

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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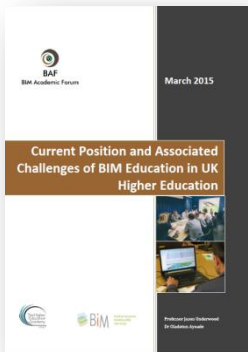
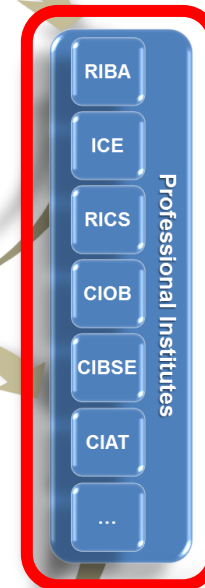
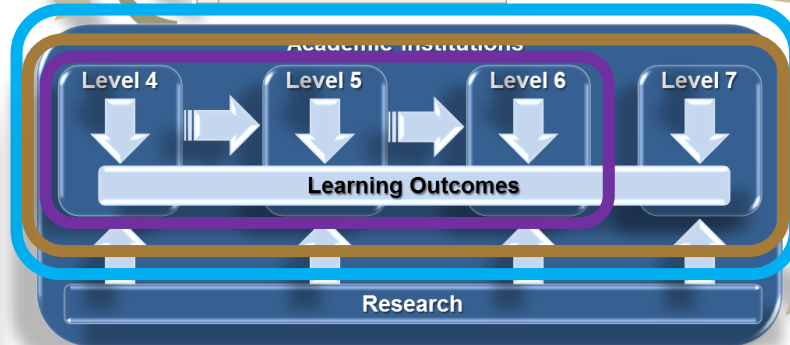
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UK BIM Task Group Learning Outcomes Framework	
1.01	* Background and the need for collaborative working (removing waste, errors and poor quality/incomplete information)
1.02	* The value of whole life and whole estate approach rather than capital-led and single asset
1.03	* The concept of Built Landings / Government Built Landings (GBL)
1.04	* Roles and responsibilities of the supply chain members and clients as part of BIM Level 2 delivery (cultural / behavioural)
1.05	* External context for BIM, global, national, standards and support communities
1.06	* Core and extended suite of standards, documents and deliverables describing BIM Level 2
1.07	* The importance of information management for success
1.08	* The importance of data security and information security
1.09	* The importance of security of digital built assets
2.01	* Understanding the context of BIM Level 2 and its connection to the Government Construction Strategy and Industrial Strategy 2025, including an understanding of:
2.02	* The value of whole life and whole estate approach rather than capital-led and single asset
2.03	* The concept of Built Landings / Government Built Landings (GBL)
2.04	* Roles and responsibilities of the supply chain members and clients as part of BIM Level 2 delivery (cultural / behavioural)
2.05	* External context for BIM, global, national, standards and support communities
2.06	* Core and extended suite of standards, documents and deliverables describing BIM Level 2
2.07	* The importance of information management for success
2.08	* The importance of data security and information security
2.09	* The importance of security of digital built assets
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4.00	* The importance of information management for success





