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Tracing Live Projects in Architectural Education: A Systematic Review of Experiential Learning Practices

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ABSTRACT

This paper discusses the growing role of live projects as experiential learning practices in architectural education. It aims to explore how live projects are conceptualized, implemented, and integrated into design curricula across diverse contexts. Employing the PRISMA 2020 framework, the study systematically reviews literature from major academic databases. Three key findings emerge: live projects enhance student learning by linking theory with practice, promote social engagement through community collaboration, and support interdisciplinary, context-responsive education. Limitations include a lack of longitudinal impact studies and inconsistencies in terminology and assessment. Drawing from the discussion and conclusion, the paper contributes a synthesized understanding of live project pedagogy, identifies operational and pedagogical challenges, and highlights their potential to reshape architectural education. It also calls for more rigorous research, sustainable institutional support, and broader adoption of live projects as a transformative model that aligns academic learning with professional and societal responsibilities.

Index-words: *Design-build, Community engagement, Pedagogy, Systematic review, PRISMA, Service learning.*

I. INTRODUCTION

The term "live projects" in architectural education refers to real-world, community-based learning experiences that complement traditional studio work. While the exact origin remains unclear, live projects have been advocated in UK architecture schools for over 20 years [1]. They were formally introduced at Leeds Beckett University in 2009 [2] and have since gained popularity across many UK schools. Live projects involve students collaborating with real clients, often in groups, to address genuine issues and deliver tangible contributions [3]. These projects help bridge the gap between academic learning and professional practice, developing essential skills such as negotiation, teamwork, and client interaction [4]. They also promote universal design principles [5] and foster situated knowledge through community engagement, offering valuable learning experiences that challenge traditional studio-based education models [6,7].

It is noteworthy that the term live project often intersects with and encompasses other related concepts that refer to similar practices, such as service learning, community design, and design-build approaches.

In alignment with the United Nations Sustainable Development Goals (SDGs), the implementation of live projects in architectural education contributes notably to SDG 4 (Quality Education) by promoting inclusive, experiential, and transformative learning opportunities. Furthermore, live projects advance SDG 11 (Sustainable Cities and Communities) through socially responsive design interventions and real-world community engagement. They also foster SDG 17 (Partnerships for the Goals) by promoting cross-sectoral collaborations between academic institutions and local stakeholders. These contributions further justify the relevance of a systematic review of live projects as a global pedagogical phenomenon in architectural education [8].

Moreover, these pedagogical imperatives align closely with broader global sustainability and inclusion objectives. Recent design research on

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climate-responsive architecture, user well-being in dense urban environments, and inclusive spatial planning frameworks [9–11] further underscores the value of experiential learning approaches that prepare students to address urgent societal and environmental challenges.

Despite these reported benefits, the incorporation of live projects raises important questions.

- *How are live projects implemented across different institutions and contexts?*
- *What are the common outcomes and challenges of applying 'Live projects?*
- *How do 'live projects' influence pedagogy, and are there trade-offs in academic rigor or scope?*

This paper addresses these overarching questions through a systematic review of live projects in architectural education. The paper seeks to synthesize current knowledge, identify prevailing themes, and reveal gaps in the literature. to point toward future directions for maximizing their pedagogical and social value.

II. METHODS AND MATERIALS

This review employed a mixed-method systematic literature analysis consisting of two key stages. The first stage involved an exploratory scoping phase using snowballing techniques to understand the conceptual diversity and variations of the term live projects within architectural education. This step enabled the identification of functionally aligned pedagogical models—such as design-build, service learning, community-engaged studios, and participatory design—which reflect similar real-world, experiential learning approaches. This conceptual mapping ensured inclusivity across relevant terminologies that might otherwise be excluded due to rigid keyword filters.

TABLE I. THE SYSTEMATIC PUBLICATION SELECTION PROCESS (AUTHORS)

Phase		Method	Scopus Database results (n)	WOS Database results (n)
Identification	Scoping	Snowballing	Snowballing technique to get some of the most cited and relevant papers to the live projects concept and then come up with the most frequently used keywords in that field to be used as seeds for the systematic review	
	Metadata research using Scopus and WOS	Using The following keywords: ((“live projects” OR “service learning” OR “Community design” OR “experiential learning” OR “Design Build”) AND (architecture))	994	20614
Screening	Crossing out irrelevant fields	Elimination	582	213
	Selecting open access references only	Elimination	102	106
	Manual filtration for relevant documents Round 1	Manual screening for publications titles, abstracts, and keywords for relevancy	39	22
Included	Crossing out duplications	Merging results from both databases and crossing out duplicates	56	
	Manual filtration of relevant documents Round 2	Fast reading of the full text Manuscripts, crossing out non-English ones	38	

Second, the PRISMA (Preferred Reporting Items for Systematic Reviews and Meta-Analyses) 2020 method [12,13] was applied to identify, screen, and analyze relevant literature systematically. Searches were conducted in Scopus and Web of Science using keyword combinations like “live project,” “design-build,” “service learning,” “participatory design,” and “architectural education,” capturing various terms related to live project pedagogy. The search was limited to English-language publications, initially

yielding about 21,600 records (994 from the Scopus database and 20,614 from the Web of Science database). After removing duplicates, excluding unrelated fields, and filtering for peer-reviewed, accessible sources within architecture, design, or education, 102 Scopus and 106 Web of Science records remained.

Aiming to create a comprehensive pool of publications, no restrictions were placed on publication date, publication type, or access level at the initial search stage. This inclusive strategy reflects the practice-based and applied nature of live projects, where influential contributions are sometimes published outside traditional peer-reviewed journal formats (e.g., in conference proceedings or book chapters).

After duplicate removal, exclusion of unrelated fields, and initial filtering for peer-reviewed, accessible sources within architecture and urban design education fields, 102 Scopus and 106 Web of Science records remained. These records were then manually screened by title, abstract, and full text according to defined elimination criteria (as detailed in Table I): studies had to specifically address live projects discussing their implementation, outcomes, or theoretical framing.

During the manual screening, an additional 18 studies—primarily those with English titles and abstracts but full texts in Spanish—were excluded due to the language barrier despite promising titles and abstracts. This brought the number of included studies down from 56 to 38.

