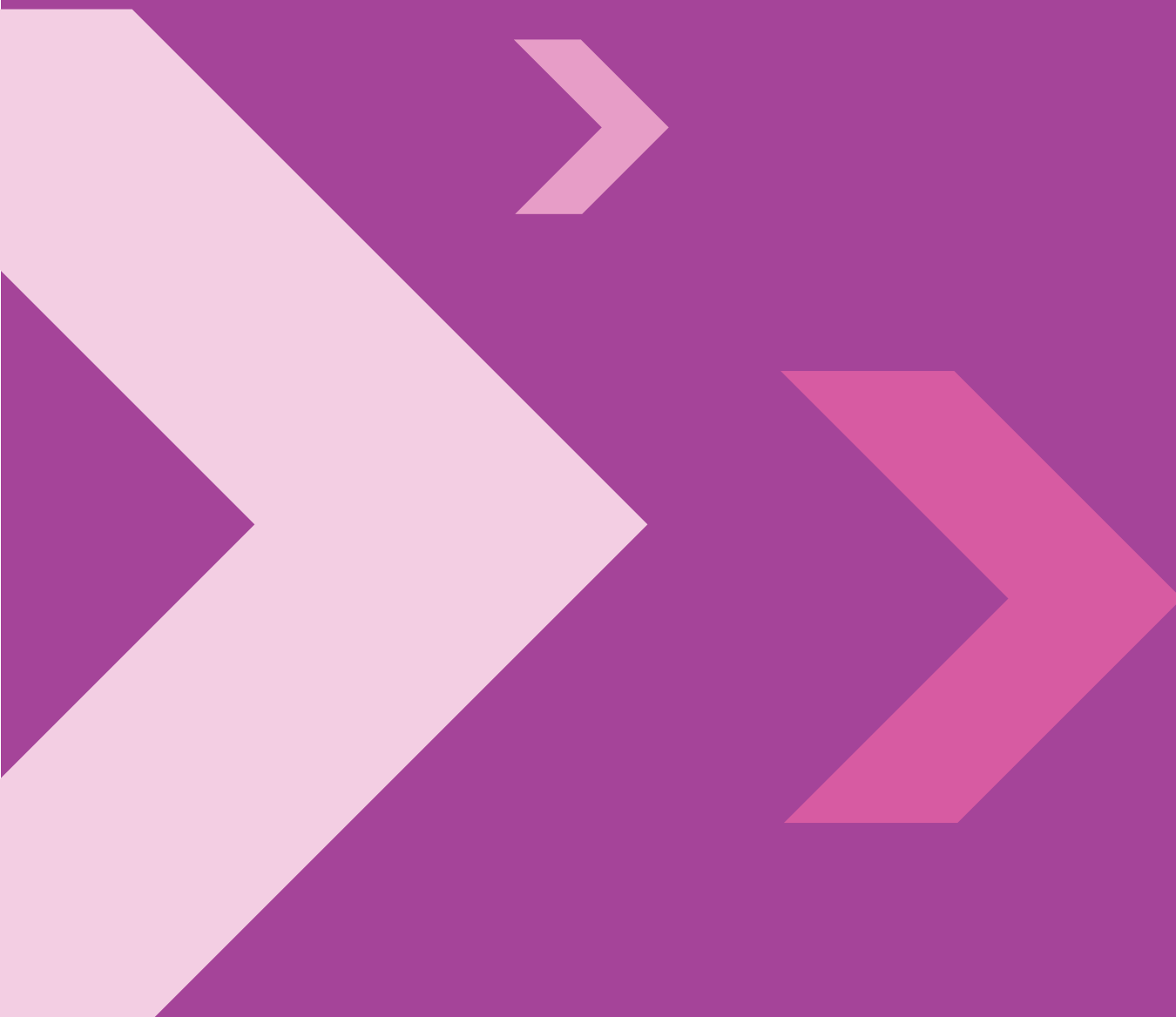

Innovation in Higher Education:
The promotion and evolution of IT-related degrees



e-skills UK would like to thank the many employers and universities supporting the ‘Revitalise IT’ programme, in particular:

Accenture	Morse
Amazon	RIM
Apple	Vodafone
BBC	University of Birmingham
BT	City University London
Cisco	The University of Greenwich
Capgemini	The University of Kent
IBM	Oxford Brookes University
John Lewis	University of Reading
Logica	Royal Holloway, University of London
Microsoft	UCL

“We are delighted to contribute to the shaping of Revitalise IT... This initiative can make an important contribution to the nation’s future.”

Nick Read, Chief Executive, Vodafone UK

“We see this programme as coming at exactly the right time to address a problem that we have been monitoring as a growing issue – i.e. the supply of graduates with the right skills set to thrive in IT professional roles.”

Kevin Price, BBC

“The UK needs to attract more young people into technology, and help future IT professionals to develop the blend of skills they will need for successful careers. Revitalise IT represents a positive and important step towards achieving this goal.”