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March 2015

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



Professor Jason Underwood
Dr Oladotun Ayode



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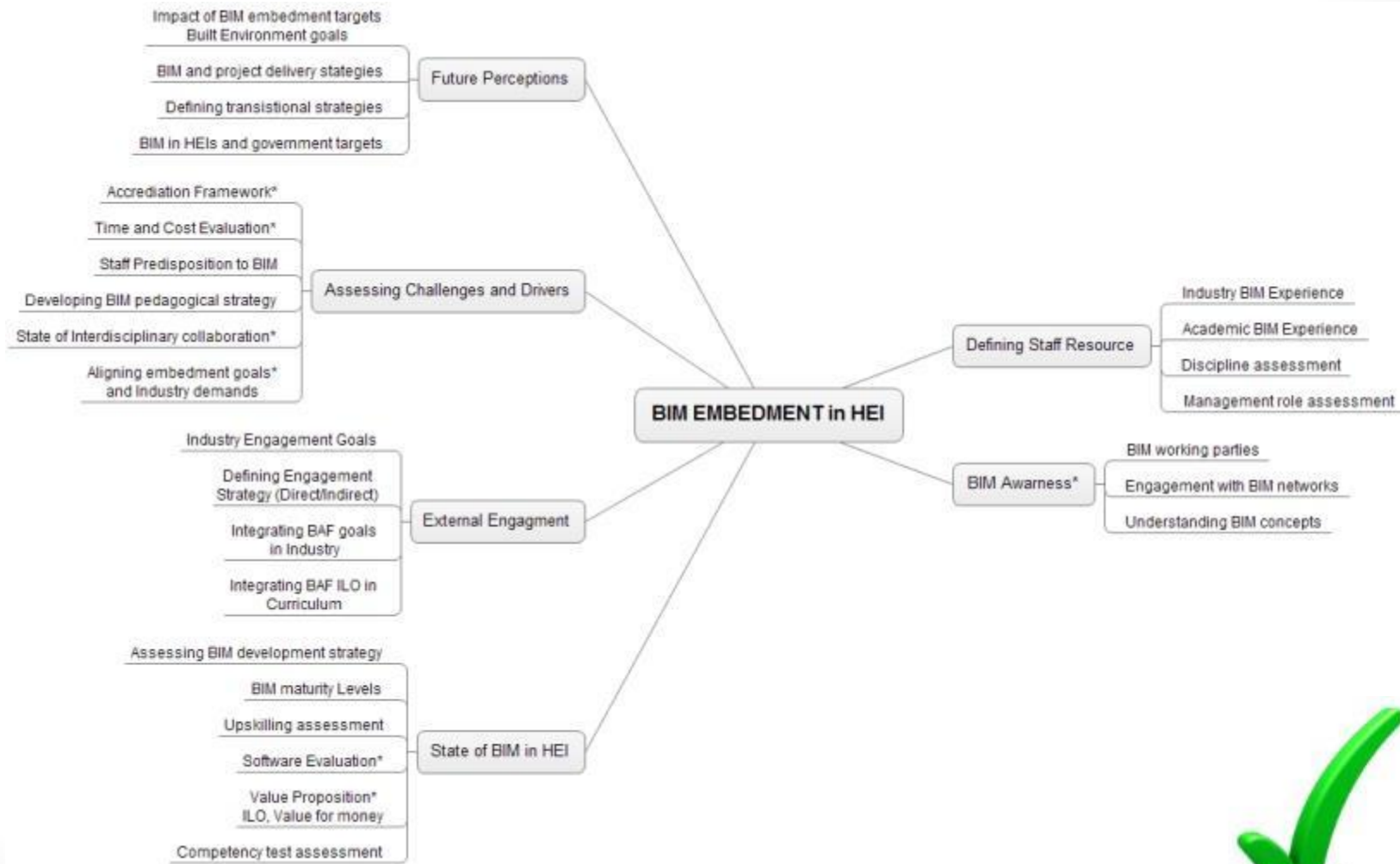
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Survey questionnaire

