BIM Education in UK HE

Professor Jason Underwood, University of Salford
& Chair (UK) BIM Academic Forum

EDUBIM 2016, 16th-17th June, ESTP, Paris, France

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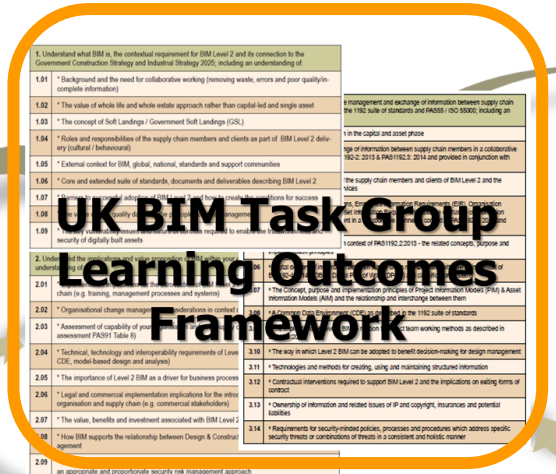
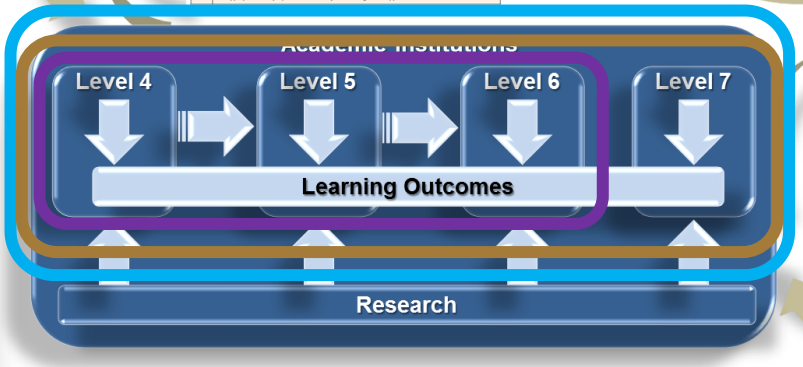
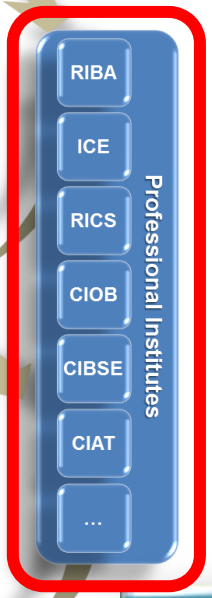
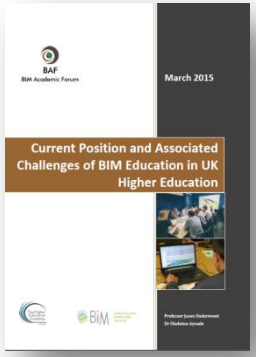


UK BIM Task Group Learning Outcomes Framework







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March 2015

Current Position and Associated Challenges of BIM Education in UK Higher Education

