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REIMAGINING NODE: A PROPOSAL FOR POP-UP URBANISM INITIATIVE IN ALOR SETAR

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ABSTRACT

A big part of tactical planning is pop-up structures. As part of a second-year architecture design lab, this study looks at pop-up urbanism in the city centre of Alor Setar, focussing on short-term changes that make places lively and focused on people. In line with Alor Setar's Strategic Plan 2024–2028, the study aims to make cities better places to live by using strategic pop-up buildings. A mixed-method approach combines Edward T. White's Site Analysis with the Space Syntax method. It starts with finding important places like Dataran Alor Setar. A lot of site data is being collected and analysed for the study to determine how cities change over time. Space Syntax helps determine how to connect and integrate spaces, which helps with where to put these temporary changes. Key results show that areas with a lot of connections, like Jalan Istana Lama and Lebuhraya Darul Aman II, are great for making things livelier, whilst areas with fewer connections, like Lebuhraya Darul Aman I, are better for targeted interventions. The study gives useful information to students who are designing pop-up structures. It also helps with future urban planning, which makes cities more resilient and open to everyone.

Keywords: *Liveable city, Pop-up structure, Site analysis, Spatial analysis, Tactical urbanism*

INTRODUCTION

Pop-up urbanism in heritage cities has several benefits. Urban pop-up parks improve physical activity, socialisation, and property values (Udeaja et al., 2020). Built heritage events promote proximity tourism and sustainability (Winter et al., 2020). The PAX project in Cordoba uses unique governance approaches to transition metropolitan regions from speculation to restoration, encouraging sustainable urban expansion while preserving historical and cultural heritage (Kádár & Klaniczay, 2022). These examples show how transitory urban interventions improve historic communities' community engagement, sustainability, and economic growth.

In their second year, architectural design students at Universiti Teknologi MARA (UiTM) complete site projects. Architectural design begins with site and contextual investigation, according to the curriculum. Site analysis is crucial in architectural spatial planning, considering multiple elements affecting design choices (Kheiri, 2016). Sustainable and practical designs need an understanding of a site's pedestrian circulation, local features, and environmental circumstances (Jöchner, 2022; Zhou & Guo, 2023). Site analysis determines the best locations for entrances, occupancies, and circulation patterns, resulting in efficient spatial arrangements (AlSaggaf & Jrade, 2021). This technique helps designs include local and biomimetic elements, promoting ecological sustainability and human-environment harmony (Amr et al., 1994).

Quantitative methods like spatial syntax analysis evaluate analysis and synthesis in addition to site visits. Based on studies, space syntax explains how a space's arrangement impacts a city's shape, pedestrian flow, and interactions. It explores how building and street configurations affect social interactions, emphasising the connection to promote community engagement (Karimi, 2018). Space syntax also shows how inner ring roads change store distributions, emphasising the need for street network integration for good retail sites. Space syntax and multi-criteria decision analysis help understand urban structure and human mobility patterns, emphasising functional attractors in pedestrian movements.

Second-year architecture design studio students conducted this investigation in Alor Setar city centre. The 2024-2028 Strategic Plan for

Alor Setar seeks to make it habitable. Prioritising critical areas and setting criteria is essential for this. Pop-up buildings should support Alor Setar's tactical urbanism. The study offers tactical urbanism-based pop-up building placement in critical Alor Setar city centre places to meet cultural, social, and economic demands and improve city life and community involvement.

LITERATURE REVIEW

Tactical Urbanism

Tactical urbanism needs community involvement, short-term implementation, and limited resources (Silva, 2016). Modern urban planning uses tactical urbanism's community focus and speed to develop dynamic, functional, and inclusive public spaces. Underuse, traffic, and lack of green space are addressed by most projects that transform parks, squares, and waterfronts (Ragab, 2023). Tactical urbanism's adaptability and community involvement may revitalise historic neighbourhoods while preserving their culture.

Pop-up structures enable rapid urban change, making them essential to tactical urbanism. Under tactical urbanism, pop-up buildings reinvigorate traditional city public areas through community-led changes. "Pop-up" means rapid interventions, whereas "tactical" means strategic preparation (Giesch et al., 2021). Pop-ups highlight historic cities' architecture and history, fostering community. Art installations and cultural events may rejuvenate public places, highlight local issues, and enhance community pride. Temporary works and events boost culture and communities, often changing society.

