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Application Of Spatial Organization In The Planning Of A Foreign Language Education Institution In Samarinda City

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ABSTRACT

The advancement of globalization has increased the demand for foreign language proficiency as part of improving human resource quality. This condition requires the provision of foreign language education facilities that are not only functionally adequate but also capable of supporting optimal learning processes through proper spatial organization. In Samarinda, the planning of foreign language education institutions still faces challenges, particularly in spatial organization that has not fully accommodated user activities in an effective, efficient, and structured manner. This study aims to formulate the application of spatial organization in planning a foreign language education institution to create well-organized spatial relationships that support learning activities. The research employs a qualitative approach with a descriptive-analytical method through literature studies and spatial requirement analysis. The analysis stages include identifying spatial functions, examining spatial relationships based on activity proximity and circulation patterns, and determining appropriate spatial organization patterns according to activity characteristics. The results indicate that the implementation of function-based zoning, by grouping spaces into public, semi-public, and private zones, along with the application of cluster and linear organizational patterns, improves circulation efficiency and activity order. Furthermore, the structured integration of learning spaces, supporting facilities, and social interaction areas creates a communicative, adaptive, and user-oriented learning environment.

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1. INTRODUCTION

The advancement of globalization requires an improvement in foreign language proficiency as one of the competencies supporting the competitiveness of human resources. Language serves as a communication tool that enables interaction across various fields at the local, national, and international scale (Ikraam, 2018). Foreign language education requires a learning environment capable of supporting interaction, concentration, and flexibility of user activity. The quality of learning space is known to influence the effectiveness of the learning process and user experience within educational buildings (Kwee & Gandha, 2020). Samarinda, as a center of education and economic activity in East Kalimantan, has considerable potential demand for adequate foreign language education facilities. However, the provision of such facilities is often not matched by optimal spatial planning, so that learning activities cannot take place effectively and in a structured manner.

A number of previous studies show that spatial organization has a significant influence on the quality of building function. Research by Sihombing (2021) explains that spatial patterns are formed based on functional proximity and activity flow, so that the compatibility between spatial function and user activity becomes a key factor in creating an efficient spatial arrangement. Grouping spaces by functional proximity is also consistent with the concept of a learning environment that places activity relationships as the basis for forming an educational spatial organization (Gislason, 2010). Meanwhile, Ikraam (2018) emphasizes that function- and zoning-based spatial arrangement can create activity order and improve the effectiveness of space use. In addition, the importance of providing adequate education facilities as a vehicle for improving the quality of human resources is also emphasized by Madina et al. (2020). The provision of discussion rooms and informal learning spaces can increase the flexibility of foreign language learning processes (F. Adji & Ramadhanti, 2023).

Spatial organization as a determining factor of architectural quality continues to be reaffirmed by recent studies focusing on institutional and educational buildings. Olurotimi, Yetunde, and Akah (2023) assessed different spatial organizational systems in schools of architecture and found that appropriate spatial configuration directly improves circulation performance and the functional promotion of component spaces. Space syntax analyses of traditional academic institutions, such as the study of the Xiangxi academies by Yang, Lin, and Lu (2025), similarly demonstrate that the spatial-cultural relationships embedded in a building's layout shape how effectively spaces support teaching and learning functions. At the scale of individual buildings, Permana, Permana, and Andriyana (2020) applied space syntax analysis to office design in Indonesia and confirmed that the quality of spatial connectivity strongly determines how efficiently a building's configuration can be used, an insight equally relevant to the planning of an educational institution.

Because spatial organization cannot function properly without a clear circulation system, several studies have specifically examined how circulation typology affects building performance. Natapov, Kuliga, Dalton, and Hölscher (2019) showed that different circulation typologies produce measurably different levels of wayfinding difficulty, underlining the need to design circulation as a deliberate spatial strategy rather than a residual outcome of room arrangement. In the Indonesian context, Minggra (2020) examined identity signage as part of a wayfinding system and found that clear spatial markers strengthen users' orientation within a complex of buildings. Consistent with this, Akubue (2022) used space syntax theory to analyze circulation efficiency and flow patterns, concluding that well-structured circulation reduces congestion and supports more effective movement between functional zones, a principle directly applicable to the linear and cluster circulation patterns examined in the present study.