Professor Jason Underwood
Dr Oladotun Ayoade

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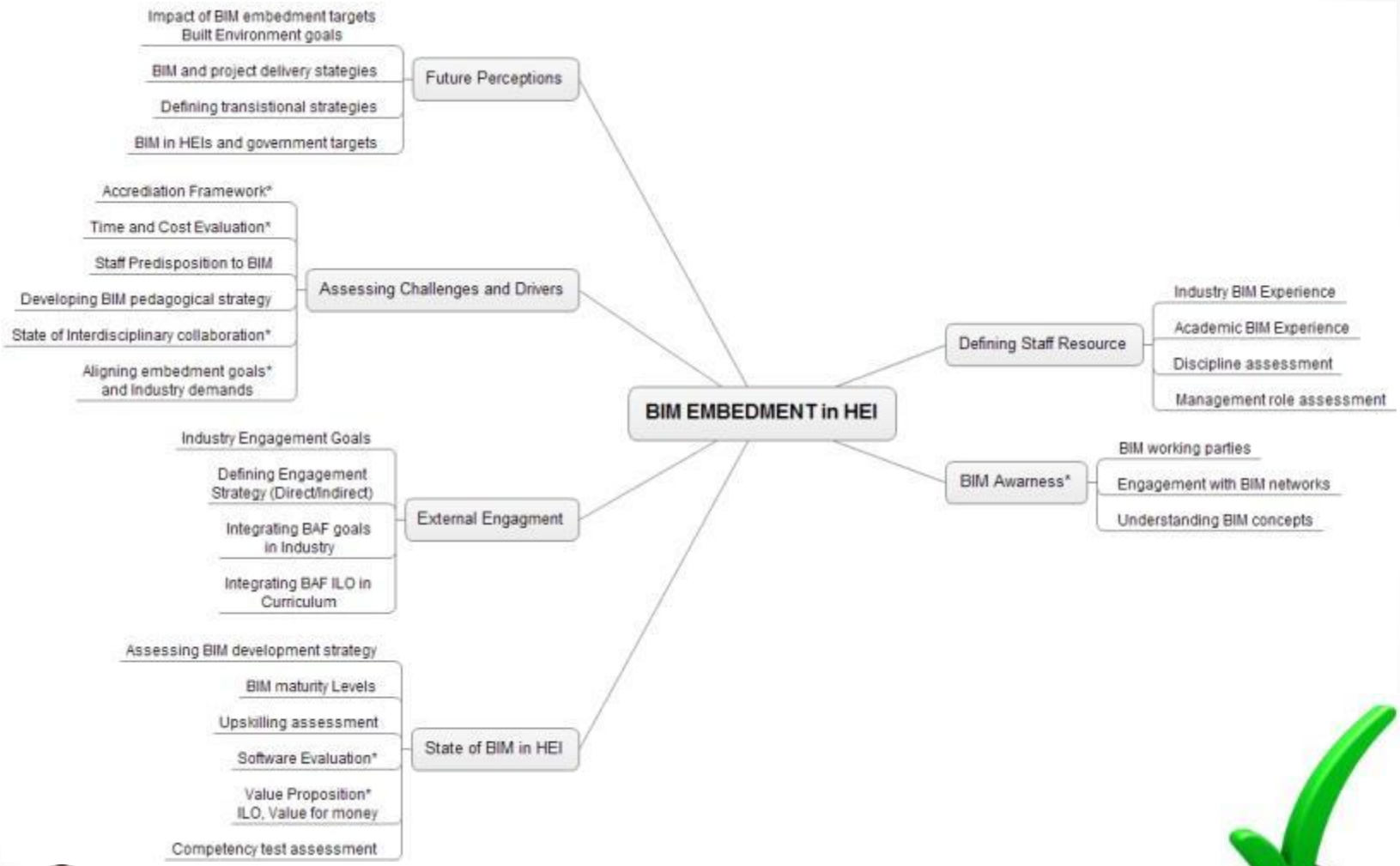
Survey questionnaire