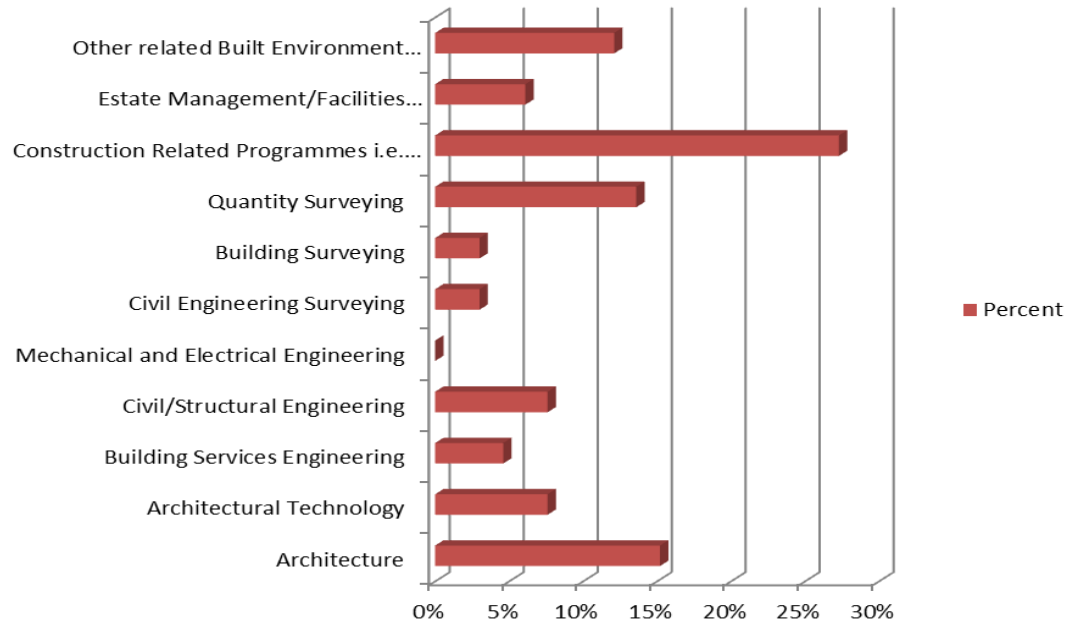


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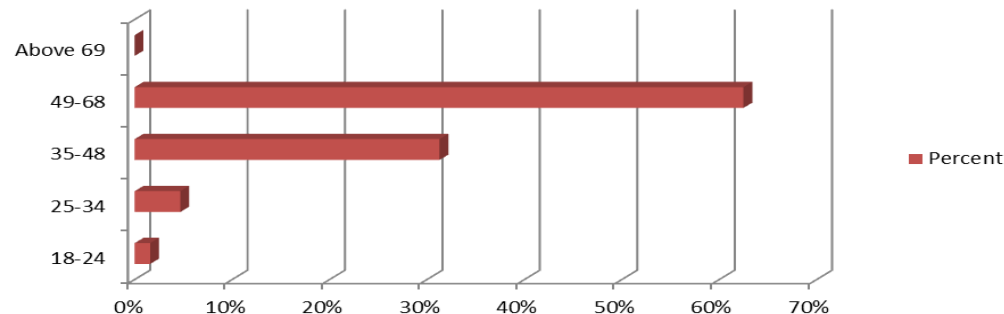
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Discipline



