The Impact of Strategic Spatial Planning on Activity Flow in Youth Development Centres

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Abstract
This study explores the impact of strategic spatial planning on activity flow within youth development centres, focusing on how spatial organisation influences user experience, movement efficiency, and functional synergy. As multifunctional spaces serving educational, recreational, and developmental needs, youth centres require thoughtful spatial configurations to perform effectively. Through a qualitative, design-based methodology involving literature review, case study analysis, and spatial observation, this research identifies key planning strategies that significantly enhance activity engagement and operational performance.

These strategies include program or activity compatibility and adjacency, circulation integration, flexibility and multi-use potential, accessibility, and the integration of indoor and outdoor spaces. Findings reveal that when these principles are intentionally applied, youth facilities benefit from intuitive navigation, balanced spatial hierarchy, increased user participation, and improved safety. Effective spatial organisation was also shown to reduce congestion, support inclusive access, and optimise transitions between functional zones.

The study culminates in a site-specific design proposal in which these strategies were practically applied. The design demonstrates how deliberate spatial planning can transform static environments into inclusive, adaptable, and high-performing youth development centres that respond to the evolving needs of users. By placing emphasis on spatial hierarchy, modularity, and connectivity, the proposed layout supports efficient circulation, encourages interaction, and aligns with programmatic demands. This work contributes to the discourse on youth infrastructure by offering practical design insights and spatial recommendations. It serves as a valuable guide for architects, planners, and policymakers seeking to develop resilient, flexible, and user-responsive youth spaces that not only meet immediate functional requirements but also promote long-term growth and engagement

Keywords: Youth development centres; Strategic spatial planning; Activity flow; Spatial organisation; Circulation integration; Flexibility and adaptability; Functional zoning; Indoor-outdoor connectivity.

1. INTRODUCTION

Youth development centres play a pivotal role in equipping young people with the necessary skills, knowledge, and social support to thrive in increasingly complex societies. These centres serve not only as spaces for informal education and recreational activities but also as environments where positive behaviours, social inclusion, and psychosocial resilience are cultivated. For these outcomes to be achieved effectively, the spatial planning of such centres must be intentional, strategic, and user-centred specifically tailored to enhance movement, interaction, and engagement among the youth they serve. Strategic spatial planning involves

deliberately organising space to support activity flow, access, and interaction through thoughtful zoning, circulation, and spatial connections (ChildCareNow, 2025).

The importance of well-planned spatial environments for youth is supported by the principle Positive Youth Development (PYD) theory, which reframes young people not as problems to be managed but as assets to be cultivated (Sanders & Munford, 2014). Drawing from these principles, well-designed environments can support autonomy, social connection, and emotional wellbeing. When activity flow, defined as the smooth movement of users through space is disrupted by poor layout or design, it can limit participation and reduce the overall impact of the centre (Sanders & Munford, 2014).

In many cases, especially within developing regions, youth centres suffer from inadequate spatial arrangements that hinder effective use, safety, and inclusivity (Ehule, Amadi, Nsereka, & Dike, 2024). This research explores how strategic spatial planning can improve activity flow, ultimately enhancing the functionality and developmental outcomes of youth

STATEMENT OF THE PROBLEM

Despite the growing recognition of youth development centres as essential platforms for nurturing young people's potential, many of these facilities are plagued by poor spatial organisation. Inadequate functional allocation, restricted circulation, and inflexible layouts, frequently result in congestion, inefficient use of space, and low user engagement (ChildCareNow, 2025). These spatial shortcomings disrupt activity flow and limit the centre's capacity to support interactive learning, social connection, and recreational participation. A lack of attention to spatial design in youth-focused environments, contributes to disengagement and behavioural issues; especially when activities are poorly supported by the built layout (Oyeyemi et al., 2016).

In countries like Nigeria, where such facilities often operate with limited resources, intentional spatial planning is rarely given priority during the design or renovation process. As a result, the physical environment frequently fails to adapt to the evolving needs of its users. In the absence of well-defined planning frameworks, these centres risk becoming inefficient or even exclusionary, rather than dynamic and inclusive hubs for youth growth (Ehule, Amadi, Nsereka, & Dike, 2024).