Data extraction followed a structured protocol capturing the following fields: publication year, geographic context, educational level, project type, methodological approach, and key findings. This enabled both a quantitative overview and qualitative thematic grouping. A narrative synthesis approach was then applied, highlighting cross-cutting trends and maintaining the contextual nuance of individual studies. The PRISMA process ensured transparency and methodological rigor throughout the review.

Thematic coding was subsequently applied to the selected studies using a structured table to extract eight key fields: (1) year of publication, (2) region and country, (3) live project definition according to the author, (4) pedagogical orientation, (5) methodological approach, (6) article theme, (7) related theories, and (8) theoretical frameworks. A summarized version of the extracted dataset is presented in Appendix A, which highlights each study's geographic origin, project theme, and year of publication and The complete thematic coding to ensure transparency and enable replication.

Finally, this table allowed the authors to draw patterns and eased the narrative to answer the research questions.

III. RESULTS

The review covers 38 publications on live projects in architectural education, spanning roughly two decades (the earliest from 2006 and the most recent in 2024). Collectively, these studies provide a global perspective on how live projects are conceived and the value they bring. Below, the findings were summarized in **four** parts as follows:

A. Study Characteristics (Contexts and Methods)

The interest in live project pedagogy has grown markedly in recent years. Over 70% of the reviewed studies were published after 2010, indicating a surge of scholarly attention in the past decade. The geographical spread is wide: about 33% of the publications document live projects in Europe (including the UK, Spain, Germany, Finland, and Slovenia), another 33% in North America (the United States and Canada), and the remainder from Asia, Africa, Latin America, and Oceania. For example, case studies come from the United States and the UK, where design-build programs are well established, but also from Egypt [14] [15], Bahrain [16], Iran [17], Colombia [18], Mexico [19], South Africa [20], and Australia [21], among others. This global range suggests that live projects are a broadly relevant educational strategy adapted to various cultural and institutional contexts. Many studies explicitly situate their live project in local socio-cultural conditions – e.g., a rural village in Turkey where construction internships were studied as an experiential learning tool or informal settlements in Southern Africa where participatory design studios tackled housing issues.

The academic level and setting of live projects vary. Most projects described involve undergraduate architecture students in design studios or elective courses [18,22,23]. Some are part of graduate programs or thesis projects [15,24], and a few extend beyond

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formal curricula (extracurricular design-build workshops or volunteer initiatives) [25]. Community design centers affiliated with universities serve as hubs for live projects in a few cases, providing a structured interface between students and communities [24]. The duration of projects ranges from short, intensive builds (a two-week installation workshop [26] to multi-year engagements (a sequence of studios spanning three semesters [24]). Despite this variability, a common thread is that students and faculty step outside the conventional classroom to engage external stakeholders and sites.

Regarding the research approach, most of the literature consists of qualitative case studies documenting one or more live project instances. For example, several papers present reflective case narratives of a single design-build project enriched with observations, interviews, or student feedback [14,25,27]. Others compare multiple cases: Schreiber et al. [28] analyzed five design-build projects across different institutions to distill lessons on social learning, while Hemmersam et al. [29] chronicled a series of studios in Norway, India, and the UK that addressed displacement and placemaking. Survey and interview methods appear in studies examining outcomes: Gutai and Palaiologou [26] surveyed students after a live-built pavilion project to assess skills gained, and Garcia and Hinojosa [30] gathered reflections from participants in a service-learning project in informal settlements. A few works employed more structured research designs – for instance, Erbaş [15] used a phenomenological qualitative approach (interviewing students about internship experiences on construction sites) to align findings with Kolb's theory, and Kee et al. [31] conducted a mixed-method empirical study (surveys and interviews) to evaluate the impact of immersive virtual technology on hybrid design studios. Notably, two sources are systematic literature reviews of related topics: Smith et al. [32] performed a mixed methods review of existing live project scholarship, and Salama [33] reviewed five years of architectural pedagogy discourse (with live projects as one emerging theme). These meta-studies reinforce our findings, identifying a trend toward more community-engaged, interdisciplinary pedagogy in architecture. Overall, the evidence base is rich in descriptive detail and pedagogical insight, though often project-specific; few studies attempt quantitative outcome measures, reflecting the inherently contextual and qualitative nature of educational experiences.

B. Concepts and Definitions of Live Projects

While all studies revolve around the central idea of engaging students in real projects, the explicit definitions of "live project" vary across the literature. Many authors use the term live project directly, whereas others discuss analogous concepts (like design-build, community-based design, or service-learning studios). An influential definition comes from the UK's Live Projects Network (2012), cited by Braham et al. [34], describing a live project as a design project initiated by students or tutors that engages real people as stakeholders, with outcomes that have real-life impact (be it a building, plan, or research). In practice, this means the project goes beyond the academic exercise – the "live" aspect denotes actual clients, users, or sites involved, and often an obligation to deliver something of value outside the university. Rodriguez [18] emphasizes that live projects complement traditional studio pedagogy by introducing significant learning experiences: students confront budget constraints, client preferences, and unforeseen on-site issues, thus learning lessons that purely theoretical studio problems seldom teach.

Some authors frame live projects within broader educational paradigms. Erbaş [15] and Kee et al. [31] both ground their live project analyses in experiential learning theory, noting that live projects naturally engage students in the full cycle of experience and reflection. In Erbaş's study, architecture interns on construction sites actively participated in building processes (Concrete Experience), reflected on the discrepancies between drawings and built reality (Reflective Observation), abstracted lessons about project management and teamwork (Abstract Conceptualization), and returned to school with new approaches to design problems (Active Experimentation). Such integration of theory and practice is a defining hallmark of live project pedagogy. Denicke-Polcher [35] introduces the concept of "architecture of multiple authorship" to describe live projects initiated and co-authored by students, faculty, and community members together. In her view, live projects redefine authorship in architecture: rather than the architect (or student designer) as the sole author, the process is a collaborative dialogue, an idea that challenges traditional pedagogy but enriches it by valuing stakeholder input and student agency.

Not all sources use the term "live project" explicitly,

but their descriptions align with the concept. For instance, Maya et al. [34] discuss "community collaboration for product design (Co-Co Design)" – an initiative where design students work with local artisans and users to develop socially innovative product solutions. They do not label it a "live project," but it meets the criteria: real stakeholders, real-world objectives (social innovation), and learning through doing. Likewise, Al Khalifa [16] examines autonomy in architectural education through a Bahraini lens, effectively advocating for live project approaches that give students more self-direction and engagement with external realities to cultivate professional competence. Across the board, what unites these definitions is the departure from isolated academic exercises. In a live project, the classroom meets the world: students must contend with the complexity and unpredictability of real situations, making their education "live." As Sara and Jones [27] put it, live projects instantiate the university's civic responsibility by actively shaping communities while educating students – a dual mandate of learning and service.

