# **Balancing skill building**

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### Introducing innovative technologies into the university curriculum is vital to ensure building surveying graduates remain employable, says Dr Kevin Thomas

The employability of graduates has become a significant performance indicator within higher education, and universities have been considering in great detail how they can ensure the best outcome. Some have engaged in the development of specific modules while others have looked to embed employability skills within existing modules.

Employability is complex but at its core is ensuring graduates are ?future fit? with relevant skills, understanding and personal attributes to make a contribution to the benefit of all. It is seen as a combination of experience, whole academic curricula and achievement (or potential) and is still a major differentiator for employers when recruiting.

However, while those skills are clearly important, there is also the need to ensure the building surveying degree curriculum is relevant and current to satisfy the need of key employer stakeholders. This is not an easy task because there will always be differences of opinion as to what employers require, albeit with a core of knowledge common to all.

Building surveying graduates need to be future fit

The answer for Northumbria University is employer liaison panels, where key stakeholders from both public and private practice meet academic staff to look at the current issues and discuss possible programme developments.

Such interaction is essential in the process of continuous improvement the university expects. This must however be a two-way process, allowing employers and external professionals to influence curricula but also provide an opportunity for academics to explain and justify decisions taken and identify the issues influencing those decisions. The panel holds meetings at least twice a year, with one hosted off university by one of the participant organisations.

#### **Technology trailblazers**

Being future fit means being familiar with innovative technologies, using them within the organisations that have them or assisting in potential purchases where they do not. This role as trailblazers cannot be underestimated; the profession has to adapt quickly to emerging technology or be left behind as other professions embrace them.

Four examples of innovative technology impacting on both building surveying students and staff at Northumbria are mobile surveying applications, building information modelling (BIM), laser scanning and visualisation, and 3D printing.

For the first, Northumbria has been working closely with <u>Kykloud</u> to ensure graduates can use the mobile surveying and asset management software service. According to Kykloud, seven of the UK?s top 10 surveying firms use its system. It is therefore essential that graduates are exposed to this technology as it becomes the industry standard.

A capital expenditure bid within the university supported the purchase of 30 iPads and the Kykloud App subscription for three years. In their final year, students on the Facilities and Asset Management module carry out a live survey of part of the university estate.

#### BIM

BIM continues to be a focus for the profession. At a recent meeting of the Building Surveying Professional Group Board, members looked at the opportunities for building surveyors with a presentation from Owen Pottle, Director at <u>Trident Building Consulting</u> and an RICS certified BIM manager.

While clearly less defined than for other construction professionals, nevertheless significant opportunities do exist and will become more widespread and visible as level 5 and 6 BIM develop. These are particularly concerned with whole life costs and the future management of facilities using populated 6D models.

Northumbria building surveying students are introduced to the fundamentals of BIM in Year 1 with the development of basic CAD and Revit skills, which are then used on other modules throughout their degree. Project work in their second and final years allows them to demonstrate the development of their skills within multi-disciplinary groups.

There is also a link to the mobile surveying technologies to input data into BIM models and more generally to facilities and asset management, replacing the necessity for building operation manuals.

#### Laser scanning

Laser scanning and the associated visualisation of the information captured is a developing area for building surveyors, in particular to architectural conservation surveys. Recent work by Northumbria building surveying senior lecturer Stuart Eve in partnership with <u>BIM</u> <u>Academy</u> saw detailed information captured in the laser scanning process of part of Durham Cathedral and developed into a 3D model.

The live model can be shared with any consultants or contractors instructed to work on the building. It could also provide a visitor-based visualisation of any area obscured during extensive conservation or restoration works. Laser scanning equipment is, however, expensive and the technology is not currently expected to be used extensively throughout building surveying practice. The development of niche expertise is more likely, operating as consultants in data capture and model development.

### **3D** printing

As the costs of 3D printing technology continue to reduce, its use becomes more widespread. In China and the Netherlands, it has allowed full-size housing components to be printed, using either a type of concrete or plastic.

However, the technology currently being integrated into building surveying education is small scale model type 3D prints. In 2009, the university purchased a Z Corps machine costing in excess of ?40,000, using a powder and resinbased system to produce a model. This technology was used in the development of the <u>Virtual NewcastleGateshead (VNG)</u> <u>model</u> in partnership with the city councils of both Newcastle upon Tyne and Gateshead. This comprises a series of 48 separate tiles measuring 250mm x 200mm, each taking 1.5-2 hours to print and costed at ?120 for material costs alone. The advantage of individual tiles is that when the cityscape changes, only the affected tile has to be replaced. There is also an electronic model for use with design software.

There are now eight MakerBot Replicator 2 printers in use in the department, using plastic filament as the print material. The machines cost around ?1,500 each and prints creating components to be made into a model ? or a small complete model showing an alteration/extension can be output in less than an hour for less than ?1.

Although this technology is unlikely to become widespread within building surveying practice, the part it may play in future development of modern methods of construction should not be underestimated.

#### **Experience counts**

With all these technologies, although there is an element of education, the main skill is acquired through experience and training. So we return to the tension of striking the right balance between the two. Building surveying degrees by their very nature are vocational and there is an expectation that graduates, as well as having suitable ?understanding?, also have the relevant skills to undertake activities within practice. This is vital to ensure that we continue to meet the needs and requirements of employers.

This is further exacerbated by the limited time and ?space? within the curriculum and so for any new technology introduced something else has to be removed. Regular alignment to building surveying APC competences is the most effective method of tailoring the curriculum to fit those requirements and allowing areas of little or less importance to be dropped.

RICS education section has recently announced major changes to its partnership arrangements with universities. Each accredited surveying degree has to demonstrate that it meets a threshold of alignment to the related APC competences. Northumbria is well placed to meet this requirement having restructured the degree within the past 18 months with the main focus being these competences.

Ensuring building surveying graduates remain employable and useful to their employers are key functions of universities and their courses and the integration of new and innovative technologies is essential in this. To focus only on traditional knowledge and skills would quickly allow other professions to dominate these new areas and academics must play their part in ensuring this does not happen.

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## **Further information**

- Related competencies include <u>Construction technology and environmental</u> <u>services</u>
- This feature is taken from the RICS Building surveying journal (March/April 2015)