This study addresses the need for spatial planning strategies that enhance activity flow, improve spatial performance, and support holistic youth development.

AIM AND OBJECTIVE OF THE STUDY

To enhance activity flow in youth development centres through the application of strategic spatial planning principles. The objectives are as follows:

1. To identify spatial planning principles applicable to the design of youth development centres.
2. To assess how current spatial layouts affect activity flow in selected youth centres.
3. To outline design guidelines that integrate strategic spatial planning for improved functionality and user experience.
4. To propose architectural recommendations that enhance activity flow and support youth-centred development.

RESEARCH QUESTIONS

1. What spatial planning principles are applicable to the design of youth development centres?
2. How do current spatial layouts influence activity flow in selected youth centres?
3. What design guidelines can be developed to integrate strategic spatial planning for improved functionality and user experience?

4. What architectural recommendations can enhance activity flow and support youth-centred development?

2. LITERATURE REVIEW

Youth development centres have evolved from small-scale recreational facilities into complex, multifunctional environments that integrate education, recreation, cultural programming, and community engagement (UN-Habitat, 2022). This transformation reflects a growing awareness of the role of built environments in shaping youth development outcomes (Marques et al., 2021). In their early forms, many youth centres prioritised program delivery over spatial logic, resulting in layouts that often-neglected circulation efficiency and user flow (Smith et al., 2022).

Recent studies emphasise that activity flow the organised movement of people between functional spaces is critical for ensuring that diverse activities can operate simultaneously without conflict (Hosseini & Mohammadi, 2021). Effective activity flow promotes seamless transitions, reduces congestion, and improves user satisfaction. As in sports and educational facilities, poor flow planning in youth centres can create operational inefficiencies, safety risks, and underutilised spaces (Koohsari et al., 2020).

### Strategic Spatial Planning as a Performance Driver

Strategic spatial planning in architecture is defined as the deliberate organisation of spaces to optimise performance, support functionality, and anticipate future adaptability (Cheshmehzangi, 2020). In youth development centres, this entails aligning spatial organisation with program needs, circulation patterns, and user demographics. Unlike conventional layout planning, which may prioritise individual room requirements, strategic planning evaluates the relationships between spaces to ensure both compatibility and functional synergy (Carmona, 2019).

Evidence from community facility design shows that spatial planning decisions such as functional zoning, adjacency logic, and circulation integration have measurable impacts on user engagement and space utilisation (Mehta & Bosson, 2021). For youth centres, the stakes are higher, as the spaces must accommodate a broad range of activities, from high-energy sports to quiet study, within the same built environment.

Principles Influencing Activity Flow in Youth Centres
1. Functional Zoning and Spatial Layering

