Exploring innovative building technology for smart city and development of virtual smart building model addressing local living lifestyle using "ExpLife"

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Abstract:

The proposed discovery-enriched learning package, the ExpLife, is an interactive platform for facilitating students to learn and explore innovative building technology for smart living environment addressing the local living lifestyle.

Students basically take a passive role in the traditional learning process. They learn construction technology topics through lecture notes, textbooks and photos. Although videos and interactive animations are also adopted as a more effective mean to illustrate the essential construction work sequence, students may still find it hard to relate the lecture contents to real life experience in particular the fast-track developing knowledge such as the principle of smart city development. The learning process should therefore be further extended from learning of basic principle to exploring new knowledge addressing the local real life characteristics. This also addresses the learning needs of our digitally native millennial students.

The principle of smart city development is the effective integration of physical, digital and human systems in the built environment for promoting sustainable development practices to address various growing urbanization challenges. Smart buildings are essential elements of smart city development and it should be the fundamental knowledge to students taking construction related programmes. This web-based learning package will consist of 5-stages of learning process from self-initiated learning of basic knowledge to exploring new building technology for future local projects adopting the principle of smart city development. The five stages are 1) studying the basic knowledge of

smart city, 2) exploring the latest development of smart living environment addressing local living lifestyle via a tailor-made learning model, 3) proposing innovative building technology to meet the new lifestyle, 4) sharing and reviewing the feedbacks and fine-tuning the proposed design, and 5) uploading the finalized design for the development of virtual smart building model that would be served as a sustainable student-contributed teaching and learning material.

The ExpLife does not only facilitate the learning process through enhancing student engagement, but also promote discovery and encourage students' sharing of knowledge, creative thinking, as well as relating their learnings to real life experience.