Staying up to speed

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Staying up to speed

There are many different initiatives designed to ensure vocational lecturers maintain their industrial knowledge, but ensuring that reaches the classroom can be a challenge. **Sam Jones** outlines the findings from her research on how two engineering lecturers fared

One of the biggest challenges faced by many vocational lecturers is ensuring that their industrial knowledge is current. This challenge has become a pressing necessity with the advent of T Levels and the 'world class skills' agenda. One method of meeting this challenge is through initiatives such as the successful 'Industry Insights' programme from the Education and Training Foundation (ETF), which allows staff to engage in a range of industry-related activities.

While event feedback has created a deep evidence base which indicates vocational staff feel the benefit of engaging with the wider industry, there is less research that focuses on the categories of knowledge staff are hoping to gain through engagement with industry, and what the challenges are to transfer these learnings back to the classroom.

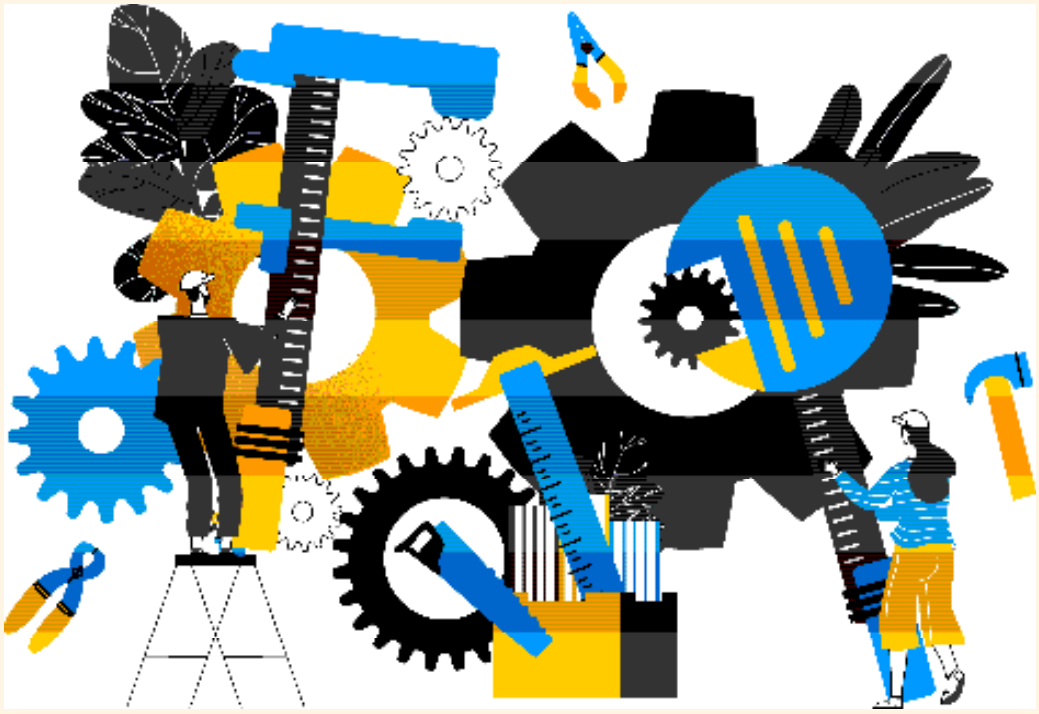
This research, sponsored by the Royal Academy of Engineering, took place over a four-year period. This article focuses on the first two years, which took place in a large, multi-site further education (FE) college. The first year centred on engaging two lecturers from an engineering or associated professional background in industry, updating similarly to 'Industry Insights'.

Lecturer 1 spent three days in a manufacturer of tanks and Lecturer 2 spent a day on an eco-house construction site. The work moved on in the second year to focus on engaging the departments these lecturers worked within with local employers to create digital content to be used both to update staff and teach students.

YEAR ONE

The work in the first year had a small sample size in order to closely track each lecturer's intervention and their long-term success at using what was being called the 'occupational knowledge' gained in their teaching practice. To this end, the lecturers were interviewed before they visited industry to understand their teaching and work-based history and their requirements for the updating.