It is worth noting that a few studies point out when a definition is not provided. Ruggeri and Young [36], for example, do not explicitly define "live project" in their paper on community design technology; instead, the concept is implicit in their case study of integrating web tools into a community-engaged studio. Similarly, some papers focused on specific aspects like digital tools [37] or sustainability [38] operate with an assumed understanding of live projects as a backdrop. Despite minor differences in emphasis – some stress construction, others stress collaboration or service – the literature concurs that a live project in architectural education means experiential, situated learning with outcomes that matter beyond the classroom.

C. Implementation Modes of Live Projects

The reviewed studies reveal a rich diversity in how live projects are implemented. These modes range from design-build projects, where students physically construct a design, to participatory planning workshops, to research-infused studios and other hybrids. For that, they were categorized into five main categories as follows.

- **Design-Build Studios and Workshops:**

Perhaps the most frequently documented mode is the design-build project, in which students design a structure and then build it at full (or substantial) scale. Such projects have been carried out as part of architecture school curricula around the world. For instance, the "Studio 804" program at the University of Kansas (though not directly in our sources, it exemplifies this model) has inspired many similar efforts. In our review, Chamel [23] makes a case that design/build is a relevant pedagogy for architecture education, illustrating a course where students designed and constructed small buildings to learn about materials, detailing, and project delivery. Quale [38] describes the ecoMOD project at the University of Virginia, where students collaborated to create ecological, modular, affordable housing prototypes that were built and occupied by low-income families – merging sustainable design lessons with a community housing mission. Several papers detail single design-build outcomes: Gutai and Palaiologou [26] report on a studio in which students built experimental pavilions on campus to test structural systems, noting that the process sharpened the students' understanding of construction logistics and team coordination. Murray et al. [25] present the DesignBuildBLUFF program in the American Southwest, where architecture students design and build homes on the Navajo Nation reservation. Over years of operation, that program yielded numerous small houses and community structures, and the authors document one such project ("Coyote Architecture on the Colorado Plateau") from concept through finished construction. These design-build implementations often involve intense, immersive periods of construction (weeks to months) and have tangible products – e.g., a building, a pavilion, a prototype – as outcomes.

Service-Learning and Community Design Projects, another class of live projects, emphasize social engagement and service, sometimes without a full construction component. Here, the key element is students working directly with communities or user groups to develop designs that address local needs. Garcia and Hinojosa [30] describe a service-learning experience in an informal settlement of Monterrey, Mexico, where architecture students partnered with residents to design incremental housing improvements. The project required students to adapt their design ideas to the realities of poverty, limited resources, and cultural context, thus learning about social factors in design. Treviño Sherk et al. [39] similarly discuss a participatory design and sustainable development studio in rural Mexico – termed "Rural Democratic Design" – which combined service-learning with a democratic

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design process to promote civic mindedness among students and villagers. In the UK, Sara and Jones [27] recount the Hands-on Bristol initiative, in which students and faculty co-created small-scale community architecture interventions in the city of Bristol (such as temporary structures, public space improvements, etc.) as a way of making the university a proactive urban agent. These projects may not always culminate in permanent buildings, but they often produce designs, masterplans, or temporary installations, along with significant community interaction. The co-design process itself is the pedagogical heart of the experience. Melcher [22] provides insight into the aesthetics of community-built projects, illustrating how students in a community design studio collaborated with neighborhood residents to produce an outcome that is rich in local meaning (and aesthetically pleasing), thereby debunking the notion that participatory projects result in sub-par design. In many service-oriented live projects, stakeholder workshops, charrettes, and public meetings are key activities. Students learn facilitation and communication skills by presenting to community members, gathering feedback, and negotiating design decisions in real time with non-architects – a skillset fundamentally different from typical studio desk critiques.

- **Internships and Fieldwork as Live Projects:**

A few studies have cast practical internships or field placements as a form of live project. Erbaş [15] examines construction-site internships integrated into an architecture program, where students spend time working under construction managers for actual building projects. Though not a "studio" in the conventional sense, this provided an experiential complement to academic learning. The author found that such field experience, when coupled with structured reflection, functioned much like a live project: students better understood construction sequencing and stakeholder coordination and brought those insights back into their design thinking. Similarly, Hemmersam et al.[29] describe an international field studio that took students to different cities (Mumbai, London, Oslo) to study placemaking and displacement on-site. Students engaged with local communities, conducted field research, and then developed design responses – an approach merging research and design in situ. These examples highlight that live project learning can happen outside the campus through internships, site visits, and community fieldwork, especially when these are carefully integrated into the curriculum as credit-bearing experiences.

Competitions and large-scale exhibitions are interesting subsets that involve design competitions or expos as a live project platform. Navarro et al. [40] detail the experience of a multidisciplinary team of students preparing for the Solar Decathlon Europe 2012 competition. In that context, students from architecture and engineering programs collaborated with design and ultimately built a full-scale solar house prototype, which was then assembled and operated during the competition event. Although framed as a competition, the educational process mirrored a live project: realistic constraints, teamwork across disciplines, and a built outcome tested in real conditions. The authors share methodology and lessons (e.g., how the competition timeline enforced project management skills and how students' technical knowledge increased). Another example is the work of Kruth and Keslacy [24], who led a three-semester "Humanities Lab" sequence that culminated in a public exhibition co-created with community partners. The process integrated research and community engagement (on issues of social justice in a Cincinnati neighborhood) with design implementation in the form of an exhibition – a non-building output that still requires physical fabrication and public interaction. These competition or exhibition-driven projects often bring additional visibility and pressure; students must meet external standards and deadlines, which can heighten the intensity of the learning experience.