Beyond circulation, zoning also shapes a building's identity and its relationship with its users. Ischak, Setioko, and Gandarum (2018) found that place identity contributes to community resilience by strengthening users' sense of belonging to a space, while Jabłońska, Telesińska, Adamska, and Gronostajska (2022) demonstrated that the architectural typology of a building's façade communicates institutional character without compromising functional performance. These findings support the view that zoning and organizational pattern decisions are not purely technical matters but also contribute to the visual and experiential identity of an educational institution, a theme discussed further in relation to the façade and interior approach adopted in this study.

The quality of the learning environment itself has also received growing research attention. Closs, Mahat, and Imms (2022) found that the physical learning environment significantly influences students' overall learning experience, while Li and Xue (2023), in a meta-analysis of student engagement, confirmed a dynamic interaction between learning behavior and the learning environment. Flexibility has emerged as a particularly important design variable: Santandreu Calonge, Thompson, Hassock, and Yaqub (2023) documented how iteratively designed flexible learning spaces can accommodate diverse teaching formats, while Putri (2022), in a study of a college of the arts, showed that behavioral architecture principles can be used to design spaces that respond to users' spatial behavior. These studies collectively support the emphasis of the present study on structuring learning spaces, support facilities, and informal interaction areas as an integrated system.

Environmental comfort factors are increasingly recognized as inseparable from spatial organization. Kapoor et al. (2021), in a systematic review of indoor environmental quality in naturally ventilated school classrooms, emphasized that lighting, ventilation, and acoustic comfort directly affect the usability of learning spaces. In the Indonesian context, Kencanasari, Surahman, Asep, and Nugraha (2020) examined indoor air quality in dense urban settlements, while Handika and Utami (2023) found that the treatment of an inner court can significantly improve natural lighting performance in an educational building at Universitas Pendidikan Indonesia. Related to this, Muhajjalín (2020) examined the application of green architecture concepts in a museum building, illustrating how sustainability principles can be integrated into public and educational facilities. These studies indicate that comfort and sustainability considerations should be treated as part of, rather than separate from, spatial organization strategy.

Studies of spatial organization in other building typologies further reinforce these principles. Permana (2022) measured the performance of a student housing apartment in an education-oriented area and found that satisfaction was closely tied to the clarity of spatial zoning and circulation, while Pynkyawati, Anggriaty, Fransiska, and Artamevia (2022) examined spatial comfort in relation to interior spatial arrangement in a public building, showing that the internal ordering of space affects user comfort regardless of building function. These cross-typological findings suggest that the zoning, relationship, and circulation principles applied in the present study are broadly transferable, while still requiring context-specific adaptation for a foreign language education institution.

Spatial organization is a method of arranging the relationships between spaces based on function, activity, level of accessibility, and user movement patterns. According to Ching (2015), spatial organization plays a role in creating orderly relationships between spaces so that activities can take place effectively and efficiently. In educational buildings, spatial organization is an important aspect influencing the quality of the learning environment because it structures the relationships between learning spaces, support spaces, and service spaces, as summarized in Table 1.

Table 1. Indicators of Spatial Organization

No.	Indicator	Description
1.	Zoning	Division of space based on function and level of access
2.	Spatial Relationship	Proximity between spaces based on activity
3.	Circulation	User movement pattern
4.	Spatial Hierarchy	Level of spatial accessibility
5.	Spatial Organization Pattern	Linear and cluster
6.	Transition Zoning	Transition area between space groups

Source: Ching, 2015 (processed by the authors)

Based on these indicators, this study focuses its assessment on the aspects of spatial zoning, spatial relationships, circulation, spatial organization patterns, and transition zoning as the basis for planning a foreign language education institution.

