

Design Thinking for Humanitarian Urbanism: Interior Design Student Proposals for Post-War Recovery and Refugee Sheltering in Gaza

F. Qaed, and R. Sultan

Abstract— This paper explores the application of design thinking methodologies in humanitarian urbanism, focusing on community-centered reconstruction and social space design in post-war Gaza. Conducted within the elective course Special Topics in Interior Design—part of the Interior Design program housed within an engineering college—this initiative engaged students in a fast-paced “Design Jam” that applied the five phases of the design thinking process. Despite their specialization in interior design, students tackled both spatial and psychosocial challenges faced by displaced communities using empathetic, co-creative problem-solving approaches. Drawing on relevant case studies and humanitarian design precedents, students developed conceptual reconstruction models emphasizing community participation and cultural relevance. While the outcomes were not technically comprehensive due to disciplinary boundaries and time constraints, the experience revealed the immense educational value of design thinking in cultivating critical awareness and creative civic engagement. The findings highlight the potential of integrating multidisciplinary teams in future iterations to enhance the feasibility and technical robustness of such solutions, affirming the broader role of design education in shaping context-sensitive responses to complex humanitarian crises.

I. INTRODUCTION

In the aftermath of war, the destruction of homes, neighborhoods, and social infrastructures leaves communities not only physically displaced but emotionally and socially fragmented. Nowhere is this more evident than in Gaza, where recurrent conflict has led to the large-scale displacement of people and the devastation of urban life. Humanitarian responses often focus on emergency shelter provision, but long-term recovery demands holistic, community-centered approaches that foster resilience, dignity, and social cohesion^{[1][2]}.

Design thinking—a human-centered and problem-solving methodology—offers a valuable framework for generating such approaches. As defined by Brown^[3], design thinking emphasizes empathy, ideation, prototyping, and testing, providing tools for addressing complex challenges in participatory and context-sensitive ways. When applied in humanitarian contexts, design thinking empowers local communities to co-create solutions that reflect their lived experiences and cultural values^{[4][5]}.

This research explores how design thinking can be employed by interior design students to generate innovative, empathetic solutions for post-war recovery and refugee sheltering in Gaza. By engaging in a structured design thinking process, participants co-created models for community-led reconstruction and social space design, addressing both spatial

and psychosocial needs of displaced populations. The research draws upon case studies, participatory design theory, and humanitarian design practice to demonstrate how design education can meaningfully intersect with global social challenges.

II. LITERATURE REVIEW

In recent scholarship, the notion of the “Architecture of Occupation” has been critically interrogated—most notably by architect-theorist Eyal Weizman, who reveals how architecture and urban design become instruments of political control and systemic violence in occupied territories^[6]. This perspective intersects powerfully with the emerging field of Humanitarian Urbanism, which examines how design and planning intervene in contexts of crisis, displacement, or conflict. For instance, Potvin^[7] explores the political dimensions of urban planning within humanitarian action, while Lepère^[8] underscores how architects in post-conflict reconstruction contribute to peace-building through participatory design processes that reinforce social cohesion. Furthermore, the sustainability of humanitarian sheltering, a core concern in humanitarian design is increasingly emphasized in recent studies, highlighting the integration of environmentally responsible practices in post-disaster and post-conflict contexts^[9]. Together, these strands of literature form a critical framework: Architecture of Occupation reveals how built environments can enforce domination, whereas Humanitarian Urbanism and Design offer strategies to reclaim architecture as a vehicle for resilience, inclusion, and repair.

A. Humanitarian Urbanism and Design

Humanitarian urbanism refers to urban design responses that prioritize social justice, inclusion, and care in contexts of displacement, conflict, and inequality^[10]. It emphasizes the role of design in fostering dignity, resilience, and long-term sustainability in vulnerable urban environments. In protracted crises like that in Gaza, where infrastructure has been systematically degraded and mobility restricted, humanitarian urbanism becomes not just a planning imperative but a form of resistance and self-determination^{[11][12]}.

