

5 Recruiting and Educating IT Professionals for the Future

If the UK is to thrive in an era of global sourcing we need to recruit and educate a cadre of IT professionals who add value by understanding how IT can be used to deliver business benefits; possess the interpersonal and business skills needed to manage projects across the world; and can develop excellent working relationships. A recent report from Deloitte (Deloitte Research, 2005) observed:

The UK needs to provide technology training and education that allows the workforce to generate significant value-add, partly through understanding the technology itself, and partly through understanding how to deploy, manage and commercialize it. The UK should focus on creating individuals who have an unrivalled capacity to turn science into technology, and technology into specialized, commercially viable products, services and solutions.

Mark Kobayashi-Hillary, a member of the BCS Working Party on Offshoring, writes:

Offshoring and the global delivery of services, including IT services, is a starkly visible phenomenon of a knowledge-based society in the same vein as that experienced by former mill, coal or steel workers and subsequently our notion of childhood education and lifelong learning will need to change just as fundamentally as the workplace. Lifelong learning is already a part of the industry. The coding skills you learned at university are close to useless a decade later, constant learning is necessary to remain attractive within the employment market. To combat the change associated with globalization and offshoring it is now necessary to consider softer skills that cannot be offshored, allowing British IT employees to break away from the 'propeller-head' stereotype.

Employment in the UK IT industry is forecast to grow at five to eight times the average employment growth in the UK over the next decade. Far from encouraging young people to shun IT as a career option, the UK needs to increase the number of graduates entering the industry.

Educators need to consider the relationship and corporate partnership skills required for specialists on IT courses and also business degrees such as the MBA. Companies need to consider how to help their employees prosper in a changing environment where they must work successfully with international teams, not just the support team in the basement. Government has to consider the question of what it means to have a career in an environment where skills can be rendered redundant in years. A brave knowledge society will seize the opportunity to lead the world through an education that prepares young people for a new world of work and then supports them through to retirement.

This chapter describes an initiative to increase the number of recruits to the IT profession, the accreditation of university courses and the development of qualifications to meet the need for UK professionals to demonstrate added-value skills.

RECRUITING TOMORROW'S PROFESSIONALS

Although IT contributes significantly to the UK economy and forecasts indicate that Britain's IT workforce will need to grow substantially over the next decade if the

UK's competitiveness is to be sustained, applications to study computer science and IT are falling. The danger of a shortfall in the number of IT professionals is clear.

This problem is not limited to the UK. Bill Gates has expressed concerns about the decline in the number of students entering computer science and said that it is up to technology companies like Microsoft to cultivate a positive image of IT work (Montalbano, 2005). We need to dispel the myth that all computer scientists do is write code in isolation with limited social interaction. Bill Gates has observed, 'The nature of these jobs is not just closing the door and coding. The greatest missing skill is somebody who's good at understanding engineering and bridges that to working with customers and marketing' (Montalbano, 2005).

Gillian Lovegrove, BCS Education and Training Forum Manager and member of the Working Party on Offshoring, and Anna Round, from the Council of Professors and Heads of Computing, write about a BCS initiative to address the shortfall in recruits to the IT profession in the UK:

In 2005, the Higher Education Funding Council (HEFC) identified computing/IT as a strategic subject area in which a strong knowledge base and a supply of highly skilled workers are of particular national importance. Representatives from HEFCE approached BCS to propose that the Society should lead an initiative to increase the number of students studying computing/IT at school, college and university. HEFCE supports similar projects in areas such as chemistry, physics, engineering and mathematics, and has now provided funding for the first phase of work in computing/IT. This is steered by BCS Education and Training Forum with its Strategic Panel and Expert Panel and the Council of Professors and Heads of Computing.