Tactical urbanism uses brief, cheap interventions to show permanent urban transformations from the bottom up. This method prioritises human needs and community interaction, like New Urbanism. Build a Better Block and PARK(ing) Day revitalise communities with short-term, community-led events that turn parking spaces into parks. The adaptability and community emphasis of tactical urbanism assist conserving and developing heritage cities (Silva, 2016).

Tactical urbanism promotes low-cost, low-risk urban improvements without major investments. This technique involves many people and promotes urban consciousness, with actual improvements enhancing communities. By creating bright, colourful, and safe areas, tactical urbanism challenges the idea that urban living is monotonous or dangerous (Giesch et al., 2021). Tactical urbanism requires community involvement, agility, and interim measures to test and promote urban reforms. These techniques foster economic, social, and creative activity without significant urban management. The movement makes urban planning and architecture agile, innovative, and resilient (Stevens & Dovey, 2023). Tactical urbanism creates inclusive, dynamic, and resilient cities through community participation, adaptation, and interim solutions.

Pop-Up Structures in Urban Design

Pop-up buildings can be folded for storage and travel but erected for use. Intersecting slice-shaped parts allow pop-up cards (Nejad et al., 2021; Diachenko & Diachenko, 2019) and self-assembling systems that build habitable rooms (Karsan et al., 2017) to effortlessly move between flat and 3-D states. These buildings are temporary, immersive, and adjustable to simplify, minimise weight, and enable speedy deployment (Diachenko & Diachenko, 2019). Retractable impact protection components show robustness (Huang et al., 2019). Pop-up constructions are adaptable, interactive, and safe (Warnaby et al., 2018). Urban pop-up structures encourage community participation and innovation, boosting place identity (Gaetano et al., 2021). Pop-up parks boost physical exercise, social connections, and property prices in underutilised locations (Warnaby & Medway, 2022). Sustainability and urban demands are supported without sacrificing future development (Sandra et al., 2020; Gaetano, 2019). However, displacement, privatisation, and worldwide adaptation are issues (Stevens & Dovey, 2018).

Alor Setar as Liveable City

Users who frequent the traditional street in Alor Setar, Kedah, impact the city's character, with street views essential for everyday participation. Mobile users engage functionally, and the street's significance and history influence attachment. Traditional Malay architecture like Balai Besar and

Masjid Zahir, among colonial-era structures, illustrates Alor Setar's heritage. Recent projects demonstrate economic progress while merging modern buildings. Alor Setar is culturally diverse, with a majority of Malay residents and considerable Chinese and Indian minorities (Nagata, 1989). Known for traditional arts, crafts, and festivals, the city maintains historical value. The local plan aims for liveability by 2035 through strategic development (Rancangan Tempatan Majlis Bandaraya Alor Setar, 2035). Urban challenges include restricted public transport, traffic congestion, urban sprawl, and preserving cultural treasures while modernising (Norhisham, 2021). Tactical urbanism, which involves low-cost, temporary public space renovations, is consistent with the goals of sustainable urban development (Roosli, 2019; Alias, 2011; Lydon, 2015).

Figure. Strategic Plan for Development of Alor Setar

Source: Rancangan Tempatan Majlis Bandaraya Alor Setar (2035)

Temporary parks and public areas can increase urban liveability, while solutions like pop-up bike lanes and pedestrian zones can lessen traffic. Provides a practical guide for implementing Tactical Urbanism projects, suggesting that they can be used to address policy and design issues and to engage the public in the planning process. Alor Setar can become a livelier and more sustainable city by promoting heritage and drawing tourists

through cultural events and art installations in public areas.

METHODOLOGY

Contextual analysis examines a project site's current, future, and possible conditions and surroundings, providing a comprehensive inventory of the location's pressures, forces, and situations (White, 2013). This analysis is crucial in design, offering information about the site before developing design concepts and integrating meaningful responses to external conditions early in planning. Our 2nd-year design studio used White's (2013) components from "Site Analysis: Diagramming Information for Architectural Design" for data collection, including location, neighbourhood context, size and zoning, legal considerations, natural and man-made features, circulation, utilities, sensory aspects, human factors, cultural factors, and climate. Five pairs of students gathered, recorded, and examined these components, focusing on Alor Setar city centre. Two prospective pop-up design project locations are in Lebuhraya Darul Aman II, near Aman Central and Alor Setar Tower, and Lebuhraya Darul Aman I, near Masjid Zahir as shown in Figure 3 below. Space syntax was also used to provide a quantitative technique to complement the students' qualitative site observations.