They were observed throughout one day of their updating opportunity to ascertain the kinds of occupational knowledge and



experience they had encountered during the updating. Finally, they were interviewed twice over a period of six months following the updating to understand their successes and the barriers they faced in moving what they had gained from the updating experience into their classrooms.

Initial findings

Both lecturers were enthusiastic to make changes to their teaching when they initially returned from the updating. Notably, these changes were about allowing learners to think and act in ways that would be useful in their potential future workplaces. However, over the longer-term, workload, curriculum or syllabus changes and access to resources proved to be significant barriers.

Lecturer 1 had witnessed students on the business's graduate training scheme undertake six-sigma training, which included undertaking an improvement project based around these principles in their placement. The business felt that this was a great way to get the students thinking in a manner that prepared them for work, and that the idea could be useful to the development of the engineering apprenticeship programme as it was linked to the development of workplace practice.

Lecturer 1 planned on improving their curriculum by running this programme before the summer break, allowing the apprentices the summer to return to the workplace and put the framework into practice. However, in an interview shortly before the summer period, almost two-and-a-half terms after the updating, this planned change had still not taken place.

The two significant blockages identified were the cost of training the trainer in order to support apprentices in gaining a 'green belt' in six sigma, and the workload constraint of the lecturer, as a different programme was going through syllabus changes, which demanded their attention above the apprenticeship:

> **BOTH LECTURERS DECIDED TO MAKE CHANGE AT A CURRICULUM LEVEL RATHER THAN BRING BACK SMALLER EXAMPLES OR STORIES**

"Obviously we've got changes in the level two curriculum so this summer that has to be my priority. I still think it is a great idea, but don't have the actual time to work on this."

Although Lecturer 1 could see the value of the changes, they were not mandated by the syllabus or the examination board and, as time and resource was limited, the syllabus changes had to take priority.

Lecturer 2 found similar constraints. The one-day placement had allowed the lecturer to see that they could modify their curriculum and teach up-to-date processes and regulations by replicating the processes witnessed on site. What the lecturer had witnessed on site, which particularly excited them, was the trades working together in new ways, rather than separately.

They wished to replicate this for the construction students to both prepare them for working in a manner expected by the industry, moving the students past simply 'knowing' the "regulations ... to connecting them with the process of the build and understanding that process".

Despite the advantages this would have brought the students, and in common with Lecturer 1, the curriculum could not be changed in the ways planned due to timetabling, resource and syllabus constraints. In order to get all the construction trades to work together as the first lecturer had witnessed on site, the timetables for three courses would have had to change to bring the learners together. As the lecturer recounts, there was "no hope" of this.

Regarding the resources to facilitate construction, at the point that the study took place the students used and reused the same bricks across multiple projects. As the environmentally friendly building materials were more expensive and less reusable in this way, the resources could not be provided for the classroom:

"The cost ... the ring beams really stood out – it would be great to model this in the classroom, but they are expensive materials. Unless, can you can get X to donate some?"

Finally, issues around the syllabus were also present. The types of construction used in the eco-homes were not yet featured on most of the syllabi taught within the college – "this [type of construction] is in the level four studies but only in two lessons of one unit" – and did not feature in levels one or two.

What does this suggest?

This data indicates, for the participants in this very small but in-depth sample, that returning to industry allowed both lecturers to see new and better ways to deliver and enhance the curriculum. It is worthy of note that while these lecturers were not given guidance, they both decided to make change at a curriculum level rather than bring back smaller examples or stories from their updating.

However, both were unable to move the financial, syllabus and resource-related barriers that would allow them to make these curriculum-level changes. It is of particular note that, for both lecturers, the use of the 'new' knowledge required both a change to delivery and the purchase of new resource in the form of training or equipment.

This suggests that the occupational knowledge is 'embodied in' the resources, and indicates this knowledge can only be passed on or taught through the use of, or engagement with, the resource itself. Both case studies also point to the constrained resources and finances inhibiting the movement or transfer of knowledge.

