or Marseille’s multicultural identity as a melting pot of European and North African influences. The process advanced to abstract conceptualization, where students theorized urban evolution, such as Istanbul’s Ottoman architecture embodying cultural hybridity or Valencia’s modernist grid reflecting industrial demands, drawing on Bhabha’s (1994) insights into cultural intersections. Finally, active experimentation manifested in projects like cultural booths for Rhodes’ medieval festivals, weaving intangible heritage into tangible forms, or VR tours for Athens incorporating rebetiko music, creating immersive narratives that bridged past and present. This cyclical approach, as Kolb (1984) posits, fosters a holistic grasp of urban dynamics, enabling students to internalize the layered histories and spatial narratives unique to each city.

Schön’s reflective practice framework (1983) further enriched this learning process, a concept supported by recent studies, by instilling a dynamic, iterative mindset that refined students’ architectural skills and cultural sensitivity. During in-action reflection, students adjusted Istanbul’s VR tour to include the Hagia Sophia, recognizing its cultural weight after a group critique, a process echoing Schön’s emphasis on real-time adaptation. Post-project, on-action reflection during expo feedback sessions led to enhancements, such as integrating Tunis’ Malouf music demonstrations into booths for greater authenticity, a decision informed by peer and evaluator insights. This reflective loop, as Schön (1983) argues, cultivates practical expertise—mastering 3D modeling for VR or textile design for mannequins—while deepening students’ appreciation of cultural contexts. Such skills are vital in diverse settings, aligning with Lefebvre’s (1991) view of space as a social product, where students learn to negotiate the sociocultural fabric of Mediterranean urbanism.

Urban semiotics and imageability provided a theoretical lens to decode these experiences, revealing the symbolic potency of Mediterranean landmarks and skylines. Landmarks like Athens’ Parthenon, a democratic symbol from 447 BCE, or Palermo’s Palazzo dei Normanni, a Norman-Arab fusion from the 12th century, were interpreted as cultural texts, as Gottdiener (1995) suggests, conveying narratives of power and coexistence. This aligns with Lynch’s (1960) concept of “imageability”, where city skylines—Valencia’s modernist structures, Algiers’ Ketchaoua Mosque silhouette, or Venice’s St. Mark’s Basilica—create mental maps that encode cultural identity. Alexander (1977) further supports this, noting that such patterns foster a sense of place, confirming the hypothesis that integrating tangible and intangible aspects offers a richer interpretation than static methods. Braudel (1972) underscores the Mediterranean’s historical depth, suggesting that this approach equips students to address contemporary challenges like heritage preservation or urban renewal with a profound, context-aware perspective.

4.2 Comparison with Previous Studies

Traditional architectural education has historically prioritized tangible elements like urban morphology and infrastructure, often sidelining the intangible narratives that define urban identity, as Lefebvre (1991) critiques in his analysis of space production. In contrast, this model integrates both dimensions, incorporating intangible aspects such as Naples’ communal pizza-making tradition, Istanbul’s whirling dervish dances, and Rhodes’ medieval festivals, aligning with Bhabha’s (1994) cultural hybridity theories that emphasize the fusion of diverse influences in shaping Mediterranean cities. This approach diverges from conventional curricula, which typically rely on lectures and static blueprints, by fostering a transdisciplinary lens that enriches students’ understanding of cultural complexity in urban contexts (Gottdiener, 1995).

Unlike traditional methods, this model leverages Kolb’s (1984) experiential learning cycle and modern frameworks, enabling hands-on engagement with materials like Tunis’ Medina fabrics or VR explorations, and Schön’s (1983) reflective practice, which supports iterative refinement through real-time feedback on projects like Oran’s Berber heritage displays. This marks a significant departure from earlier Mediterranean urban studies, such as Braudel’s (1972) historical analyses focused on economic and preservationist perspectives, or Lynch’s (1960) imageability studies limited to physical legibility, by using modern tools like VR to bridge past and present. The emphasis on cultural motifs, such as Tunis’ Medina courtyards, draws on Alexander’s (1977) “patterns” in urban design, encouraging students to identify communal spaces that reflect social practices.

