

Insights from Campus Street Design: A Case Study Approach for Enhancing Public Spaces in Bangalore

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Abstract

Urban street design significantly influences pedestrian experience, especially in spaces frequented by children and elderly individuals (Gehl, 2010). College campuses often exhibit well-designed pedestrian-friendly streets that balance safety, accessibility, and aesthetics (Jacobs, 1993). This paper examines a campus street section as a model for public street design, with a focus on Bangalore. The study explores how elements of design within campuses can be applied to enhance public spaces near parks and lakes in the Indian urban context (Singh, 2018). However, these design recommendations are most applicable to public streets with lower vehicular traffic density, ensuring pedestrian safety and comfort (ITDP, 2011).

Introduction

The increasing urbanization of Indian cities presents significant challenges in designing pedestrian-friendly streets (Tiwari, 2019). Rapid motorization and inadequate pedestrian infrastructure have contributed to unsafe and uncomfortable walking environments, particularly for vulnerable populations such as children and the elderly (Singh & Sharma, 2015). Public spaces near schools and parks require special attention to enhance accessibility and safety while promoting social interaction and community well-being (Gehl, 2011). Research indicates that well-designed pedestrian zones encourage walking and cycling, improving public health and reducing dependence on motor vehicles (Litman, 2015).

College campuses often provide a controlled environment where innovative street design elements are successfully implemented (Marshall, 2018). Features such as dedicated pedestrian pathways, shaded walkways, seating areas, and traffic calming measures create an inclusive and safe space for users (ITDP, 2017).

This paper investigates a college campus street in Bangalore to derive insights that can inform public street planning, particularly in areas with lower vehicular traffic density. By studying the carefully planned pedestrian zones, traffic management strategies, and green infrastructure in campus streets, this research aims to bridge the gap between campus and urban street design, making public spaces more inclusive and comfortable for all users (Kumar et al., 2020).

Literature Review

Pedestrian-friendly urban design prioritizes the needs of non-motorized users by integrating features such as wide sidewalks, shaded walkways, and designated crossings to enhance safety

and accessibility (Gehl, 2011). Research indicates that walkability improvements contribute to public health, reduce vehicular dependency, and create more vibrant urban environments (Litman, 2021). Traffic calming strategies such as speed humps, raised crossings, and curb extensions help in reducing vehicle speeds and enhancing pedestrian safety, making streets more user-friendly (Rastogi & Rao, 2016).

Studies on campus street design highlight the importance of restricting vehicular movement to specific zones and allowing pedestrian-only spaces to create safer environments (ITDP, 2017). Green infrastructure, including trees, rain gardens, and bioswales, has been recognized as an essential component in urban street design, mitigating heat island effects and improving air quality (Jacobs, 1993). Examining international best practices, cities like Copenhagen and Amsterdam have successfully integrated pedestrian-prioritized street designs by implementing shared spaces and reducing on-street parking (Marshall, 2018).

However, public streets in Indian cities face significant challenges due to inadequate pedestrian infrastructure, encroachments, and heavy traffic congestion (Singh & Sharma, 2015). Government initiatives such as the Tender S.U.R.E. projects in Bangalore aim to enhance pedestrian mobility by designing well-structured streetscapes, yet implementation remains inconsistent (BBMP, 2020). The Smart Cities Program also emphasizes sustainable urban mobility, advocating for improved pedestrian pathways and better traffic management (Rastogi & Rao, 2016). While these policies reflect a shift toward pedestrian-first approaches, stronger execution mechanisms and community involvement are needed to achieve their full potential (Tiwari & Jain, 2012).

Understanding the design elements in campus environments can offer practical comprehension for transforming public spaces near parks in Bangalore. By adopting pedestrian-oriented strategies from campus planning, urban designers can create more inclusive and safer public streets, particularly in areas with lower vehicular traffic density (ITDP, 2011). This study contributes to the existing literature by bridging the gap between institutional campus design and public urban streetscape planning, demonstrating how pedestrian-friendly interventions can be adapted to the broader city context (Singh, 2022).

Methodology

The research employs a qualitative and quantitative approach, starting with field observations and photographic documentation of the selected campus street (Creswell, 2014). Key elements such as walkways, crossings, street furniture, lighting, and greenery are mapped to understand their role in enhancing the pedestrian experience (Alexander, 1977). A comparative analysis is conducted between the campus street and public streets in Bangalore, highlighting differences in infrastructure, accessibility, and user comfort (Marshall, 2018). Stakeholder interviews with urban planners, architects, and campus authorities provide additional insights into best practices and challenges in implementing similar designs in public spaces (Singh, 2022). The findings are synthesized to develop recommendations for public street design near parks in areas with low vehicular traffic density (Litman, 2015).