Moreover, these constraints result in time and energy being given to the maintenance of meeting the standards and requirements of examination boards, rather than exceeding them. →

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(see page 39)

ILLUSTRATION: ISTOCKPHOTO

THE RESEARCH COLLEGE GROUP

→ YEAR TWO

The updating opportunities and interviews ceased as Covid-19 hit, and instead the work began to explore how digital resources, co-created with local employers, could be used as alternatives to location-based updating, and whether these resources could overcome some of the barriers identified in the first year of the work. The idea was that a video could bring sufficient representation of the context of the work and visual access to the resources.

A series of interviews with senior figures in the departments who had not participated in year one was carried out to understand how these resources could be used both to update staff and transfer the knowledge from this updating into the classroom to teach students.

Initial findings

The most interesting development from this stage of the work was to open up the discussion about what was being termed 'occupational knowledge' at the start of the project. Up until this point, this term had been used to catch all the forms of knowledge that could be gained by updating, both tactic and explicit (Polanyi, 1967).

However, both interviewees differentiated the knowledge of the new technology or ideas from knowing how these technologies or ideas are used in practice in local businesses:

"What does occupational knowledge even mean? Obviously not one thing – you need to know about technologies and new technologies, but how they are used, that is different in my mind."

This resonates strongly with the decisions made by the lecturers earlier to work at a curriculum level to allow them to assess "how [the new technologies] are used".

Understanding how others are approaching tasks and what decisions are being made appeared to be an important aspect of seeing people and technology at work in context. The best received idea for a digital recourse was a voiced-over video that had an individual completing a task using the new technology from start to end, explaining what they are doing and why they are doing it in that way. Again, this appears to add weight to the idea of knowledge being 'embodied' into activities and resources.

At the interviews this was seen as beneficial as "you can see into that organisation, into the mind of that engineer. It's got to be useful for staff and students, particularly if you are both using the same resource because you are both at the same thought process." Again, this appears to add weight to the idea of knowledge being 'embodied' into activities and resources.

What does this suggest?

The issue of the 'embodied' knowledge suggests that thought is required when planning for industrial updating in terms of how to facilitate its movement post-event. What resources or adaptions will be required, or can be made, needs consideration to ensure opportunities are not wasted. The data from this section also suggests that a catch-all term such as 'occupational knowledge' may be insufficient when thinking about the types of knowledge required by lecturers. I used 'technical knowledge' and 'contextual knowledge' to differentiate between new technology or ideas and knowing how these technologies or ideas are used.

Conclusion

To exploit the opportunities that returning to industry can bring to vocational lecturers, greater consideration needs to be given to the types of knowledge that the lecturers and the syllabus feel are appropriate and what time, resources and activities may be required post-event to contain or embody the knowledge to ensure its movement or transfer.

Focusing on the post-event changes as much as on the organisation of the updating event itself should help to address structural issues such as workload, curriculum changes and access to resources, which are currently barriers to some lecturers.

WIDER INITIATIVES

The research outlined in this piece took place over four years, drawing on the input of two lecturers. Other stakeholders – including the ETF – have also provided funding for both 'Industry Insights' and 'Teacher Encounters', including one-day, 5- to 10-day and longer immersive placements, as well as group and online placements.

Examples here include the ETF's TLPD Industry Insights (et-foundation.co.uk/news/case-studies/category/tlpd-industry-insight-placements/) and SET for Teaching Success Industry Insights (et-foundation.co.uk/news/case-studies/category/set-for-teaching-success/).

These opportunities have been beneficial for teachers, and subsequently their learners. For example, Alison Ackroyd, a science lecturer at Mid Kent College, as a consequence of her placement, has been involved in the design and development of a CPD course in genomics that is available nationally, working in collaboration with Wellcome Trust and Sanger Institute.

The Careers and Enterprise Company is also offering Teacher Encounters (careersandenterprise.co.uk/employers/teacher-encounters-tools-and-resources/) to support the embedding of the Gatsby Benchmarks cross-sector.