

## **Modernization of Islamic Boarding School Infrastructure Through Community Empowerment in Batu City**

**Adisti Safrilia<sup>a)</sup>, Razqyan Mas Bimatyugra Jati**

Architecture Study Program, University of Merdeka Malang, Malang, Indonesia

<sup>a)</sup> Corresponding author: adisti.safrilia@unmer.ac.id

### **ABSTRACT**

Formal education based on religious values is one of the most significant foundations for building a strong nation. The Ar-Razi Islamic Boarding School is envisioned as an integrated educational institution that combines the traditional pesantren system with formal schooling. Strategically located in Bulukerto Village, Batu City, the school benefits from a natural mountainous setting, providing a serene and conducive learning environment. This community-based design project aims to develop a comprehensive and context-sensitive master plan that responds to the client's vision. The key objectives include accommodating both male and female students in a spatially organized manner, designing inclusive and functional facilities such as classrooms, dormitories, a central masjid, administrative areas, and outdoor activity zones for archery and horseback riding, while also preserving green open spaces for ecological and recreational purposes. The planning and design process was conducted in four main stages: (1) coordination stage to align visions and understand partner needs, (2) preliminary study through field surveys and community engagement, (3) master plan development focusing on zoning and infrastructure layout, and (4) evaluation and finalization with stakeholders. This participatory approach involved close collaboration with pesantren owners, local residents, and village officials to ensure the final design reflects both cultural values and future development goals. The resulting master plan not only meets the immediate spatial and functional needs of the pesantren but also lays the foundation for a sustainable and value-based educational environment that will nurture future generations of Islamic learners and leaders.

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### **INTRODUCTION**

Education is one of the most important pillars of any civilization. In today's rapidly changing world, educational institutions are expected to produce more than just graduates—they must nurture individuals

with strong moral character, Islamic values, and technical skills to face global challenges. Imam Ali bin Abi Talib once said, "Educate your children because they will live in a time you do not know." This profound reminder reflects the core philosophy of Ar-Razi School, which believes that modern education must go beyond forecasts and economic projections, drawing instead from divine guidance and holistic learning.

To achieve this, Ar-Razi School implements a unique approach rooted in the Prophetic Glad Tidings Curriculum (Bisyaroh Rasulullah SAW). The aim is not merely the transmission of knowledge but the formation of a robust, resilient, and balanced Muslim generation. The school integrates three structural methodologies of learning: Talaqy (direct knowledge transmission), Classical (formal education), and Workshop (practical skill-building). These methods aim to shape students who are intellectually sharp, physically capable, and financially independent—fully equipped to navigate a world undergoing monumental transformation.

Established as a comprehensive and integrated Islamic educational institution, Ar-Razi School offers a curriculum from Kindergarten (TK) through to Elementary (SD/MI), Junior High (SMP/MTs), and Senior High (SMA/MA) levels. In alignment with Islamic principles, the school enforces gender segregation in facilities to uphold discipline, ethics, and religious integrity (Resor et al., 2021). More than just academic success, the school also prioritizes physical development and life skills, supported by outdoor amenities and extracurricular activities—creating a well-rounded, future-oriented educational journey. The school's vision is to become the best Tahfidz school in Indonesia, nurturing a generation with strong Islamic foundation, global insight, and practical abilities (Zuhri et al., 2022).

To translate this vision into physical space, a collaborative design approach was carried out by involving architects, the pesantren owner, and the community. The design process was guided through coordination meetings, site surveys, and Focus Group Discussions (FGDs) with relevant stakeholders. These participatory methods helped identify real needs, refine spatial requirements, and formulate an architecture that resonates with the identity of the institution (Dosen STAI DDI Pangkep dan Guru MAS DDI Baru Baru Tanga Kab Pangkep, 2020)

The owner envisioned a modern architectural style that still reflects strong Islamic characteristics (Chaerul Huda et al., 2020). The final design embraces Arabian and Mediterranean influences, dominated by clean white façades with blue accents—symbolizing purity, serenity, and spiritual clarity (Hendro Abdul Rasyid et al., n.d.). Each zone within the site is planned with functional clarity and religious sensitivity: from the central mosque that separates the male and female dormitories, to semi-outdoor classrooms, administrative buildings, and special areas for archery and horseback riding, reflecting the holistic nature of Islamic learning that balances spiritual, intellectual, and physical development (Resor et al., 2021).

