

Tactile maps: universal design and participation in the architectural design process

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Abstract This paper presents an experiment conducted in an undergraduate course in the School of Civil Engineering, Architecture and Urban Design of the State University of Campinas, UNICAMP, Brazil. An innovative teaching method was introduced in an elective discipline of two undergraduate courses (Civil engineering and Architecture). Universal design (UD) was discussed in a creative way. Tactile maps were introduced as design documentation and communication. User participation, represented through persons with impaired vision, was present as a means of enriching the design process of students. Two principal goals were set out in the course: (1) teaching the concepts of universal design and (2) experimenting within the creative design process. Special attention was given to users with impaired vision. Students were asked to develop non-visual design communicating tools. Architectural barrier elimination was not the only issue of UD that students had to address. The UD concept was explored on an extended basis, demanding changes in designer attitudes. Spatial organization was emphasized in design discussion activities to provide users with increased environmental perception, better “way-finding” abilities and allow for user feedback. The teaching experience used several activities to increase student’s sensitivity toward users with a variety of difficulties or abilities. In normal design courses students discuss issues of function, aesthetics, structure, construction techniques and urban impacts among the various aspects of building design. The creative process uses drawings and models, where forms are manipulated, primarily on a visual basis. The questions of UD are usually treated superficially. Students may show good intensions in incorporating the seven principles of UD; however, a deeper understanding is difficult to reach when students have not felt the difficulties of restricted

abilities themselves. Thus, new design teaching methods are necessary to increase student awareness. Also new design methods must be taught, especially to develop alternative ways of presenting design solutions to clients/users with specific needs. In the case of the visually impaired, tactile maps can be added to the normally produced physical or computer aided design (CAD) models. Tactile maps can also improve user participation in the design process to obtain feedback, opinions and feelings. The teaching experience introduced several theoretical concepts: DU, environmental psychology, building performance assessment (BPA) and architectural programming or briefing. Students evaluated the university campus in relation to the Brazilian accessibility code and performed role-playing activities to gain sensibility toward restricted user abilities. Finally, students developed a design project in groups and presented their solutions to users with visual deficiencies. Through tactile maps, these users performed a walkthrough the model (map) and expressed their spatial orientation and cognition of the design. This teaching experiment followed the intensive module awareness, accountability level and integration level, described by Welch (1995). As a result students gained important learning experiences. Through their difficulties students had insights, which can add professional responsibility and human sensibility of future Architects and Engineers.

Keywords Universal design • Architectural design process • Tactile maps

Reference

Welch P (ed) (1995) Strategies for teaching universal design. Using awareness levels across design disciplines, Chapter 6. Adaptive environments center, Boston

