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Community-Based Learning Laboratories as Alternative Pathways to Sustainable Education and Empowerment: Insights from Indonesia

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Abstract: Mainstream formal schooling often fails to address the diverse needs of marginalized communities. In Indonesia, community-based laboratories, specifically Sanggar (art studios), Dojo (martial arts centers), and Pesantren (Islamic boarding schools), have emerged as innovative educational ecosystems. This study explores how these laboratories function as alternative pathways for education and empowerment aligned with the Sustainable Development Goals (SDGs). Using an exploratory-descriptive qualitative design, data were collected through participatory fieldwork, including interviews and focus group discussions at three laboratories in Yogyakarta affiliated with UIN Sunan Kalijaga. The findings reveal that these laboratories serve as "educational safety nets" for school dropouts (SDG 4), create livelihood pathways through professional certification and art business ecosystems (SDG 8), and foster "living heritage" through intergenerational knowledge transfer (SDG 11). The study concludes that recognizing and integrating these non-formal models into the national education agenda is crucial for building a more inclusive and resilient learning society.

Keywords: Community-based education, learning laboratories, empowerment, SDG 4, SDG 8, Indonesia.

Introduction

Formal schooling remains the mainstream model in the Indonesian education system. However, empirical reality reveals a significant "schooling gap" where rigid standardization often alienates vulnerable groups (Cramer, et.al., 2018; Scott and Husain, 2021; Zhao, 2016). Data indicates a concerning disconnect between the national curriculum and local needs, contributing to high dropout rates that exceeded 77,000 children in the 2022/2023 period (Hakin and Khotimah, 2023). This underscores that standardized approaches often fail to reach communities with diverse socio-cultural contexts. Illich (1971) and Freire (1970) long ago criticized the limitations of schooling models that are overly curriculum-centered and unresponsive to the realities of community life. In a contemporary context, UNESCO (2015) emphasizes the importance of lifelong learning and community-based learning as strategies to address these challenges in educational inclusion (Hata, et.al., 2021). Consequently, there is an urgent need for alternative pathways (Singh and V, 2021) that are not only flexible but also culturally responsive (House, et.al., 2024) and economically empowering.

Within this framework, community-based learning laboratories (Hendratno, et.al., 2024), specifically the *Sanggar* (art lab), *Dojo* (gym lab), and *Pesantren* (learning lab), offer non-formal educational models function as a comprehensive ecosystem. These spaces are flexible, contextual, and rooted in local wisdom. Studies on indigenous pedagogy (Smith, 1999; Wilson, 2001) suggest that community learning spaces function as vital arenas for intergenerational knowledge transfer, character

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building, and cultural identity reinforcement. Similarly, empowerment approaches and the capabilities approach provide strong theoretical frameworks for understanding how community-based education supports individual and community capacity building, particularly in economic and social contexts.

In Indonesia, community education models like art *Sanggar*, martial arts *Dojo*, and *Pesantren* have long served as centers for learning, culture, and character formation. The *Pesantren*, for instance, is the oldest form of community-based education in Indonesia, integrating *tafaqquh fiddin* (religious understanding) with life skills reinforcement (*ilmul hal*). Beyond religious institutions, *Sanggar* and *Dojo* function as spaces for nurturing creativity, bodily discipline, local entrepreneurship, and strong social networks. They operate as vocational incubators where the *Sanggar* builds local art business ecosystems and the *Dojo* facilitates professionalization through embodied learning (Stolz, 2015), aligning with the concept of communities of practice (Charungkaittikul, (2011); Wenger, 1998).

However, research on community laboratories as "alternative education pathways", rather than mere supplements to forml schooling, remains limited. This is particularly true regarding their specific contribution to achieving Sustainable Development Goals (SDGs). These include SDG 4 (Quality Education), by providing an educational safety net for dropouts; SDG 8 (Decent Work) by reducing youth NEET (Not in Education, Employment, or Training) rates; SDG 10 (Reduced Inequalities) by democratizing access to skills; and SDG 11 (Sustainable Communities) by preserving "living heritage". Furthermore, the role of higher education in developing university–community engagement (Fitzgerald, 2012) opens new opportunities to integrate community learning models into the ecosystem of knowledge and community service.

