

Studio Apartment Interior Design with Urban Smart Living Concept: Space Optimization Strategies

Indy Rafia^{1,*}, Dian Muhammad Rifai²

Universitas Sahid Surakarta, Jl. Adi Sucipto No.154, Jajar, Kec. Laweyan, Kota Surakarta, Jawa Tengah 57144

¹indy.rafia@usahidsolo.ac.id; ²dianrifai@usahidsolo.ac.id

* Corresponding Author



Received 25 February 2025; accepted 8 May 2025; published 19 June 2025

ABSTRACT

Solo has been officially recognized as a "Student City," home to numerous state and private universities that continue to draw students from across the region. This growing student population has traditionally relied on boarding houses for accommodation, but middle- to upper-income parents have increasingly begun treating student housing as a long-term investment rather than a recurring expense. Solo Urbana Residence, a newly built low-rise apartment complex oriented around the urban smart living concept, responds directly to this shift, with its studio-type unit—at only 18 m²—proving the most sought-after among prospective residents. This limited footprint places considerable pressure on the interior design process, which must accommodate a student's full range of daily needs, from sleeping and storage to study and cooking, within a single compact space. This study documents the interior design process developed for the Solo Urbana Residence studio-type unit, structured across four stages: observation, design development, production, and installation. Field observation data directly informed the design process, beginning with spatial layout planning and 3D visualization under a modern minimalist concept that prioritizes function while minimizing unnecessary form. Following client approval, the design proceeded to production and on-site installation. The resulting design demonstrates a replicable approach to optimizing compact living spaces for student residents in high-density urban housing.

KEYWORDS

Studio apartment
Interior design
Space optimization
Urban smart living
Modern minimalism

This is an open-access article under the [CC-BY-SA](#) license



1. Introduction

Solo has been officially recognized as the "Student City," or City of Intellectuals—a designation the city government attributes directly to its growing concentration of state and private universities. As these institutions have expanded, they have drawn an increasing number of students from other regions to Solo to pursue their education, and with them comes a fundamental need: a place to live. Historically, the default answer to this need has been the boarding house, available across a wide spectrum from economical to exclusive, priced according to the facilities on offer. More recently, however, middle- to upper-income parents have begun reconsidering this default, increasingly treating student housing as a long-term investment rather than a recurring monthly expense.

This shift in thinking has direct market consequences. Exclusive boarding houses in Solo currently start from around IDR 900,000 per month—a price point that, reframed as an investment rather than rent, becomes comparable to financing a property purchase. Solo Urbana Residence, a newly developed apartment complex in Gulon Hamlet, Plesungan Village, Gondangrejo District, Karanganyar Regency, was built in direct response to this shift. It is currently the only apartment project in the Solo area developed around a regional, low-rise concept oriented toward urban smart living. Spanning 1.6 hectares across four towers of seven to twelve floors, the development comprises 1,000 residential units supported by amenities tailored to student life—a 3-on-3 basketball court, swimming pool, jogging track, laundry facilities, minimarket, coffee shop, canteen, restaurant, ATM, and a meeting-point garden, among others. Units are offered in three types—Studio (18 m²), Studio Plus (24 m²), and One Bedroom (30 m²)—starting from IDR 400 million including tax.

Among these unit types, the standard Studio has proven the most popular, which places the interior design process under considerable pressure: at only 18 m², the space must still accommodate the full range of a resident's daily needs. For student residents specifically, this means fitting a bed, storage, a study desk, a bookcase, and a kitchen set into a single compact footprint—while still meeting each client's individual preferences, which inevitably vary from one resident to the next. It is precisely this tension, between limited square footage and the full scope of daily living requirements, that makes deliberate interior design essential rather than optional, and it is this challenge that defines the role of the interior designer within this project.

2. Method

Interior design is the process of arranging and composing interior elements into a single, interrelated unit, producing a spatial layout that is both functionally correct and visually coherent (Suptandar 1999, 9). Guided by this definition, the design process for this project was directed toward three core aims: establishing an atmosphere that feels intimate and consistent with its surrounding environment, ensuring that the space adequately provides for its occupants' needs, and maintaining a considered relationship between the environment and its aesthetic elements. In practice, these aims were pursued through the interaction of several parties whose input shapes the resulting design—the client, users, architect, engineer, psychologist, contractor or financier, manufacturer, and designer—each contributing a different perspective to how the design problem is defined and resolved (Figure 1).