Functional zoning is the separation or grouping of spaces based on activity type, noise levels, and privacy needs. Spatial layering builds on zoning by creating transitions between zones through semi-public spaces, lobbies, or buffer areas (Carmona, 2019). For instance, high-energy areas such as gyms and music studios are best located away from classrooms and counselling rooms, with shared buffer spaces to absorb sound and movement spillover (Hudec & Rollová, 2019).
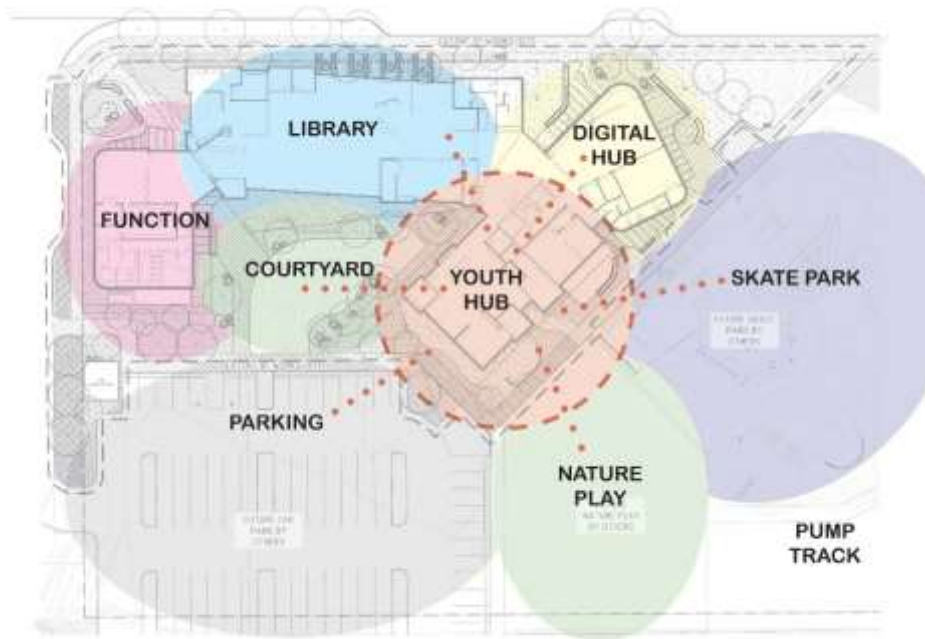
Figure 1: A diagram showing functional Zoning and Spatial Layering
Source: https://www.sitearchitecture.com.au/designing-for-youth/

2. Programmatic Adjacency
Programmatic adjacency refers to the intentional placement of related spaces in close proximity to enhance operational efficiency. In youth centres, adjacency planning can facilitate cross-program participation for example, locating art rooms next to multipurpose halls enables exhibitions and performances to happen alongside community gatherings without major reconfiguration (Kim & Lee, 2020).

3. Circulation Hierarchy
A circulation hierarchy distinguishes between primary spines, secondary connectors, and localised loops. Primary spines serve as the main arteries connecting major activity nodes, while secondary and tertiary routes manage flow within specific zones (Koohsari et al., 2020). This approach prevents congestion and ensures that different user groups can navigate independently without interfering with each other's activities.

4. Flexibility and Adaptability
Flexibility allows spatial configurations to change based on evolving user demands, ensuring longevity and cost-effectiveness (Hudec & Rollová, 2019). This includes multi-use rooms, modular furniture, and reconfigurable partitions. Adaptable spaces accommodate varying group sizes and support diverse programming without major redesign (Marques et al., 2021).

Figure 2: A flexible space used as a seminar room
Source: https://www.bgsu.edu/bowen-thompson-student-union/conference-and-event-services/spaces/event-spaces/multipurpose-room.html


Figure 3: A flexible space used as a dance hall
Source: https://www.bgsu.edu/bowen-thompson-student-union/conference-and-event-services/spaces/event-spaces/multipurpose-room.html

5. Indoor Outdoor Integration

Many youth development centres operate in climates where outdoor spaces are essential program assets. Strategic spatial planning ensures that indoor and outdoor functions are visually and physically connected, enabling flexible transitions between the two (UN-Habitat, 2022). This integration expands programming capacity and supports seasonal adaptability. Social interaction is a key factor for student satisfaction in schools; because of that it is integrated it in the educational plan. The courtyard can improve the social interaction of the users and can give a sense of relaxation. The courtyard is essential in the passive and active social life for the students. The importance of the presence of the courtyard space in a school building as an innovative reason for a better social and education atmosphere (Salameh, Touqan, & Salameh, 2020).
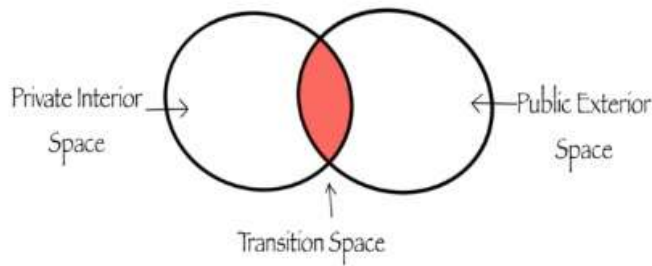
Figure 4: An illustration showing courtyard as a transition space between indoor and outdoor spaces
Source: https://nclurbandesign.org/transition-spaces/