Palestinian communities, particularly in Gaza, face complex challenges including repeated displacement, housing insecurity, and loss of public space. Research underscores the necessity of urban strategies that go beyond temporary shelters and instead support reconstruction through social infrastructure, cultural continuity, and economic integration^{[13][1]}. Community-centered reconstruction, as part of humanitarian urbanism, emphasizes active participation

F. Qaed and R. Sultan are Assistant Professors at University of Bahrain. College of Engineering, Department of Architecture and Interior Design.

from affected populations, thereby reinforcing social cohesion and ownership of the recovery process.

Integrating design thinking into humanitarian urbanism contributes to this aim by introducing iterative, user-centered methodologies that engage communities in co-design. It facilitates the translation of tacit knowledge—such as local building traditions, lived experiences, and social networks—into innovative spatial solutions^[5]. This participatory lens shifts the narrative from top-down aid provision to collaborative transformation, where design becomes a tool for empowerment and social healing.

B. Participatory Design and Post-Disaster Recovery

Research has emphasized the value of participatory design in post-disaster contexts, where affected individuals must be involved in the planning of their rebuilt environments^{[1][13]}. Participatory design approaches foster empowerment, local ownership, and long-term sustainability. Notable examples include the Rebuilding Alliance’s work in the West Bank and UNRWA’s Gaza Emergency Shelter Response, both of which emphasize community collaboration and spatial dignity.

C. Design Thinking in Humanitarian Contexts

Design thinking, with its iterative and user-centered framework, is increasingly recognized as a powerful tool in humanitarian innovation^{[4][12]}. The approach facilitates deep engagement with users’ lived experiences, supporting the co-creation of interventions that are both functional and meaningful^{[3][5]}. In humanitarian settings, this methodology bridges the gap between emergency relief and long-term development by encouraging local participation and creative adaptation^[4]. Successful examples include the Gando Primary School in Burkina Faso, where Francis Kéré involved local communities in both the design and construction process, resulting in a climate-responsive and culturally resonant school^[13]. The Domiz Refugee Camp in Iraq, developed in collaboration with UNHCR, integrated public space design to support social interaction and mental well-being^[18]. Similarly, Catalytic Action’s educational spaces in Lebanon employed participatory design with Syrian refugee children, yielding flexible and child-centered learning environments^[13].

These projects underscore how design thinking’s core tenets—empathy, ideation, and iteration—can produce adaptive, user-responsive solutions in volatile humanitarian contexts. This approach contrasts with top-down design frameworks by incorporating community feedback throughout the process, which improves social acceptance and long-term sustainability^{[15][16]}.

III. DESIGN THINKING AS A METHODOLOGY

This study tasked interior design students with addressing critical urban planning and sheltering questions, specifically targeting urban reconstruction strategies, innovative utilization of local materials, emergency shelters responsive to socio-environmental considerations, and community engagement strategies. The central challenge posed to students within the design thinking framework was:

“Develop a community-driven reconstruction model where displaced people actively participate in rebuilding homes and

shared spaces, fostering social bonds and economic recovery, particularly in the context of the Palestine conflict.”

The primary objective of this educational exercise was to empower students to employ design thinking methodologies effectively, generating innovative, culturally sensitive, and community-oriented reconstruction solutions. These solutions were aimed at actively involving displaced communities in the reconstruction process, thereby enhancing social cohesion, mental health, and economic opportunities.

The methodology was structured around the five iterative stages of the design thinking process: Empathy, Define, Ideate, Prototype, and Test. Over two intensive sessions, each lasting approximately three hours, students initially focused on comprehensively completing the Empathy, Define, and Ideate stages. The following session concentrated on refining the selected concepts from the ideation stage, prototyping them, and subsequently testing these prototypes.

Between sessions, students had one week to collaboratively develop and refine their concepts further. Working in groups of two to four, students collectively produced diverse and impactful outcomes under the close guidance and supervision of two course instructors. The total cohort comprised two sections, aggregating 41 students who contributed dynamically to the proposed community-centric reconstruction models.