Comparatively, this model stands out against global pedagogical approaches, offering a unique contribution to architectural education. Scandinavian design education often prioritizes sustainability and ecological design (Alexander, 1977), while Middle Eastern urban studies focus on economic development (Braudel, 1972), and Southern European efforts center on heritage preservation (Lefebvre, 1991). By highlighting cultural diversity and integrating contemporary tools, this framework equips students to address the multifaceted challenges of Mediterranean cities, such as balancing modernity with tradition in cities like Istanbul or Rhodes, providing a more holistic and culturally sensitive approach to urban design education.

4.3 Strengths and Limitations

The model’s strengths lie in its transdisciplinary approach, blending architecture, culture, media, and technology to foster critical thinking, particularly through innovative tools like VR, which enhanced spatial understanding across diverse cities such as the ancient ruins of Crete and the modern districts of Barcelona. The inclusion of community-inspired elements, such as consulting local artisans for Oran’s rug designs, added authenticity, while the collaborative

group work encouraged peer learning, enriching analyses of Marseille's multicultural port and Alexandria's cosmopolitan heritage with contributions from students of varied cultural backgrounds. This approach cultivated a nuanced appreciation of Mediterranean urban identity, setting a foundation for culturally sensitive design.

However, the model faces limitations as an elective course, including its inclusion of students from all levels, though it is ideally suited for 3rd or 4th years due to its complexity. The small sample size of 20 students per semester restricts the generalizability of findings to larger populations, and the focus on Mediterranean cities may not fully address urban contexts like Southeast Asia or Latin America. Additionally, the qualitative nature lacks statistical rigor, suggesting a need for mixed-method approaches, while reliance on VR posed access challenges, highlighting the need for equitable resource distribution in future iterations.

Compared to traditional architectural education, which often emphasizes functionality over cultural engagement, this model's strength in cultural diversity aligns with emerging global pedagogies, though it contrasts with quantitative-heavy studies in regions like North America that prioritize measurable outcomes (Salama, 2009). Students reported stress from managing multiple courses, impacting work quality, and the subjective evaluation, common in architecture's relative nature, lacks standardized rubrics, leading to variability, a critique also noted in European design critiques (Salama, 2009).

4.4 Implications and Future Directions

This pedagogical model offers a robust framework for culturally responsive urban planning, with practical applications in preserving Mallorca's medieval heritage through adaptive reuse projects, revitalizing Benghazi's post-conflict urban fabric with community-driven designs and developing sustainable tourist spaces in Venice that mitigate flooding while honoring its cultural identity. By encouraging architects to integrate sociocultural dynamics, it addresses the unique needs of each city, fostering designs that respect local traditions and histories, such as Venice's lagoon-based lifestyle or Benghazi's resilience amid adversity, setting a precedent for context-sensitive urban interventions.

The model contributes to global urbanism by tackling pressing challenges like climate change—rising sea levels affecting Alexandria's coastline—urbanization pressures in Barcelona, and cultural erosion in Tunis' Medina, as highlighted by Braudel (1972). Its emphasis on technology opens innovative avenues, such as using AI-driven urban simulations to model climate impacts on Venice's canals, predict population growth in Istanbul, or simulate preservation strategies for Rhodes' fortifications, aligning with Gottdiener's (1995) call for semiotic interpretations that bridge physical and cultural urban elements.

Future research directions include exploring cities with Mediterranean-like characteristics, categorized by common traits: the Adriatic-Ionian region (Dubrovnik, Kotor, Corfu) with maritime trade histories and Venetian-Ottoman hybridity, the middle eastern big cities like Dubai as a modern trade hub where skyscrapers coexist with traditional souks, and Lagos where rapid urbanization intersects with rich cultural traditions, all sharing environmental challenges like flooding. These contexts test the model's adaptability by applying Lynch's (1960) concept of imageability, enabling students to map urban elements—such as Dubrovnik's medieval walls, Dubai's souk districts, or Lagos' vibrant markets—ensuring designs resonate with local identities. Longitudinal studies tracking students' professional growth over five to ten years could assess the long-term impact, measuring outcomes like culturally sensitive projects or sustainable design awards (Schön, 1983).

Collaborations with local communities—partnering with Tunisian artisans for booth materials or consulting Venetian gondoliers for VR content—could enhance authenticity, aligning with Kolb's (1984) experiential learning. Additionally, developing standardized rubrics for assessing cultural accuracy, technical skill, and reflective depth would provide a consistent framework, facilitating institutional adoption, as Gottdiener (1995) suggests, building on Bhabha's (1994) insights into global urbanism.