Case Study

Campus Street Design in Bengaluru

The selected campus street is located within a prominent educational institution in Bangalore, offering an ideal setting for pedestrian-oriented urban design (BBMP, 2019). The street is

characterized by well-maintained pedestrian pathways, traffic calming measures such as speed breakers and signage, shaded walkways lined with trees, and seating areas that encourage social interaction (Tiwari & Jain, 2012). The design prioritizes pedestrian comfort by limiting vehicular access during peak hours and ensuring designated crossings for safe street navigation (Rastogi et al., 2021). Additionally, the presence of green buffers along sidewalks contributes to environmental quality by reducing urban heat and filtering air pollutants (Kumar & Sharma, 2020; Tzoulas et al., 2007). Such features make the space inviting and safer for pedestrians, offering a potential model for public street design near parks in Bangalore.



Figure 1 Key plan of Ramaiah Institute of Technology, highlighting multiple street section cut locations.

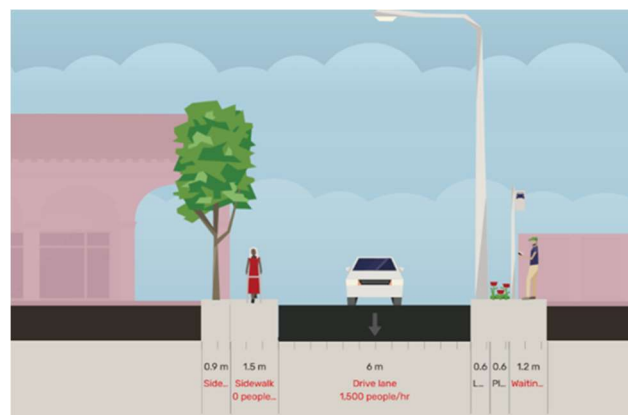


Figure 2: Section of Gate 10 Street Section



Figure 3: Photograph of the selected campus street of Gate 10 Street Section



Figure 4: School of Architecture Street Section



Figure 5: Photograph of the selected campus street of School of Architecture street

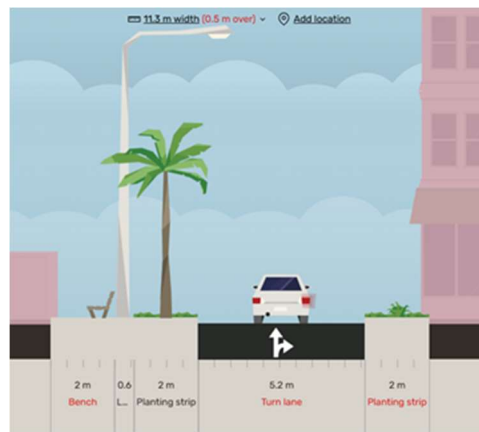


Figure 6: ESB Hall Street Section



Figure 7: Photograph of the selected campus street of ESB Hall Street Section

Figures 2, 4, 6 depict the street section of the selected campus street, emphasizing key design elements such as pedestrian pathways, green buffers, and traffic calming strategies.

Figures 3, 5, 7 present real-world images of the selected campus streets, illustrating pedestrian pathways, traffic calming features, and green buffers that contribute to walkability and user comfort.

Application to Public Spaces

The insights gained from the campus street case study can inform the design of public streets near schools and parks by prioritizing pedestrian infrastructure (ITDP, 2015). Wider sidewalks and dedicated pedestrian pathways should be implemented to accommodate diverse users, while raised pedestrian crossings and tactile paving can enhance accessibility for individuals with disabilities (Dines & Cresswell, 2004). Traffic management strategies such as speed limits, designated drop-off zones, and vehicle-free hours can improve safety in high-footfall areas (Singh, 2022). Integrating green infrastructure, including tree canopies, bioswales, and shaded rest spots, contributes to environmental sustainability and enhances user comfort (Jacobs, 1993). However, these recommendations are best suited for streets with lower vehicular traffic density, where pedestrian movement can be prioritized without causing major disruptions to urban mobility (Rastogi & Rao, 2018). Policy-level changes and collaborative efforts between government bodies, urban designers, and local communities are crucial for successful implementation (BBMP, 2020). Pilot projects can be used to test these interventions before broader adoption in Bangalore's public spaces (Tiwari & Jain, 2012).