The students were first introduced to design thinking process as part of their first assignment of the special topics in interior design course prior to the design Jam, where they had to visually analyze the Design Thinking Bootleg of Stanford d.school^[21].

A. Empathize

Students conducted desk research and analyzed real-world case studies such as the Gando Primary School, Domiz Refugee Camp, the Gaza Emergency Shelter Response (UNRWA), and Rebuilding Alliance initiatives.

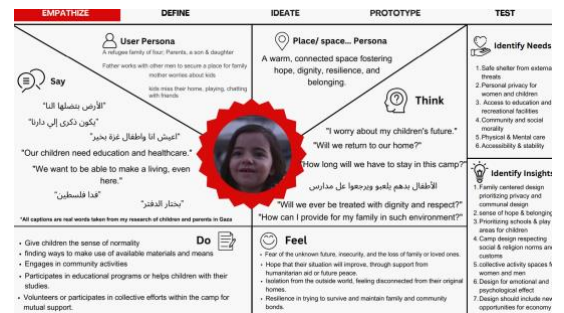


Figure 1 Empathy maps created by the students after observation of many cases and people of displaced situations

D. Prototype

Low-fidelity prototypes—including physical models Figure 7, storyboards, and digital renderings—were developed to visualize and iterate ideas.

Students also used different AI tools to explore different design solutions, Figure 8. Students used platforms like Instagram and design forums to gather community feedback.

E. Test

Initial feedback was gathered from peer critique sessions, educators, and online user comments. Students refined their designs Figure 9 to better reflect user needs and realistic constraints.



Figure 8 Using AI Tools to explore

Figure 10 shows potential users feedback on digital rendering prototypes.

This process demonstrated the value of experiential, reflective learning and empowered students to engage in real-world humanitarian issues.

IV. STUDENT’S PROPOSALS AND THEMES

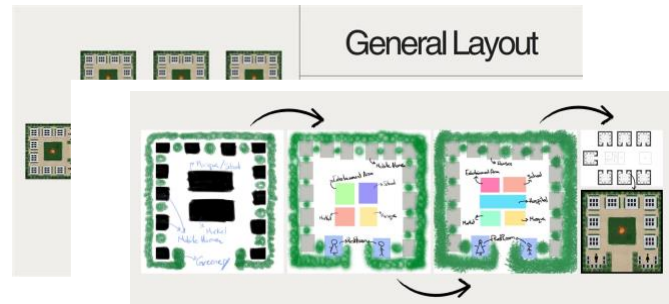
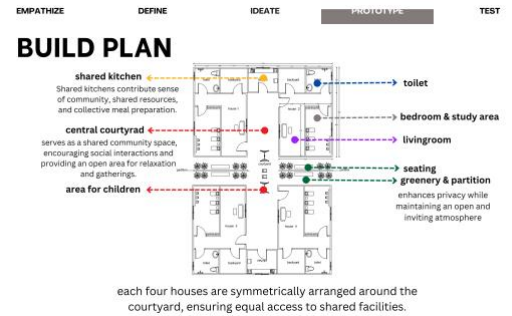


Figure 11

After the students

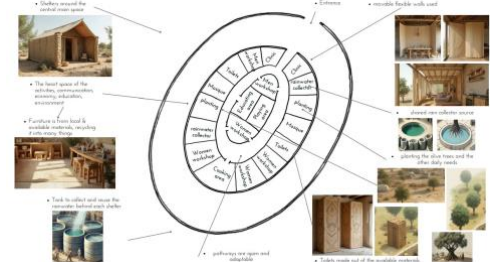


Figure 11 Student’s proposal to modular layout showcasing communal areas such as kitchen and kids playing areas or mosques and clinics

submitted their proposals and prototypes, testing them and acquiring opinions from Gaza’s citizens to enhance their proposals in testing phases, the students submitted their work. The instructors then categorized the submitted proposals, and the emerging themes are as follows:

A. Modular Emergency and Transitional Shelters

Students designed rapid deployment shelters using modular construction techniques, leveraging locally available materials such as mud bricks and recycled plastic.