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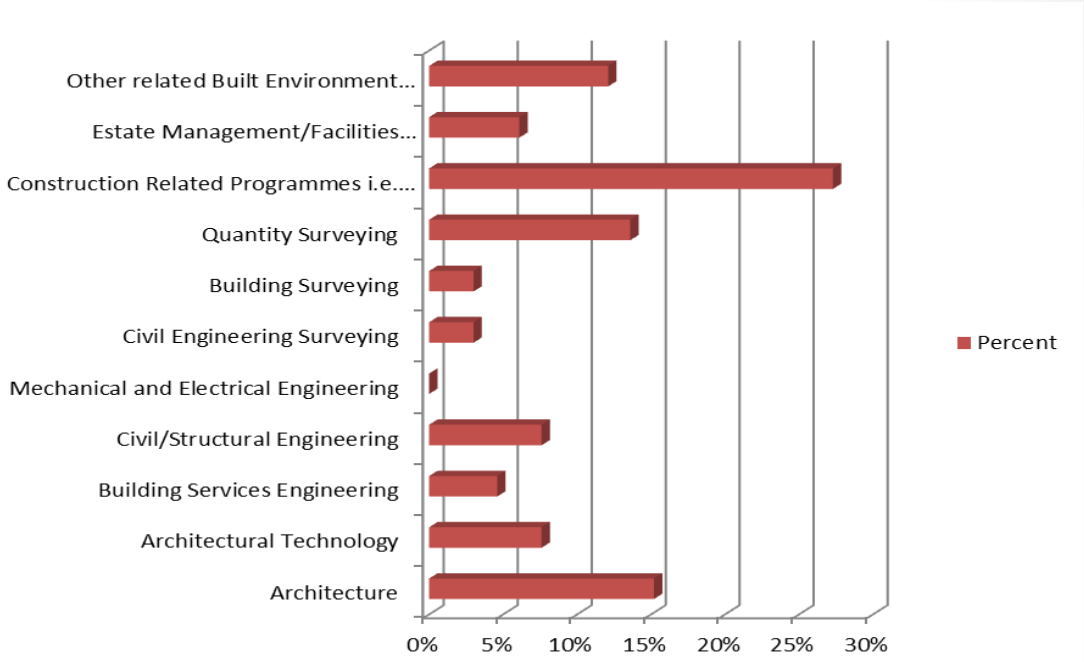
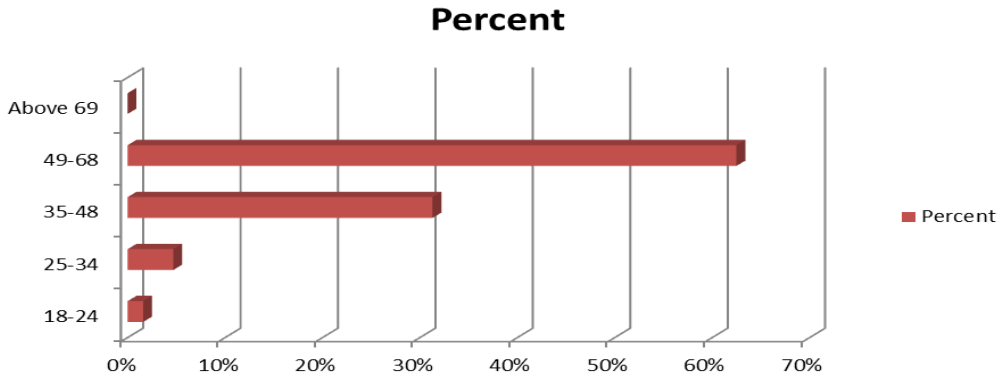
Discipline





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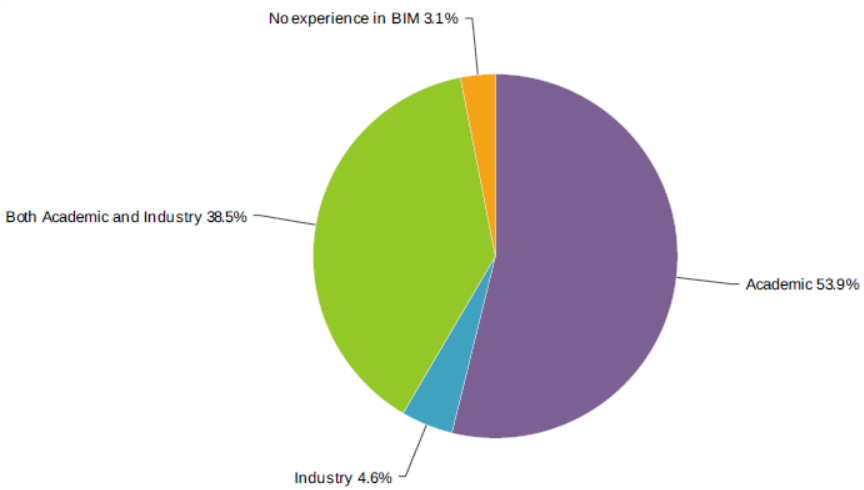
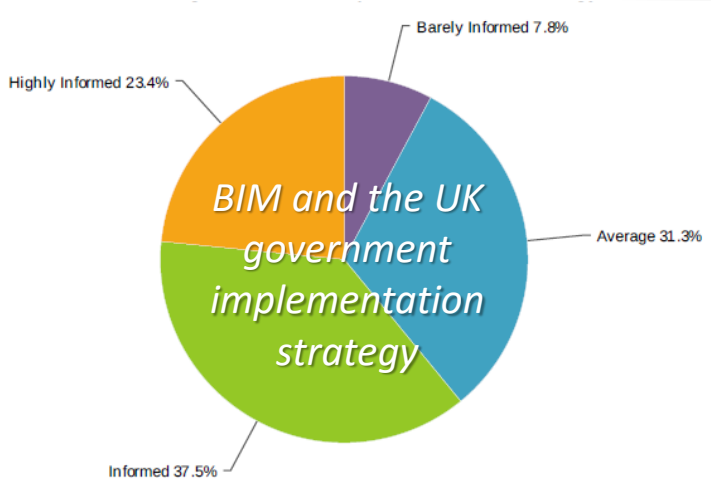
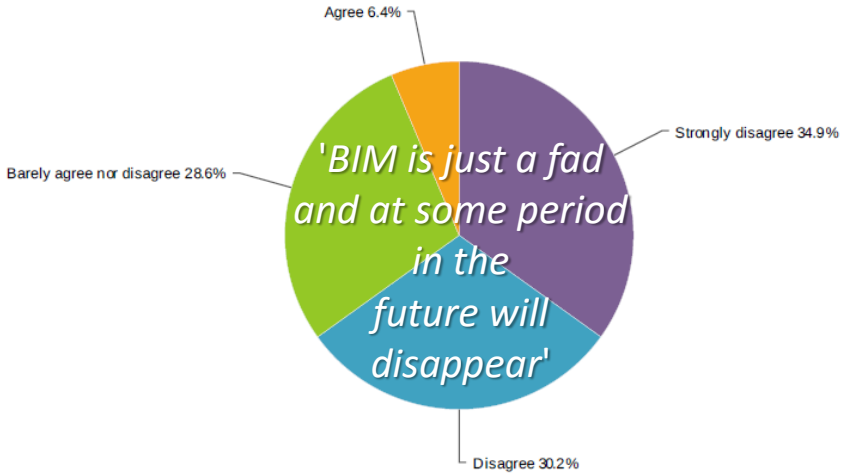
BIM experience/awareness