Percent



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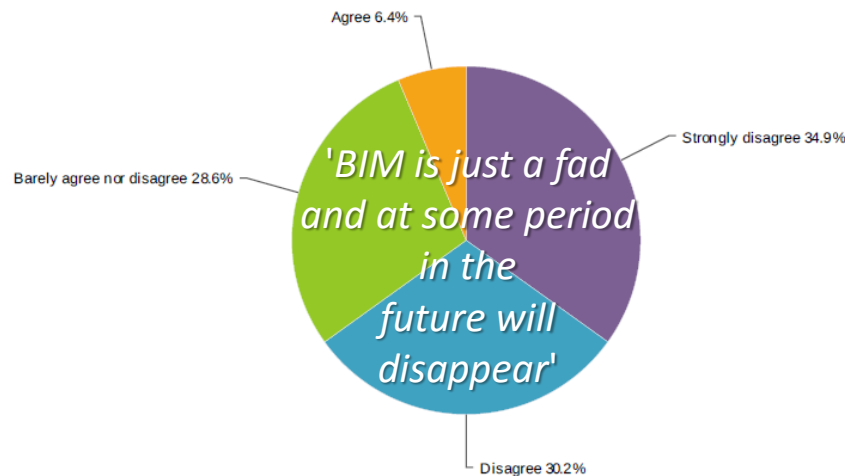
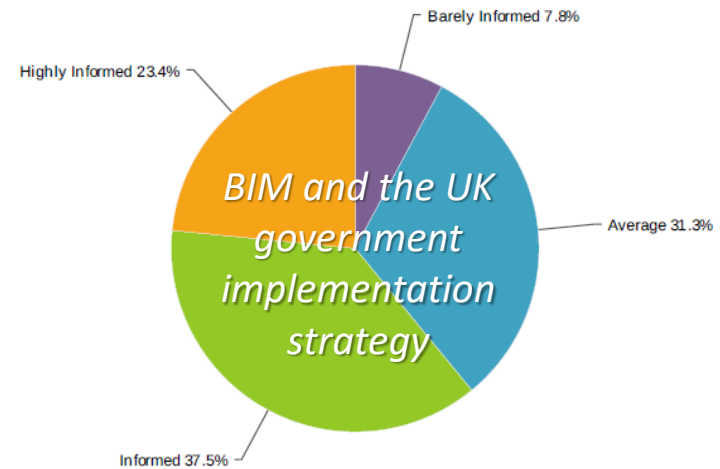
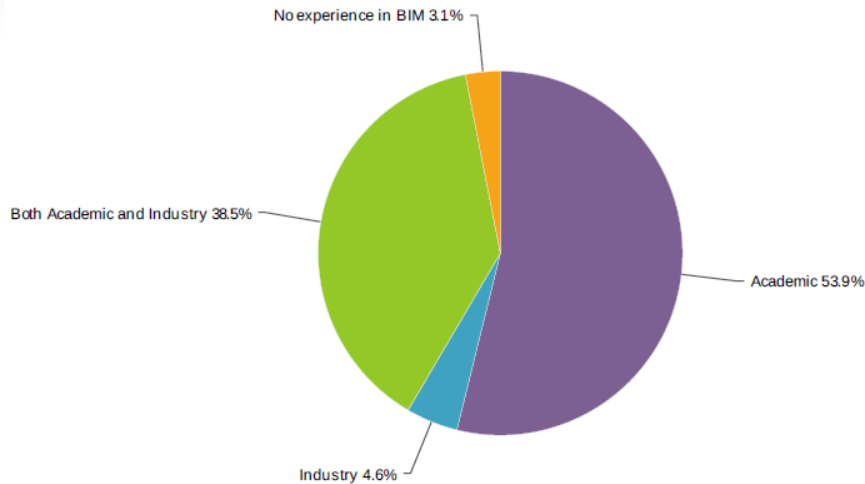
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BIM experience/awareness



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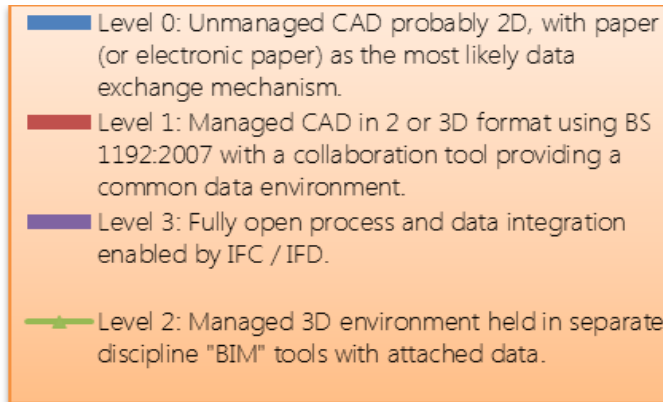
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BIM maturity



❑ 66.7 % of respondents expressed average or less than average maturity for BIM Level 2.

❑ 36.7% expressing barely matured/not matured levels.



