EDUCATION VERSUS SKILLS

On the 12 June the BCS Learning and Development Specialist Group, in partnership with the Worshipful Company of Information Technologists' Education and Training committee, hosted an Oxford Union style debate on the motion: 'This house believes that academic education will never meet the skills needs of the IT profession'. Paul Jagger FBCS, Secretary of the BCS Learning and Development Specialist Group, reports on the debate itself and on the post debate discussions.

'Universities are failing to educate graduates with the skills we need' - this is the complaint often made by employers of IT graduates. Does the problem start in school with the state of IT and computing science teaching and assessment at GCSE and A Level, or is it reflective of a fundamental misunderstanding among employers as to the role of an academic education?

Whilst certainly a contentious motion, it was also one that is open to much debate and discussion, and a subject that is critical to the future economic success of the UK economy and IT profession.

Those supporting the motion, proposed at the Armourers' Hall in London in June, were:

Professor Kevin Jones, Head of Computing at City University and David Evans, BCS Director of Membership.

Opposing the motion were: Dr Bill Mitchell, Director of the BCS Academy of Computing and Dr David Bowers, Programme Director for Computing and IT at the Open University.

Prior to the debate an invited audience of approximately 90 industry leaders, academics and representatives from professional and trade associations were invited to vote on the motion. The initial vote showed that 53 per cent supported the motion.

The debate was opened by Connor Ford, a sixth form computing student at St John's Academy, Marlborough, who shared some of his experience at the lack of computing and IT skills among teachers.

The debate was chaired by Dr Leslie Spencer, also of St John's Academy, with guests of honour BCS President, Roger Marshall and WCIT Master, Michael SK Grant presiding.

Following Connor Ford's outstanding introduction to the motion, and speaking first in support of the motion, David Evans argued from his own experience in commerce and more recently as a senior officer of BCS that: 'Academic education serves two different purposes, both utilitarian and moral, and for a lifetime, not just for the first job. It also isn't able to produce a real professional on its own, as training and development in the work environment can deliver different things. We should see academic education as foundational and serving a wider purpose, rather than trying to shoe-horn it into something it can't and shouldn't do - which is provide a shrink-wrapped ready to go worker.'

Dr Bill Mitchell countered the arguments put forward by his colleague David Evans by arguing that academic education should start earlier and lasts throughout our lives: 'The purpose of an academic education is to equip a person with the intellectual skills needed to succeed in life. The right kind of computer science academic education would give someone the right intellectual skills to succeed in the IT profession. We should not confuse formal education with academic education, which does not stop the second you leave university. To really fix our current formal education system we have to start with a genuine academic education starting from primary school.'

Professor Kevin Jones continued the argument in support of the motion by contrasting the role of education versus workplace training: 'Whilst an academic education is absolutely vital to providing the intellectual basis that all skills will be based on over a lifelong IT career, industry itself is better suited to providing training in the complementary skills that have a huge short-term effect on the success of their employees; a rational long-term, forward thinking partnership between an academic education and specific skills development provided in the workplace leads to the best overall result.'

Professor Jones used the magnificent and ancient surroundings of Armourers' Hall to draw an analogy between the role of academic education as providing the lasting foundations and structure that have held the building up over centuries whereas workplace training provided the short-term and changing skills in interior design and decoration that would change quickly with fashion.

Closing the arguments in opposition was Dr David Bowers who expanded upon the consequences of equipping a generation of IT and computing science graduates with short-term employability skills:

'Academic education can and does meet the skills needs of the IT profession because it equips graduates with essential cognitive skills that are transferable across time: the intellectual skills necessary for ongoing learning in the face of novelty and change. Technical skills and competencies result from workplace experience building on academic education.'

Following the debate there was a brief opportunity for the audience to ask questions and raise points about the arguments for and against the motion. There was much consensus between both the supporting and opposing camps and ultimately the debate came down to an argument about the degree to which academic education, in its own right, can meet the on-going learning needs of any profession.

The outcome

Following the debate and points from the audience a second vote was conducted and a substantially increased majority of 71 per cent supported the motion with some of the audience absenting.

Clearly the arguments presented by David Evans and Professor Kevin Jones had swayed the audience and increased the margin in favour of the motion, notwithstanding the fact that both support and opposition found a great deal of common ground in their arguments.

Post debate discussion

The Oxford Union style debate provided a forum to explore the motion from two perspectives and it raised a number of questions that were subsequently opened to wider discussion on the BCS Learning

and Development Specialist Group's LinkedIn Forum that ran until 2 August.