The Space Syntax Axial Lines analysis evaluated Alor Setar pop-up urbanism locales. Space configuration and connectivity measurements are used to understand how places are connected and integrated. Space Syntax Axial Lines are networks of streets and public spaces that measure connectedness and integration, according to Dursun (2007).

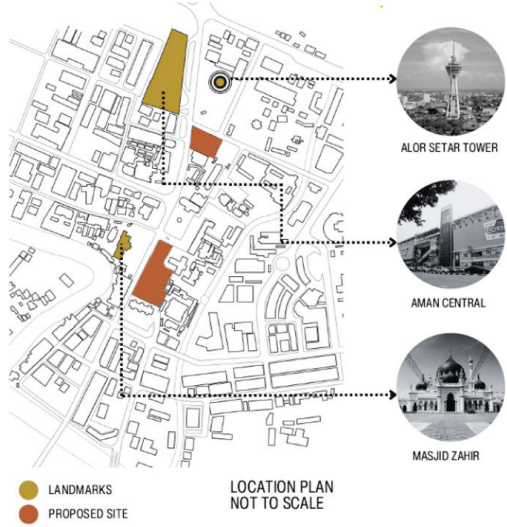

Figure 2. Perimeter of Contextual Analysis for The Pop-Up Structure
Source: Author

The study comprises geographic integration, connectedness, and correlation. Connectivity analysis is important because it corresponds with the area's pedestrian and vehicular movement patterns, revealing the degree of connectivity between nodes. Integration analysis investigates urban spatial integration. Axial lines with a radius of 1 km show spatial integration and how well each area is related to the urban framework (Hillier, 2007).

In layout analysis, graphs are compared using a red-to-blue gradient to show integration or connectedness from highest to lowest. Additionally, correlation values from low (below 0.5) to high (above 0.5) reveal linkages and movement patterns.

RESULTS

Contextual Analysis

Figure 3 below shows the various distribution of landmarks within a 1km radius of the potential site and highlights the spatial distribution

and architectural significance of these structures within the city's fabric. The landmarks are categorised into three (3) categories; accommodation, government, and commercial. It showcases diverse buildings that contribute to the city's socio-economic and cultural fabric. These buildings' careful distribution and distinct architectural styles highlight the city's blend of modernity and tradition, reflecting its historical significance and contemporary aspirations.

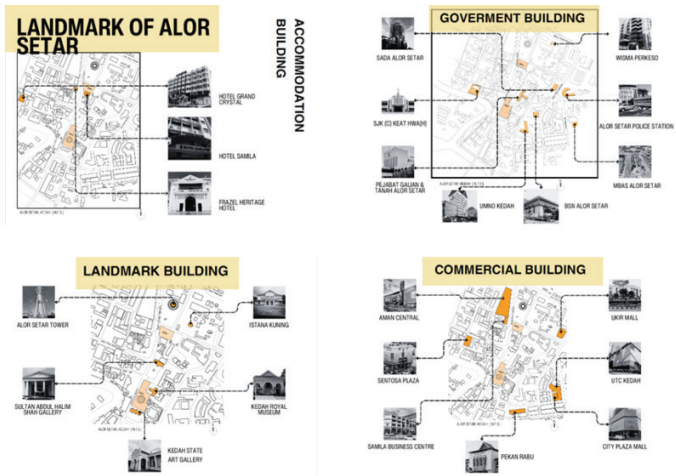

Figure 3. Landmark Study of Alor Setar

Source: Author

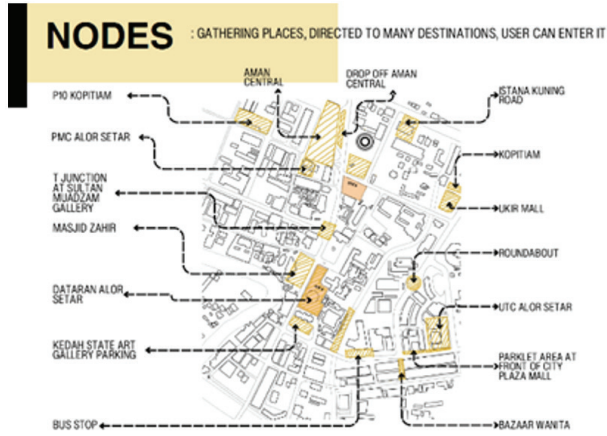

Figure 4. Nodes Study in Alor Setar

Source: Author

Figure 4 below offers an analysis of the key nodes in Alor Setar, Kedah, focusing on gathering places and their connectivity to various destinations. These nodes serve as central points where users can easily access multiple locations, highlighting the urban layout and its facilitation of movement within the city. Figure 5 presents a detailed analysis of the road network and dimensions in Alor Setar, Kedah. This analysis focuses on road directions, classifications, and cross-sectional dimensions, providing valuable insights into the urban infrastructure and its design.