This community service project, conducted from May 1 to July 5, 2024, had a clear objective: to produce a master plan that is responsive to the educational mission of the school while addressing cultural values, environmental potentials, and future growth (Deshariyanto et al., 2023). It emphasized participatory design as a means of social engagement and empowerment, ensuring the built environment reflects the aspirations of its users. The result is not just a plan for buildings, but a blueprint for a generation prepared to meet the future with faith, knowledge, and purpose (Zainal Maliki & Alim Saputra, n.d., 2025).

## Partner's Issues And Needs

The optimal learning environment is one of the main issues which is addressed at Ar-Razi School, and how it can be visualized within its educational vision. Such an approach requires school facilities to be designed in consideration of the fact that students will be pursuing different stages of education

but while ensuring the integrity of Islamic principles is maintained. The institution ideally needs to have a structured master plan that comprises of:

1. Comprehensive Education Facilities: The school must provide TK to SMA integrated educational facilities with sufficient classrooms, prayer rooms, and dormitory for students.
2. Gender-Segregated Areas: Gender-segregated areas according to Islamic standards in the school which separate male and female students, including adhering to religious guidelines for all facilities such as dormitories, classrooms, and recreational spaces.
3. Outdoor and Extracurricular Spaces: The inclusion of outdoor spaces where students can engage in activities like sports or limb stretching is vital to their holistic development, improving both mental and physical health.
4. Child-Friendly Infrastructure: The school aims to establish a learning atmosphere that excites students and aids in the retention of information, while fostering curiosity and motivation.
5. Qualified Educators and Islamic Scholars: In order to fulfill its vision, Ar-Razi School needs proficient teachers and scholars who are well-versed in Islamic studies and proficient in innovative teaching practices.

The master plan will be developed in four main stages to address these challenges:

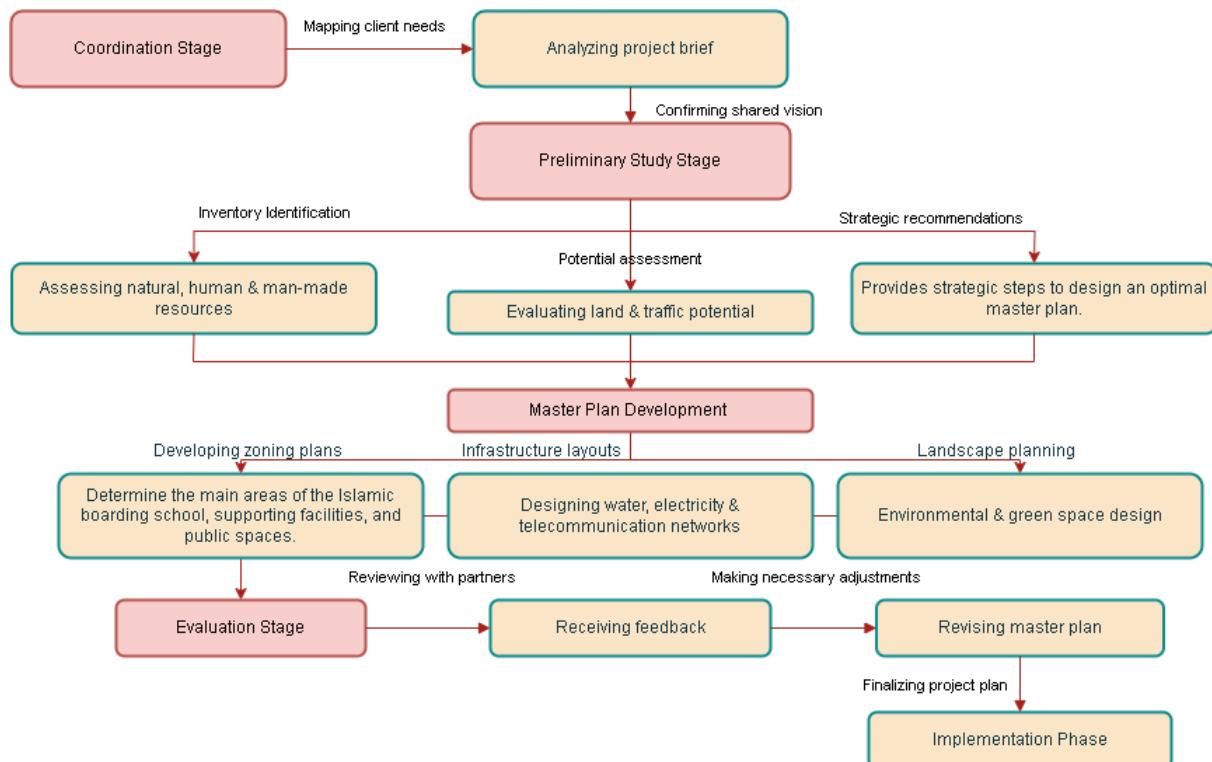
1. Preliminary Investigation: This means holding conversations and getting feedback from school ministries, teachers, and stakeholders to understand their specific needs (Lestari, n.d.)
2. Site Assessment: Touring the school's location in Bulukerto, Batu City to absorb the natural environment, evaluate existing infrastructure conditions and spaces for potential expansion.
3. Design Development: The master plan of the school consisting of all the necessary facilities required for the community with considerations approved the design maintaining sustainability while complying with the values of Islam (Alexander\_A\_Pattern\_Language, n.d.)
4. Iterative Process: Sharing the master plan with key stakeholders and revising it as needed based on comments/feedback, leading to finalization of the best design for implementation (Rapoport, n.d.).