A number of themes arose from both the debate and the subsequent online discussion including:

- The very different yet complementary roles of academic education and work-place learning in providing the skilled resources the IT profession requires.
- The perceived lack of alignment between academic programmes and the reality of the working world.
- Limited opportunities for placement years or integrated education/work-place learning in higher education.
- The focus on university being the right (or only) path to a career in the IT profession.
- Difficulty in mapping the outcomes

of academic education to the skills required by employers of IT skilled graduates.

A selection of comments from the discussion highlight these issues:

'[Academic education] is not a preparation so much as a constant companion; we draw on what academic education gives us through our whole career, and academic education should be something we turn to for updates, refreshers and life changes throughout our life so shouldn't end with our first employment contract.'

'What seems to have gone missing is the importance of work placements and sandwich years as part of degree programmes.'

'I think a return to the thin sandwich

(six months academic, six months work) would be a good idea and an ideal way of integrating work experience, certification etc and reflection on that experience into an academic qualification.'

One theme that came across in numerous discussions before, during and after the debate is the need for academic qualifications to map to the Skills Framework for the Information Age (SFIA) in a manner that allows prospective employers to identify the knowledge and skill that has been developed at under-graduate or postgraduate level, that aligns with a specific skills set and job role in the IT industry.

Several universities have made that leap, notably the Open University and the

University of Northampton, although it must be recognised that an undergraduate qualification in itself is not sufficient to build competence in a particular job role – that is the role of employers who must recognise their responsibility to continue the learning journey with both formal and informal learning in the workplace.

The conventional university route is not the only option that employers should consider in order to develop skilled IT professionals.

The advent of the higher apprenticeship and associated work-based learning that develops vocational skills leading to a foundation degree or other qualification is just as valuable a route to employment, and one that lends itself to alignment with the SFIA model.

When BCS launches the professional qualification at SFIA level 3 or 4, that will act as a stepping stone to Chartered IT Professional status, the IT profession will offer a compelling vocational training path to professional qualification for those who either choose not to follow the university route or want to achieve a milestone on the road to CITP status later in their career.

Conclusions

Whilst the debate motion certainly highlighted the alignment gap between academia and the IT profession (real or perceived), the motion was essentially fallacious in that an academic education does not exist exclusively, or perhaps even primarily, to produce graduates that have all the skills and experience necessary to be competent and productive during their first week of employment, as many employers might desire. Who would want to undergo a heart operation conducted by a surgeon whose only experience has been in the classroom?

The idea that universities will be able to produce 'production ready' IT graduates capable of being sent out on billable assignments in their first week of employment is unrealistic and misleading, no matter how desirable that might be to employers.

Employers and employees must jointly shoulder responsibility for developing and sustaining the specific short-term skills that are required to remain competitive in the IT profession.

Academic education must do more to show how their role in developing the long-term foundation knowledge and skills maps to the industries skills framework (SFIA) whilst recognising that undergraduates are not going to achieve Chartered IT Professional status straight out of university – there is no value in raising expectations to a level that cannot be achieved by academic education alone.

The government, schools, colleges, universities, employers and professional bodies all have a role to play in ensuring that the UK has the skills it needs to compete on the global stage and none of these stakeholders will bridge the gap between the outputs of academia and the needs of the market in isolation.

Recommendations
The post-debate discussion led to some simple yet compelling recommendations that will help to close the gap.

1. Sandwich degree courses are an excellent way to build employability skills into an undergraduate degree whilst forging links with prospective employers.
2. Universities should show a clear alignment between their IT and computing qualification and the Skills Framework for the Information Age.
3. The role of the higher apprenticeship should be promoted as an attractive alternative to the conventional university route, blending workplace learning and academic education that leads to a career in IT.
4. BCS should accelerate the development of the entry level IT professional qualification aimed as SFIA level 3 or 4 as a realistic milestone for both graduates and apprentices to achieve within a few years of qualification.

5. The BCS Academy should invite IT industry leaders, especially among major employers of IT graduates, to have a voice in the development of IT undergraduate and post-graduate qualifications throughout the UK.
6. The IT profession would benefit from a closer working relationship between BCS and e-Skills UK especially in respect of developing a joint policy to align academia with the future skills needs of the IT profession – based upon SFIA.

Readers may identify other recommendations or have alternative points of view, and with that in mind you are welcome to follow up using these resources listed below.