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20 JANUARY 2023
*International Invention, Innovation & Design Exposition
for Built Environment and Engineering 2023*

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BIM Education for Quantity Surveying Students Using REVIT Tools:

IIBD BEE X 2023

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Evaluating the Knowledge, Awareness and Perceptions

INTRODUCTION

The implementation of BIM has been proven to enhance the productivity and efficiency throughout the construction process in other countries such as United Kingdom, Singapore, Hong Kong (Building Research Levy, 2016). Thus, the Malaysian government has highly encouraged the application of BIM to transform the Malaysian construction industry to a higher level (CIDB, 2015). Thus, the changes towards existing construction education system in BIM or information technology curricular, also for professional development courses need to be carefully examined in order to support the demands for the skilled BIM professionals. Developed countries have put in many efforts to impose BIM in their education systems as the reason to increase BIM awareness and train their graduates to be well-equipped and adequate with BIM knowledge and skills (Aziz et al., 2019). Howard et al. (2017), Jin et al. (2017) and Aziz et al. (2019) have discussed on the individual professional perception in BIM practice and implementation in AEC industry. Additionally, studies by Kugbeador et al. (2015), Zhao et al. (2015) and Shelbourn et al. (2017) have focused on the development of BIM in higher learning institutions' curricular and academic. Kugbeador et al. (2015) outlined BIM readiness defined as the student's willingness to explore BIM and their ability to work in a BIM-enabled environment. BIM is observed as a groundbreaking approach and integrated process that supports the efficient design, information storage and retrieval, model-based data analysis, visual decision making, and communication among project stakeholders (Eastman et al., 2008). BIM is different from computer-aided drawing (CAD), which enables modeling of the building's form. Meanwhile, CAD only provides a representation of the engineering object (Sacks, 2010). Therefore, the development of BIM initiates a new approach to teaching AEC. Through BIM, a comprehensive, integrated graphic and alphanumeric database, stakeholders can collaborate effectively (Thomsen 2008). Advanced analysis using BIM data allows various analytical activities, such as code checking, collision detection, energy efficiency analysis, and structural analysis. Adding time and cost information to the 3D model results in the virtual construction model (Kim, 2012). In response to this promising technology and industry needs for relevant skills, academic institutions are exploring strategies and approaches to incorporate BIM education in their undergraduate and graduate curriculum (Wang & Leite, 2014). Recently, the teaching method in construction education has also changed as education is always in tandem with the industry. The BIM technique has been integrated into the construction education curriculum (Kim, 2012).

ISSUES

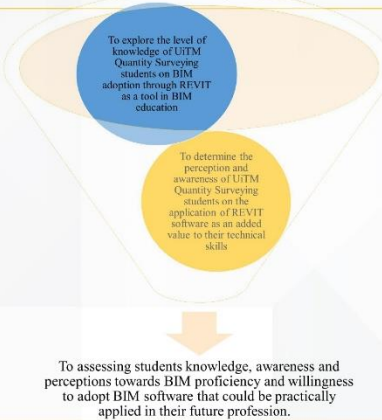
AEC industry demands for BIM competence professionals (Hosseini et al., 2018)

AEC industry faced problems of lacking skilled BIM professionals (Suwat et al., 2013)

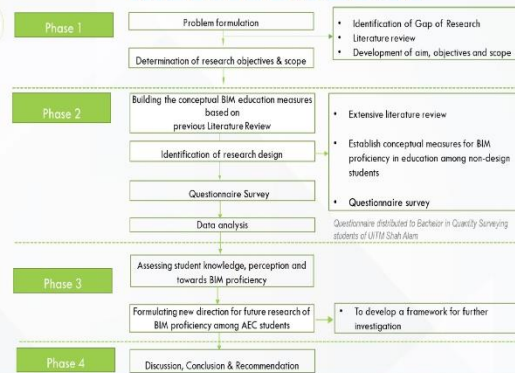
BIM skills and competencies are needed to solve future problems in construction sectors (Bosch-Sijtsema et al., 2019; Hong et al., 2019; Jin et al., 2019).

There is still lack of studies in the previous literature addressing BIM awareness and readiness of built environment students towards BIM software application especially for non-design students.