This comprehensive plan will enable Ar-Razi School to serve as a leading Islamic education provider globally, specializing in tahfidz and preparing students for the challenges of the world with confidence, wisdom, and Islamic values.

## METHOD

This community service project was conducted over a period spanning from May 1st to July 5th, 2024. The main objective was to collaboratively design a master plan for the Ar-Razi Islamic Boarding School in Bulukerto Village, Batu City, through a participatory and contextual architectural approach (Zainal Maliki & Alim Saputra, n.d.). The process involved several structured stages, which are visually outlined in the activity timeline table. These stages began with initial coordination meetings with local stakeholders, followed by a Focus Group Discussion (FGD) to identify space requirements and development priorities (Anisa Octaningrum et al., 2024). The team then conducted a site survey, including land measurements and facility mapping, which informed the conceptual design and circulation planning (Mukhamad et al., n.d.). As the design progressed, massing studies and zoning strategies were refined using modeling software, while continuous feedback sessions ensured alignment with the community's vision. The process culminated in a final design review meeting and completion of the project documentation. This timeline-

based method ensured that the entire process was inclusive, well-coordinated, and responsive to the actual needs of the pesantren and its stakeholders. The implementation of this community service project will be divided into four (4) stages:



**FIGURE 1.** Implementation Process Flowchart of the Ar-Razi School Project

1. Coordination Stage: Initial coordination with Ar-Razi School to identify client needs and align on a shared vision. Discussions included the number of buildings, supporting facilities, and site conditions. The outcome was a clear project framework and mutual understanding.
2. Preliminary Study Stage: Site surveys and data analysis were conducted to understand land potential and constraints. This phase included inventory identification, environmental and traffic assessments, and development recommendations to inform zoning and design decisions.
3. Master Plan Development Stage: A comprehensive master plan was designed, including zoning for learning, worship, and activity areas, as well as infrastructure planning (utilities, roads, landscape) (Lestari, n.d.).
4. Evaluation Stage: The proposed master plan was reviewed with stakeholders. Feedback was incorporated to finalize the design, ensuring it meets all functional, spatial, and community needs.

## RESULTS AND DISCUSSION

### Socialization of the Pesantren Development

The socialization was held in the pesantren location with a total meeting of six meetings. The process began with consultations with community members and the pesantren owner to ensure that the community was involved in and supported the entire development process. Focus Group Discussion (FGD) was also held with village device, local community, and owner of pesantren to find out facilities and infrastructure that needed to plan. Next, site survey, topographic survey and existing facilities mapping were performed.



**FIGURE 2.** Focus Group Discussion (FGD) and Site Survey for Identifying Development Needs of Ar-Razi Pesantren  
(Source: Activity Documentation, 2024)

The Focus Group Discussion (FGD) was conducted as a crucial step in gathering insights and aspirations for the development of the pesantren. The session aimed to align the vision and goals of the project with the expectations of key stakeholders, ensuring that the new facilities would effectively support the pesantren's educational and religious activities.

### Objectives of the FGD:

**Defining the Development Direction** – Discussing the overall vision and long-term goals for the pesantren's growth

**Identifying Stakeholder Needs** – Understanding the specific requirements of different groups, including teachers, students, and administrators