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Technology-Integrated Live Projects: With the advent of new technologies, some live projects have adopted innovative tools to enhance learning. McIntosh and Marques [37] introduce the FABRIC framework as a tool for remotely experiencing architectural and landscape icons when travel is restricted (as was the case during the COVID-19 pandemic). In their implementation, students who could not visit sites in person due to travel bans engaged with famous buildings and landscapes through a structured online immersive approach (using archives, virtual tours, and digital modeling), essentially creating a "live" experience of those sites from afar. While not a live project in the community sense, it was a pedagogical adaptation to make learning experiential despite the distance – showing the flexibility of live project principles (learning from reality) even in virtual contexts. Kee et al. [31], the same idea was also echoed by [41]. They sought to explore immersive technology in synchronous hybrid learning, where architecture students participated in design studios that combined in-person and virtual reality interactions. Their study indicates that technologies like VR can simulate some aspects of life and hands-on experience and support collaboration among geographically dispersed students and stakeholders. Additionally, some traditional live projects have begun incorporating digital fabrication and computation [42]. Salzberger [43] describes the InterACT Lab in Germany, which connected architecture students with local craftspeople through computational design-build workshops. Students designed digitally fabricated wooden structures in collaboration with carpenters, thus marrying high-tech tools with community craftsmanship. This kind of project expands the definition of "live" to include not just working with communities but also working with emerging technologies and industry partners in real time.

These modes are not mutually exclusive; many projects combine elements of several. For example, the ARCHI21 project in Europe (described by Hunter et al. [42]) blended design-build and digital pedagogy: students from multiple countries engaged in a shared virtual world (Second Life) to design installations, which were then partly built physically, all while also learning foreign language skills through Content and Language Integrated Learning (CLIL). Such multifaceted live projects highlight architecture's interdisciplinary nature – touching on language, digital innovation, and cross-cultural communication. Across implementations, a few operational themes recur: the need for institutional support (funding, facilities, permission) to execute real projects, the importance of partnerships (with communities, municipalities, sponsors, and industry), and the role of faculty mentorship in guiding students through unfamiliar, complex processes. Challenges like safety, liability, and logistics are sometimes noted (e.g., ensuring construction site safety for students [15] or meeting building codes within academic projects [25]), though detailed discussion of these practical issues is less common in literature, which tends to focus on educational outcomes.

D. Outcomes and Impacts (Educational and Social)

The findings reported in the literature overwhelmingly indicate positive outcomes from live projects, both for students (pedagogical benefits) and for external stakeholders (community/social benefits). The following section shows the main outcomes, as stated in the studies:

Concerning pedagogical outcomes for students, Virtually all sources agree that live projects provide rich learning experiences that enhance students' education in ways traditional studios often cannot. Chief among the outcomes is the development of practical skills and professionalism. Through live projects, students learn how to translate drawings

into built form – gaining construction knowledge, material awareness, and detailing skills. For example, Nicholas and Oak [44] observed that when students physically construct elements of their design (even at the detail level), they confront the "make-or-break" reality of construction tolerances and joinery, which fosters a much more nuanced understanding of how design decisions affect buildability. Many students also improve in project management and teamwork. In design-build projects, they must schedule work, allocate tasks, and often lead teams of volunteers or coordinate with contractors, thereby exercising leadership and communication abilities [26][25]. Elaby et al. [45] quantitatively assessed first-year students and found significant improvement in problem-solving skills and creative thinking after a semester-long design-build project (compared to a control group), attributing this to the iterative trial-and-error that occurs when ideas meet reality.

Live projects enhance design skills by grounding them in context. Students reportedly become better at site analysis and context-responsive design when they have real sites and communities to consider. Perold et al. [46] note that South African students, through community-engaged studios in informal settlements, learned to design with extreme resource constraints and, in response to users' cultural practices – skills not acquirable through hypothetical studio briefs. This leads to more user-centered design thinking. Several authors highlight growth in students' empathy and listening abilities: by interacting with clients or community members, students learn to gather and interpret feedback and incorporate others' perspectives into their designs [27][22][24]. Kruth and Keslacy [24] specifically mention that students practicing "critical proximity" (working side by side with community participants) started to "decenter" their role as sole authors and instead view themselves as designer-researchers facilitating community goals. Such an outcome aligns with the broader educational aims of producing socially conscious architects.

Another frequent outcome is increased student engagement and motivation. Live projects tend to be energizing and memorable educational experiences. Rodriguez [18] reported that students in her live-project-based course demonstrated higher enthusiasm and commitment – many spent extra hours on-site or in meetings because they felt accountable to real clients and users, not just to a grade. Similarly, students often take pride in the tangible legacy of a live project. Having a built artifact or a real implemented plan gives a sense of accomplishment that purely academic projects may lack. This motivation can translate into improved work quality and deeper learning. Tucker [21] observed that engaging students in fieldwork and design-build can also cater to a wider range of learning styles ("southern" experiential learners as well as "northern" theoretical learners), thereby reducing the misalignment between teaching style and student learning preferences. In essence, live projects have the potential to reach students who thrive on applied learning, thus improving overall educational inclusivity.

Live projects also yield academic products in some cases, such as research insights or publications, when structured as part of research studies or investigations. For instance, Salama [47] structured a live project around Appreciative Inquiry and found that students not only designed and assessed retrofitted buildings but also contributed to research on assessment methods. In that regard, students practiced critical thinking and analysis in parallel with design, an outcome of bridging research and practice.

From a curriculum standpoint, institutions note outcomes like strengthened university-community relationships and enhanced student portfolios/ employment prospects. Participating in live projects gives students concrete projects to show potential employers and often leads to networking opportunities. Anecdotally, several papers mention that alumni of these live-project programs are highly sought after in practice for their proven practical experience [23][25]. However, a few authors caution that students can also experience stress and time management challenges when dealing with real projects on top of normal course loads [44][34]. Learning to cope with real-world pressure is itself arguably an outcome (resilience, adaptability), but it comes with the need for support.

For social and community outcomes, live projects, by design, produce outcomes beyond the university. Many reviewed studies document the positive impacts on communities or client organizations that result from student projects. For example, DesignBuildBLUFF houses provided much-needed housing on Navajo land [25]; the ecoMOD houses demonstrated new affordable green housing solutions for low-income families [38]; a Cairo design-build studio delivered an improved school environment (a redesigned school courtyard

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and facilities) for local students and teachers [14]. These direct outcomes – a built work or design solution – are often valued by community partners, even if student-built works are sometimes small in scale or experimental. Beyond the physical products, communities often benefit from the process of engagement. Melcher [22] noted that in her community-build project, the collaborative process itself strengthened relationships among neighborhood residents and gave them a sense of agency in shaping their environment. This is echoed by Mull and Adjoubei's accounts (as cited in [35]) of live projects extending beyond one academic year: such projects can seed ongoing community initiatives and have legacy effects like establishing local design advocacy groups.