Figure 5: A courtyard as a transition space
Source: https://worldarchitecture.org/articles/ccnve/jds-architects-completed-its-new-urban-catalyst-project-called-euralille-youth-centre-in-france.html?utm_source=chatgpt.com

Theoretical Frameworks Informing Spatial Planning
Space Syntax Theory provides a method for analysing connectivity, visibility, and movement within a facility, enabling designers to predict and optimise user flow (Koohsari et al., 2020). Behavioural Setting Theory links physical layouts to recurring patterns of activity, helping architects ensure that space configurations align with user behaviours (Mehta & Bosson, 2021).
Third Place Theory underscores the social value of informal spaces, encouraging the inclusion of neutral, flexible zones that foster spontaneous interaction (Marques et al., 2021).
These theories collectively reinforce that spatial planning is not merely a technical exercise but a determinant of social and functional performance.

The Impact of Strategic Spatial Planning on Activity Flow

1. Optimizing Movement and Access: Strategic spatial planning ensures that movement through the centre is smooth, intuitive, and inclusive. This optimises access to resources and programs, helping users engage meaningfully without disorientation or delay (Koohsari et al., 2020).

2. Increasing Program Efficacy: By aligning spatial design with functional needs, strategic planning improves operational efficiency. Spaces become purpose-driven and better equipped to deliver services with minimal disruption. This allows youth centres to offer more consistent and reliable programming (Hosseini & Mohammadi, 2021).

3. Promoting Engagement and Interaction: Strategically arranged spaces foster spontaneous social interaction, collaboration, and communal belonging. Interactive zones, visual openness, and central gathering points encourage youth to participate and engage more deeply with centre activities (Mehta & Bosson, 2021; Marques et al., 2021).

4. Maximising Flexibility and Future Adaptability: Strategically planned spaces with modular elements and reconfigurable zones can accommodate changing program needs and user preferences over time (Hudec & Rollová, 2019; Marques et al., 2021)

5. Enhancing Spatial Legibility and Wayfinding: Spatial planning that incorporates signage, visual hierarchy, and intuitive layout helps users understand and navigate the space with ease, reducing confusion (Kim & Lee, 2020; Hosseini & Mohammadi, 2021)

3. METHODOLOGY

This study adopts a qualitative, design-based methodology combining case study analysis, spatial observation and strategic planning principles. Five youth development centres were purposively selected for comparative analysis, each representing diverse spatial configurations, and design strategies. These include: Onikan Youth Centre (Nigeria), Boys and Girls Club (USA), Qingpu Youth Centre (China), Gehua Youth Activity Centre (China), and Euralille Youth Space (France). Data was gathered through literature review, spatial evaluation of the selected youth centres, and visual analysis of their architectural layouts. Key insights were drawn from field observation, user feedback (where available) and expert-based interpretation to assess how spatial sequencing, zoning, circulation and environmental integration influence activity flow. Each case study was analysed based on: spatial planning and design, which evaluates overall organisation and spatial hierarchy; program or activity compatibility and adjacency, which examines the placement of functions to encourage synergy and minimise conflict; circulation integration, which assesses the clarity and efficiency of movement routes; flexibility and multi-use potential, which considers adaptability through movable partitions and modular layouts; accessibility, which measures inclusivity based on universal design principles; and integration of indoor and outdoor spaces, which analyses the physical and visual connections that enhance continuous activity flow.

4. DISCUSSION

The findings of this study affirm that strategic spatial planning significantly influences activity flow within youth development centres. By examining how movement, interaction, and engagement are shaped by spatial configurations, it becomes clear that intentional planning transforms-built environments into dynamic, responsive settings that enhance user experience and operational efficiency. This principle is demonstrated in the proposed youth centre design, where spatial strategies were purposefully applied to respond to both the challenges and potential of the site.