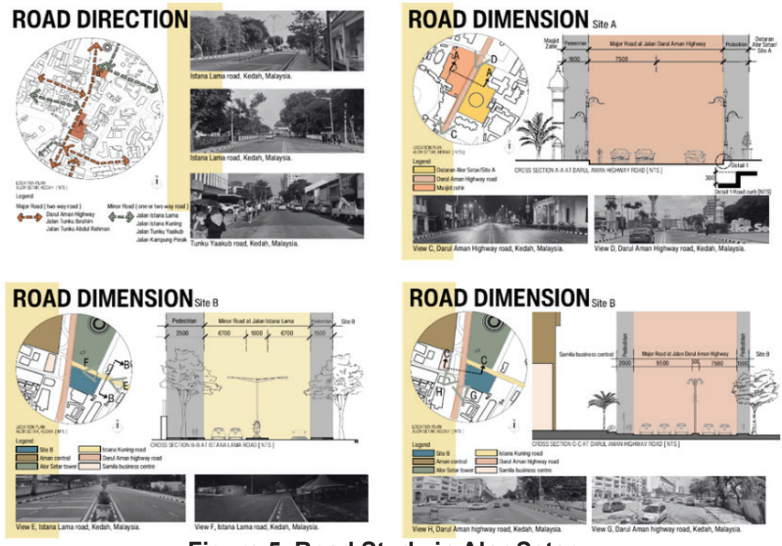

Figure 5. Road Study in Alor Setar

Source: Author

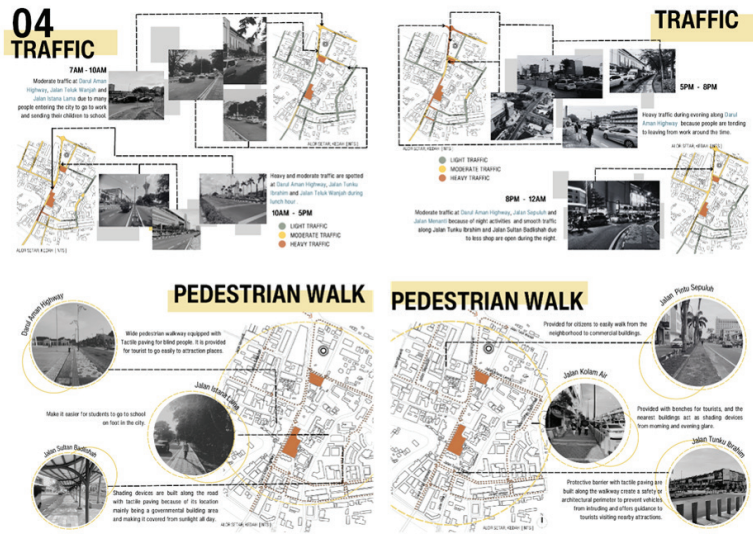

Figure 6. Traffic and Pedestrian Walk Study in Alor Setar

Source: Author

Figure 6 comprehensively analyses traffic patterns and pedestrian walkways in Alor Setar, Kedah. This analysis sheds light on urban traffic's temporal and spatial dynamics and the design considerations for pedestrian infrastructure. The pedestrian infrastructure in Alor Setar is designed to facilitate safe and convenient pedestrian movement, including tactile paving for visually impaired individuals and shading devices for comfort.

Space Syntax Analysis

Figure 7 depicts the map of Alor Setar City Centre, 4 main road networks have been chosen for analysis purposes. Lebuhraya Darul Aman was divided into two, Lebuhraya Darul Aman I and II, due to the length of the road and its contrasting characteristics. Other roads included in the study were Jalan Teluk Wanjah, Jalan Tunku Abdul Rahman, and Jalan Istana Lama. Based on the data provided in Figure 8, the connectivity values for various streets in Alor Setar City Centre are illustrated using a colour gradient from red to blue, representing varying levels of connectivity. Lebuhraya Darul Aman II exhibits the highest connectivity with a mean value of 22, as shown in Table 1, which is particularly significant in its

southern section. This highlights its importance as a primary road that interlinks with local roads and provides a strong connection to the city. Jalan Istana Lama follows closely with a connectivity value of 21. Jalan Teluk Wanjah shows a moderate connectivity level with a score of 17, while Jalan Tunku Abdul Rahman also demonstrates moderate connectivity with a value of 15. Lebuhraya Darul Aman I has the lowest connectivity level among the streets, with a score of 12, indicating its relative disconnection from the core elements of the city.