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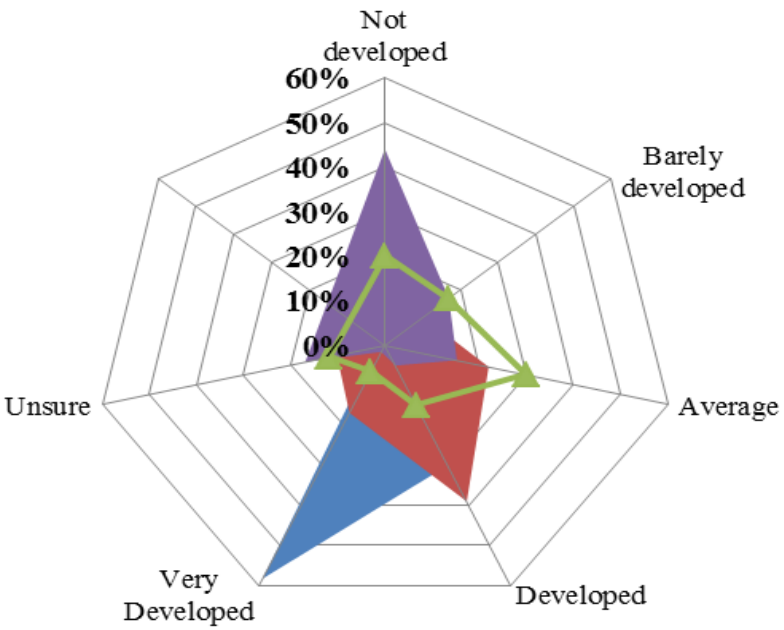
BIM maturity



Level 0: Unmanaged CAD probably 2D, with paper (or electronic paper) as the most likely data exchange mechanism.

Level 1: Managed CAD in 2 or 3D format using BS 1192:2007 with a collaboration tool providing a common data environment.

Level 3: Fully open process and data integration enabled by IFC / IFD.

Level 2: Managed 3D environment held in separate discipline "BIM" tools with attached data.

- 66.7 % of respondents expressed average or less than average maturity for BIM Level 2.
- 36.7% expressing barely matured/not matured levels.