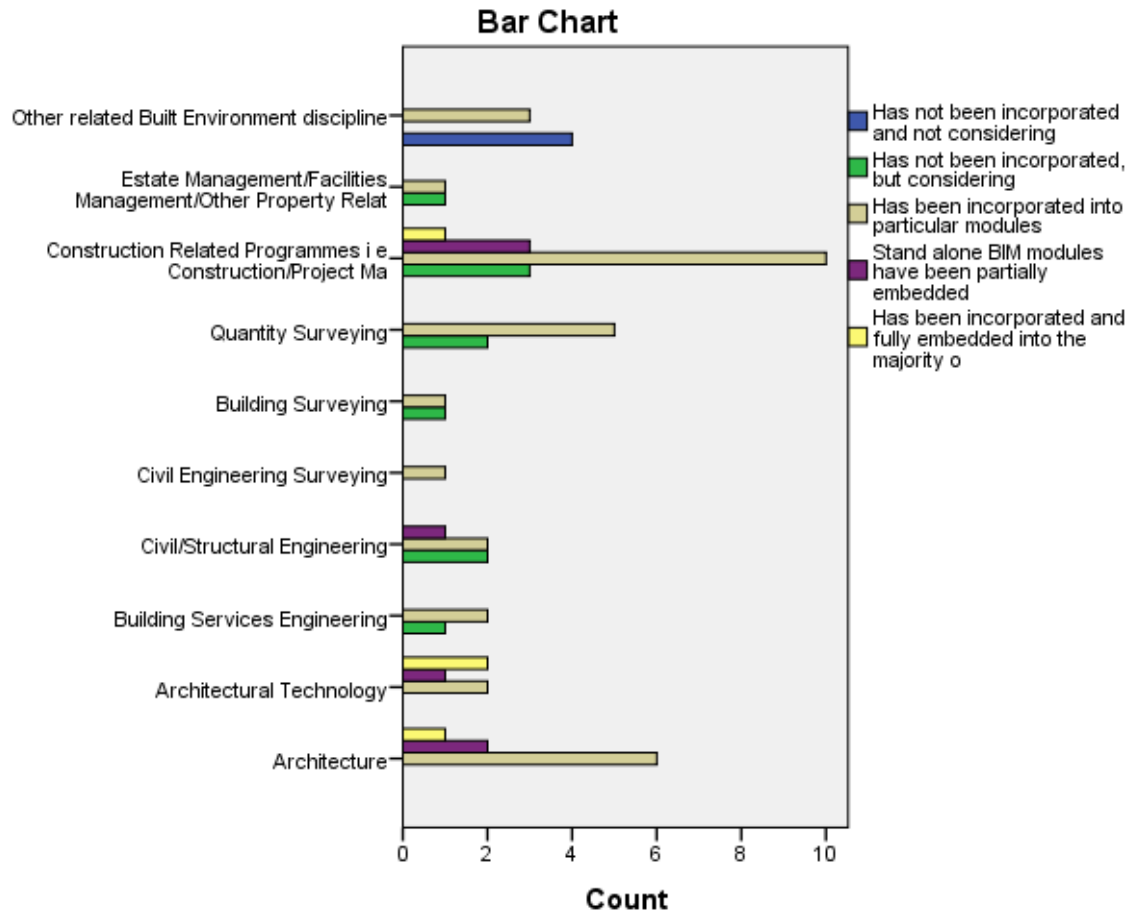
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BIM curriculum



- ❑ 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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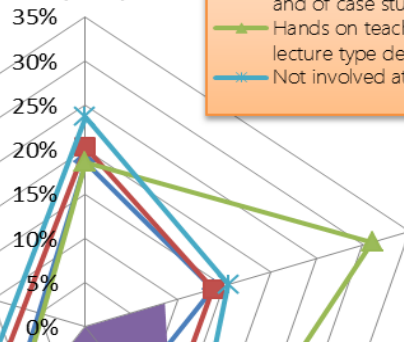
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BIM curriculum

