

## Urban and Building Information Modeling's Applications for Environmental Education: Case Study of Educational Campuses

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**Abstract :** Smart sustainable educational campuses are the latest paradigm of innovation in the education domain. Campuses become a hub for sustainable environmental innovations. University has a vital role in paving the road for digital transformations in the infrastructure domain by preparing skilled engineers and specialists. The open digital platform enables smart campuses to simulate real education experience by managing their infrastructure within the curriculums. Moreover, it allows the engagement between governments, businesses, and citizens to push for innovation and sustainable services. Urban and building information modeling platforms have recently attained widespread attention in smart campuses due to their applications and benefits for creating the campus's digital twin in the form of an open digital platform. Qualitative and quantitative strategies were used in directing this research to develop and validate the UIM/BIM platform benefits for smart campuses FM and its impact on the institution's sustainable vision. The research findings are based on literature reviews and case studies of the TU Berlin El-Gouna campus. Textual data will be collected using semi-structured interviews with actors, secondary data like BIM course student projects, documents, and publications related to the campus actors. The study results indicated that UIM/BIM has several benefits for the smart campus. Universities can achieve better capacity-building by integrating all the actors in the UIM/BIM process. Universities would achieve their community outreach vision by launching an online outreach of UIM/BIM course for the academic and professional community. The UIM/BIM training courses would integrate students from different disciplines and alumni graduated as well as engineers and planners and technicians. Open platforms enable universities to build a partnership with the industry; companies should be involved in the development of BIM technology courses. The collaboration between academia and the industry would fix the gap, promote the academic courses to reply to the professional requirements, and transfer the industry's academic innovations. In addition to that, the collaboration between academia, industry, government vocational and training centers, and civil society should be promoted by co-creation workshops, a series of seminars, and conferences. These co-creation activities target the capacity buildings and build governmental strategies and policies to support expanding the sustainable innovations and to agree on the expected role of all the stakeholders to support the transformation.

**Keywords :** smart city, smart educational campus, UIM, urban platforms, sustainable campus

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