Designs emphasized ease of assembly, adaptability, and scalability. In these modules, students proposed various spatial layouts that respond to daily family needs, including cooking areas, safe zones for children, and culturally significant requirements such as privacy.

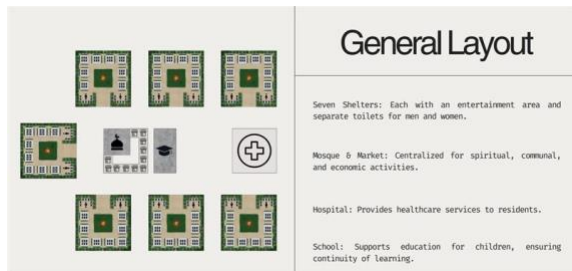


Figure 11 and Figure 12 illustrate examples of these proposed plans.

B. Sustainable and Locally Sourced Materials

Proposals prominently feature rammed earth, bamboo, and upcycled materials Figure 13, highlighting environmental sustainability, local economic support, and innovative material

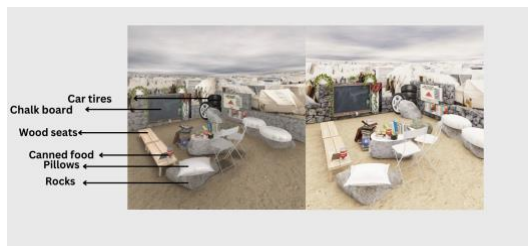


Figure 13 Focus on the material available through the observation in the empathy phase

reuse.

C. Community-Centered Design

The creation of supportive communities through architectural design emerged as a central theme, particularly during the empathy phase, which underscored this as a core need among

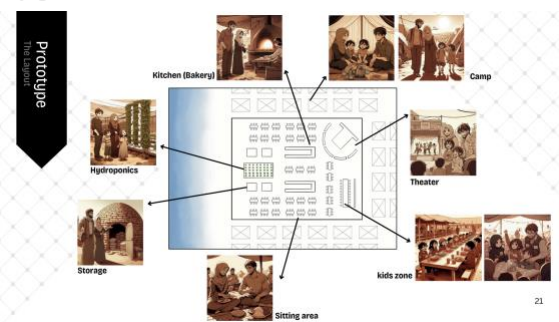


Figure 14 Bringing together the community through the design of the layout of the camp.

displaced populations. As a response, the proposed design solutions integrated communal spaces—such as shared kitchens, courtyard playgrounds for children, prayer areas, local markets, and small edible gardens—to foster social interaction, enhance community cohesion, and support collective resilience. Figure 14, and psychosocial support, addressing the need for collective resilience and emotional recovery.

D. Cultural Sensitivity and Identity Preservation

Designs reflected traditional Palestinian architectural styles, integrating elements such as courtyards, privacy screens, and vernacular spatial organization, thereby preserving cultural heritage. Students emphasized the social dimensions of Palestinian culture in their design responses. During the user research phase, participants highlighted the cultural significance of communal cooking and shared meals. As a result, many student proposals incorporated communal kitchens and dining areas within central courtyards to foster social interaction and a sense of community. Furthermore, the collective spirit embedded in Palestinian daily life—evident in local markets, women collaborating in tailoring activities, volunteer teachers operating in mobile camps, and community gardening—was reflected in the students' spatial solutions. These social functions were strategically placed at the heart of residential clusters, reinforcing the role of shared spaces in supporting community cohesion and resilience.

E. Adaptive Reuse of Partially Destroyed Structures

Several projects explored adaptive reuse, proposing strategies to retrofit damaged buildings with modular elements, combining preservation with innovative architectural interventions. Students also identified various forms of war-related waste—such as plastic bottles, tires, wooden pallets, scrap metal, tarps, and fabrics—and explored their potential as raw materials for reconstructing damaged buildings.

F. Sustainable Infrastructure

Proposals integrated renewable energy systems (solar panels), passive cooling methods, and water harvesting systems to enhance shelter self-sufficiency and resilience.

