



香港城市大學
City University of Hong Kong

Development of a Virtual Construction Environment (VCE) Model (Foundation Part) for Construction Planning for Construction & Structural Engineering Curricular

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Principal Investigator: Prof Chi Ming TAM

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Abstract:

The planning process of construction projects is among the most challenging topics faced by construction students. Decisions made during this process have a tremendous impact on the successful execution of the project from its early conceptual phases, through the project construction and completion. For a large majority of construction projects, the current planning practices remain manually based. General and project specific data are communicated among project participants through design drawings in a 2D paper-based format. Due to the interdependence between the different elements and the large amount of information that needs to be manually processed, it imposes a heavy burden for construction undergraduates to make right decisions under the planning process.

This project will set up a web-based resource centre for planning environment and will support the learning process of the construction or civil engineering students in the planning phase of design-build projects. The courses related to this area are BC3411, BC4412, BC2111 and BC5106: Construction Engineering and Project Management, Building Design Project, Construction Environment, Building and Science and also a GE programme named GE2303 Sustainable Environment, etc. The main purpose of the web-based resource centre is to assist the students in planning decision making, by providing pertinent information necessary for making appropriate decisions in a structured format. This information can be organized, stored, and retrieved by the students whenever needed at the web-based centre. The centre also provides the information of the different work execution and site layout planning scenarios early during project development stages.

In order to define required information in learning planning decision making, the investigators will use a web-based Virtual Construction Environment (VCE) model (Foundation Part) under which information required could be classified and organized in a structured standardized format. The construction students can then retrieve and utilize this information interactively whenever needed during the virtual learning sessions. A prototype computer tool is introduced to illustrate the framework of the VCE. The computer prototype is implemented using available commercial software tools.