**Undergrad
Level 4
(NQF)/Level
8 (SCQF)**



Use BIM as a vehicle for teaching other aspects of the programme in addition to hands on teaching fully embedded in the curriculum
 Mainly generic reference to BIM
 Lecture type delivery of BIM related material: Teaching of concepts and of case studies, etc.
 Hands on teaching of BIM software in computer labs in addition to lecture type delivery materials (concepts and case studies).
 Not involved at this level

**Undergrad
Level 5
(NQF)/Level
9 (SCQF)**

❑ 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.

**Postgrad
Level 7
(NQF)
/Level 11
(SCQF)**

**Undergrad
Level 6
(NQF)
/Level 10
(SCQF)**



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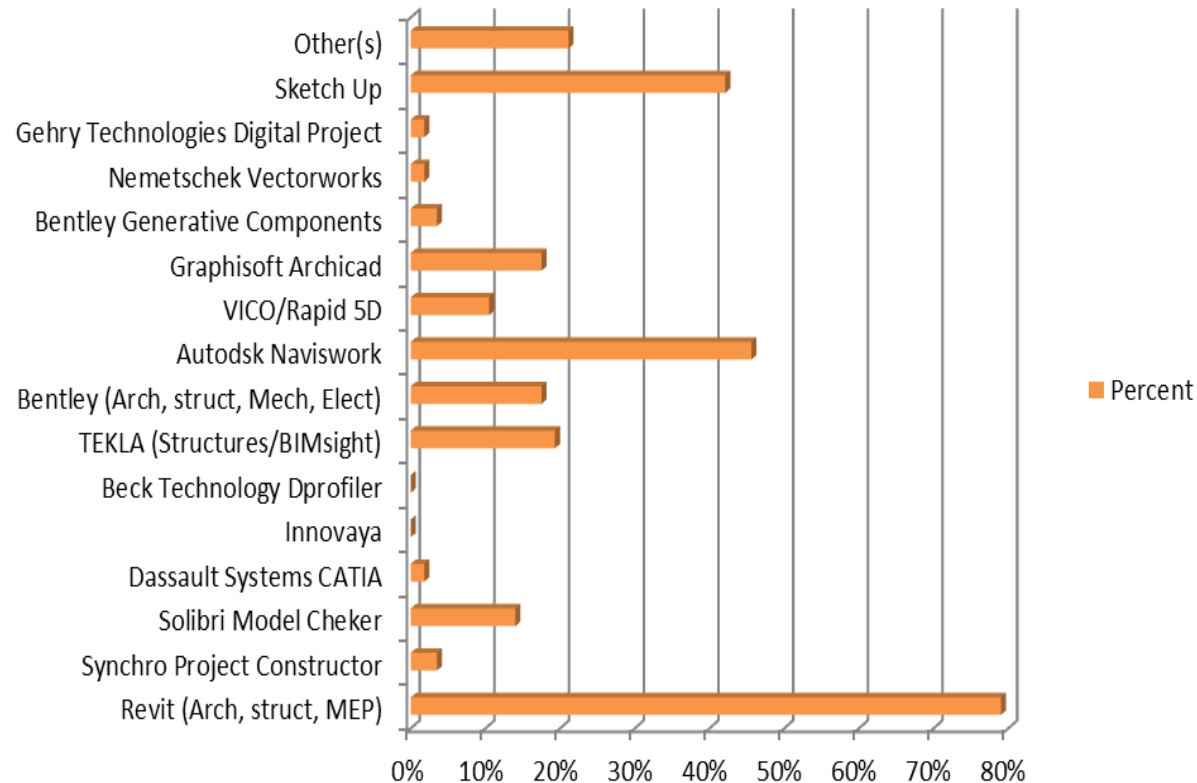
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BIM curriculum: Software adoption