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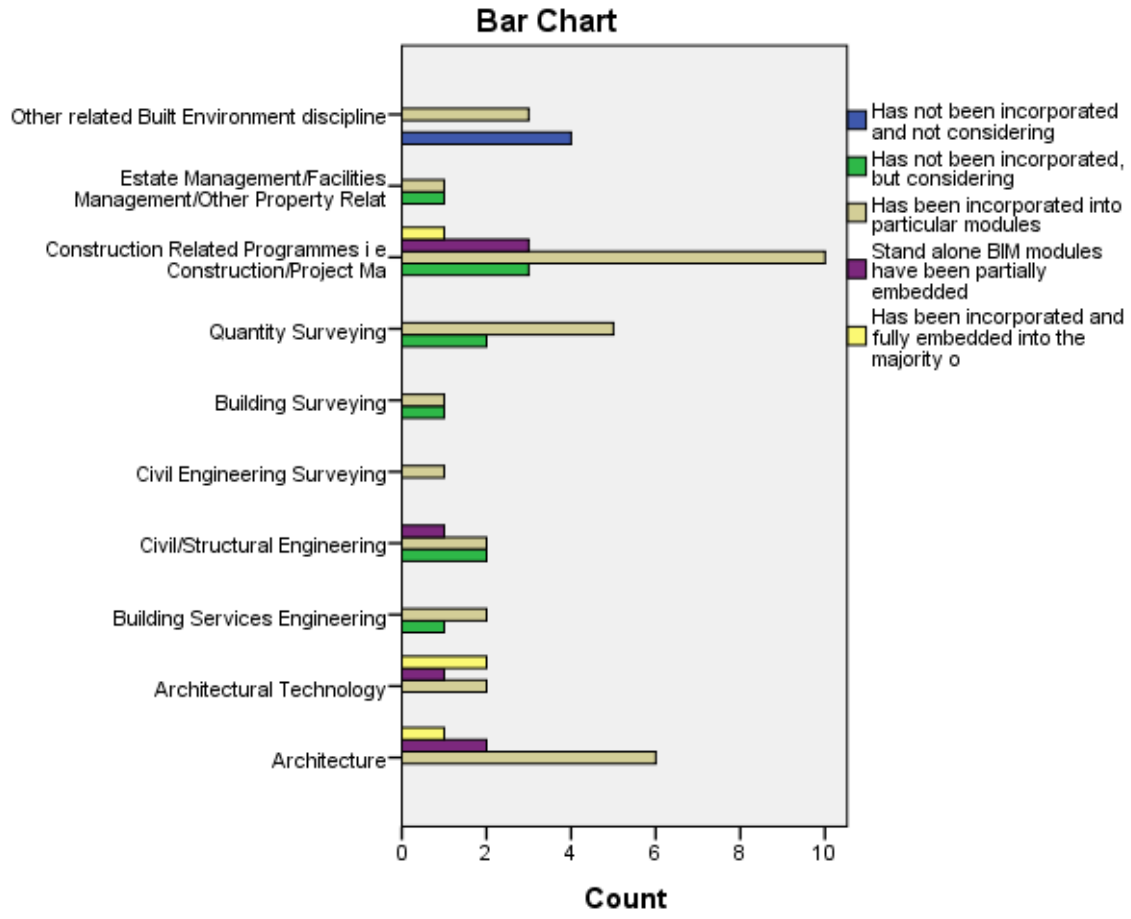
BIM curriculum



- 24% programmes yet to incorporate BIM; 6.9% are not considering incorporating BIM.
- 57% have incorporated BIM into particular modules.
- About 20% of programmes have developed standalone BIM modules.
- However, only 13% partially embedded BIM, while only 7% have fully embedded BIM in majority of their programmes.