Although prior studies, including those reviewed above, have examined function and spatial organization in residential, government, office, and educational buildings in general, research that specifically integrates the application of spatial organization into the planning of a foreign language education institution, particularly within the context of Samarinda, remains limited. Therefore, the novelty of this study lies in a planning approach that positions spatial organization as the primary strategy in designing a foreign language education institution capable of optimally accommodating learning activities.

Based on the above description, the problem addressed in this study is how spatial organization can be appropriately applied in planning a foreign language education institution in Samarinda so as to create spatial relationships that are effective, efficient, and responsive to user needs. Accordingly, this study aims to formulate a concept for the application of spatial organization capable of supporting language learning activities optimally through structured and integrated spatial arrangement.

2. RESEARCH METHOD

This study employs a qualitative approach with a descriptive-analytical method, aiming to examine the application of spatial organization in planning a foreign language education institution in Samarinda. This approach was chosen because it allows an in-depth description of the relationships between spatial function, user activity, and spatial organization patterns based on design conditions and requirements.

Data were collected from two types of sources: primary and secondary data. Primary data were obtained through observation of spatial and activity requirements in similar educational facilities, as well as an analysis of user characteristics. Secondary data were obtained through a literature study of journals and references related to spatial organization, spatial function, and educational facility planning, including prior studies such as those by Swandani et al. (2019), Sihombing (2021), Ikraam (2018), and Madina et al. (2020).

Data analysis was carried out in several stages. First, an analysis of spatial function was conducted to identify spatial requirements based on the types of user activity. Second, an analysis of spatial relationships examined the interconnection between spaces based on functional proximity and circulation flow. Third, an analysis of spatial organization aimed to determine the appropriate spatial arrangement pattern, such as centralized, linear, cluster, or a combination thereof, based on the character of activities within the language education institution. Fourth, a design synthesis produced the spatial organization concept as the basis for the design.

The results of the analysis were then translated into a structured and integrated spatial organization planning concept, capable of supporting the effectiveness of foreign language learning activities and improving the quality of space use within the building. The stages of the research can be seen in the following research flow diagram :



Figure 1. Research Method Diagram

Source: Authors' analysis, 2026

3. RESULT AND DISCUSSION

3.1 Spatial Requirement Analysis

A. Analysis of Spatial Requirements and Function

Based on the study's findings, spaces within the foreign language education institution can be classified into three main groups: learning spaces, support spaces, and service spaces. This classification aims to create activity order and minimize circulation conflicts between users.

Table 2. Classification of Spatial Function

No.	Space Group	Type of Space	Function
1.	Learning Space	Classrooms, language laboratories	Teaching and learning activities
2.	Support Space	Library, discussion room	Supporting learning activities
3.	Service Space	Administration, lobby	User services

Source: Survey, 2026

This functional division is consistent with the zoning concept that emphasizes spatial order based on activity, as explained in the design of educational facilities by (Ikraam, t.t. 2018).

B. Analysis of Spatial Relationships and Circulation

The relationships between spaces were designed based on the level of activity proximity and intensity of use. Learning spaces were placed adjacent to support spaces to facilitate the learning process, while service spaces were located in the front area as the public zone.

Table 3. Spatial Relationship and Circulation

Zone	Character	Spatial Relationship	Circulation Pattern
Public	High access	Lobby – administration	Linear
Semi-public	Limited access	Classroom – library	Cluster
Private	Limited access	Staff room	Separated

Source: Survey, 2026

This pattern shows that linear circulation is used for public spaces to ensure ease of access, while cluster patterns are used in learning spaces to create functional proximity. This is consistent with the concept that spatial organization is influenced by activity and the relationships between users (Swandani et al., 2019), a principle also reflected in Natapov et al.'s (2019) analysis of circulation typology and wayfinding difficulty.