Figure 7. Streets in Alor Setar

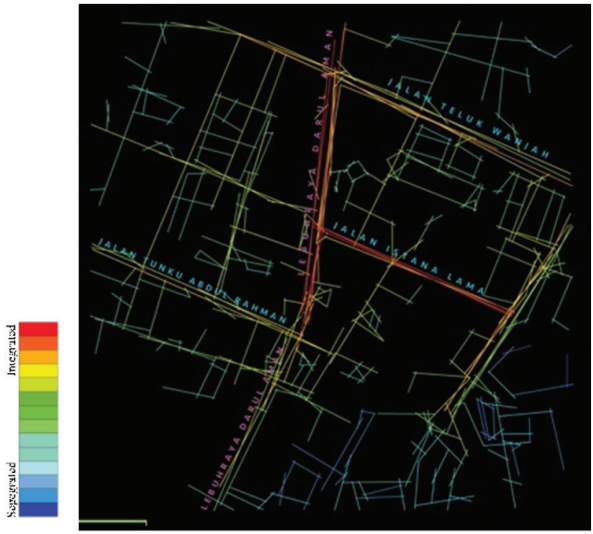

Figure 8. Space Syntax Axial Lines Analysis on Connectivity of Alor Setar City Centre

Source: Author

Table 1. Alor Setar City Centre Mean Connectivity Result

Road / Street	Mean Connectivity
Lebuhraya Darul Aman I	12
Lebuhraya Darul Aman II	22
Jalan Tunku Abdul Rahman	15
Jalan Istana Lama	21
Jalan Teluk Wanjah	17

Source: Author

Based on the data presented in Figure 9, the mean integration values [HH] for various streets in Alor Setar City Centre are highlighted, illustrating their relative levels of integration. Based on Table 2, Jalan Istana Lama exhibits the highest mean integration value of 2.184, indicating its significant role in connecting various parts of the city. Lebuhraya Darul Aman II follows with a mean integration value of 2.102, underscoring its importance as a primary thoroughfare. Jalan Teluk Wanjah has a moderate integration value of 1.864, while Jalan Tunku Abdul Rahman shows a similar moderate level with a value of 1.750. Lebuhraya Darul Aman I has the lowest mean integration value of 1.585, suggesting a lesser degree of connectivity within

the urban fabric compared to the other streets.

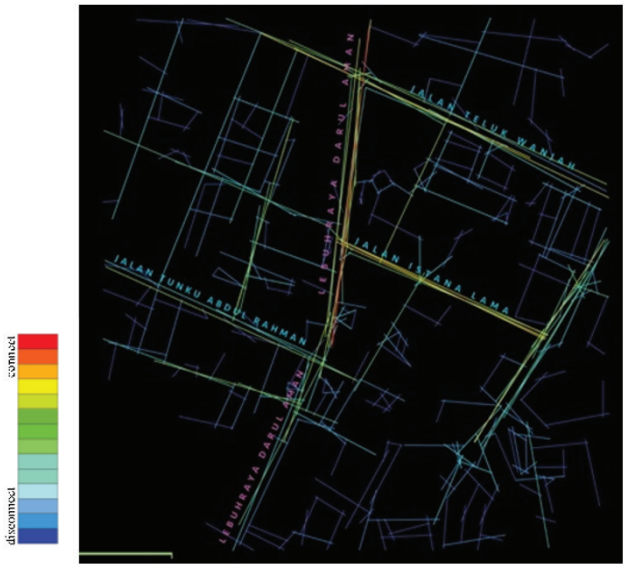

Figure 9. Space Syntax Axial Lines Analysis on Connectivity of Alor Setar City Centre

Source: Author

Table 2. Alor Setar City Centre Mean Connectivity Result

Road / Street	Mean Integration [HH]
Lebuhraya Darul Aman I	1.585
Lebuhraya Darul Aman II	2.102
Jalan Tunku Abdul Rahman	1.750
Jalan Istana Lama	2.184
Jalan Teluk Wanjah	1.864

Source: Author

Figure 10 illustrates the relationship between connectivity and mean integration (HH) in Alor Setar City Centre. The scatter plot uses a colour gradient from blue to red to represent varying levels of integration and connectivity. The R-value obtained from the scatter plot yields 0.554, indicating a moderate relationship between connectivity and integration.