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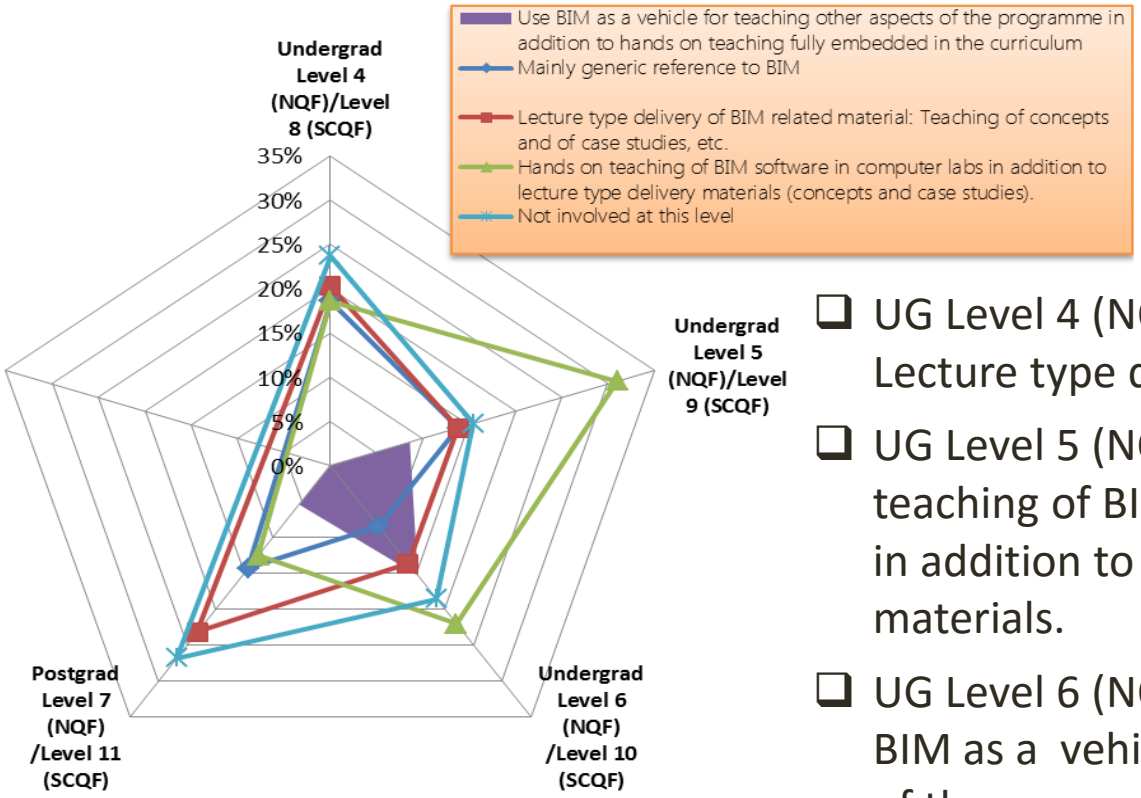
BIM curriculum



- UG Level 4 (NQF)/Level 8 (SCQF): 20% Lecture type delivery of BIM.
- UG Level 5 (NQF)/Level 9 (SCQF): hands on teaching of BIM software in computer labs in addition to lecture type delivery materials.
- UG Level 6 (NQF) /Level 10 (SCQF): 15% use BIM as a vehicle for teaching other aspects of the programme in addition to hands on teaching fully embedded in the curriculum.
- Postgraduate Level 7 (NQF)/Level 11 (SCQF): 23% Lecture type delivery of BIM.

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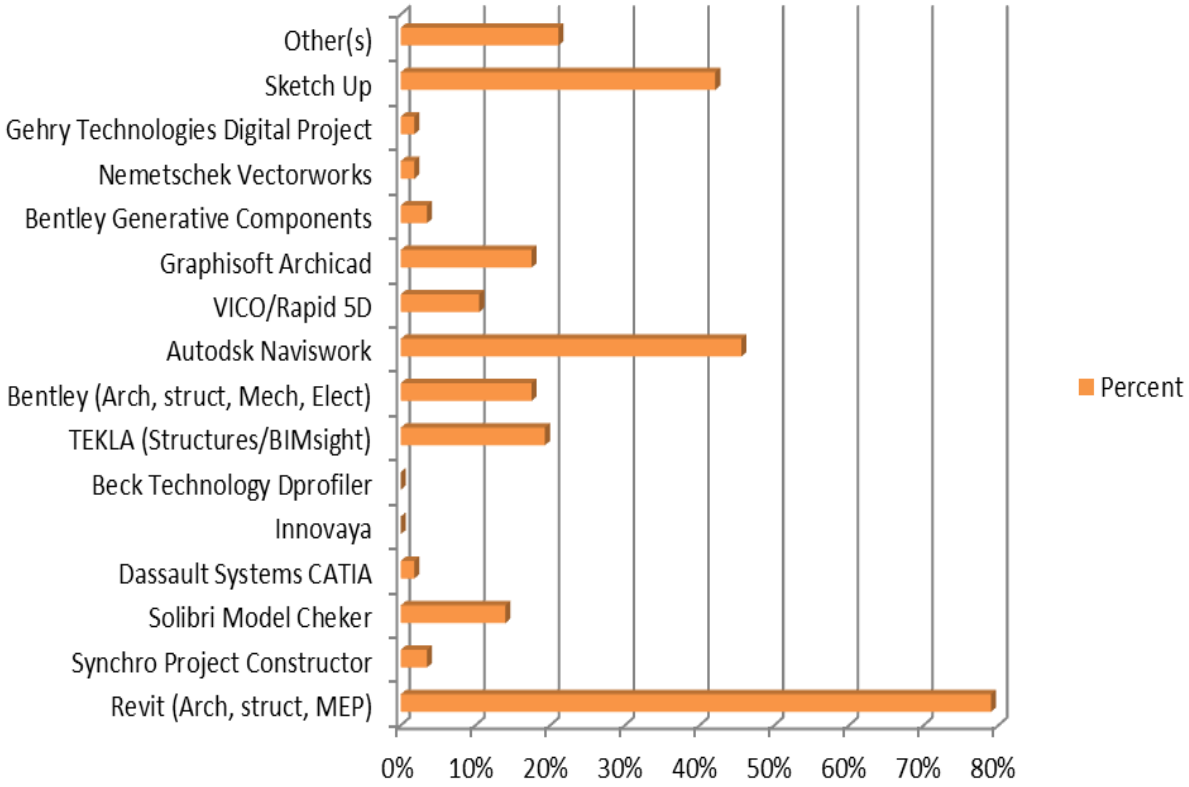
BIM curriculum: Software adoption