Communities also gain access to design services they might not otherwise afford. Several service-learning projects [30][39][34] effectively provide pro bono design and planning work to underserved communities or non-profit clients. The literature highlights instances where student proposals were later taken forward by local authorities or organizations. For instance, Nitavska et al. [48] describe how their academic workshop bridging municipal planning and landscape education in Latvia helped align local authorities' plans with fresh ideas from students, potentially influencing real municipal projects. In another case, Kamelnia and Hanachi [36] identify community architecture paradigms in Iran and suggest that raising awareness of these through academic-community collaboration can pave the way for more participatory design practice in that country – an outcome more diffuse but important in sparking dialogue about design governance.

It is also noted that live projects can contribute to social innovation. Maya et al. [34] recount how their product design collaboration in Mexico yielded new socially innovative product concepts (like assistive devices co-designed with end-users), illustrating that involving students and communities in co-creation can generate creative solutions to local problems. Even in educational contexts like Hong Kong, where Kee et al. introduced immersive tech in a hybrid studio, community stakeholders (in that case, outside reviewers and collaborating NGOs) appreciated the exploration of technology's role in engagement, an indirect social outcome of expanding what is possible in public consultation via VR.

E. Challenges and Negative Outcomes

While overwhelmingly positive, some findings temper the enthusiasm with notes on challenges – which can be seen as "lessons learned" outcomes. A few recurrent challenges include time and scope management (students often underestimate how long construction takes or how complex real projects are, leading to schedule overruns or scope reductions [44][25]); design quality vs. pedagogy tensions (in striving to let students lead, sometimes the final product might not reach professional-level refinement, which some authors acknowledge as a trade-off [22][23]); and stakeholder coordination difficulties (differences in communication styles or expectations between students and community members can cause friction, which itself is a learning outcome for students in negotiation and compromise [27][30]). Importantly, these challenges are usually presented not to dissuade live projects but to highlight areas needing careful supervision or structuring. For example, Filz and Ruan [49] note that in their multi-disciplinary timber design-build, managing knowledge between architects and engineers was challenging at first (horizontal vs. vertical knowledge flows), but ultimately, the team developed better knowledge-sharing protocols – thus, the "challenge" resulted in an outcome of improved interdisciplinary collaboration practice.

A few studies measured community partner satisfaction. Most report positive feedback, though one or two mention that not all community suggestions could be realized due to technical or time constraints, occasionally leading to minor disappointment or the need for faculty to adjust project promises [22][46]. These instances underscore the importance of setting realistic goals in live projects – a topic that some authors explicitly discuss as a recommendation rather than a finding.

In summary, the results across the literature paint a picture of live projects as high-impact educational experiences that benefit students by blending practical skills, design excellence, and social awareness. They also benefit communities by delivering creative design services and fostering inclusive processes. The outcomes range from the very tangible (buildings, plans, prototypes) to the intangible (student confidence, community pride, cross-cultural understanding). As the next section will explore, these outcomes are interrelated, and the accumulation of case evidence allows us to discern broader themes and implications.

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IV. DISCUSSION

The foregoing results demonstrate that live projects are a powerful pedagogical approach in architectural education, yielding multifaceted benefits. In this discussion, the findings were analyzed, linkages were drawn between themes, and broader implications were addressed. For that, the discussion was divided into four main themes: (1) Pedagogical Enrichment through Experiential Learning, (2) Social and Civic Dimensions of Live Projects, and (3) Institutional and Structural Considerations. And finally, (4) Gaps and future research directions.

A. Pedagogical Enrichment and Student Learning

The review confirms that live projects substantively enrich architectural pedagogy by embedding experiential learning at the core of the curriculum. Traditional architectural education has often been critiqued for the disconnect between studio exercises and real-world practice. Live projects directly address this gap. They embody what Kolb theorized decades ago – that learning is most effective when it cycles through doing and reflection – and put it into practice in architecture schools. Students engaged in live projects are not merely solving abstract design problems; they are experiencing the consequences of design decisions in a real context and then reflecting on those experiences. This leads to a deeper form of learning often described as transformative: students frequently report a shift in their understanding of what architecture entails after a live project, seeing it not just as creating images on paper but as coordinating materials, people, and processes toward a built goal. In educational terms, live projects develop both hard skills (technical, managerial) and soft skills (communication, empathy, adaptability), aligning with the demand for well-rounded graduates.

One theme is how live projects cater to diverse learning styles and integrate multiple disciplines. Tucker's study [21] suggested that students who might struggle in purely theoretical courses often excel in hands-on projects. Thus, live projects can make architectural education more inclusive to different aptitudes. Moreover, many live projects are inherently interdisciplinary – involving engineering [40], landscape [20], interior design or crafts [43], and even language learning [42]. This breaks the siloed nature of design education and reflects the collaborative reality of practice. As a theme, the integration of knowledge is key: live projects collapse the separation between "design studio" and "technical courses" or "humanities courses," as noted by Kruth and Keslacy [24]. This suggests that live projects can serve as an effective pedagogical platform for holistic learning, where structural engineering, social science, and artistic design thinking meet in a single project. Smith et al. [32], in their review, observed that recent scholarship on live projects often emphasizes hybrid pedagogies – blending service-learning, design-build, and research – which our findings corroborate as a growing trend.

Another significant discussion point is the impact on student professional development and employability. The literature anecdotally reports that students emerge more confident and "practice-ready" after live project participation [23][25]. They have real experience discussing in job interviews and often a portfolio piece that is built or realized, which sets them apart. This aligns with calls in the profession for graduates who are not only conceptually strong but can also hit the ground running in terms of understanding construction and client relations. From an educator's perspective, live projects thus function as a bridge from education to practice, smoothing the often-jolting transition from academia to the professional world [50]. The theme of authorship and agency also emerges: Denicke-Polcher's concept of "multiple authorship" [35] implies that students learn to share authorship with clients and communities, preparing them for the collaborative nature of real projects (where architects work with engineers, contractors, users, etc.). This adjustment in mindset – from the lone creative genius to the collaborative team player – is an essential professional competence that live projects cultivate in a safe yet real environment.