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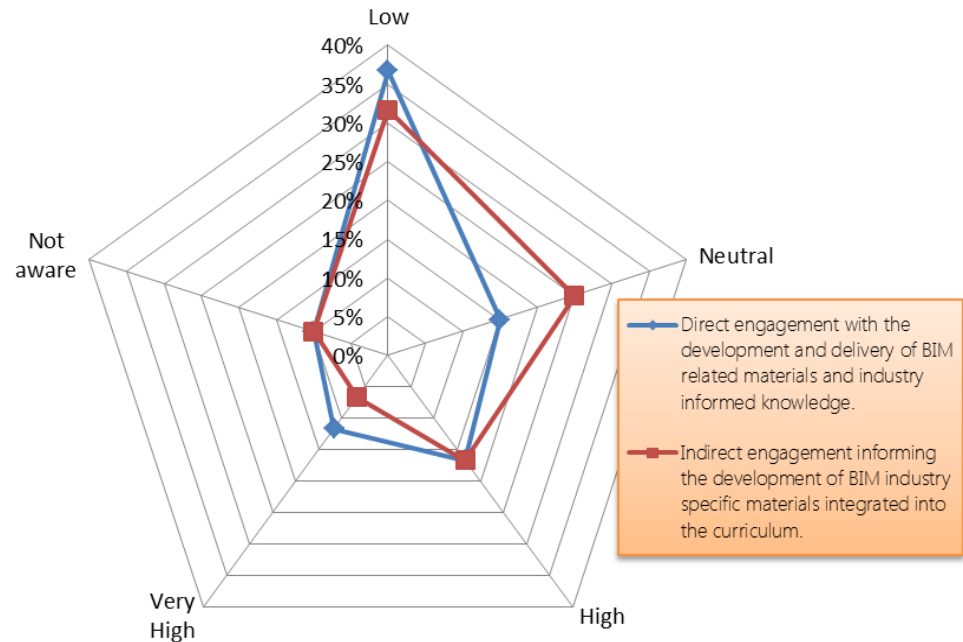
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BIM curriculum: Industry engagement

- ❑ 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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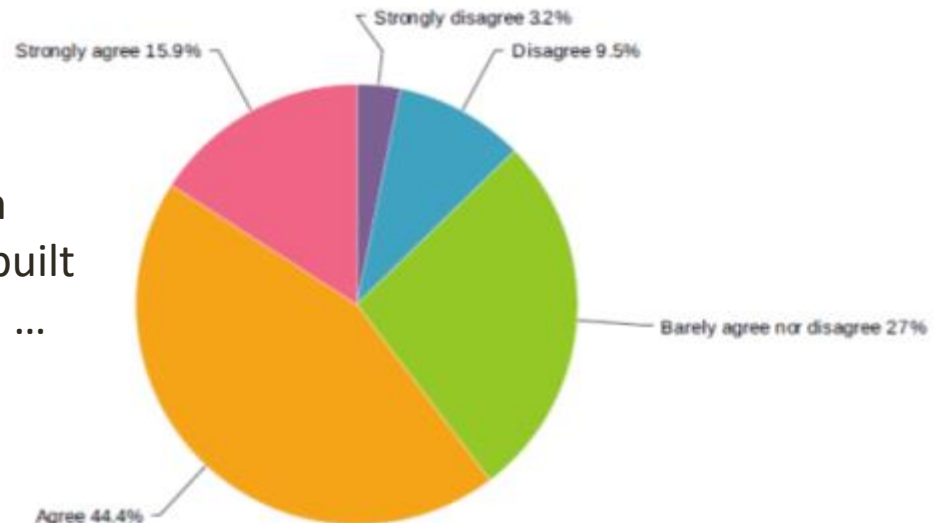
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BIM curriculum

