

The Role of Building Information Modeling as a Design Teaching Method in Architecture, Engineering and Construction Schools in Brazil

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Abstract : Despite the significant advances made by the construction industry in recent years, the crystallized absence of integration between the design and construction phases is still an evident and costly problem in building construction. Globally, the construction industry has sought to adopt collaborative practices through new technologies to mitigate impacts of this fragmented process and to optimize its production. In this new technological business environment, professionals are required to develop new methodologies based on the notion of collaboration and integration of information throughout the building lifecycle. This scenario also represents the industry's reality in developing nations, and the increasing need for overall efficiency has demanded new educational alternatives at the undergraduate and post-graduate levels. In countries like Brazil, it is the common understanding that Architecture, Engineering and Building Construction educational programs are being required to review the traditional design pedagogical processes to promote a comprehensive notion about integration and simultaneity between the phases of the project. In this context, the coherent inclusion of computation design to all segments of the educational programs of construction related professionals represents a significant research topic that, in fact, can affect the industry practice. Thus, the main objective of the present study was to comparatively measure the effectiveness of the Building Information Modeling courses offered by the University of Sao Paulo, the most important academic institution in Brazil, at the Schools of Architecture and Civil Engineering and the courses offered in well recognized BIM research institutions, such as the School of Design in the College of Architecture of the Georgia Institute of Technology, USA, to evaluate the dissemination of BIM knowledge amongst students in post graduate level. The qualitative research methodology was developed based on the analysis of the program and activities proposed by two BIM courses offered in each of the above-mentioned institutions, which were used as case studies. The data collection instruments were a student questionnaire, semi-structured interviews, participatory evaluation and pedagogical practices. The found results have detected a broad heterogeneity of the students regarding their professional experience, hours dedicated to training, and especially in relation to their general knowledge of BIM technology and its applications. The research observed that BIM is mostly understood as an operational tool and not as methodological project development approach, relevant to the whole building life cycle. The present research offers in its conclusion an assessment about the importance of the incorporation of BIM, with efficiency and in its totality, as a teaching method in undergraduate and graduate courses in the Brazilian architecture, engineering and building construction schools.

Keywords : building information modeling (BIM), BIM education, BIM process, design teaching

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