Despite these positives, the pedagogical theme also comes with cautionary notes. One gap in the literature is the formal assessment of learning outcomes. Many papers provide qualitative evidence of student learning (quotes from students or instructor observations), but few measure learning gains in a rigorous way. Elaby et al. [45] did provide a comparative assessment and found notable improvements, indicating it's feasible to evaluate learning outcomes quantitatively. Future research could build on this by systematically comparing cohorts who do and do not participate in live projects across multiple skill dimensions. Additionally, some authors question how to ensure design excellence

and academic rigor remain high in live projects. Because live projects add layers of complexity, there's a risk (if not managed well) that students might focus on, say, construction at the expense of exploratory design or vice versa. The discussion in the field suggests the need for balance: a well-designed live project curriculum will still encourage innovation and creativity, not just rote execution. Indeed, many educators have responded by structuring live projects to occur after students have a grounding in design fundamentals – for example, making design-build a capstone experience so that earlier design training can be brought to bear in the live context. This sequencing is something future studies might analyze: when in the curriculum do live projects have the most impact?

B. Social and Civic Dimensions

An important theme from the review is the alignment of live projects with the social mission of architecture. Architectural education has long wrestled with producing graduates attuned to social and ethical responsibilities. Live projects inherently push students (and faculty) toward engaging with real societal issues, be it housing affordability, community placemaking, or sustainability. The reviewed literature contains numerous examples of how live projects function as a form of public interest design or service learning, contributing tangible improvements to communities. The mutual benefit model is evident: students learn while communities benefit. This reciprocity is a hallmark of effective service-learning pedagogy, and architecture's live projects provide a clear embodiment of it.

One major benefit on the community side is empowerment and inclusiveness in design processes. When residents or users are involved in academic live projects, they get to voice their needs and aspirations, often in situations where they might not normally have access to professional design services. Live projects can challenge power dynamics and produce more equitable outcomes. Students coming into a marginalized community to work "with" rather than "for" or "on" the community is a subtle but important shift in approach, often leading to more contextually appropriate designs and a sense of shared ownership. This reflects broader trends in architecture toward participatory design and co-creation as part of ethical practice. Live projects effectively train the next generation of architects in these participatory methods, as evidenced by projects in informal settlements [30] [46] and post-disaster contexts (though not heavily represented in our sample, similar pedagogies have been applied in disaster recovery studios).

Another theme is global citizenship and cross-cultural learning. Several live projects take students out of their familiar environment into new cultural contexts (e.g., study-abroad design-build in rural communities or international collaborations online). Such experiences broaden students' perspectives and sensitize them to cultural differences and global challenges like sustainability. These experiences answer a frequent call-in for architectural education to produce globally competent architects who are not insular in outlook.

However, the social dimension theme also surfaces potential pitfalls and ethical considerations. One concern in literature (and more so in external critiques of live projects) is the possibility of "community exploitation" or short-term engagement that doesn't lead to lasting benefit. Academics must be cautious that a live project is not merely using a community for student learning without delivering meaningful results. While most cases in our review show genuine benefit (even if small-scale), a gap was identified, as few studies conducted post-occupancy evaluations or longitudinal studies on community impact. The students' benefits were evident, but was the community space built to continue to be used effectively? Did the community feel truly empowered or just temporarily engaged? These are questions rarely answered in current literature. Future research could fill this gap by revisiting live project sites long after completion, assessing the durability of impact. Additionally, authors like Mull (referenced in [35]) have noted elsewhere that continuity is key – ideally, live projects should be part of an ongoing community-university partnership, not one-off incursions. Some programs achieve this via institutionalizing community design centers or annual projects in the same locale.

Thus, a theme for improvement is moving from ad-hoc live projects to sustained engagement. In sum, while live projects undoubtedly carry social benefits, educators must manage them ethically and sustainably – a point for discussion in academic forums that the literature could explore more deeply.

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C. Institutional and Structural Considerations

Implementing live projects often requires structural support and shifts within educational institutions. The discussion turns to how architecture schools can integrate live projects into their programs and what challenges they face at an institutional level. A prominent sub-theme is the need for flexible curricular structures and administrative support. Live projects do not always fit neatly into a 14-week semester or a 3-credit course framework. Many of the successes reported involved bending or extending these structures, e.g., a summer build workshop after the spring design studio [23][25] or a multi-semester sequence [24]. This requires buy-in from the administration to allow non-standard scheduling, provision of funds for materials and travel, and sometimes adjustment of credit hours. Some institutions have embraced this by creating design-build certificates or dedicated semesters for live projects. Others face hurdles such as budget constraints, risk management concerns, or faculty workload issues (live projects are labor-intensive to supervise.

Literature provides instances of administrative innovation. For instance, the creation of a community design center (like the one referenced in [24]) can institutionalize the interface with communities and provide steady resources and staffing to support live studios. On the flip side, a few authors imply that without administrative support, live projects rely on the heroic efforts of individual faculty and students, which is not sustainable long-term. Some authors also suggest that one reason participatory architecture hasn't flourished is a lack of structural support in both academia and government for such initiatives [17] – pointing to a needed paradigm shift to value community engagement as integral, not extracurricular, to architectural practice.

Architecture programs often are accredited by bodies (like NAAB, RIBA, etc.) with certain criteria. Live projects can potentially fulfill many criteria (construction knowledge, client communication, ethics, etc.), but schools may need to document these learning outcomes formally. Kruth and Keslacy [24] show that a humanities-driven studio can still meet design studio learning outcomes while adding more; this could inspire program directors to incorporate alternative studios into curricula. However, some faculty may resist, fearing that the time spent building is time taken from developing design exploration or other content. The discussion in conferences (as indicated by the AAE proceedings [35]) has been about overcoming such internal resistance by demonstrating that design quality and academic learning do not suffer in live projects – in fact, they can be enhanced. Studies like Nicholas & Oak [44] address this by reflecting critically on outcomes, acknowledging issues but also showing pedagogical gains, thereby providing evidence to persuade skeptics that, with proper guidance, live projects meet educational objectives.