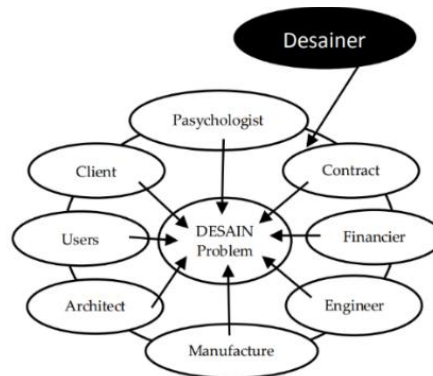


Fig. 1. Parties involved in shaping the interior design problem.

Source: Suptandar 1999.

This process is shaped by a combination of internal, external, and regulatory factors. Internal factors include the function and form of the space, its capacity and required facilities, and how it is spatially organized. External factors include the influence of surrounding environmental activity, the design's intended level of achievement, and the building's orientation. A further set of factors—building regulations and the surrounding environmental structure—sits outside both categories but still shapes what the design can ultimately accommodate. Working through these factors follows two broad analytical stages: programming, in which non-physical data, physical data, literature, and other relevant information are systematically collected; and synthesis, in which this data is translated into a design solution, tested against alternatives, and refined into the strongest option. This two-stage structure is reflected in an eight-step design process model—commit, state, collect, and analyze under the analysis stage, followed by ideate, choose, implement, and evaluate under the synthesis stage—with feedback loops connecting each step back to earlier stages as the design is refined (Figure 2) (Rosemary 1992).

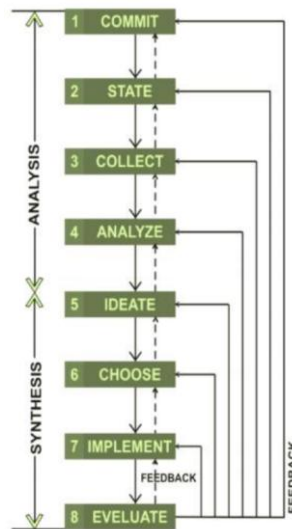


Fig. 2. Eight-step interior design process model, structured across analysis and synthesis stages.

Source: Rosemary 1992.

Because the design process that unfolds in practice rarely follows interior design theory as systematically as this model suggests, this eight-step structure was simplified into four practical stages for the Solo Urbana Residence studio-type project: observation, combining the commit, state, collect, and analyze steps into a single fact-finding phase grounded in field data; design development, combining ideate, choose, implement, and evaluate into the process of generating, selecting, and refining design alternatives into 2D and 3D form; production, in which the approved design is fabricated; and installation, in which the completed design is fitted on site. This four-stage structure—observation, design development, production, and installation—forms the operational method used throughout the remainder of this study.

3. Results and Discussion

The interior redesign was carried out for a single unit at Solo Urbana Residence—studio room unit A2-0206. Work began with field observation to establish the room's existing shape and dimensions through direct measurement and photographic documentation (Figure 3), followed by a consultation session in which the client's spatial needs, preferred concept, and expectations for overall harmony were discussed and confirmed. This process identified six core activities the unit needed to support—resting, studying, watching television, storing clothes, cooking, and bathing—each mapped to a corresponding furniture requirement: a bed, a study table and bookshelf, a TV backdrop, a wardrobe, a kitchen set, and a toilet (Table 1).



Fig. 3. Existing condition of studio room unit A2-0206 prior to redesign.

Source: Rafia 2023.

Table 1. Occupant activities mapped to corresponding room needs.

No.	Activities	Needs
1.	Rest (Sleep)	Bed
2.	Studying	Study Table and Bookshelf
3.	Watching a Television	TV Backdrop
4.	Keeping clothes	Cupboard
5.	Cooking	Kitchen set
6.	Taking a shower and defecate	Toilet

Source: Rafia, 2023

Solo Urbana Residence is built around an urban smart living concept—an approach grounded in efficiency, practicality, and comfort—for which a modern minimalist interior style was judged the most fitting match. Modern style prioritizes clean, functional forms suited to a fast-paced, quality-driven contemporary lifestyle (Tunjung 2007, 307), while minimalist style works by maximizing spatial efficiency, organizing a room strictly around functional need rather than excess form (Wahjutami 2017, 24). Combined, modern minimalism is defined by four characteristics applied throughout this design: geometric lines that keep the interior visually engaging through the shape of the room, furniture, and applied patterns; a restrained furniture selection limited to essential pieces; a monochrome, neutral color palette that keeps the space visually calm and simple; and a consistent prioritization of function over unnecessary ornamental form. This style suits a compact unit particularly well, since its central objective—optimizing limited space around function—directly addresses the spatial constraint at the center of this project.