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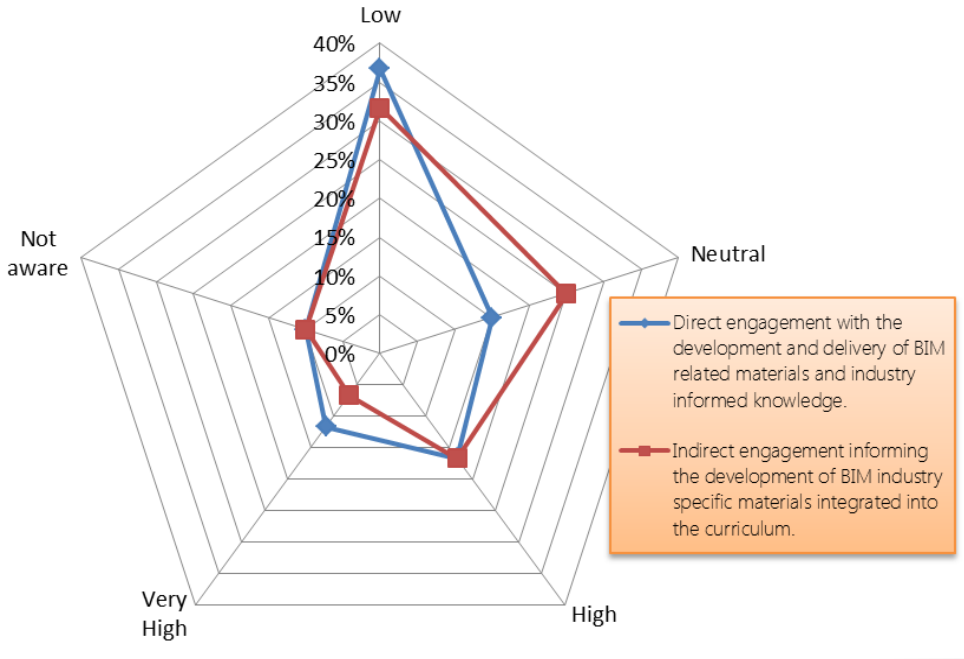
BIM curriculum: Industry engagement

- Low level of engagement with industry either indirect or direct.
- 62% and 67% less than high levels of industry direct and indirect external engagement in their BIM curriculum development.
- Significant positive correlations between levels of direct and indirect external industry engagement and level of development of BIM maturity levels.