5. Conclusion

5.1 Summary of Key Findings

The study confirms that integrating tangible and intangible dimensions through experiential learning enhances students' understanding of 16 Mediterranean cities, with diverse outputs reflecting urban and sociocultural dynamics. Projects on Naples, Istanbul, Tunis, Rhodes, Rome, Oran, Malta, and Latakia demonstrated how historical, architectural, and cultural elements intertwine—such as Naples' port trade history, Istanbul's Ottoman architecture, Tunis' Islamic urban layout, Rhodes' medieval fortifications, Malta's religious festivals like the Valletta feast, and Latakia's agricultural heritage tied to olive cultivation—shaping urban identity.

Outputs like VR tours of Tunis' Medina, cultural booths with Oran's Berber rugs, fashion displays of Istanbul's kaftans, analytical timelines of Rome's imperial shifts, and interactive maps of Malta's fortified grid showcased hands-on learning's role in fostering creativity and cultural sensitivity (Kolb, 1984). The three expos—December 2022, May 2023, and January 2024—highlighted the work's depth, with external evaluators praising its innovative approach, cultural authenticity, and potential to inspire future architectural curricula, noting its contribution to redefining urban education.

5.2 Implications of the Findings

This model positions architectural education within global urbanism and postcolonial education discourses, promoting sustainable design practices that address climate change, rapid urbanization, and cultural homogenization in Mediterranean cities. It offers a blueprint for emerging centers like Beirut, with its Ottoman-French legacy, and Casablanca, blending Arab and modernist influences, encouraging architects to integrate sociocultural contexts.

The findings imply significant impacts, including policy development for heritage conservation laws, economic growth through cultural tourism in Malta, and social equity by including marginalized communities in Oran's urban renewal projects. This fosters resilience, such as adapting Venice's flood defenses while honoring Carnevale traditions or revitalizing Tunis' Medina with community input.

Cultural immersion through hands-on projects deepens appreciation of Mediterranean narratives, providing a critical edge to address geopolitical complexities like post-colonial tensions in Alexandria. This promotes inclusive global practices, enhancing architects' ability to navigate diverse urban landscapes with sensitivity and innovation, shaping culturally rich, sustainable futures.

5.3 Limitations of the Study

The study's methodological limitations include its small cohort size of 20 students per semester and regional focus on 16 Mediterranean cities, restricting generalizability to broader global contexts like the Middle East's desert cities, Africa's sprawling Lagos, or Southeast Asia's urban villages with unique cultural fabrics. The qualitative approach, while rich in narrative depth, lacks quantitative rigor, suggesting mixed-method studies to enhance validity across larger populations (Kolb, 1984).

As an elective course with mixed levels, it is best suited for 3rd or 4th years due to its complexity. Subjective evaluation and student stress from managing multiple courses—evidenced by rushed submissions—impacted work quality, reflecting workload challenges that could be mitigated with better scheduling, as Biggs (2003) and Salama (2009) suggest for improving educational outcomes in architectural studies.

5.4 Recommendations for Future Research

Future research should standardize evaluation rubrics for experiential learning to ensure consistency across educational settings, incorporating criteria for cultural accuracy, technical proficiency, and reflective insight, as Salama (2009) and Gottdiener (1995) advocate. Longitudinal studies could assess students' professional growth, tracking metrics like the number of culturally sensitive projects completed or their influence on urban policy, providing a measure of the model's long-term impact on architectural practice.

Expanding the model to regions like Dubai, with its modern skyline juxtaposed against traditional souks, Lagos' rapid urban sprawl, or Tokyo's blend of ancient temples and cutting-edge technology, would offer comparative analyses, enriching global applicability. Incorporating AI-driven urban simulations could enhance analytical skills, allowing students to model scenarios like climate change impacts on Venice's canals, population growth in Istanbul, or preservation strategies for Rhodes' fortifications, fostering predictive design capabilities.

Community collaborations with local stakeholders—such as Tunisian artisans for booth materials, Venetian gondoliers for VR content, or Alexandrian poets for literary insights—could ensure authenticity, reflecting lived cultural realities. Pilot programs in diverse institutions, from rural Mediterranean schools to urban Asian universities, could test scalability and adaptability, broadening the framework's educational reach and impact.

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