Based on this context, this paper aims to: (1) analyze the role of community-based learning laboratories in expanding inclusive educational access; (2) identify their contributions to socio-economic empowerment and cultural preservation; and (3) propose a conceptual framework for integrating these models into sustainable education development planning. This introduction asserts the urgency of viewing community laboratories as strategic pathways for a future education that is inclusive, sustainable, and community-centered.

Method

Research Design

This study uses an exploratory-descriptive qualitative design. This approach was selected to deeply investigate the mechanisms and functions of community-based laboratories as alternative education ecosystems. The design allows for a holistic understanding of how these non-formal spaces operate as "engines of resilience" within a specific socio-cultural context.

Locus of Study

The research locus is situated within the network of laboratories affiliated with UIN Sunan Kalijaga, Yogyakarta. The study focuses on three distinct but integrated laboratory models:

1. Sanggar Joglo Alit (Art Lab), focusing on cultural preservation and economic ecosystems.
2. Dojo Joglo Alit (Gym Lab), focusing on embodied learning and professionalization.
3. Pesantren Joglo Alit (Learning Lab), focusing on the integration of spiritual values (tafaqquh fiddin) and life skills (ilmu hal).

Data Collection

Data were gathered through Participatory Fieldwork to ensure a grounded understanding of the community dynamics. The collection methods utilized a triangulation approach, comprising:

1. In-depth Interviews to explore personal narratives of empowerment and career progression.
2. Focus Group Discussions (FGDs) to capture collective perspectives on community challenges and educational needs.
3. Direct Observation to witness the daily practices of knowledge transfer and skill acquisition in the labs.

Data Analysis

Data were analyzed using Thematic Coding to identify recursive patterns and meanings. The analysis specifically focused on three core themes derived from the field data empowerment (how the labs build capacity and self-reliance), knowledge transfer (the mechanisms of transmitting skills and values intergenerationally), livelihood (the creation of economic opportunities and professional certification).

This methodological framework facilitates an evidence-based assessment of how these local initiatives contribute to global goals, specifically SDG 4, 8, 10, 11, and 17.

Results And Discussion

The findings demonstrate that community-based learning laboratories function as alternative educational pathways that transcend the role of formal schooling. By integrating local values, community practices, and empowerment mechanisms, these three models contribute significantly to expanding educational access, strengthening capabilities, and fostering sustainable socio-economic development. Based on field observations, this study identified three distinct laboratory models that form an integrated ecosystem. The conceptual structure of these laboratories is presented in Figure 1.

Figure 1. The Alternative Pathway Mechanism.

The study reveals that community laboratories operate not merely as supplementary extracurricular activities, but as a structured "Alternative Pathway Mechanism." This mechanism bridges the gap between the persistent limitations of formal schooling, such as rigid standardization and high dropout rates, and the achievement of global sustainable development goals.

As conceptualized in Figure 1, the model transforms local challenges into opportunities through three distinct ecosystem focuses: cultural-economic resilience (Sanggar), embodied professionalization (Dojo), and spiritual-life skills integration (Pesantren). These pathways directly map onto specific SDG targets (Goals 4, 8, 11, and 17), demonstrating a concrete trajectory from local community action to global impact. The following sections detail how each laboratory functions within this mechanism to empower vulnerable youth. These findings are discussed in three analytical clusters aligned with the SDGs.

Access and inclusion: Bridging the Gap through Non-Formal Pathways

The study found that *Sanggar Joglo Alit* and *Dojo Joglo Alit* function not merely as extracurricular facilities, but as "educational safety nets" for vulnerable groups. In Indonesia, where school dropout rates remain a challenge, with over 77,000 children dropping out in the 2022/2023 academic year, the existence of alternative learning spaces is urgent.

