

IMPAQT

Integrative Multidisciplinary People-centered Architectural Qualification & Training

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WP.1.2 ICT Contribution in Architectural Education (introduction)

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1. Introduction

This report summarizes the contribution of ICT in the architectural and urban design education program of IMPAQT. It shows the approach developed on the utilization of ICT along the different streams of the integrative, multidisciplinary, people-centred program. The aim is to enable technology to incorporate the human aspects in design that eases and support the learning process throughout. The approach developed encounters the needs of the current and future generations through focusing on the utilization methods of the tools and equipment to evoke creative and flexible mindsets.

The role of ICT and technology in the current architecture and urban design education was reviewed through several local and international academics to identify the existing challenges and common misconceptions to the tools, equipment and solutions. The implementation of the learning activities was developed along the 5-year undergraduate program considering the integration between the multidiscipline such as construction, design, history, theory and urban. The activities include tools and equipment which are useful for, 3-D visualization, documentation, analysis and integration to be utilized in understanding and defining design problems, formulating design objectives, design thinking, communication and evaluation of design solutions. Besides, exploring and developing labs and equipment for data storage and sharing networks. Quantitative and qualitative analytical tools, visual, thermal and acoustic instruments and simulation software, computational problem space planning programs, parametric design software, BIM technology, project management and Post Occupancy Evaluation software.

2. An integrative approach pedagogy

Formerly, architectural and urban designs could only be represented through physical modeling, which was time and cost inefficient. With the presence of modeling and simulation software and technological tools designers could not only communicate their ideas clearly, but also assess their designs before they are actually built. Furthermore, such tools advanced immensely enabling architects and urban designers to analyze the influence of numerous parameters within the built environment in any context and within any scenario. Therefore, the contribution of ICT and technology became inevitable and significant in architectural and urban design institutions.

The project at hand aims to develop an integrative, multidisciplinary, people-centred educational program, which incorporates ICT and technology as a representational and analytical tool that facilitates the design thinking and learning process. Furthermore, the approach is to enlighten the learners along the different streams of the program to understand the purpose of using any of these tools and stay in control during their usage, whether it being design thinking, representation or analytical tools. This is not only to avoid the production of inhumane designs resulted from technological methods but also to prioritize the human aspect in all the design streams of the program. The rationality of the software, simulations and modelling tools obliges the users to

incorporate the human aspects in their designs whether at the initial stages of drafting/modelling stages or during the interpretation of the outcomes. This makes conclusions more subjective and disputable than depending on a computer assessment system, which provides generic outcomes.

Establishing an approach to utilizing ICT and technology tools, where users take full control of the tool at hand allowing it to enhance their design and maximize their learning rather than depending on it as a design thinking tool. This way, the limitations and challenges of each tool could not lead to misconceptions, decisive interpretations or even limit the learner's creativity, which potentially extends beyond the computer-aided tools. The current integrative approach would significantly influence the architectural and urban design education of current and future generations, creating better quality environments.

3. Gap analysis using social surveys

Three types of surveys were conducted to investigate the influence of ICT and technology on the existing architectural and urban design education. First are the online surveys, which included questionnaires for young architects. Second included questionnaires to the specialized partners the Desk review and surveys included questionnaires of focus groups and specialized partners were conducted to investigate the advantages/disadvantages of incorporating Design-aid tools in Architecture Education. ICT and technology allow interdisciplinary teamwork between different parties and engineers which saves time and money. It enables the designer to create organic complex forms and forms that emerge from certain parameters.

Most responses highlighted the significance of ICT tools and technology for visualization, representation, analysis, digital fabrication and impact assessment. However, it is advised that learners should be aware not to become dependent upon such tools solely for tackling design problems. Few challenges were revealed by the students interviewed who emphasized the complexity of the learning process for many software and tools. They added that many software and tools depended on their prior knowledge to other skills that they may not always possess, which limits their equal opportunities and design innovation.

Few responses recommended the importance of utilizing ICT and technology during the design thinking and not just to represent the end result due to its informative outcomes which could guide the design decisions efficiently by implementing quick changes. Other recommendations highlighted the use of ICT for helping the professional practice and methodologies innovation yet necessitating the need for verification. Also, suggestions were made to not allow computer modelling to take over physical models due to their influence on improving creativity. Specialized partners assured the importance of developing mindsets that are capable of utilizing the tools and technology to serve their goals. Besides the need to conduct actual measurements to analyze buildings performances through computer simulations that are reliable and validated to contribute to better understanding of the design implications.