CASE STUDY: DEVELOPMENT OF BIM U-EDUCATION SYSTEM WITH OPEN BIM LIBRARY

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ABSTRACT: Recent changes within the digital business environment have shifted construction industry toward a more adoption of new technologies as BIM(Building Information Modeling). However, adoption of BIM concept or 3D drawing means a lot of time and labors are needed to develop the 3D model of structure, also all participants in the project network have to familiar with 3D tools. Internationally, adequate BIM training is recognized as the most challenging area, but in domestic BIM education is rely on BIM tool vendor's instruction education or related seminar. This research suggest the case study of the development of eduBIM : the 1st private BIM u-education system with open BIM library in Korea, specifically the BIM education process based on worker's competency, structure of overall system and services at present, education experiences, and recommendation.

Keywords: BIM, Education, Training, Ubiquitous, U-learning System, BIM Library

1. INTRODUCTION

Recently in Korea, BIM concept is adopted and educated in many AEC companies according to the BIM guide for Architecture by MLTM(Ministry of Land, Transport and Maritime Affairs)[1], BIM plan[2] and BIM procurement guideline[3] by Public Procurement Service.

In case of BIM concept is applied to the whole project successfully, it is expected that a lot of errors may be decrease, reducing of cost and schedule may improve the project's efficiency.

Fig.1 Challenges to BIM Adoption

In overseas countries, challenges to BIM adoption process [4] shows 'adequate BIM training' would be the most challenging area, therefore AEC companies are going to consider the BIM education cost and program sufficiently. Whereas in domestic industry, most of BIM education is relying on vendor's instruction or out of company seminar[5]. Also Seo[6] revealed that during the BIM education, not only learning of 3D modeling tool, but also overall understanding of building process should be considered first for the BIM collaboration.

Also, there are many problems in BIM education as lack of work based learning program, student's poor learning ability, time and cost problem of workers, lack of optional subject, unclear BIM education process, learner's illusion of BIM capability and etc[7].

Therefore, this research aimed at developing optimized BIM education program as 1)investigating the most wanted BIM education category considering domestic and overseas BIM process, 2)developing work based BIM education program, and 3)suggesting u-education program containing on-line and mobile learning system with BIM library supporting system.
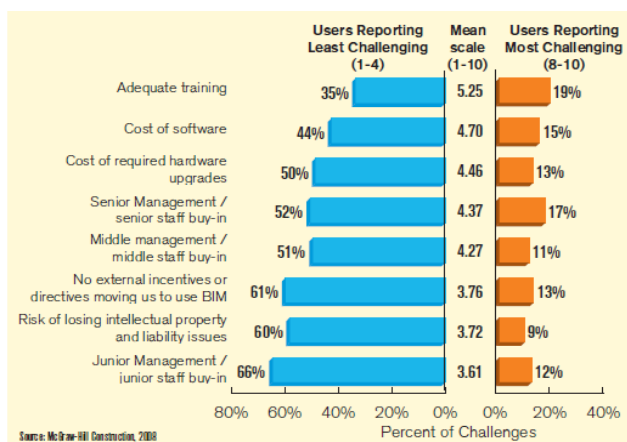
2. NEW BIM EDUCATION PROCESS

At present BIM education is simply constitute of 3D tool learning program, but suggested BIM education program is developed accordance with selective BIM tool with project's life-cycle and architectural competency group in the national competency standards by Human Resources Development Service of Korea[8]. This program can support learner's acquisition of BIM process by work type
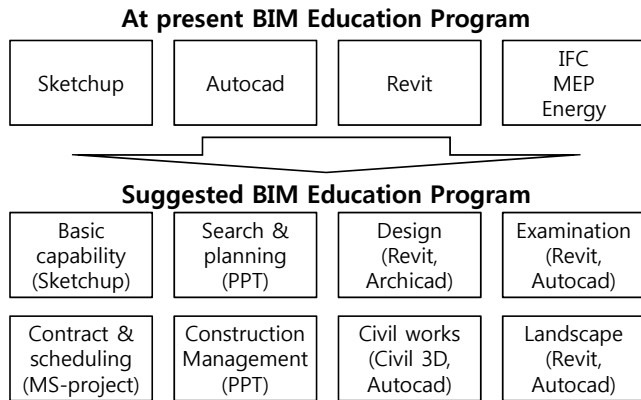
At present BIM Education Program

Sketchup	Autocad	Revit	IFC MEP Energy

Suggested BIM Education Program

Basic capability (Sketchup)	Search & planning (PPT)	Design (Revit, Archicad)	Examination (Revit, Autocad)
Contract & scheduling (MS-project)	Construction Management (PPT)	Civil works (Civil 3D, Autocad)	Landscape (Revit, Autocad)

Fig. 2 New BIM education process

3. eduBIM : U-EDUCATION SYSTEM

eduBIM which was developed to support new BIM education process is consist of u-learning and BIM store(library)(Fig. 3). This system was concentrated in 1)provide the selective education for satisfying trainee's need, 2)support basic BIM library for decreasing work schedule, and 3)program for learning the effective BIM concept based on basic BIM software[9].

u-Learning system(Fig. 4) was programed to trainee can select voluntary classes according to the duty in project, whereas BIM store(Fig. 5) have breakdown library structure for easy use and can be used in real project as a BIM library.
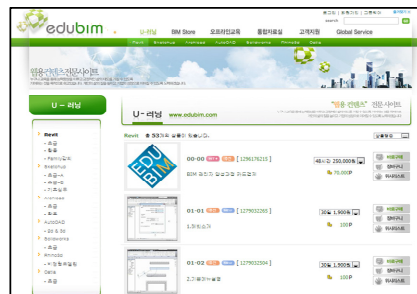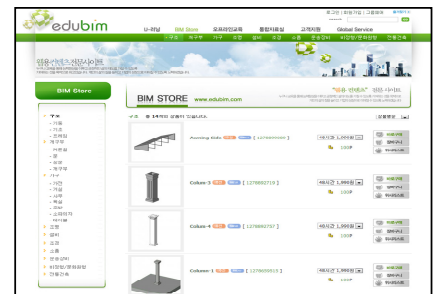
4. CONCLUSION AND RECOMMEDATION

Through the new BIM education process based on work competency, trainee's work capability and communication ability was upgraded for BIM collaboration. Moreover these experiences can be continued from design to construction, supervision, and maintenance stages.

Regardless of using specific BIM tool, BIM process would be possible if the trainee select and study the basic BIM tool based on IFC standard suitable for his own work and supported by BIM library.

Also application of BIM process should be started from the needs of job site, not from the academic field. Therefore it is desirable that firstly learn the way of using basic BIM tool than expand to the integrated BIM application.

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Fig. 3 U-Education System Main

Fig. 4 u-Learning System

Fig. 5 BIM Store(basic BIM Library)