Initial scoping workshops were held in Newcastle in November 2005 and in London in February 2006. The aim of these regional meetings was to gain a broad picture of the relevant issues throughout the UK. Attendees included representatives from secondary, further and higher education, industry, the training sector, the careers service, Local Education Authorities, the Learning and Skills Councils and the Regional Development Agencies. The workshops included short presentations on key issues and these were followed by intensive discussions on topics such as widening participation in computing/IT courses and careers, the recruitment of women and ethnic minorities, mature-age students, the school curriculum, computing/IT in higher education, resources for school teachers, careers advice, the role of the Skills Councils and attitudes to computing/IT.

Reports from the workshops will be taken forward at an event to be held in the spring of 2006, at which a panel of experts will examine key themes and future actions, including the format of a pilot project. A programme of activities will be drawn up and partners will be identified. Partners will be sought from higher, further and secondary education as well as industry, Skills Councils and professional organizations. The relationship between this project and other initiatives to increase student numbers in crucial STEM (science, technology, engineering and mathematics) subjects will also be established.

Further information can be found at www.bcs.org/server.php?show=ConWebDoc.3356.

ACCREDITING DEGREE COURSES

Andrew McGettrick is BCS Vice-President and Chair of the Qualifications and Standards Board, which promotes the provision of high-quality education and training to encourage practitioners to develop and maintain exciting, responsible and rewarding careers in the context of increasing globalization of the IT workforce. He writes about the current review of accreditation processes:

With the relatively recent introduction of Chartered Scientist (CSci) and Chartered IT Professional (CITP), it became necessary to review the accreditation processes associated with degree programmes leading to these awards. Criteria had to be developed to guide accreditation teams looking at undergraduate programmes and part of this involved providing clarification on the differences between CSci and CITP as well as the already existing Chartered Engineer title (CEng). Roland Ibbett, a distinguished member of the University of Edinburgh and one of its former Vice-Principals is leading this activity. The broad findings emerging from the review are that:

- Chartered Scientist is relevant for degree programmes characterized by mathematical foundations and theory or by an emphasis on the scientific method, which often relate to areas such as artificial intelligence, cognitive science, escience, simulation and modelling;
- Chartered IT Professional is characterized by an attention to areas relating to the IT profession, including systems issues and innovative and imaginative uses of computing in a variety of application areas;
- Chartered Engineer embraces areas such as software engineering, computer engineering, communications areas, embedded systems and architecture.

The accreditation review has sought to address certain kinds of postgraduate courses. The motivation for this has come from consideration of the needs of the relevant stakeholders, namely:

- students who need guidance on their choice of programmes;
- industrialists who also need guidance on graduates emerging from courses of quality;
- academic staff who see courses benefit in terms of prestige and status from the kitemark of being accredited by BCS.

An important aspect of this review has been to properly and effectively position BCS and the UK in terms of its standing and its expectations of graduates. It is envisaged that the new accreditation arrangements and criteria will be introduced at the start of the calendar year 2007.

The ACM report *Globalization and Offshoring of Software* (Aspray *et al.*, 2006; see also page 13) presents a set of six challenges to the education community.

- There is a need to consider the levels of IT work that are predominant in the national and multinational economy being served by educational institutions, and which are likely to be predominant in the coming years.
- There is a need for computing/IT education to evolve, whether due to globalization or not.
- There is a need for education to begin to prepare students for a global economy and its possible impact on their careers.
- Educational systems that help prepare students to be creative and innovative will create advantages for those students and their countries.
- Educational systems that not only pay attention to current business and industry needs but also provide a core foundational knowledge will create advantages for those students and their countries.
- A good educational system requires the right technology, a good curriculum and good teachers.

In the world of educational computing, this is a time of change and challenge. Apart from the adjustments in accreditation there are a range of concerns caused by falling student numbers, with low completion and retention rates, and uncertainties over

careers. Moreover the technology continues to evolve and educational institutions need to respond to the changing landscape. These developments create an important set of considerations for BCS through its accreditation activities.