- ❑ 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%

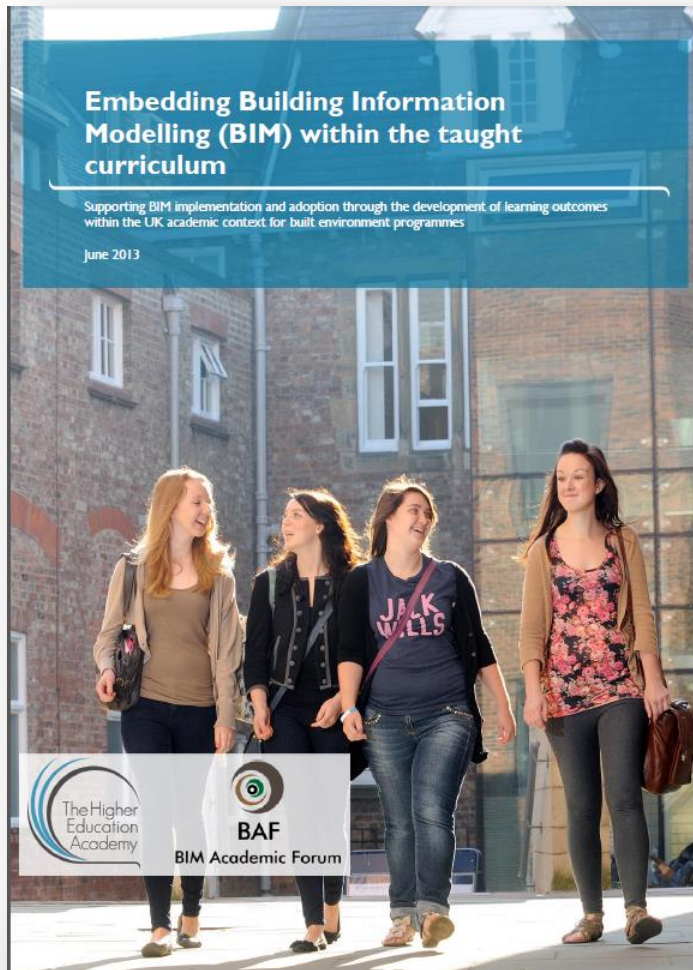
- ❑ Embedding BIM into HEI curriculum signify a paradigm shift in the way built environment education is delivered ...



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BAF/HEA report



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

Knowledge & understanding

Practical skills

Transferable skills



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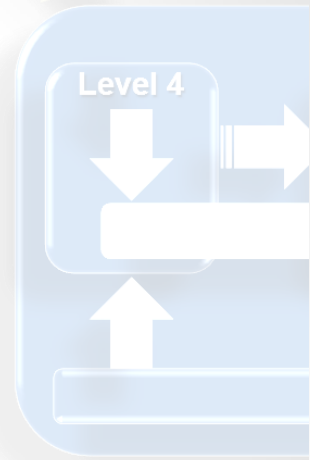
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Learning Outcomes: Level 4



Knowledge and Understanding	Practical Skill	Transferable skills
Undergraduate		
<ul style="list-style-type: none">▪ Importance of collaboration▪ The business of BIM	<ul style="list-style-type: none">▪ Introduction to technology used across disciplines	<ul style="list-style-type: none">▪ 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
<i>Undergraduate</i>		
<ul style="list-style-type: none"> ▪ BIM concepts – construction processes ▪ Stakeholders' business drivers ▪ Supply chain integration 	<ul style="list-style-type: none"> ▪ Use of visual representations ▪ BIM tools and applications ▪ Attributes of a BIM system 	<ul style="list-style-type: none"> ▪ 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
<i>Undergraduate</i>		
<ul style="list-style-type: none"> ▪ BIM across the disciplines ▪ Contractual and legal frameworks / regulation ▪ People / change management 	Technical know how <ul style="list-style-type: none"> ▪ Structures and materials ▪ Sustainability 	Process / management <ul style="list-style-type: none"> ▪ 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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