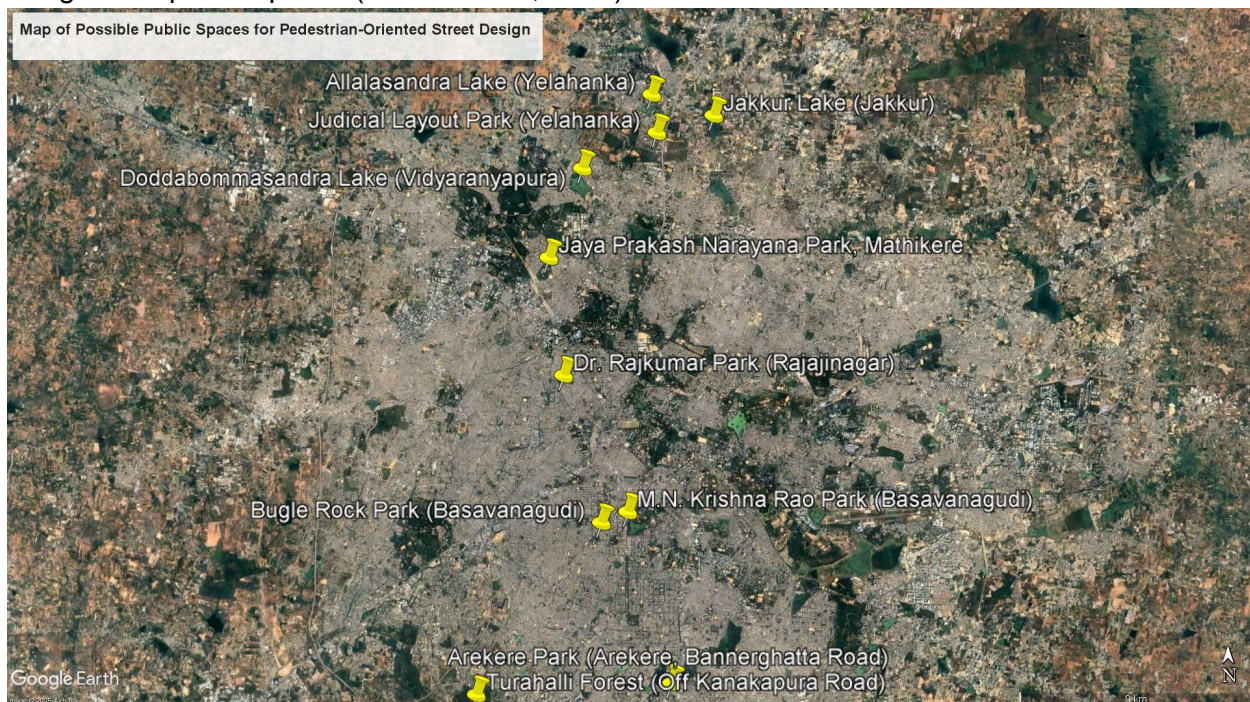


Figure 8: Map of Bengaluru highlighting potential public spaces where pedestrian-friendly street design interventions can be implemented

The map shows the list of green spaces and open spaces in Bengaluru that have lower traffic density but still require pedestrian-oriented street design improvements. These spaces are generally located in quiet residential areas, institutional zones, or suburban locations, making them ideal candidates for pedestrian-friendly interventions.

Conclusion

This study highlights how campus street designs can serve as a valuable reference for improving public street design in Bengaluru, particularly in areas with lower vehicular traffic density, such as streets adjacent to parks and green spaces. By analyzing a campus street within Ramaiah Institute of Technology, this research identifies key design elements—including pedestrian

pathways, green buffers, traffic calming measures, and street furniture—that enhance safety, comfort, and walkability (ITDP, 2017).

One of the primary takeaways from this study is the role of controlled vehicular access and pedestrian priority in creating safer and more inviting public spaces. The selected campus street successfully limits vehicular movement during peak hours, providing a model for public spaces where pedestrian movement should be prioritized (Singh & Sharma, 2015). Similar interventions, including raised pedestrian crossings, wide sidewalks, and seating areas, can be applied to these locations to improve accessibility and walkability (Gehl, 2011). Streets around Cubbon Park, Lalbagh Botanical Garden, and Kaikondrahalli Lake are ideal candidates for such improvements due to their relatively low traffic density and high pedestrian footfall (BBMP, 2020).

Additionally, the presence of green buffers and shaded walkways along the campus street demonstrates their effectiveness in mitigating urban heat, reducing vehicular noise, and enhancing the overall pedestrian experience (Kumar & Sharma, 2020; Tzoulas et al., 2007). In Bengaluru, where rapid urbanization has led to the fragmentation of pedestrian-friendly spaces, integrating tree-lined streets and bioswales in low-traffic public streets can significantly improve environmental quality and public health (Litman, 2021).

While campus-inspired design strategies are promising, implementing them in public streets requires policy-level support, community engagement, and iterative testing through pilot projects (Rastogi & Rao, 2016). The study emphasizes the need for multi-stakeholder collaboration, including urban planners, municipal bodies like BBMP, and local communities, to ensure the successful adaptation of pedestrian-friendly street design principles (Tiwari & Jain, 2012). The findings advocate for gradual, evidence-based implementation, where small-scale interventions in selected streets near parks and lakes can be tested before city-wide adoption (Mehta, 2008).

By integrating the lessons learned from campus street design, Bengaluru has the opportunity to transform its underutilized public spaces into vibrant, inclusive, and accessible environments (Marshall, 2018). If these recommendations are implemented strategically, the city can move toward a future where pedestrian mobility is at the core of urban street design, ensuring safer and healthier public spaces for all (Pucher & Dijkstra, 2003).

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