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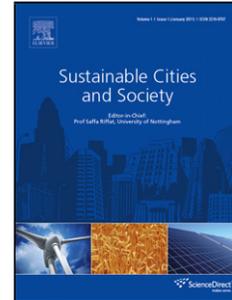
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# **Coupling architectural synthesis to applied thermal engineering, constructal thermodynamics and fractal analysis: an original pedagogic method to incorporate “sustainability” into architectural education during the initial conceptual stages**

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## **Research Highlights**

- Refine the architectural design based on the energy consumption
- Methodology to integrate sustainability with architectural synthesis
- Conversion of 3 different pedagogical approaches
- Conceive and transform a volume within an evolving context
- Constructal and fractal dimension of architectural synthesis

## **Abstract**

This paper describes an original didactic approach to integrate sustainability and building applied thermal engineering methodology with the architectural education. It presents the pedagogical and scientific dimension of a seminar-workshop that has been conceived in order to accomplish the aforementioned objective. Three educational models of architectural synthesis have been converged to common methodology. According to the present educational program's guidelines complex volumes have been produced, while an evaluation engine was created on the basis of simplified calculation models, in order to provide formal modifications, evaluate the formal solutions and choose the optimum solutions preserving the initial architectural idea. In its final stage, the project featured the refinement of the conceptual architectural design focusing on the energy consumption aspects. As a result of this pedagogical project, it was observed that the adopted methodology produced reliable results for the pedagogical purpose in the nine projects

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