ASSESSMENT OF THE USABILITY OF BIM SOFTWARE IN ARCHITECTURAL DESIGN PRACTICE AND EDUCATION IN BRAZIL – AUTODESK REVIT – BUTANTÃ HOUSE

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Objectives

This research aimed to study the use of Autodesk Revit BIM software in the design process of the Butantã House, a representative Brazilian building by architect Paulo Mendes da Rocha. Thus, throughout the process, it was sought to provide a better understanding of the design and construction stages, which undoubtedly help in learning architecture. Moreover, another major objective was the acquisition of knowledge of the BIM design methodology and Information Systematization, technologies that will be increasingly present in the daily lives of professionals in the construction industry.

Materials and Methods

The proposed method is described in Giacaglia and Moura (2015). The method used is based on that applied in previous researches, such as the one conducted by Santana (2021) and following the provisions of the NBR 19.965 standard. In it, it is expected the construction of two tables, one that indicates the effectiveness of the representation achieved by the research, and another of the efficiency of the design process with the use of the software, in this case, Revit. The first table is analyzed from the final drawings produced from the modeling, and the second table, examines the path, that is, the search for a plausible process, from the whole to the details.

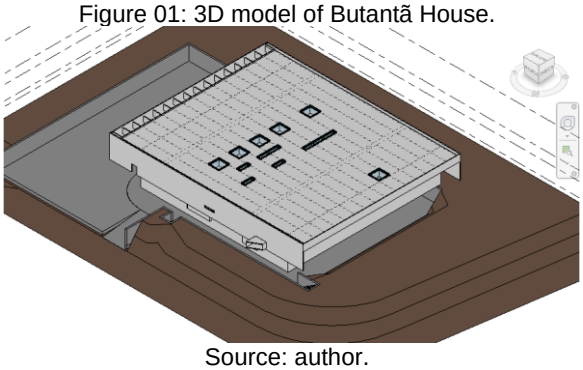
The research started reading the basic bibliography and the previous results. The references were texts selected by the advisor about BIM - Building Information Modeling (LAWSON, 1998; SUCCAR, 2009; EASTMAN et al., 2011; BORRMANN et al., 2018). Regarding the studied building, the drawings from the book Casa Butantã: Paulo Mendes da Rocha (ODONTO,2016) were used as reference. And, regarding the software, the study was made from tutorials made available by the company itself and by previous research (SANTANA, 2021).
The work is carried out reporting the results obtained about the applicability in the design process, parallel to the production of the didactic material. The results are incorporated into the final report of the research.

Results

At the end of the research process, a final report was produced with a synthesis of all the work done throughout its development. The modeling process of Casa Butantã generated a didactic material with a step by step development of the model in Revit software, summarized in the previous item, which follows the methodology proposed by the research and has advice about the use of the software learned throughout the modeling process. The research methodology also provides as a final result two tables, Requirements of the design process and Requirements of representation, presentation and interoperability. The first contains requirements that must be met by the software, in this case Autodesk Revit, for an efficient design process. The second presents a

list with the degree of realization and the level of development of each object performed in the modeling. Moreover, the research produced the 3D model of Butantã House (Figure 01).

Figure 01: 3D model of Butantã House.



Source: author.

Conclusions

The search for a logical and effective design process implied some challenges in the modeling process of Butantã House. Furthermore, some aspects of the software itself were also challenges during the development of the research.

However, it is also worth highlighting the positives of using the software. As Revit is a parametric software, the whole modeling process was facilitated with it, for example, when modifying individually an element of the project, all other elements linked to it were automatically updated, which avoided rework and wasted time. Thus, even with all the bottlenecks in the process, they did not become a hindrance to reaching the level of preliminary design proposed by the research.

To conclude, the research presented itself as an important learning process, both regarding the Autodesk Revit software, and regarding the great project studied, the Butantã House, by architect Paulo Mendes da Rocha. Furthermore, the writing of the didactic material complemented even more the learning about the themes, and represented a consolidation of knowledge. This study was financed in part by the University of São Paulo Provost's Office for Research.

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