Working from measured room dimensions, the design process began with a working layout (Figure 4) positioning five furniture zones—bed (A), table and shelving (B), TV backdrop (C), wardrobe (D), and kitchen set (E)—before developing the layout into full 3D visualizations (Figure 5). The finished palette uses neutral tones—gray, cream, and white—selected for their established influence on mood, focus, and perceived spaciousness: brighter tones reflect more light than dark tones absorb, reducing the practical lighting demands of a small room while contributing to the calm, cohesive atmosphere associated with the wider modern minimalist concept (Paksi 2021, 93).

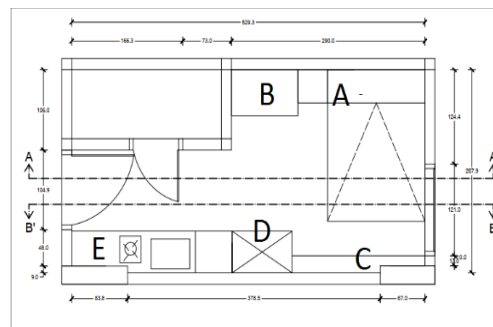


Fig. 4. Working layout of studio room unit A2-0206, showing furniture zones: bed (A), table and shelving (B), TV backdrop (C), wardrobe (D), and kitchen set (E).

Source: Rafia 2023.

Table 2. Furniture code legend corresponding to Figure 4.

Code	Furniture
A	Bed
B	Table and Shelves
C	TV Backdrop
D	Cupboard
E	Kitchen Set

Source: Rafia, 2023



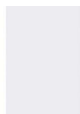
Fig. 5. Figure 5. 3D visualization of the finished studio room interior.

Source: Rafia 2023.

The design was then developed across the room's three space-forming elements. The existing cream ceramic flooring, installed by the apartment's contractor, was retained as-is, since its tone already aligned with the modern minimalist concept (Ching 2003, 162). The walls, originally finished only in plain white paint, were updated with light brown vinyl wallpaper behind the bedhead and TV backdrop—a affordable, durable choice selected to visually warm the room, increase its apparent height, and blend unobtrusively with the surrounding furniture through a restrained, minimalist pattern. The ceiling, a cast finish typical of the unit's position on the second floor of a multi-story tower, was likewise retained without modification, as it already suited the space's functional and conceptual needs.

Furniture pieces were then developed to fill the space. The bed uses a foam mattress in a sliding configuration—a 120×200 cm top mattress paired with a 100×200 cm lower slide-out mattress—allowing the sleeping area to expand for guests without permanently occupying floor space; the bed frame itself is built from MDF finished in HPL, drawing on four HPL variants used consistently across the room's furniture (Table 3). The study table and adjoining bookshelf were sized to the width of the bathroom wall (106×50×75 cm and 106×30×50 cm respectively), fitted with a 10 cm storage drawer and a wall-mounted mirror that doubles the desk as a vanity, paired with a foam-seated chair. The TV backdrop, kept deliberately free of unnecessary ornamentation, incorporates shelving along its base and side for accessories and books, with the wardrobe positioned adjacent to it (90×55×220 cm); the wardrobe uses sliding doors with an integrated mirror to minimize the space required for opening. The kitchen set, positioned at the end of the room facing the bathroom, houses a mini refrigerator, sink, and dish rack beneath a white granite countertop, with ceramic wall cladding chosen for ease of cleaning.

Table 3. HPL finish variants used across the room's furniture

HPL	Merk dan Tipe
	Taco TH 002 G
	Taco TH 022 G
	Carta CT 8001 G
	Carta CT 8003 G

Source: Rafia, 2023

Once the finished 3D design was approved by the client, working drawings were released to production alongside a formal price offer covering furniture and supporting fixtures—including

electronics, window treatments, and bathroom fittings—priced individually and totaling Rp 30,035,000. Production was completed within one to two weeks (Figure 6).



Fig. 6. Furniture production process.
Source: Rafia 2023.

Installation followed as the final stage, requiring precision fitting of each furniture piece alongside the wallpaper, lighting, and air conditioning, and completed within one to two days including final finishing and cleaning checks (Figure 7). The completed installation shows the sliding mattress and MDF bedhead—finished with a sponge and fabric layer for comfortable use—alongside the newly added wallpaper, with the adjacent window continuing to provide natural light and ventilation (Figure 8). The study table and shelving were installed as designed (Figure 9), as were the kitchen set, wardrobe, and TV backdrop, completing the unit's furnished layout (Figure 10).



Fig. 7. Furniture and fixture installation process.
Source: Rafia 2023.