Empirically, these laboratories offer flexible and inclusive access for children and youth facing systemic vulnerabilities, such as limited access to

health services, cultural marginalization, and dropout risks. The *Sanggar* was found to overcome social and financial barriers that often hinder community participation in cultural activities. Meanwhile, the *Dojo* provides an inclusive, intergenerational space welcoming children and youth to build physical health and communal identity. This flexibility bridges the gap left by formal schools, which tend to be standardized and rigid.

Drawing on Amartya Sen's (1999) capabilities approach, these initiatives go beyond merely providing access; they expand individuals' "substantial freedoms" to achieve the well-being they value. In this context, community laboratories function as a "resilience mechanism". For children alienated from the school system due to economic reasons or curriculum incompatibility, these laboratories offer an alternative route to gain self-recognition, life skills, and social capital. This aligns with theories of decolonizing education, emphasizing the integration of local perspectives into the learning process rather than imposing foreign curricula. Consequently, these laboratories contribute directly to SDG 4.5 by ensuring that marginalized groups receive culturally responsive (House, et.al., 2024) and economically empowering education.

Economic Empowerment and Decent Work: From Cultural Assets to Livelihoods

The study findings indicate that laboratories such as the *Sanggar* and *Dojo* transcend their traditional functions as mere recreational spaces; they act as informal vocational incubators that directly respond to the challenges of youth unemployment. In the context of *Sanggar Joglo Alit*, economic empowerment occurs through the development of a local art business ecosystem. This study found that arts and culture are not merely positioned as entertainment, but are managed as educational resources with economic value. Aligning with Bourdieu's concept of cultural capital cited in this study, artistic expression and local traditions are capitalized upon to enhance community economic resilience.

This empowerment mechanism is evident in the initiative to establish a professional artists' association. This platform is designed to guarantee standards of professionalism and fair pricing practices, thereby creating sustainable economic opportunities for local artisans and artists. Thus, the *Sanggar* provides an entrepreneurial pathway rooted in local wisdom, which is often more accessible to the community compared to formal business training.

Meanwhile, *Dojo Joglo Alit* offers an empowerment model through the professionalization of sports. Findings show a shift from purely traditional martial arts toward modern management that opens up employment opportunities. This laboratory facilitates career pathways for youth through formal certification systems for coaches, judges, and referees.

This directly addresses the issue of unclear career progression in traditional sports. By distinguishing between amateur and professional training tracks, the *Dojo* not only builds character and physical health but also equips youth with marketable professional credibility.

The integration of vocational training, entrepreneurship, and life skills in both models supports the achievement of SDG 8.6 (reducing the proportion of youth not in employment, education, or training). These community laboratories offer alternative productive pathways for youth, transforming local potential, whether artistic or physical talents, into decent and dignified work.

Cultural Sustainability and Heritage: Fostering Living Traditions through Intergenerational Learning

The study findings confirm that cultural preservation in *Pesantren*, *Sanggar*, and *Dojo* transcends the static concept of museums; they function as spaces of "living heritage" where traditions are practiced, reinterpreted, and transmitted across generations. In the *Pesantren Joglo Alit* model, cultural sustainability is achieved through a unique synthesis of *tafaqquh fiddin* (deepening religious knowledge) and *ilmul hal* (practical life skills). Data indicates that this model rejects the dichotomy between the sacred and the profane. Instead, the *pesantren* serves as a bridge ensuring that spiritual values and traditional Islamic culture remain relevant when facing

modern needs. Through a holistic pedagogical approach, the *pesantren* ensures cross-generational knowledge transfer that encompasses not only text memorization but also social ethics and adaptive life skills.

On the other hand, the *Sanggar* (Arts) and *Dojo* (Martial Arts) respond to the challenge of cultural commodification, where traditional arts are often reduced to mere entertainment or commercial products. The *Sanggar* positions art as a meaningful educational resource. By teaching art as a disciplined practice and form of expression, the *Sanggar* ensures that the philosophy behind local arts remains understood by the younger generation, not just its external aesthetics. Findings highlight the *Dojo's* role in facilitating "intergenerational knowledge transfer." Through embodied learning (Stolz, 2015), values of discipline and ancestral heritage are internalized by children and youth, maintaining the continuity of martial arts traditions amidst the popularity of modern sports.