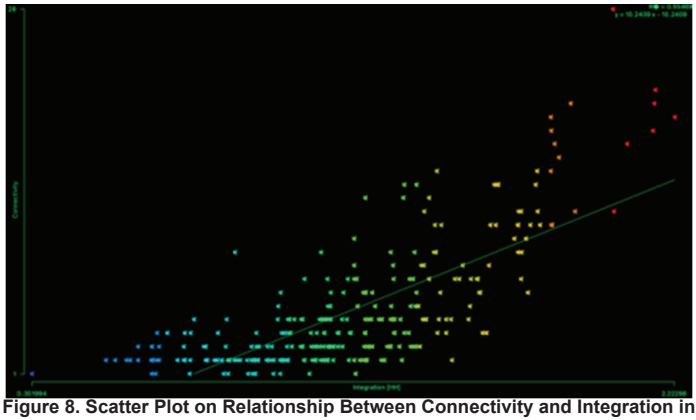

Figure 8. Scatter Plot on Relationship Between Connectivity and Integration in Alor setar City Centre

Source: Author

High Connectivity and Integration

Streets such as Lebuhraya Darul Aman II and Jalan Istana Lama are positioned in the upper right quadrant, indicated by red and orange colors. These streets exhibit high values in both connectivity and integration, highlighting their importance within the urban network.

Moderate Connectivity and Integration

Streets like Jalan Teluk Wanjah and Jalan Tunku Abdul Rahman fall within the middle range of the graph, represented by yellow and green colors. These streets display moderate levels of connectivity and integration, signifying a balanced role in the city's spatial structure.

Low Connectivity and Integration

Lebuhraya Darul Aman I is in the lower left quadrant, which is marked by blue colors. This street shows the lowest connectivity and integration values, indicating limited interaction within the urban grid. The linear trend line on the graph suggests a positive correlation between connectivity and integration values, indicating that streets with higher connectivity generally tend to have higher integration levels. This relationship is crucial for understanding spatial dynamics and informing planning interventions to enhance urban connectivity and integration.

DISCUSSION

Several studies have looked into the idea of "pop-up urbanism," focussing on how it can make cities livelier and encourage people to get involved in their communities. For example, carefully placed pop-up structures in well-connected areas can turn empty spaces into busy public hubs that encourage socialising and make places easier to live in. Studies show that temporary urban environments can be set up quickly to meet a variety of needs while also promoting long-term growth when mixed with strategic urban planning. Bertino et al. (2020), for example, talk about how temporary urban structures can make cities livelier by putting in place living systems that are sustainable, flexible, and quick to set up. Additionally, Zakaria and Pinto de Freitas (2020) stress that pop-up architecture can help revitalise empty spaces in cities by turning them into lively public areas that encourage community involvement.

Pop-up urbanism can also grow in places that aren't well-linked. Jin (2020) pointed out that targeted pop-up events can bring life back to areas with poor connectivity, boosting both social and business activity. This fits with what McCunn et al. (2020) found: pop-up resource villages in West Oakland not only created lively community places, but they also made the public safer and helped people make new friends. Finally, smart planning and pop-up urbanism can change both high- and low-connectedness areas, encouraging equitable urban growth, improving connectivity, and boosting social unity.

CONCLUSION

The study's findings underscore the efficacy of data-driven, participatory urban planning in enhancing the livability of Alor Setar. By strategically placing pop-up structures in well-connected and integrated areas, the city can address urban challenges and achieve its goal of becoming a highly livable city. The insights gained from the contextual and space syntax analyses provide a valuable foundation for the students to evaluate and propose a pop-up structure for future urban planning efforts, contributing to creating vibrant, inclusive, and resilient urban environments. Hence, it helps get comprehensive perspectives in contextual analysis when proposing

architectural design projects.

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AUTHOR CONTRIBUTIONS

Team teaching for the 2nd-year architecture design studio, all authors conceived and designed the research. Sayed Muhammad Aiman and Farid Al Hakeem designed the study, methodology, and analysis. Mohammad Nazrin, Fazidah Hanim, and Nur Azdli helped students with contextual analysis and literature evaluation. All writers read and approved the article.

CONFLICT OF INTEREST

No conflict of interest. The research has been registered under UiTM Perak Branch Research, Industrial Linkages, Community and Alumni Network.

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