At the most fundamental level, spatial planning and design determine the overall organisation and hierarchy of spaces. The centre adopts a coherent spatial sequence that supports smooth activity progression and user navigation. Entry points as shown on the site plan (see Figure 6),

were carefully designated as primary and secondary access routes to streamline arrival and departure. Upon entry, the parking area is centrally positioned, acting as a transitional buffer before users proceed into core program areas. This layout reduces congestion and provides a sense of spatial orientation.

The strategic positioning of the football field on the eastern edge of the site allows post-match crowds to disperse efficiently without disrupting other ongoing activities as shown on the site plan (Figure 6). This design decision aligns with principles of circulation integration and activity zoning, reducing the potential for overlap between high-density recreation and other sensitive functions.

The administration building sits at the centre of the site, serving both as a control node and as a link between administrative offices and the multipurpose hall via a concourse (Figure 7). This interconnected arrangement ensures that operational functions remain cohesive and accessible, reinforcing spatial clarity. Directly behind the administration block, a courtyard serves as the heart of the facility which is an active social hub and transition space that connects the educational block on the left (containing classrooms, studios, and workshops) with the cafeteria and clinic on the right (Figure 9). This centrality supports informal interaction, recreation, and social bonding, fulfilling both circulation and programmatic goals.

Program compatibility and adjacency were crucial in determining spatial relationships. High-energy areas like the indoor sports hall are placed at the rear of the site to isolate noise and foot traffic, while learning zones are kept together to sustain a focused educational atmosphere. Similarly, placing the clinic beside outdoor sports areas allows for quick medical access when needed, demonstrating a synergy between health and physical activity (Figure 7).

Circulation throughout the facility is not treated as residual space but as an integrated component of the design. Wide, clearly defined paths connect key functional zones, enhancing wayfinding and encouraging casual encounters along the way. The courtyard itself operates as an expanded circulation node, inviting movement while hosting informal activities (see Figures 7 and 9). Flexibility and multi-use potential were embedded in core spaces such as the multipurpose hall and learning studios, which were designed with reconfigurable layouts (Figure 8). This adaptability ensures that the centre can accommodate changing programs, seasonal events, and evolving youth interests over time. Accessibility considerations informed both the macro and micro planning levels. The layout prioritises clear, unobstructed pathways, sensory legibility, and logical progression from one zone to the next. The equitable distribution of amenities, such as dining and healthcare facilities, reinforces inclusive access and supports user comfort across diverse demographics.

Finally, the integration of indoor and outdoor spaces is achieved through visual and physical porosity. The courtyard connects seamlessly with adjacent buildings, while terraces and open recreation spaces extend the program outward. These transitions not only encourage continual engagement but also relieve interior density, offering opportunities for rest, reflection, and unstructured activity.

In summary, the spatial planning of the proposed youth centre serves as a direct response to the core findings of this study. By addressing zoning, adjacency, circulation, flexibility, accessibility, and spatial integration through deliberate design interventions, the facility is positioned to support fluid activity flow, enhance engagement, and foster the holistic development of its users. Rather than acting as a static container, the space actively shapes behavioural rhythms, encourages participation, and sustains a vibrant and adaptive youth environment.