V. FINDINGS AND REFLECTIONS

Students' reflections emphasized the central role of empathy in shaping meaningful design outcomes. As captured in Figure 15 Students' reflections emphasized the central role of empathy in shaping meaningful design outcomes. As captured, many participants noted that stepping into the lived experiences of displaced individuals shifted their design priorities toward dignity, cultural identity, and social cohesion. They acknowledged the emotional weight of the topic and how it heightened their sense of responsibility as future designers.

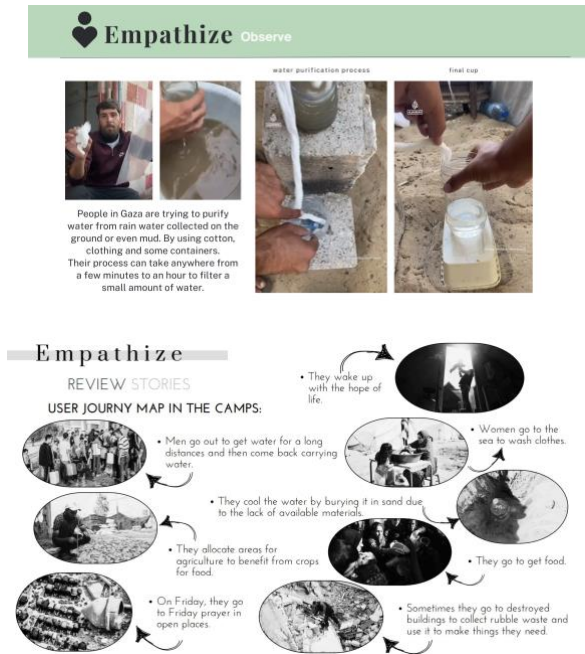


Figure 15 Empathize phase played a major role in creating meaningful ideas and solutions.

Challenges were also highlighted, particularly around the accessibility of materials, time constraints for prototyping, and limitations in balancing innovative thinking with feasible implementation. Students expressed that while their ideas were not fully resolved from a technical standpoint, the process-oriented nature of the design jam, combined with their primary training in interior design rather than structural engineering or urban planning, justifies the scope and form of their outcomes.

Importantly, the reflection process itself became a learning tool. Students recognized how constraints can serve as catalysts for creativity, and how collaboration, especially across disciplines, would improve the technical rigor of future proposals. Many reflected on the power of design to address real-world humanitarian challenges and expressed a desire to continue engaging with socially responsible design practice in their future careers.

These insights underscore the potential of design education, not merely as a space for skill development, but as a platform for cultivating civic engagement, resilience thinking, and interdisciplinary collaboration.

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VI. CONCLUSION

This research illustrates how integrating design thinking into interior design education can generate meaningful, community-centered solutions for post-war recovery. By applying empathy, ideation, and prototyping within a real-world humanitarian context, students developed proposals that foregrounded dignity, identity, and resilience.

Design education, when aligned with global humanitarian challenges, can foster not only creative thinking but also critical social awareness and activism. This case study in Gaza provides a replicable model for other conflict-affected regions seeking to rebuild with communities at the center.

Design thinking and service design methodologies effectively enabled interior design students to address complex challenges in post-war urban reconstruction and refugee sheltering. By aligning education with real-world crises, academia can significantly impact humanitarian outcomes, emphasizing empathy, innovation, and cultural sustainability.

Although the outcomes of the students did not culminate in fully realized technical solutions, this is understandable given the process-oriented nature of the project. The design jam format, its short time frame, and the students' specialization in interior design rather than architecture or engineering justify the scope and depth of their outcomes. Furthermore, the assignment's intentional focus on social-centered design solutions guided the development of ideas toward empathy, community cohesion, and cultural resonance rather than technical deliverables.

Future courses should deepen collaboration with humanitarian organizations and stakeholders, explore pilot implementation of student-generated ideas, and establish formal pathways to integrate academic initiatives into broader policy frameworks. Engaging multidisciplinary teams—

including technical experts, policy-makers, and community representatives—could further enhance the feasibility, technical soundness, and social relevance of student proposals.

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