C. Application of Spatial Organization Patterns

Research results indicate that a combination of *cluster* and *linear* spatial organization patterns is the most appropriate approach. The *cluster* pattern is used to group spaces with similar functions, while the *linear* pattern is used to clarify the main circulation flow. This approach enables the creation of spaces that are adaptive to changing needs, as dynamics in spatial function can occur due to changes in user activity (Swandani et al., 2019). Comparable adaptive configurations have also been documented in space syntax studies of institutional buildings, such as those on offices (Permana et al., 2020) and traditional academies (Yang et al., 2025), which similarly link configuration quality to functional performance.

D. Transition Zoning as a Connecting Area

Based on the results of the spatial relationship analysis, a transition area is required to connect groups of spaces with differing activity characteristics. This area is realized in the form of *transition zoning*, which functions as a connecting space between the public, semi-public, and private zones.

Transition zoning does not only function as a circulation pathway, but also as a pause space that helps users adapt when moving from one zone to another. The presence of this transition area improves spatial orientation legibility, reduces activity conflict, and creates a more comfortable and structured spatial experience for users, consistent with findings that clear spatial markers and transition cues strengthen user orientation within a building complex (Minggra, 2020).

In a foreign language education institution, *transition zoning* also has the potential to become an informal interaction space that supports the learning process outside the classroom. Thus, the transition area functions not only as a physical connector between spaces, but also as part of a spatial organization system that supports the effectiveness of user activity.

E. Research Findings and Design Implications

Based on the overall analysis, it was found that:

1. Zoning-based spatial organization improves the efficiency of user activity;
2. *Cluster* and *linear* spatial organization patterns create more effective spatial relationships;
3. *Transition zoning* serves as a connecting area that improves inter-spatial connectivity;
4. Good spatial relationships improve comfort and learning effectiveness;

5. Grouping spaces by function facilitates user orientation and movement within the building.

Thus, the application of spatial organization functions not only as a design strategy, but also as an approach to improving the overall quality of the learning space.

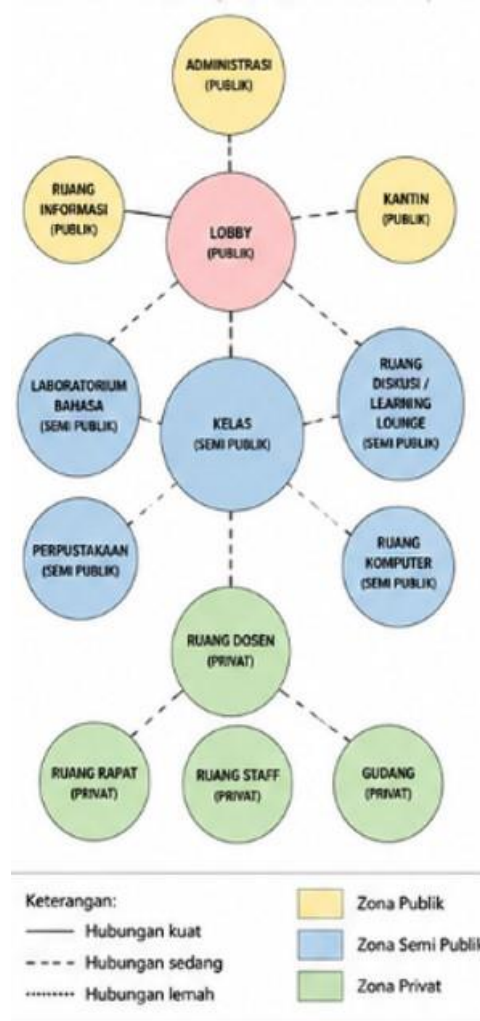


Figure 2. Bubble Diagram of Spatial Relationships

Source: Authors' analysis, 2026

The bubble diagram shows the relationships between space groups based on the level of functional proximity and the intensity of user activity. The learning space is positioned as the main activity center, having a direct relationship with support spaces such as the library and discussion room. Meanwhile, the service space is located in an easily accessible area to support user needs from the moment they enter the building. These relationships form the basis for the spatial organization used in the final design.