Figure 6: Site Plan

Figure 7: Ground Floor Plan
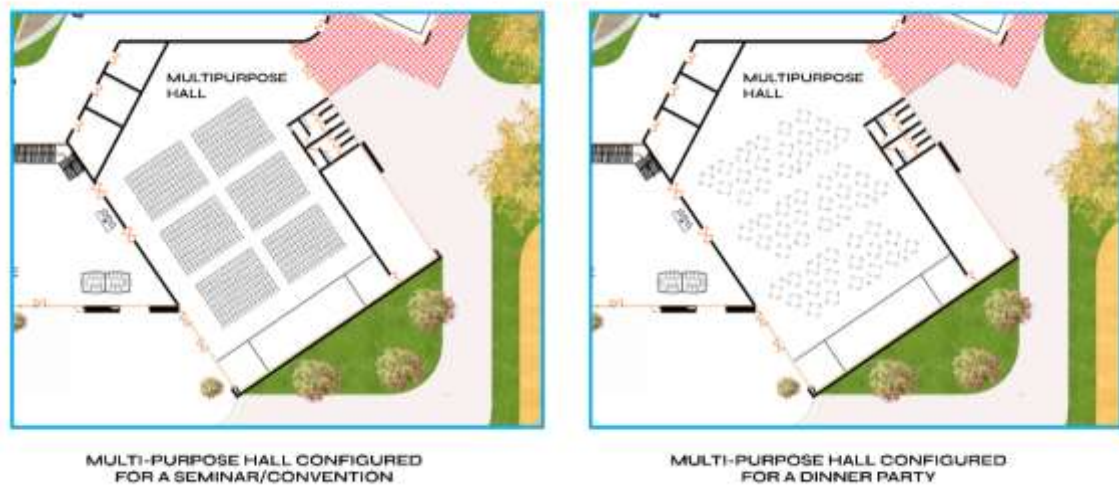
Figure 8: Multipurpose Hall

Figure 9: Perspective View of the Courtyard

Figure 10: Exterior View of the Proposed Design

5. CONCLUSION

This study affirmed that the proposed youth development centre effectively applied strategic spatial planning principles to enhance activity flow and user engagement. The layout was deliberately organised around a central courtyard, which functioned as a social hub and transition space, linking major zones such as the educational wing, clinic, cafeteria, and sports facilities. Access points were carefully planned to streamline movement, with a centrally located car park easing site navigation and a strategically placed football field enabling smooth crowd dispersal after events. The administrative building was centrally positioned to provide spatial oversight and was directly connected to the multipurpose hall and offices via a unifying concourse. Key spatial strategies such as program compatibility, circulation integration, and flexibility were embedded throughout the design. Learning, health, recreation, and social functions were positioned to minimise conflict and encourage intuitive movement. The indoor sports hall was placed at the rear to house high-energy activities, while adjacent outdoor sports zones allowed proximity to healthcare services. Overall, the design demonstrated how thoughtful spatial organisation can optimise functionality, adaptability, and user experience in youth-focused environments.

6. RECOMMENDATION

Based on the research insights and applied design strategies, the following recommendations are proposed to improve the implementation and overall effectiveness of the Youth Development Centre:

1. Integrate Strategic Spatial Planning in Early Design Stages: Define distinct zones for active, quiet, and shared functions early in the planning process. This improves spatial clarity, minimises conflicts between different activity types, and ensures each zone supports its intended use without disruption.
2. Ensure Functional Adjacency and Synergy: Group related functions such as placing the clinic near sports area or the cafeteria between active and passive zones to promote seamless user flow and support natural program progression throughout the day.

3. Design Circulation as Social Space: Circulation routes should not only connect spaces but also encourage interaction. Corridors, entry points and transitional areas should be visually open, welcoming and wide enough to support informal gatherings and wayfinding ease. Access points should be strategically located and supported by transitional spaces such as central parking and large event dispersal areas. This promotes controlled movement, reduces congestion, and enhances safety during peak use.

4. Prioritise Indoor-Outdoor Continuity: Where site conditions allow, integrate open courtyards, shaded activity zones or landscaped spill-out areas adjacent to indoor spaces. The inclusion of a central courtyard or open hub is recommended to serve as a spatial anchor. Such spaces facilitate orientation, encourage social interaction, and support informal activities while promoting balanced spatial distribution. This supports flexible programming, improves ventilation and promotes user wellbeing.

5. Integrate Modular and Reconfigurable Elements: Incorporate movable partitions, modular furniture, and multipurpose layouts in the sports hall, classrooms, and multipurpose rooms. This allows for quick transitions between programs and supports changing user needs over time without costly alterations.

6. Design for Program Growth and Change: Allow space for future expansion and anticipate shifts in youth needs. Strategic spatial planning should support incremental changes without disrupting existing operations.

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