AIM & OBJECTIVES



METHODOLOGY



FINDINGS

CONCLUSION

Through the assessment on the students' knowledge and awareness versus their perceptions towards BIM and Revit software, it can be observed that the results demonstrated quite positive findings. In response to the survey questions, most of the students were excited in knowing more about BIM and ready to learn and explore Revit software, although they did not have any idea and aware about neither BIM nor Revit since they never heard of the terms before. Hence, they could not interpret either how BIM and Revit work, or what benefits they could get when using the tools in construction projects. Nevertheless, they believed that BIM technology with the usage of its tools such as Revit included in the course syllabus would benefit them in giving added-values towards their future career development.

NOVELTY

In terms of practicality, this research intends to promote the initial efforts in producing competent and proficient non-design students towards a successful implementation of BIM system in BIM-based projects. Consequently, it could lead to the establishment of a career as a BIM Manager among non-design professionals.

CONFERENCE

Paper has been submitted to the 11th International Conference on University Learning and Teaching (INCULT 2021), UiTM, entitled "BIM Education for Quantity Surveying Students Using REVIT Tools: Evaluating the Knowledge, Awareness and Perceptions" held on 2nd December 2021

Respondents' profile

	Frequency (No.)	Percentage (%)
Age		
18-20 years old	58	28.6
21-23 years old	142	70.0
24-26 years old	3	1.5
Total	203	100.0
Gender		
Male	56	27.6
Female	147	72.4
Total	203	100.0
Education level		
SIPM	31	16.7
Matriculation	56	27.6
Diploma	108	53.2
Others	5	2.5
Total	203	100.0

Perceptions towards BIM and Revit Software Application

Statements	Mean	SD	T _{stat}	Significance
Perception on BIM				
I am excited to know more about BIM	3.28	1.497	2.268	0.174
I know BIM will give me added value to my future career development	3.20	1.543	2.380	0.021
I understand the key concepts and usefulness of BIM in construction industry	1.62	0.844	0.714	1.136
I understand the key concepts and usefulness of BIM in construction industry	1.58	0.813	0.661	1.090
I have read about BIM before I was taking this course	1.57	0.872	0.761	1.086
Perception on Revit Software				
I know REVIT will give me added value to my future career development	3.36	1.474	2.173	0.032
I am excited to learn and explore REVIT	3.38	1.477	2.183	0.030
I think I can learn REVIT through watching a YouTube Manual etc.	2.29	1.138	1.296	0.243
I understand the important and usefulness of REVIT for Q&S job scope	1.91	1.140	1.299	0.245
I have experience with REVIT before I am taking this course	1.36	0.663	0.439	1.930

Knowledge and Awareness on BIM and Revit Software

Questions	BIM		REVIT	
	Frequency (No.)	Percentage (%)	Frequency (No.)	Percentage (%)
Have you heard of BIM/ Autodesk Revit Architecture before? (Without knowing what it is)				
Never	119	58.6	119	58.6
Rarely	30	14.8	38	18.7
Sometimes	40	19.7	28	13.8
Often	7	3.4	15	7.4
Always	7	3.4	3	1.5
Total	203	100.0	203	100.0
Do you know the application of BIM/ Autodesk Revit Architecture?				
Never	154	75.9	149	73.4
Rarely	31	15.3	33	16.3
Sometimes	15	7.4	14	6.9
Often	2	1.0	6	3.0
Always	1	0.5	1	0.5
Total	203	100.0	203	100.0
Do you have any idea how BIM/ Autodesk Revit Architecture works? (In term of technical aspects)				
Never	159	78.3	154	75.9
Rarely	30	14.8	34	16.7
Sometimes	10	4.9	11	5.4
Often	2	1.0	2	1.0
Always	2	1.0	2	1.0
Total	203	100.0	203	100.0
Are you aware of what BIM/ Autodesk Revit Architecture can bring to construction projects?				
Never	128	63.1	138	68.0
Rarely	35	17.2	30	14.8
Sometimes	24	11.8	22	10.8
Often	13	6.4	8	3.9
Always	3	1.5	5	2.5
Total	203	100.0	203	100.0
Are you aware of the main benefits of BIM/ Autodesk Revit Architecture?				
Never	137	67.5	148	72.9
Rarely	32	15.8	31	15.3
Sometimes	22	10.8	14	6.9
Often	7	3.4	6	3.0
Always	5	2.5	1	0.5
Total	203	100.0	203	100.0

This research is in the process of applying an Intellectual Property (IP) for the title and scope following the extended research on examining students' perceptions towards the after-effect of employing Revit as a tool. It includes the benefits and challenges of using Revit as BIM tools in deliberating their understanding to be aligned with skills and knowledge when using BIM platform.

COMMERCIALIZATION

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