3.2 Effectiveness of Spatial Organization on User Activity

The application of spatial organization in the foreign language education institution was designed to create spatial relationships capable of supporting the effectiveness of user activity within the building. Spatial arrangement was carried out based on the level of need, intensity of activity, and functional relationships between spaces, resulting in a more structured and efficient activity flow. Good spatial organization not only facilitates user access, but also improves comfort and the quality of interaction during the learning process.

The analysis results show that the division of public, semi-public, and private zones provides clarity in spatial hierarchy for users. The public zone is placed at the front of the building to be easily accessible to visitors and general users. The semi-public zone is located in the central area as the center of learning activity, while the private zone is placed in a quieter area to support the activities of management and staff. This grouping helps reduce circulation conflicts between users and creates activity order within the building.

In addition, the application of the *cluster* organization pattern allows spaces with similar functions to be grouped together, facilitating learning activity relationships. Meanwhile, the *linear* pattern is used to clarify the main circulation direction of users from the entrance toward the learning space. The combination of these two patterns produces a movement flow that is easier to understand and more efficient. This is consistent with Sihombing (2021), who states that spatial organization is influenced by functional relationships and user activity patterns, and aligns with evidence that well-defined circulation typologies reduce wayfinding difficulty (Natapov et al., 2019; Akubue, 2022).

Table 4. Effect of Spatial Organization on User Activity

Aspect of Spatial Organization	Application in the Building	Impact on Users
Spatial zoning	Division into public, semi-public, private	Activity is more orderly
Cluster pattern	Grouping of learning spaces	Facilitates functional relationships
Linear pattern	Main building circulation	Clearer, more efficient access
Spatial relationship	Functional proximity between spaces	Reduces activity conflict
Spatial hierarchy	Differentiated levels of access	Improves user comfort

Source: Survey, 2026

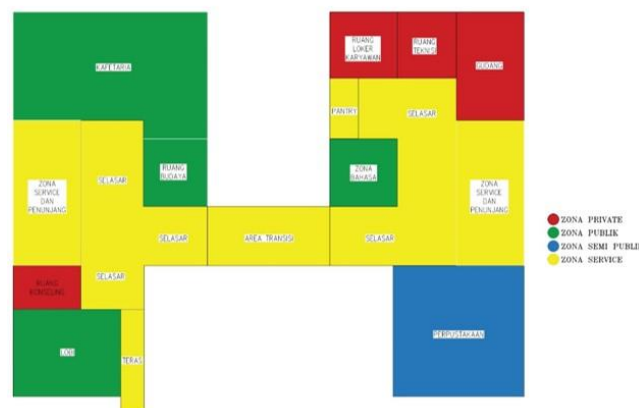


Figure 3. Ground Floor Zoning Block Plan

Source: Authors' analysis, 2026

Spatial organization on the ground floor is arranged based on a zoning division consisting of public, semi-public, private, and service zones according to the level of access and spatial function. Public zones such as the lobby, cafeteria, and cultural room are placed in areas easily reached by users, while the semi-public zone, comprising the library and language zone, functions as a support area for learning activities. The private zone, which includes the counseling room, staff locker room, technical room, and storage, is placed in an area with restricted access to maintain the security and comfort of management activities. All spaces are connected by corridors and transition areas that serve as links between zones, creating

directed circulation, clarifying user orientation, and supporting the effectiveness of activity within the building.

The lobby acts as the primary orientation point, while adjacent service spaces support administrative activities before users enter the main learning areas.