PROFESSIONAL QUALIFICATIONS

Through the ISEB, BCS provides industry-recognized qualifications that measure competence, ability and performance in many areas. These qualifications add value to professional careers by providing both the means and the platform for recognition and enhanced career development. ISEB qualifications are currently available for the following areas:

- IT service management;
- IT assets and infrastructure management;
- IT legal and compliance;
- security;
- project management and project and programme support office;
- business analysis;
- business change;
- testing;
- systems development;
- IT architecture.

Qualifications are available at foundation, practitioner and higher levels. To maintain high standards, ISEB accredits all training providers offering courses that lead to these qualifications, reviewing both the courses and the materials used. ISEB courses are available in more than 30 countries, including the USA, Australia, New Zealand, India and China. Further information can be found at www.bcs.org/iseb.

This very successful qualification scheme is continually being expanded into new areas. Recent launches include:

- software asset management essentials;
- IT service management practitioner exams in release management, availability management, IT service continuity management, capacity management and financial management for IT.

Current developments include:

- foundation in IT assets and infrastructure;
- foundation in IT-enabled business change.

The ISEB qualification framework has recently been reviewed to align all qualifications into a more cohesive structure, highlighting the links across different subject areas so that individual professionals can more easily combine different qualifications from across the range on offer to meet their career development needs. The new ISEB framework is based on a broad subject-based structure, which makes it possible to identify which qualifications are applicable to various industry-standard job roles. There are four main subject areas:

- projects and business change;
- legal, compliance and security;
- IT infrastructure, assets and services;
- solution development and delivery.

Across all subject areas there are three qualification levels, producing greater clarity and depth in the ISEB scheme:

- foundation;
- practitioner;
- higher.

ISEB is clearly providing a wide range of qualifications that can be combined to enable UK-based IT professionals to demonstrate that they can add value, combining technical expertise with business-related knowledge, project management expertise and service management skills, to name but a few of the many subjects that can be studied.

This information was provided by Samantha Ralph, ISEB Product Manager.

BOX 5.1 DEVELOPING WORLD CLASS IT SKILLS FOR A GLOBAL MARKET: E-SKILLS UK

Margaret Sambell of e-skills UK writes:

e-skills UK is the employer-led Sector Skills Council for IT and Telecoms. Licensed by government, it brings employers together with educators and other stakeholders to improve UK productivity and competitiveness through action on skills.

In June 2005, e-skills UK launched its Sector Skills Agreement (SSA) with employers and stakeholders. The SSA sets out a 10-year vision supported by a 3-year action plan to close the UK's productivity gap with major international competitors. It is underpinned by one of the most extensive studies into the IT skills landscape ever undertaken in the UK.

The SSA research highlights the impact of globalization and global sourcing, and explains the economic imperatives that unite business, government and education in addressing the implications for the UK's IT workforce. Without coherent action, the UK is under threat from highly skilled lower cost economies. Conversely, the UK can seize opportunity, by recognizing and responding effectively to the changing environment.

The work of e-skills UK focuses on four strategic objectives: improving the attractiveness of careers in IT; preparing the future IT workforce for successful employment; helping the current IT professional workforce to meet the changing needs of the market; and addressing skills infrastructure matters through policy influence and the reform of standards and qualifications.

The IT workforce of the future needs a different blend of skills from the past: deep technical skills are increasingly married with sophisticated business, project and interpersonal skills. This four-part blend is the principle behind the new employer-led Information Technology Management for Business degree framework, which is now being adopted by universities across the UK. In November 2005, e-skills UK introduced the SFIA Profiler, an online skills management tool that allows companies to navigate easily through the Skills Framework for the Information Age (SFIA) while benefiting from SFIA's universally recognized definitions and skill descriptions.

In support of the promotion of professional standards, and as the custodian of the UK's National Occupation Standards for IT, e-skills UK is developing the overarching Sector Qualification Strategy for IT. This will provide a coherent framework that simplifies and reforms the UK's IT-related qualifications structure to ensure it meets the UK's long term needs.

Further information can be found at www.e-skills.com. For further information about SFIA see page 35.

