

## Chapter 16

# Active Learning using Digital Technology and Ubiquitous Information in Architectural Construction: PBL as a Vital Methodology for Instructional Design

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### ABSTRACT

*In the new context of the Information Society and learning skills, architectural education through active constructive methodologies is able to form professionals capable of combining technical and aesthetic aptitudes and begin to apply to the design and building construction skills. In the discipline of Architectural Construction where contact with the professional world is inevitable. The strategic instructional design element used as main methodology the PBL. With the use of information technologies and communication, ICT and Ubiquitous information ensures the acquisition of skills and knowledge. The programming steps of PBL at the use of ICTs as tools for research-knowledge and representation -communication, achieves another educational dimension. This provides students awareness of their own learning, as also a conceptual relationship and ultimately a holistic view of architecture.*

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## INTRODUCTION

The new setting of higher education in the Information Society (SI) is based on the correct acquirement of skills, instead of the educational model based on the acquisition of knowledge. In the field of Engineering and Architecture (where we can also find additional studies, such as Construction Engineering or Civil Engineering), we can identify both general and specific skills related to the use and control of the Information Technologies (IT).

In architectural education, until recently, the use of IT was restricted to project implementation processes, i.e., the use of Computer Assisted Design (CAD). More recently, Building Information Modelling (BIM) applications have enabled a significant leap in the parametric design of architectural projects. Nevertheless, the IT potential for teaching and learning goes much further than the use of these tools to support educational practices and improve outcomes for understanding. The incorporation of the Technical Information and Communication Technologies (ICT) is essential to the new educational methods of the European Higher Education (EHEA). It promotes collaborative and cooperative learning, and motivates students to engage in self-learning, thus obtaining the right skills for their future careers. In other words, this approach avoids passive “lectures” that keep the teacher away from the students, and do not benefit from the digital age and new SI. Nowadays, owing to the technologically “friendly” classes, students can benefit from new learning dynamics, many of which are based on content and on-line methods (commonly referred to as e-learning).

The learning process necessary to master architecture, specifically in the construction division, should not be oblivious to this technological evolution. ICT is of great value in both educational and professional contexts, and for this reason, we consider and propose a new approach to education in architecture. This new approach includes cross-learning, problem-based learning (Font, 2004)

and strategically organized projects that allow students to acquire the highest quality of skills so that they can establish their own autonomous learning (Pozo and Monereo, 1999).

## THE SPANISH ARCHITECT AND COMPETENCE SKILLS

In Spain, an architect is considered a professional capable of combining technical and aesthetic skills and using those abilities for the construction of buildings or urban planning. In this sense, an architect is both an “artist” and a “builder” with a complete view of architecture that focuses its core business in the architectural design and the building work. Thus, the powers of the architect are in accordance with the provisions of European Directive 85/384 / EEC of the European Community, and the programs leading to the official qualification of an Architect. However, architectural curriculum must maintain the proper balance between theory and practice and guarantee the acquisition of specific aptitudes described following.

- The ability to develop architectural designs that satisfy both aesthetic and technical requirements.
- An adequate knowledge of the history and theories of architecture, as well as the related arts, technologies and human sciences.
- Knowledge of the fine arts as a factor likely to influence the quality of Architectural design.
- Suitable knowledge of urban design, planning and the skills involved in the planning process.
- Ability to understand the relationship between people and buildings, due to the need to harmonize these relationships depending on the needs and scale of human creations.

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