Collectively, these laboratories contribute directly to SDG 11.4 (Strengthen efforts to protect and safeguard the world's cultural heritage). They safeguard local symbols, values, and knowledge systems from extinction, allowing them instead to evolve dynamically. Referring to Indigenous Pedagogy (Smith, 1999; Wilson, 2001), this process proves that the most sustainable education is one rooted in its community's own identity, yet remains open to global innovation.

SDG Mapping and Policy Relevance: From Local Action to Global Goals

Based on empirical findings, these laboratories function not merely as supplementary educational activities (Hendratno, et.al., 2024), but as essential complementary education systems. They address critical gaps in the national development agenda, particularly for marginalized populations. The following mapping illustrates how the specific activities within the Sanggar, Dojo, and Pesantren translate into measurable contributions toward the 2030 Agenda:

Table 1. Mapping SDGs untuk Community-Based Learning Laboratories.

SDG Goal	Target	Relevant Indicator	Contribution of Community Laboratories (Evidence-Based)
SDG 4: Quality Education	4.5: Eliminate gender disparities & ensure equal access.	4.5.1: Parity indices (access for vulnerable groups).	Provides flexible, non-formal education access for school dropouts (77,000+ nationally) and children with learning disorders, ensuring educational resilience.
SDG 8: Decent Work	8.6: Reduce youth NEET (Not in Education, Employment, or Training).	8.6.1: Proportion of youth NEET.	The Sanggar builds local art business ecosystems, while the Dojo offers professional certification for coaches/referees, transforming hobbies into viable professions.
SDG 11: Sustainable Communities	11.4: Protect and safeguard cultural heritage.	11.4.1: Expenditure/Effort on heritage preservation.	Sanggar and Pesantren act as hubs for intergenerational knowledge transfer, preserving traditional arts and spiritual values as "living heritage" rather than commodified products.
SDG 10: Reduced Inequalities	10.2: Empower social, economic, and political inclusion.	10.2.1: Inclusion of people below median income.	Democratizes access to skill development for low-income families in rural areas (e.g., Karangdukuh, Klaten) who cannot afford expensive private courses.
SDG 17: Partnerships	17.17: Encourage effective public-private-civil partnerships.	17.17.1: Commitment to partnerships.	Demonstrates a "Triple Helix" model involving the University (UIN Sunan Kalijaga), Local Government (Disbudporapar), and Civil Society (FSST, Martial Arts Associations).

The mapping above highlights that community laboratories are multidimensional social development models. For policymakers, this suggests that:

1. Recognition of Non-Formal Pathways
   Regulations (such as those on Child-Friendly Cities) should explicitly integrate community laboratories as valid educational entities eligible for state support.
2. Investment in Community Facilitators
   Achieving SDG 8 requires shifting focus from top-down job training to supporting community-led professionalization ecosystems like the *Dojo* and *Sanggar*.
3. Collaborative Governance
   Sustainability relies on cross-sector partnerships (SDG 17). The study confirms that collaboration with local organizations and government bodies is essential for scaling these initiatives.

Community Laboratories as Alternative Educational Pathways

This section argues that the Sanggar, Dojo, and Pesantren serve as critical alternative pathways to formal schooling by offering flexible, lifelong learning structures that address the limitations of standardized curricula. While formal schools often prioritize cognitive achievement through fragmented subjects, these community laboratories foster embodied and holistic learning.