**Space Planning and Functionality** – Determining the spatial arrangement and zoning of different functional areas.

**Facility Requirements** – Outlining essential facilities that need to be incorporated into the master plan

**FIGURE 3.** Focus Group Discussion (FGD) on Pesantren Development Planning (Source: Analisys)

## Key Stakeholders Involved

**Pesantren Owner and Administrators** – Provided insights into the operational needs and future expansion plans.

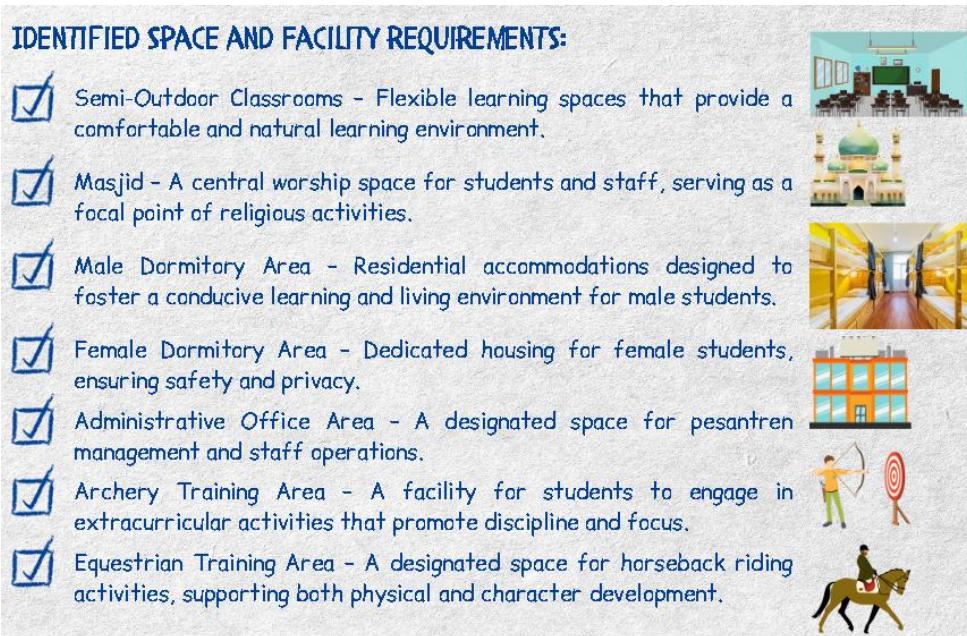
**Village Officials** – Ensured that the development aligns with local regulations and community needs.

**Local Residents** – Shared perspectives on how the pesantren's growth might impact the surrounding environment

**Architects and Designers** – Evaluated design feasibility and spatial planning strategies.

**FIGURE 4.** Stakeholder Roles and Contributions in Pesantren Development (Source: Analisys)

Through the FGD, several key areas and facilities were determined to be essential for the pesantren's development:



**FIGURE 5.** Essential Space and Facility Requirements for Pesantren Development

Following the FGD, a site survey was conducted to assess the land conditions, measure available space, and map existing facilities. These findings would serve as the foundation for the master plan, ensuring that the final design effectively accommodates all identified needs while maintaining harmony with the surrounding environment.

## Project Location Description

This community engagement project is based in Jalan Kenanga No. 300, Bulukerto, Bumiaji, Kota Batu. Currently, the site is home to an existing educational facility, the Ar-Razi School, and this program includes three principal building masses. Of these, two buildings are each about 300 m<sup>2</sup> and one building is about 200 m<sup>2</sup>. These buildings are resting on a 2,800 m<sup>2</sup> plot of land for future development and expansion.

The environment is peaceful, quite cool, with nice air, so it is very suited for an institution, especially one that has a combination of learning, academic, and religious education. The area is well-served by transport links making the movement of students, teachers and staff easy. Whether some infrastructural updates would be necessary is yet unclear but it might be needed to ensure the school's long-term vision and operational needs (Febriani et al., 2024).

With these conditions in mind, the project is to evaluate, design, and improve the seniors existing facilities to better suit the growing student population and the goals of the education. Bringing together all ends of the spectrum through extensive coordination, site analysis, and master planning, the development initiative will center around optimized layouts, accessibility, and supporting infrastructure all while maintaining synergies with the surrounding environment.



**FIGURE 6.** Site Location Plan of Ar-Razi School Development Project

## Site Zoning Concept

The initial planning phase was carried out by adjusting the zoning layout according to the partner's vision and requirements. The zoning concept divides the pesantren area into three main functional zones:

### 1. Learning Zone

This zone includes educational spaces where students engage in academic and religious studies. It consists of:

- Semi-Outdoor Classrooms – Designed to provide a flexible and comfortable learning environment that integrates natural elements.
- Male Dormitory (Pondok Putra) – A dedicated living space for male students to support their daily educational and spiritual activities.
- Female Dormitory (Pondok Putri) – A separate residential area for female students, ensuring privacy and safety.

