

The use of urban watersheds as a geodesign framework in planning education

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Bridging theory and practice through problem-solving planning strategies.

OBJECTIVES

The purpose of this paper is to demonstrate the use of technology-assisted multi criteria analysis and participatory approaches as effective tools for implementing the pedagogic guidelines of the Architecture and Planning Undergraduate Program at the Federal University of Minas Gerais, Brazil. It reports on a planning studio experience that uses the hydrological cycle in urban watersheds as a powerful analytical framework for understanding development environmental impacts and spatial justice issues from an integrated and interdisciplinary perspective, involving contentious interest groups and mediation strategies, aiming at more sustainable and shared decision-making processes.

BACKGROUND AND PROBLEM IDENTIFICATION

Having a strong emphasis on urban environmental planning and housing policies, this recently created program has been considered innovative for its highly flexible curriculum and its focus on bridging theory and practice through problem-solving planning strategies. Its pedagogical project has its origin in debates that took place within the Architecture and Planning Graduate Program – NPGAU at UFMG that recognized the need to overcome the strong architecture and design tradition of the former undergraduate program, towards a more interdisciplinary profile of future planners that have been claimed by Brazilian changing society.

This new graduate program has been launched in 2009 with a total of 3.600 class hours, being 15% made up of compulsory theoretical courses, 60% of compulsory practice studios and the remaining 25 % of free course choices, open to

complementary concentration areas. As pointed out by MOURA (2014), one of its main quality - its wide opened flexibility and lack of pre-requirements amongst disciplines supplied, also became the origin for its main problem: how to organize theory and practice contents, involving different scales and complexity levels?

The experience reported on this paper refers to URB-017, a 120 class hour studio on Urban Watershed Planning Issues and the use of Vargem das Flores water supply reservoir and its catchment basin as a framework to integrate physical, biological and socioeconomic aspects of urban environmental planning.

Located in Belo Horizonte Metropolitan Area, this watershed encompasses portions of two important industry based municipalities: Contagem and Betim, both pressured by urban development, land use conflicts and lack of adequate infrastructure. Regardless its importance as a strategic water supply resource, the lack of effective and coordinated land use management, increasing pollution levels, major highway projects, deforestation and prime farm land transformation have caused severe environmental impacts on water quality and supply, also aggravated by a recent long lasting dry season.

METHODOLOGY

The students were divided in groups of three, each responsible for a different watershed subdivision. The use of Geographic Information System, multicriteria analysis and digital modeling have allowed the diversification of traditional inventory methods and the expansion of students' perception of local issues and their connections to the whole study area and more general processes, as suggested by VILLAÇA (2001), involving several analytical dimensions in a systematic and integrated way, leaving more class time for field work.

On-site inspection of the effectiveness of public policies and survey of community perceptions of everyday problems made it possible for students to decode existing rules and regulations, values, landscape components and urban space elements before proposing new scenarios in real contexts and then critically explore and discuss the resulting impacts.

The use of a Geodesign framework, as proposed by STEINITZ (2012), made it possible to organize and model each phase of the planning process, from describing

and understanding how the study area operates, identifying different interest groups and discussing how this reality can be change by planning strategies which have to be negotiated amongst the affected stakeholders.

MAIN RESULTS AND CONTRIBUTIONS

The use of a urban watersheds as a Geodesign framework that combines geotechnologies, traditional planning techniques and community involvement provided a more comprehensive understanding of contemporary complex urban environmental issues, achieving better results for the course objectives and the program pedagogic objectives. It also helped structure planning phases and processes, stakeholders' motivations as well as negotiation steps in favor of shared decision-making processes, qualifying the use of GIS tools to achieve more sustainable and inclusive proposals within very complex socio environmental contexts.

References

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