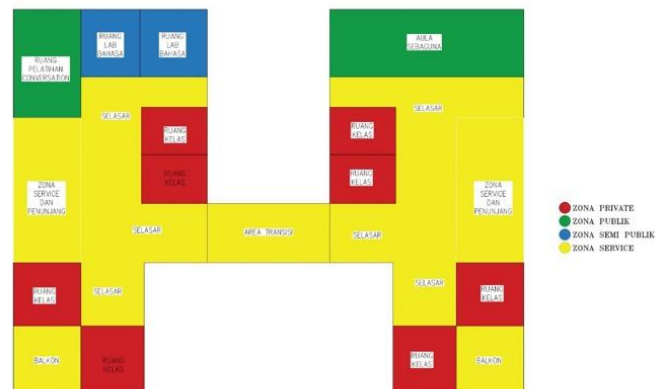


Figure 4. First Floor Zoning Block Plan

Source: Authors' analysis, 2026

Spatial organization on the first floor is dominated by learning functions arranged using a *cluster* pattern based on activity similarity. Classrooms, language laboratories, and conversation training rooms are grouped together to support the effectiveness of the teaching and learning process and to facilitate interaction between users. Zoning division is based on the level of access, with the learning space as the main zone supported by surrounding service and support zones. All spaces are connected through corridors and transition areas located at the center of the building, creating clear circulation, facilitating user orientation, and improving inter-spatial connectivity in support of foreign language education activities.

The cluster arrangement also encourages interaction between students and simplifies access to supporting learning facilities.

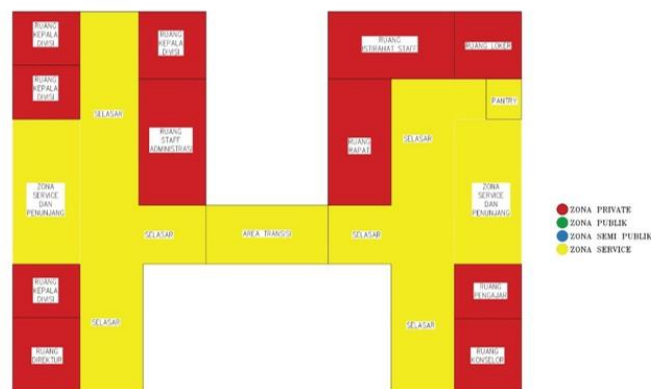


Figure 5. Second Floor Zoning Block Plan

Source: Authors' analysis, 2026

Spatial organization on the second floor is focused on supporting the management and administrative activities of the foreign language education institution through the grouping of workspaces with a higher level of privacy. The director's room, division head room, administrative staff room, meeting room, instructor room, counselor room, staff rest room, and locker room are placed within a single functional group to facilitate internal coordination

and communication. The zoning division is dominated by the private zone, supported by service and support zones, while corridors and transition areas serve as connectors between spaces, creating orderly circulation, clarifying user orientation, and improving the overall efficiency of building management activity.

The second floor accommodates management and supporting educational activities. Spaces are grouped according to operational functions, allowing efficient coordination among staff while maintaining privacy from student learning areas.

The zoning results show that public space is placed in areas of high accessibility, while semi-public space is located in the main area of learning activity. Private space, meanwhile, is placed in a quieter area to support the activities of management and staff. This zoning division creates activity order and minimizes circulation conflict between users, an outcome consistent with studies showing that clear zoning strengthens place identity and supports community-oriented use of a building (Ischak et al., 2018).

3.3 Implementation of Spatial Organization in the Design

Table 5. Implementation of Spatial Organization in the Building

Aspect of Spatial Organization	Design Implementation
Zoning	Public, Semi-Public, Private
Hierarchy	Lobby as the orientation center
Circulation	Linear corridor
Functional proximity	Classroom adjacent to language laboratory
Flexibility	Multifunctional discussion room
Transition zoning	Connector between public, semi-public, and private zones

Source: Authors' analysis, 2026

Based on the analysis results, the implementation of spatial organization is applied through a clear division of zones and spatial relationships arranged according to user activity needs. Spatial organization functions not only as an arrangement of spatial layout, but also as a strategy to improve the effectiveness of the learning process. Good spatial relationships produce more efficient circulation and facilitate user orientation within the building. Providing a multifunctional discussion room within this arrangement further supports flexible use of space, in line with evidence that iteratively designed flexible learning spaces can accommodate diverse teaching and interaction formats (Santandreu Calonge et al., 2023).