### 2. Worship Zone

Serving as the spiritual core of the pesantren, this zone features:

- Masjid – Positioned centrally within the site to act as a unifying element for both students and staff. It serves as a place for prayers, religious discussions, and communal gatherings.

### 3. Sports and Extracurricular Zone

Supporting physical activities and skill development, this zone includes:

- Archery Training Area – A designated space for students to practice archery, promoting discipline and concentration.
- Equestrian Training Area – A facility for horseback riding, fostering character development and physical fitness.

Each zone is strategically positioned to ensure efficient movement within the pesantren while maintaining a balanced environment that supports both academic and extracurricular activities. The masjid is centrally placed as a boundary between the male and female dormitories, reinforcing its role as the spiritual heart of the pesantren (Febriani et al., 2024).



**FIGURE 7.** Site Zoning Concept

### Ar-Razi School Design

The initial planning phase was carried out by adjusting the zoning layout according to the partner's vision and requirements. The zoning concept divides the pesantren area into three main functional zones:



**FIGURE 8.** Zoning Design Concept



**FIGURE 9.** Masterplan Design Concept



**FIGURE 10.** Orthogonal View



**FIGURE 11.** Office Ar-Razy School



**FIGURE 12.** Male and Female Dormitory

## Architectural Design Concept

The architectural design of Ar-Razi School portrays a modern approach while still reflecting Islamic values. The visual representation showcases monumental, clean, and symmetrical architecture. The dominant use of white and light blue creates a calm and spiritual atmosphere, offering a sense of professionalism and warmth (Hendro Abdul Rasyid et al., n.d.).

### Key Design Elements Include:

- Symmetrical façade: Representing balance and order, in line with the harmony encouraged in both Islamic teachings and educational spaces.
- Curved elements and tall columns: Convey a sense of grandeur and elegance, referencing traditional Islamic architecture with a modern interpretation.
- Minimal ornamentation: Prioritizing functionality while maintaining visual appeal through subtle decorative touches.

### **Functional Concept and Zoning**

- The building layout emphasizes clear zoning based on activities and gender:
- The administrative office (Figure 11) is placed at the front for accessibility and functions as the management hub of the pesantren.
- Male and female dormitories (Figure 12) are placed apart from one another, with the mosque centrally located as a spiritual and spatial divider.
- Outdoor areas are carefully designed with structured circulation paths and greenery to support comfort and tranquility for learning.

### **Design Rationale**

- Representation of Islamic Identity: The use of blue and white symbolizes peace, faith, and purity—values deeply rooted in Islamic education.
- Visual and Psychological Comfort: The forms, colors, and spatial arrangement aim to create a pleasant, inspiring environment that nurtures both academic and spiritual growth.
- Accessibility and Safety: The design ensures proper separation between public and private areas, as well as between male and female facilities, supporting a secure and respectful atmosphere.

This design goes beyond mere functionality; it represents Ar-Razi School's vision of building a holistic educational environment that nurtures knowledge, character, and integrity through an organized, beautiful, and purpose-driven space.

## **CONCLUSION**

The Ar-Razi School boarding facility design-based community service project met an educational institution's need for a holistic development plan in the alignment of its Islamic educational values and functional requirements. Using a collaborative and participatory approach which included coordination meetings, focus group discussions, site reconnaissance to confirm observations, and design evaluations, the project team established the primary spatial needs, translated those needs into appropriate zoning strategies, and ultimately developed a master plan to accommodate the pesantren's future growth.

The developed design consists of semi-outdoor classrooms, dormitories for male and female students, an administration office, central mosque and extra-curricular spaces such as archery and horseback riding. Each space was intentionally designed to encourage spiritual, academic, and personal growth and was sensitive to the local context, environmental conditions, and community input.

In summary, this project illustrates the potential that architectural design has as an empowering tool and how it can engage designers, education institutions, and local communities in producing spaces that are not only functional and aesthetic but responsive in their cultural and social contexts.

## **ACKNOWLEDGMENTS**

The design team extends heartfelt thanks to all those who contributed to the successful completion of this community service project held at Ar-Razi School. A special gratitude goes to the owner and administrators of Ar-Razi School for their trust, engagement, and input. We are also grateful to the village officials and local residents for their involvement in discussions and focus group activities that led to us understanding the community's aspirations and contextual needs. Our academic advisors and colleagues also deserve thanks for their support, feedback, and encouragement throughout the planning and design phases.

The collaborative spirit and shared commitment of all stakeholders made this project possible. We expect this project would bring significant outcome, which could help to develop pesantren in the long term and give positive impacts surround community.

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