IMPROVING IT MANAGEMENT SKILLS

A major study by BCS and the Royal Academy of Engineering in 2004 (Royal Academy of Engineering and BCS, 2004) pinpointed problems in the management of complex IT projects. This research found that a striking proportion of project difficulties arose because people in both customer and supplier organizations failed to implement known best practices. The study concluded that education in many universities and management schools in the UK is not producing IT practitioners with the IT application and project skills they need. The importance of project management is not well understood and usually under-rated. Management schools should ensure that both project management and IT are core modules of MBA courses:

The increasing prevalence of IT systems, coupled with overseas competition in this area, means that failure to improve the collective professionalism of the IT industry and strengthen the national infrastructure supporting project delivery is likely to have serious and ongoing economic consequences for the UK.

ROYAL ACADEMY OF ENGINEERING AND BCS (2004)

The Management Qualifications Working Group was set up in 2002 to evaluate where effort is needed by BCS to improve the standard of IT management. The group is helping to develop a competency framework for IT managers and reviewing postgraduate degree courses against this framework. Gill Ringland, chair of the Group, writes about its achievements:

As a result of a survey of over 100 MSc level courses in ICT management worldwide, we have developed a taxonomy to describe the content and target audience, and map them on to emerging ICT professionalism descriptors. We expect to publish a handbook on ICT management in 2007.

Further information can be found at www.bcs.org/forums/mqwg.

BOX 5.2 NATIONAL OUTSOURCING ASSOCIATION (NOA) EDUCATION AND TRAINING INITIATIVE

The NOA is an independent not-for-profit association dedicated to the promotion of best practice in outsourcing. At their 2005 annual conference delegates expressed an interest in new research focused on outsourcing education, how it is taught and how it could be improved. This led to the creation of an NOA education forum, focused on the issue with the aim of developing a formal policy that will then stimulate new research.

The NOA considers that outsourcing is now an essential part of the modern company and the use of outsourcing is expanding to include small and medium businesses. It is becoming clear to those companies purchasing services, and the service providers, that professionals and those leaving higher education should be better trained in the principles of outsourcing.

Some of the key areas on which the NOA forum has focused are:

- what knowledge of outsourcing is missing from business education in the UK today;
- what training would be of benefit to the industry, from introductory training to the MBA;

(Continued overleaf)

- can general higher education courses highlight the differences between buyers of services and suppliers of services and intermediaries, and assist all areas of industry.

The NOA education forum has determined that professional and academic education needs to be approached from different angles. The NOA is now working with higher education colleges including London South Bank University and Bristol Business School to publish a NOA-endorsed elective MBA module on outsourcing and corporate partnerships, which will be used initially in the 2006–07 academic year. The NOA education forum is planning to produce key curriculum criteria that can be used by professional trainers, allowing courses with different content and areas of focus to be NOA-accredited provided certain key subjects are included.

Through these two specific actions to promote best industry practice, the NOA intends to improve professional education in outsourcing and to provide examples of how outsourcing can be taught within higher education through academic partnerships. The NOA will conduct further research into this subject through 2006, particularly the requirement for lifelong learning and the interaction with higher education providers.

This information was provided by Mark Kobayashi-Hillary, NOA board member and member of the BCS Working Party on Offshoring.

Further information on the NOA can be found at www.noa.co.uk.

BCS'S SCOUTS BADGE

To help build a strong, dynamic IT profession for the future, BCS sponsors a five-stage scout activity badge (for boys and girls) to improve the computing skills of the younger generation and to highlight the positive benefits of using IT. In line with BCS's overall objective to ensure a fully IT literate nation, the IT badge aims to provide a solid grounding in IT skills from fundamentals such as switching on a PC correctly (stage 1) to website design and internet studies (stage 5). With the decline in the number of students choosing computer-related courses at college and university, it is vital to capture the interest of young people to demonstrate the relevance of IT, as well as encouraging more people to consider pursuing a career in IT. BCS's scouts badge has achieved 130,000 passes in just over 2 years.