3.4 Design Results

A. Ground Floor Plan

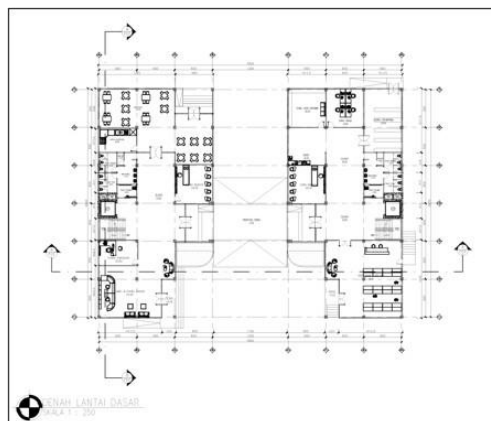


Figure 6. Ground Floor Plan

Source: Authors, 2026

The ground floor is dominated by public and service functions such as the lobby, administration, and information room. Spatial organization on this floor is designed to provide initial orientation for users while facilitating access toward the learning area on the following floor.

B. First Floor Plan

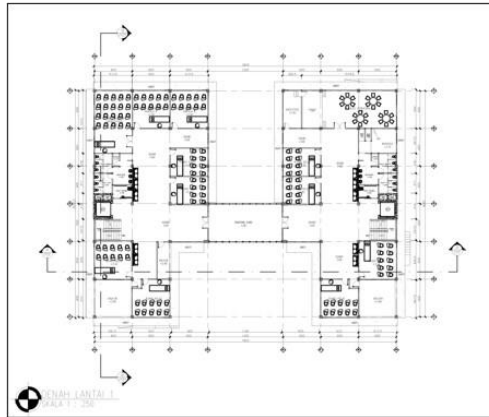


Figure 7. First Floor Plan

Source: Authors, 2026

The first floor is the center of learning activity, consisting of classrooms and language laboratories. Spatial organization uses a *cluster* pattern to strengthen the relationships between spaces with similar functions so that learning activity can take place more effectively.

C. Second Floor Plan

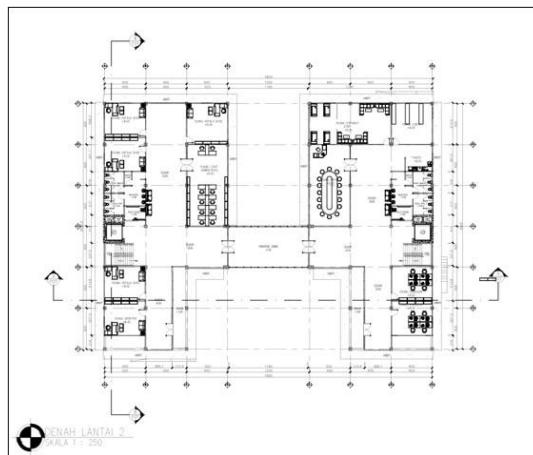


Figure 8. Second Floor Plan

Source: Authors, 2026

The second floor functions as an area for educational support and language skill development. Spatial placement is based on functional proximity so that users can access facilities more efficiently.

D. *Transition Zoning as a Connecting Area*



Figure 9. Transition Zoning

Source: Authors, 2026

Transition zoning functions as a connecting area between groups of spaces with different activity characteristics. The presence of this area creates a more comfortable transition between the public, semi-public, and private zones, making user movement flow more directed. In addition to functioning as a circulation connector, *transition zoning* can also become an informal interaction space that supports the learning process outside the classroom.