An interesting linkage between research and teaching is evident in a few sources (notably [24] and [47]) on how live projects can unite the research and teaching missions of a university. Faculty can align their research interests (e.g., in sustainable technology or participatory methods) with live project studios, turning student projects into research data or pilot studies. This "teaching hospital" model for architecture (akin to medical education's approach) could strengthen the case for live projects institutionally by showing that they generate scholarly output as well as teaching outcomes. For instance, Salama's Appreciative Inquiry studio [47] yielded publishable findings on pedagogical methods, and Kruth & Keslacy's community research studio [24] effectively produced new knowledge about local history and urban issues while teaching. Encouraging more write-ups of live project studios as research (as many in our list have done) will help build an evidence base that administrators value. Smith et al. [32] observed that the body of literature on live projects itself has grown – this review stands on their shoulders – indicating that educators are increasingly studying and publishing their live project endeavors, a trend that legitimizes and refines the approach.

D. Gaps and Future Directions

The discussion would be incomplete without acknowledging the gaps identified in this review.

First, as mentioned, there is a lack of longitudinal studies on outcomes. Literature is thin in terms of the long-term impact on students' careers. Do students who did live projects tend to go into certain fields (like community design or construction management) at higher rates? Are they more likely to stay in the profession or to get licensed faster? Such questions could be answered with alumni surveys or longitudinal tracking, which are scarce in current literature. Similarly, for communities,

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following up on built projects after 5–10 years to see how they stood the test of time, both physically and socially, would provide valuable feedback for educators designing future live projects.

Second, the geographical distribution of case studies, while broad, still has blind spots. Contributions from North America, Europe, parts of Asia and Africa, and Latin America were present, but very few from East Asia (e.g., Japan, Korea) or the Middle East beyond Egypt, Iran, and Bahrain, and none from Eastern Europe or Central Asia. It may be that live project pedagogy is less common or less documented in those regions. Future research could explore if the concept exists under different guises in those contexts or if there are cultural/structural barriers to implementing live projects there. The global spread of architecture education means ideas can cross-pollinate; what works in one country might be adapted in another. For example, the Rural Studio model from the US influenced programs in the UK and Australia. Similarly, perhaps the community design center models from Latin America could inspire schools in other developing regions. There is room for more cross-case comparative research, e.g., comparing a design-build in a high-income country vs. one in a low-income country to see different challenges and student takeaways.

Another gap lies in examining failures or less successful projects. Understandably, published literature skews towards positive reporting. But there is much to learn from projects that did not meet their goals, perhaps a build that was not completed on time or a community partnership that faltered. These stories are likely underreported. A candid discussion of common pitfalls (permitting issues, budget overruns, community conflict, student burnout, etc.) and how to mitigate them would be highly beneficial for educators planning new live projects. Some authors do touch on these (e.g., the need for contingency planning in schedules [44] [25]), but often briefly. A more extensive "lessons learned" repository could be developed, potentially through collaborative platforms like the Live Projects Network or conferences (like the AAE or ARCC) focusing on this pedagogy.

Finally, as live projects become more mainstream, there is a need to consider scalability and accessibility. Not all architecture programs have the resources to build a house or send students abroad. Can the benefits of live projects be achieved in smaller exercises or with limited means? The technology angle offers one solution: using VR or digital simulations to mimic aspects of a live project experience for students who cannot physically be on a certain site. While not a full substitute for real engagement, these tools can broaden participation. Additionally, interdisciplinary collaboration within the university (e.g., teaming architecture students with theater students to design/build stage sets as a live project on campus or with engineering students to build installations) might allow resource-sharing and creative live project formats that are feasible for more schools. The discussion in the literature just opens on these innovative formats.

As illustrated in the following framework (Figure 1) and building on the discussion section, There is a consensus that live projects serve as a nexus of experiential learning, social engagement, and professional preparation in architectural education. They cultivate architects who are not only designers but also builders, collaborators, and socially conscious practitioners. The themes identified – enriched learning, community impact, and the need for supportive structures – suggest that while live projects are highly beneficial, they require careful integration and commitment. As the pedagogy matures, researchers and educators should continue to document outcomes rigorously, share best practices, and address challenges openly. The gaps highlighted provide a roadmap for scholarship: longitudinal impacts, cross-cultural studies, and frank assessments of difficulties are areas ripe for exploration. By doing so, the field can ensure that live projects evolve from pioneering experiments into a robust, evidence-backed component of architectural curricula worldwide.

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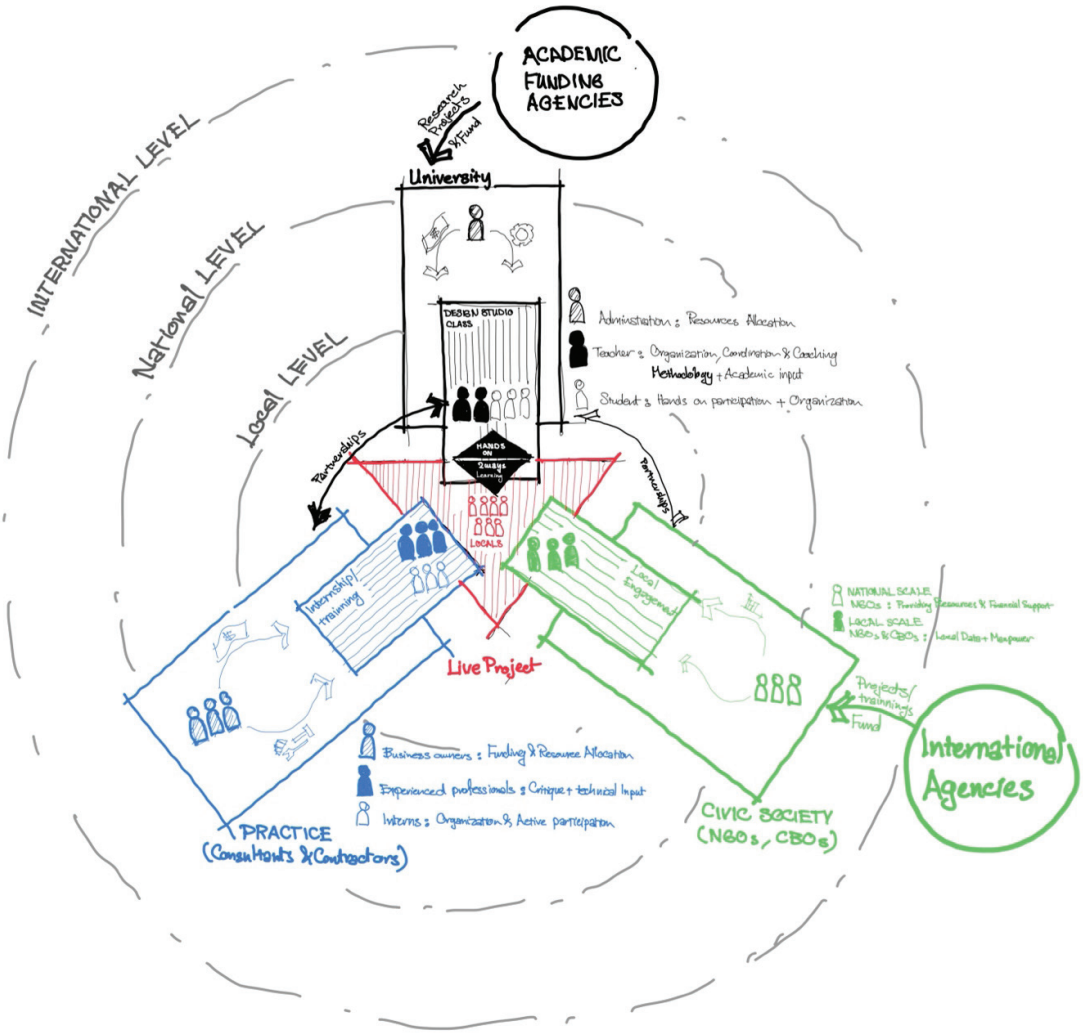