Fig. 8. Completed bed installation.
Source: Rafia 2023



Fig. 9. Completed study table and shelving installation.
Source: Rafia 2023

4. Conclusion

Solo Urbana Residence remains the only apartment development in Solo built explicitly around the urban smart living concept, prioritizing practicality, efficiency, and comfort in its design approach. For students whose parents are increasingly inclined toward long-term investment rather than recurring rental costs, the apartment offers a viable alternative to conventional boarding houses, with the added benefit of reduced day-to-day living expenses in the city. Among its unit types, the studio—the most sought-after by student residents—became the focus of this design work, for which a modern minimalist interior style proved particularly well suited: by prioritizing function without sacrificing aesthetic or ergonomic quality, this style allowed the compact unit to achieve genuinely optimized space management rather than a merely reduced version of a larger apartment layout.

The completed design addressed the unit's main living space only, excluding the bathroom, and furnished it according to needs identified through field observation and client consultation—a bed, study table, bookshelf, TV backdrop, wardrobe, and kitchen set—built primarily from MDF with HPL finishing in a white, gray, and cream palette consistent with the modern minimalist concept established earlier in this study. Natural ventilation and daylight enter through the unit's window, supplemented by central air conditioning and layered artificial lighting, including hidden lamps at the bedhead, TV backdrop, and kitchen set that reinforce both the room's warmth and its overall aesthetic cohesion. With a total furnishing cost of approximately IDR 30,000,000, this design demonstrates that a fully realized modern

minimalist studio interior is achievable within Solo Urbana Residence's urban smart living concept, offering a replicable reference point for similarly compact residential units.

Reference

- Atmadi, Tanjung, SP. (2007). Kajian Desain Interior Kantor PT. Pupuk Sriwidjaja Dengan Konsep Modern Minimalis. Fakultas Desain dan Seni Kreatif, Universitas Mercu Buana Jakarta. 4 (3), 307.
- Dedih Nur, FP. (2021). Warna dalam Dunia Visual. Fakultas Film dan Televisi, Institut Kesenian Jakarta. 93.
- Erlina, LW. (2017). Kesenjangan Konsep dan Penerapan Gaya Modern Minimalis pada Bangunan Rumah Tinggal. Mintakat. 1 (1), 24.
- Karlen, Mark, and James Benya. 2010. *Lighting Design Basics*. 3rd ed. Hoboken: Wiley.
- Lawson, Bryan. 2001. *The Language of Space*. Oxford: Architectural Press.
- Le Corbusier. 2007. *Towards a New Architecture*. Los Angeles: Getty Research Institute.
- Paksi, Dedih Nur Farhan. 2021. "Warna dalam Dunia Visual." *Jurnal Seni dan Reka Rancang* 3 (2): 90–99.
- Schittich, Christian, ed. 2012. *Small Apartments*. Munich: Detail Architecture.
- Wahjutami, Erlina Laksmi. 2017. "Kesenjangan Konsep dan Penerapan Gaya Modern Minimalis pada Bangunan Rumah Tinggal." *Mintakat: Jurnal Arsitektur* 18 (1): 20–28.
- Ballast, David Kent. 2013. *Interior Design Reference Manual*. 6th ed. Belmont: Professional Publications, Inc.
- Brooker, Graeme, and Sally Stone. 2018. *From Organization to Decoration: An Interiors Reader*. New York: Routledge.
- Francis, DKC. (2003) *Interior Design Illustrated*. New York : Van Nostrand Reinhold Company.
- Pamudji, S. (1999). Desain Interior. Jakarta : Djambatan.
- Panero, Julius, and Martin Zelnik. 1979. *Human Dimension and Interior Space: A Source Book of Design Reference Standards*. New York: Watson-Guption.
- Pile, John F., and Judith Gura. 2014. *A History of Interior Design*. 4th ed. Hoboken: Wiley.
- Rosemary, K. (1992) *Designing Interiors*. California: Wadsworth Publishing Company.
- 7 Jenis Kasur Terlengkap agar Tidur Lebih Nyaman. Diakses pada 8 Maret 2023 dari <https://www.ruparupa.com/blog/jenis-kasur-lengkap-agar-tidur-lebih-nyaman/>
- 8 Jenis Lantai Rumah Terbaik dengan Kualitas Mumpuni Tahun 2023. Diakses pada 8 Maret 2023 dari <https://berita.99.co/jenis-lantai-rumah/>
- Apa itu Kayu MDF? Diakses pada 8 Maret 2023 dari <https://www.dekoruma.com/artikel/76114/apa-itu-kayu-mdf>