Drawing on the perspective of *communities of practice* (Charungkaittikul, 2011; Wenger, 1998) and *embodied learning* (Shusterman, 2012; Stolz, 2015), the Sanggar and Dojo provide spaces for learning through practice, physical engagement, and social relations, elements often marginalized in text-centric formal schooling. The study found that the Dojo transcends mere physical exercise. It functions as a site for embodied learning where physical discipline shapes communal identities and value systems (Stolz, 2015). By balancing traditional martial arts with modern management, it fosters health and intergenerational knowledge transfer that formal sports curricula often lack. Similarly, the Sanggar integrates arts education not as a separate subject, but as a lived cultural practice connected to economic logic. It fills the gap for "cultural capital", allowing participants to learn through immersion in local traditions rather than passive observation.

The *Pesantren Joglo Alit* offers a compelling alternative to the secular-religious dichotomy prevalent in modern education. The findings reveal that this model successfully integrates *tafaqquh fiddin* (deep religious expertise) with *ilmul hal* (practical life skills). Unlike formal institutions that often separate spiritual development from vocational skills, the Pesantren provides a pathway for holistic development. It ensures that learners remain grounded in local wisdom while acquiring the practical competencies needed for modern life, thus proving that community-based education can be both deeply traditional and highly adaptive.

Mechanisms of Empowerment and Sustainability

To justify the "Empowerment" aspect of this study, the findings highlight specific mechanisms through which community laboratories transform from mere learning spaces into active engines of community resilience. The analysis identifies three core mechanisms:

Economic Empowerment through Professionalization

Data reveals that these laboratories are actively creating livelihood pathways by shifting the paradigm from "leisure" to "profession". The study found that the Sanggar goes beyond art appreciation to build a "local art business ecosystem". By initiating professional artist associations, the lab ensures fair pricing and economic sustainability for artisans (Fischer and Newig, 2016), protecting them from market exploitation. Similarly, the Dojo empowers youth by establishing clear distinctions between amateur and professional tracks. It provides certification pathways for coaches, judges, and referees, effectively turning a martial arts hobby into a viable profession and reducing youth unemployment.

Social Empowerment and Inclusion

The laboratories function as a critical social safety net, specifically targeting vulnerable groups such as school dropouts and marginalized youth. By providing a structured yet non-formal environment, they offer a "second chance"

mechanism for social inclusion (aligning with SDG 10). This inclusive approach allows youth who are excluded from formal academic achievement to regain confidence, build social identity, and restore their community standing through achievements in arts or sports.

Sustainable Education through Intergenerational Transfer

Finally, the study argues that true sustainability is achieved not through top-down policy, but through "intergenerational knowledge transfer". In the Dojo and Sanggar, elders and practitioners pass down tacit knowledge, embodied skills and cultural nuances, directly to the younger generation. The Pesantren ensures the continuity of ethics, spiritual values, and cultural practices. This mechanism ensures cultural sustainability (SDG 11) by keeping traditions alive and relevant, a process that formal textbooks and standardized curricula cannot replicate.

Conclusion

This study asserts that community-based learning laboratories (Sanggar, Dojo, and Pesantren) serve as more than mere supplements to formal schooling; they are vital alternative pathways for building a sustainable learning society. Unlike fragmented schooling models, these laboratories offer holistic and embodied learning approaches that bridge access gaps for vulnerable groups while preserving local knowledge through intergenerational transfer.

Specifically, the findings demonstrate that community laboratories function as multidimensional engines of resilience. They contribute directly to the SDGs by: (1) transforming cultural and physical assets into professional economic opportunities and decent work for youth (SDG 8); (2) providing an inclusive "second chance" mechanism for school dropouts (SDG 4 and 10); and (3) safeguarding cultural heritage as a dynamic, living practice rather than a static artifact (SDG 11).

Consequently, this study advocates for a paradigm shift within higher education institutions, particularly Faculties of Islamic Education. There is an urgent need to move beyond a schooling-centric focus toward the formal recognition and institutionalization of these non-formal ecosystems. Strengthening strategic partnerships (SDG 17) among universities, government bodies, and local communities is essential to scale these models, ensuring that future education is not only intellectually rigorous but also economically empowering and culturally grounded.

Conflict Of Interest: The authors declare that there are no conflicts of interest concerning the publication of this article.

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