The implementation of spatial organization in the design is demonstrated through the grouping of spaces based on function, integrated spatial relationships, and the arrangement of floor plans that support ease of user orientation. In addition, transition zoning as a connecting area between space groups has proven capable of improving inter-spatial functional connectivity, clarifying user orientation, and creating a more comfortable activity transition. The presence of this transition area makes spatial organization function not only as a layout arrangement strategy, but also as an approach to improving the quality of user experience within the educational building. (Jabłońska et al., 2022).

4. CONCLUSION

Based on the findings of this study on the application of spatial organization in planning a foreign language education institution in Samarinda, it can be concluded that spatial organization plays an important role in creating a learning environment that is effective, comfortable, and structured. Spatial organization was applied through the division of the building into public, semi-public, and private zones, arranged according to the level of accessibility and user activity needs. This zoning division creates clearer spatial relationships, thereby improving circulation efficiency and minimizing activity conflict between users.

The analysis results show that a combination of *linear* and *cluster* spatial organization patterns is the most appropriate approach for a foreign language education institution. The *linear* pattern is used to form a main circulation that is easily understood by users, while the *cluster* pattern is applied to learning spaces and support spaces that have a high degree of functional interrelation. The application of these two patterns produces a spatial arrangement that is more effective in supporting teaching and learning activities and improves user comfort.

The implementation of spatial organization in the design is demonstrated through the grouping of spaces based on function, integrated spatial relationships, and the treatment

through functional zoning, integrated spatial relationships, transition zoning, and floor plan arrangement. The implementation of spatial organization is reflected through functional zoning, spatial relationships, transition zoning, and floor plan arrangement, resulting in a learning environment that supports efficient circulation, user orientation, and educational activities. Transition zoning functions not only as circulation space but also as an informal interaction area that enhances user connectivity and spatial experience.

Thus, the application of spatial organization in the planning of a foreign language education institution in Samarinda can serve as an effective design strategy to support learning activity, improve spatial quality, and shape an educational building identity that responds to user needs.

4.1 Key Findings

The key findings of this study can be summarized as follows:

1. Function-based zoning, dividing space into public, semi-public, and private zones, improves circulation efficiency and activity order more effectively than an undifferentiated spatial layout.
2. A combination of *linear* and *cluster* organizational patterns produces circulation that is both legible (linear) and functionally efficient (cluster), consistent with prior circulation-typology research (Natapov et al., 2019; Akubue, 2022).
3. *Transition zoning* is not merely a physical connector between zones but also a potential informal learning and interaction space, supporting orientation and reducing activity conflict (Minggra, 2020).
4. Environmental comfort, lighting, ventilation, and acoustics, remains an area requiring further attention beyond spatial organization alone (Kapoor et al., 2021; Handika & Utami, 2023).

4.2 Recommendations

For the development of similar educational facilities, the following recommendations are proposed:

1. Future planning should consider greater spatial flexibility, such as multifunctional and reconfigurable learning spaces, to accommodate evolving teaching formats (Santandreu Calonge et al., 2023).
2. Environmental comfort aspects, lighting, natural ventilation, and acoustic control, should be integrated into the spatial organization strategy from the early design stage rather than treated as a later technical addition (Kapoor et al., 2021; Kencanasari et al., 2020; Handika & Utami, 2023).
3. The use of learning technology should be incorporated into the spatial program to support blended and flexible learning formats (Li & Xue, 2023; Santandreu Calonge et al., 2023).
4. Sustainable design principles should be considered in the development of future educational facilities to produce a more adaptive and environmentally responsible learning environment (Muhajjalín, 2020).
5. Further research is recommended to evaluate post-occupancy user satisfaction once the foreign language education institution is built, in order to validate the spatial organization concept proposed in this study against actual usage patterns

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The authors recognize that this scientific article still has shortcomings, and constructive criticism and suggestions are greatly appreciated for the improvement of future research. It is hoped that this article can provide benefits and serve as a reference for the development of educational facility planning, particularly for foreign language education institutions in Samarinda.

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