APPLIED PERPSPECTIVES

Creating Location Using Space Syntax Analysis

Urban Calculator Workshop, Evidence-based design studio, Architecture and Urban Design Education, Chalmers University of technology.

The Educational Challenge

At the bachelor level, architecture and urban design students have limited exposure to advanced spatial analysis. While many may later specialize in building-scale design, a system perspective—understanding how street networks influence accessibility, centrality, and urban life—is essential for all future professionals. The challenge is to introduce this perspective in a way that is both accessible and directly relevant to design education.

How the Workshop Applies

An educational workshop, utilizing the Urban Calculator tool, addresses this gap by giving students hands-on experience with spatial analysis in a design context. The tool enables analysis of connectivity and centrality without requiring prior GIS expertise, making it suitable for undergraduates. Through iterative testing of design ideas, students learn how even small interventions can reshape accessibility and urban life. This strengthens their ability to think systemically and to ground proposals in evidence — skills that remain useful whether they work with buildings, neighborhoods, or cities.

Illustrative Case Example

At Chalmers University, the workshop is integrated into bachelor courses in architecture and urban design. Students use Gothenburg as a testbed, exploring how new bridges across the Älven River—or over infrastructural barriers such as highways—might change the city's spatial structure. The analysis shows how these connections can redistribute centrality, improve accessibility between north and south, and open opportunities for densification and new urban centers. Students also investigate site-specific effects, for example in residential suburbs, and reflect on how infrastructure shapes both daily life and long-term growth.

Figure 1. Examples of conceptual diagrams showing two different goals when adding new bridges over the Älven, Gothenburg, Sweden

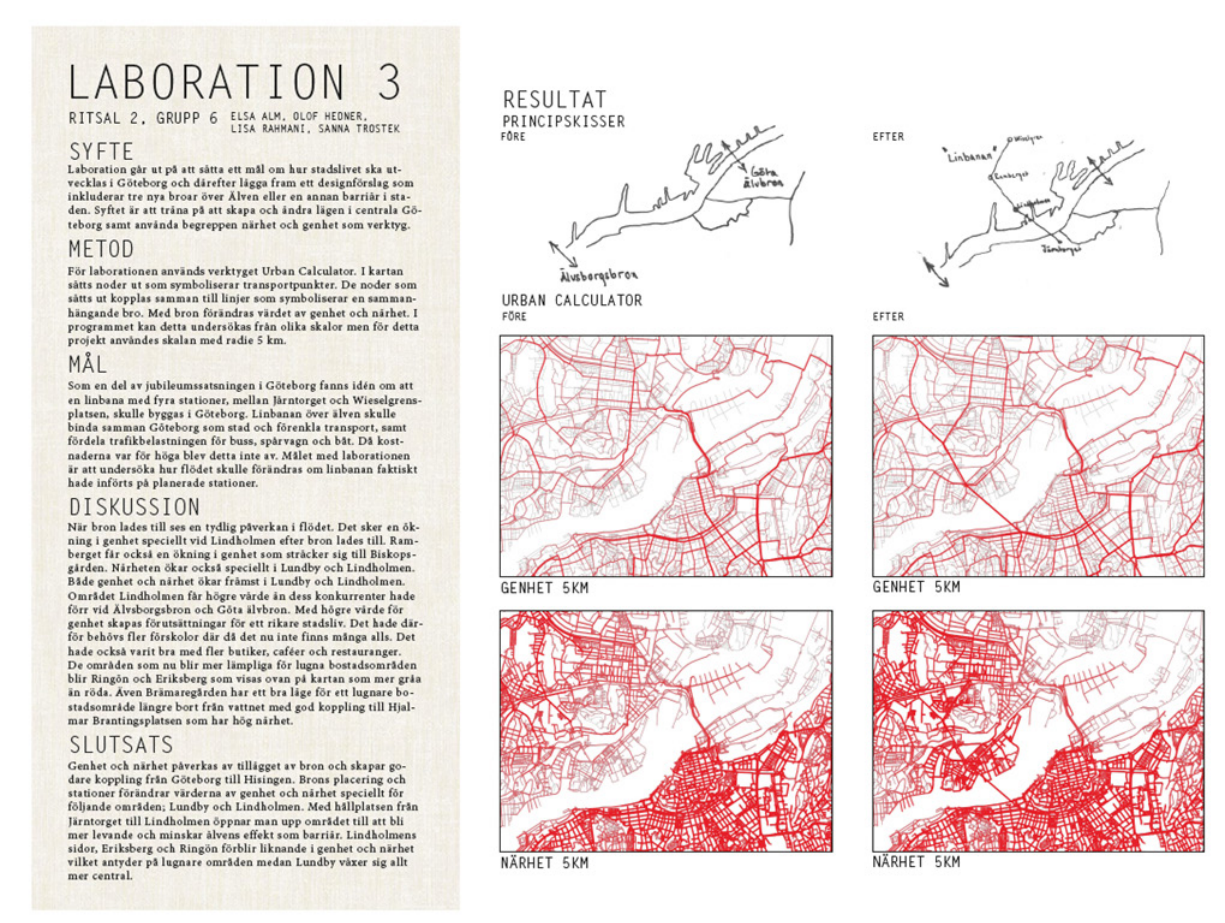

Figure 2. Example of the student work

Potential Outcomes

The exercise reveals multiple dimensions of urban change. Students see how bridges can reduce barriers and strengthen citywide connectivity, while shifting centrality toward emerging nodes. They identify opportunities for densification, mixed-use development, and active ground-floor programming in areas made more accessible. The iterative design process trains them to refine proposals based on feedback from spatial analysis, demonstrating how small adjustments can lead to large-scale impacts. Ultimately, the workshop fosters an understanding of evidence-based urban design and shows how system thinking supports more vibrant, diverse, and sustainable cities.

Relevance for Bachelor Education

The Urban Calculator workshop gives students a clear and accessible way to connect design decisions with measurable spatial outcomes. Without requiring advanced technical training, it introduces a system perspective that complements any later specialization, whether in architecture or urban design. For educators, it offers an efficient method to integrate evidence-based tools into bachelor curricula, while for students it builds confidence in linking design ideas to citywide effects—skills that are transferable across both academic and professional contexts.

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