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INTEGRATING COMPUTATIONAL ANALYSIS TECHNIQUES IN EGYPTIAN ACADEMIC ARCHITECTURE CURRICULA

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Abstract

Educational environments must support real life needs, and serve industry demands on both local and worldwide levels. Computer technology can enhance architecture in so many ways. Data Collection, conceptual design, computer aided design, digital model, physical model, virtual reality, simulation, and remote collaboration are different fields that support architecture technically, not to mention the advantages in construction industry. That is why it must be integrated in architecture education, but with care so as not burden creativity.

It was found that 75% of the computer modules in architecture departments in Egyptian universities and institutes do not fully integrate with other modules. As an output, two major problems resulted. The first problem is that the design final project comes out either weak or supported by professional paid eligible aid. Secondly, and more important is the need for external software courses to support design projects and not just on the drafting level. Teaching techniques must bear in mind how to integrate modules and courses that aim at enhancing final outputs. As an example is one of the most important courses in the field, which is the computer course taken mostly in early years.

Despite the overloaded architecture curricula, because of its multiple identity academia or practice; techniques or aesthetics; science or humanities (Kocaturk, T. and Kiviniemi, A, 2013) how and when to integrate these aspects is crucial. The focus of this paper is to test the importance of integrating computational analysis tools into architecture education (specifically in design). It also aims at emphasizing on the importance of integrating all modules to achieve a qualified output. In order to achieve the fore mentioned goal, a survey on graduates' educational conditions is first conducted. This is followed by a critical review of some of the existing educational approaches. This paper explores introducing three different computational analysis tools, addressing three different parameters, to evaluate a sample of architecture design projects at a schematic stage. The chosen parameters had a strong impact effect on the design project. Evaluation in a quantitative manner was the third aim of the paper. Quantitative approach was compared to traditional evaluation measures. The focus of this approach indicates a strong necessity to use computer analysis tools during the schematic phase, and recommends suitable building forms and orientations.

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