Fig. 1. Live projects Framework (Author based on 38 reviewed papers)

The integration of live projects into architectural education aligns closely with theories of reflective practice, particularly as conceptualized by Donald Schön[51]. Schön's notion of "reflection-in-action" emphasizes the role of experiential learning, iteration, and situated problem-solving within the design process. Live projects naturally create environments where students must reflect upon their decisions in real time while engaging with complex, dynamic contexts. Furthermore, "reflection-on-action," the process of critically reviewing experiences after project completion, is similarly fostered through live project pedagogies. This reflective dimension not only enriches the student learning experience but also aligns architectural education more closely with professional practice, where adaptability, critical thinking, and continuous learning are essential competencies. Embedding live projects thus supports a shift toward a more reflexive, context-responsive model of architectural education.

V. CONCLUSION

Live projects have been recognized as a transformative pedagogy in architectural education, with the traditional design studio model being fundamentally enriched through the integration of real-world engagement and hands-on learning. Through a systematic literature review of 38 sources, the substantial benefits brought by live projects, whether manifested as design-build programs, community design studios, service-learning initiatives, or research-integrated projects, have been observed. Students gain practical skills, confidence, and a deeper understanding of architecture's social and material dimensions while communities are provided with design input, built works, and an inclusive process through which stakeholders are empowered. In this way, live projects are positioned as a bridge between academia and society, with educational outcomes being aligned with civic responsibility.

This review answered the core research questions by revealing that live projects are implemented globally in diverse ways but share common challenges and successes. Students consistently report more engaging and memorable learning experiences, and studies document improvements in problem-solving abilities, teamwork, and professional readiness. At the same time, managing a live project requires navigating constraints of time, budget, and stakeholder coordination hurdles that, when overcome, become valuable learning moments in themselves. The literature shows that with proper faculty mentorship and institutional support, the pedagogical payoffs outweigh the difficulties. Key themes identified include the integration of experiential learning theory in practice, the fostering of community engagement and social awareness in students, and the potential of live projects to innovate curricular structures (by merging design education with research and interdisciplinary collaboration).

There are, however, important gaps that call for further research and development. Empirical measurement of long-term impacts on graduates' careers and on community well-being remains limited. Future studies should track alumni of live-project programs and evaluate how these experiences influence their professional trajectories and commitment to community-oriented practice. Similarly, longitudinal community impact studies would help determine how sustainable and effective student-built projects are over time, informing improvements in how such projects are executed. Another avenue for future research is exploring live project pedagogy in under-represented regions and contexts. As architecture education diversifies, understanding how live projects can be adapted to various cultural, economic, and institutional settings (and what barriers might exist) will be crucial for broader adoption.

For architectural educators and institutions, several recommendations emerge from this review. First, incorporating live projects into the curriculum, even at small scales, is highly recommended, given the clear benefits to student learning. Schools should seek opportunities for students to engage with real clients or users, whether through design-build assignments, community partnerships for studio projects, or internships with structured reflection. Second, careful planning and support systems are key: securing funding for materials, allocating sufficient time (perhaps via dedicated semesters or summer programs), and ensuring experienced supervision (including technical mentors) will set live projects up for success. Establishing ongoing relationships with community organizations or industries can also create a pipeline of mutually beneficial live project opportunities. Third, educators should embed reflection components (such as journals, group debriefings, or research papers) within live projects so that students consciously abstract lessons from their experiences. This turns experience into education, fulfilling the cycle of experiential learning. Lastly, sharing outcomes through exhibitions, publications, or presentations can amplify the impact of live projects, giving recognition to student achievements and demonstrating to stakeholders (university administrators, accreditation boards, local communities) the value these projects bring.

In conclusion, live projects represent a pedagogical paradigm that fosters learning by doing, teaching future architects to be agile, empathetic, and competent in addressing real-world problems. They exemplify the best of learning by experience, a principle applicable far beyond architecture. As one student poignantly noted in a community design studio reflection, "I learned that architecture is not just about buildings, but about building relationships and trust." This encapsulates the profound educational and humanistic impact that live projects can have. By continuing to implement, study, and refine live project pedagogy, architectural education can produce professionals who not only design better buildings but also build better communities. The outcomes of live project pedagogy echo broader advances in sustainable architectural practice, as evidenced by emerging design strategies that address psychological, social, and environmental well-being [52,53]. Embedding such insights within educational models fosters graduates capable of navigating a complex and rapidly evolving design landscape.

The trajectory of the literature and practice suggests that live projects are moving from the periphery to the mainstream of architectural curricula – a shift that promises to enrich the formation of architects and enhance the relevance of architecture education in meeting societal needs.

Declaration of generative AI and AI-assisted technologies in the writing process

During the preparation of this work the author(s) used Chat GPT 4.0 to improve the language and readability of the paper. After using this tool/service, the author(s) reviewed and edited the content as needed and take(s) full responsibility for the content of the publication.

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