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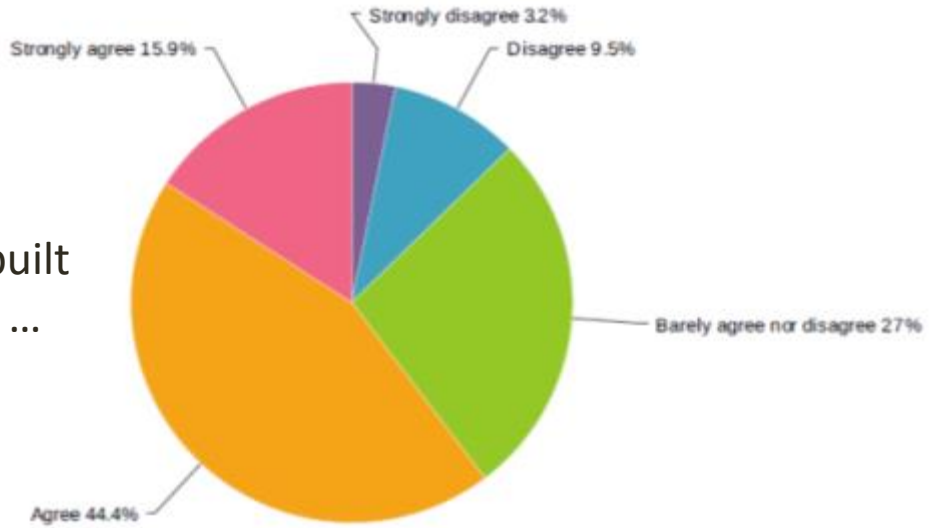
BIM curriculum

- Transition strategy that should be adopted in response to industry demand for embedding BIM within the curriculum …

	Follow and change reactively	Track change with industry at equal pace	Proactively push and lead change
Undergraduate level 4, 5, 6 (NQF)/Level 8, 9, 10 (SCQF)	17 27.0%	18 28.6%	28 44.4%
Postgraduate level 7 (NQF)/Level 11 (SCQF)	14 22.6%	17 27.4%	31 50.0%



- Embedding BIM into HEI curriculum signify a paradigm shift in the way built environment education is delivered …

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BAF/HEA report

Learning outcomes @ Levels 4, 5, 6 & 7:

Knowledge & understanding

Practical skills

Transferable skills

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Learning Outcomes: Level 4

Knowledge and Understanding	Practical Skill	Transferable skills
Undergraduate		
▪ Importance of collaboration ▪ The business of BIM	▪ Introduction to technology used across disciplines	▪ BIM as a process / technology / people / policy

… provide context and background to the industry, and why the need for significant productivity improvements exists, set against the historical and traditional working arrangements which have prevailed

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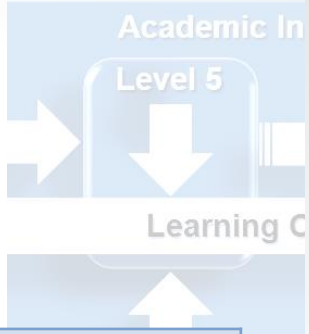
Learning Outcomes: Level 5



Knowledge and Understanding	Practical Skill	Transferable skills
Undergraduate		
▪ BIM concepts – construction processes ▪ Stakeholders' business drivers ▪ Supply chain integration	▪ Use of visual representations ▪ BIM tools and applications ▪ Attributes of a BIM system	▪ Value, lifecycle and sustainability ▪ 'Software as service' platforms for projects ▪ Collaborative working ▪ Communication within interdisciplinary teams

… develop knowledge and understanding of the role of BIM as a business driver for collaborative working within an integrated supply chain, considering the roles and responsibilities of each within a BIM approach

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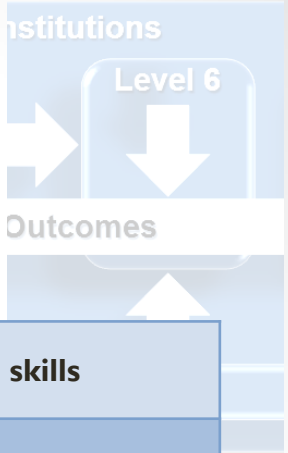
Learning Outcomes: Level 6



Knowledge and Understanding	Practical Skill	Transferable skills
Undergraduate		
▪ BIM across the disciplines ▪ Contractual and legal frameworks / regulation ▪ People / change management	Technical know how ▪ Structures and materials ▪ Sustainability	Process / management ▪ How to deliver projects using BIM ▪ Information and data flows ▪ BIM protocols / EIR

… greater focus on building competence and knowledge around the people, systems and process which are required for BIM to be delivered successfully on projects

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