Richard Pettinger, Department of Management Science and Innovation, UCL

“This initiative is timely and relevant to the future of computing in Higher Education in the UK. It tackles a number of areas which City University also believes to be key: creating a larger pool of talent to recruit from, improving careers advice, building on employer relationships, and being able to showcase clearly to employers what graduates can do.”

David Bolton, City University London



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Information Technology is the driving force of a globally competitive economy, underpinning innovation

Foreword

Supported by the Higher Education Funding Council for England (HEFCE), e-skills UK has brought together employers and universities to help revitalise students' interest in IT-related education and careers (the 'Revitalise IT' programme).

Information Technology is the driving force of a globally competitive economy, underpinning innovation, competitiveness and long-term prosperity. A vibrant IT workforce is critical for the success of every sector, and a world-class technology skills base is an essential pre-requisite for the UK to be a winner in the global economy.

However, there is falling uptake of IT-related degrees, employers are concerned at insufficient numbers of graduates pursuing IT professional careers (from both IT-related and other degrees), and there is a constant need to evolve undergraduate curricula to meet changing IT employment needs in the UK.

Change is urgently needed, but none of us can do this on our own. We need to work together to address these issues. The 'Revitalise IT' programme is an example of a cross-sector employer / university partnership which sets out to do just that.

This publication covers two related topics. Firstly, it considers the promotion of IT-related degrees, setting out the current challenges, highlighting case studies from a number of universities, and explaining what the 'Revitalise IT' programme is doing to help. Secondly, it explores curriculum evolution, again with examples of innovation from universities at home and abroad, and with information about the work of 'Revitalise IT'.

We are keen for as many stakeholders as possible to engage with this work. The final section of this document points to our wiki at www.e-skills.com/revitalise. Its purpose is to enable stakeholders to promote developments taking place in this area, and to generate discussion and new ideas concerning the IT-related education in universities, colleges and schools.

We hope you find this publication a useful backdrop to an important debate and we look forward to hearing from you.

Karen Price OBE
CEO, e-skills UK

> 1.0

The promotion of IT-related degrees

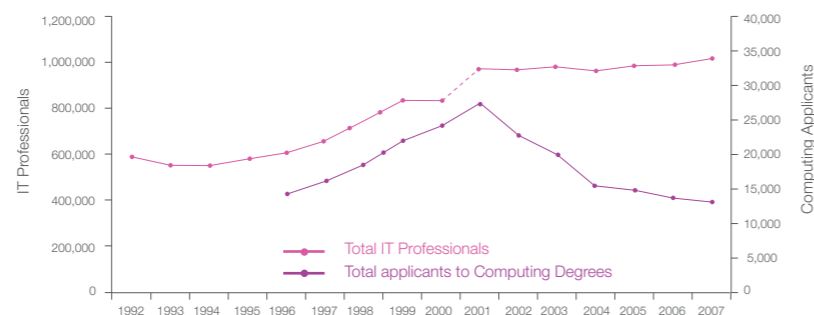
> 1.1 Current challenges

The IT professional workforce is growing, but uptake to IT-related degree courses is declining.

The IT professional workforce in the UK has almost doubled since 1994; from 550,000 to almost one million today. e-skills UK's research forecasts that the workforce will continue to grow at 5-8 times the average employment growth for the coming decade. Despite this continued sector growth, there has been a dramatic decline in student uptake of computing discipline degree courses, with a 50% drop in the last five years.¹

The following chart shows the profile of UK applicants to computing discipline degree courses from 1996 to 2007, contrasted with the growth in the number of people in IT professional occupations.

IT professionals in the UK workforce / UK Applicants to Computing degrees



Source: e-skills UK analysis of ONS LFS and UCAS data.
Post 2000 LFS data uses SOC 2000

Terminology

The IT professional workforce includes all those working in IT professional jobs regardless of sector. This includes those working in:

- **Business services** such as consulting, business process re-engineering and change management;
- **IT services** including solution design, systems integration, Internet and Web;
- **Software development** including applications and games;
- **IT operations** including information management, security, service delivery and systems maintenance;
- **Networking and communications** including mobile and fixed line telecommunications;
- **IT project and supplier management.**

¹Computing discipline degrees are defined here as G4 Computer Science; G5 Information Systems; G6 Software Engineering; G7 Artificial Intelligence, UK home students only (source: UCAS).

Uptake of IT-related A-levels is also declining

Computing A-levels have suffered a steady decline in numbers since 2003, with an overall decrease of 50% by 2008 and 10% in the last year alone. More students undertake A-levels in ICT (IT user skills) than in Computing, although this number is also dropping.

Females are significantly under-represented in IT-related education

The mismatch between the needs of the economy and the graduate workforce are compounded by a severe gender imbalance. 91% of students of Computing A-level and 83% of students of IT-related degree courses are male, meaning the sector is missing out on a large part of the talent pool.

The IT sector does not have the pipeline of talent it needs

Employers actively encourage graduate intake to the sector from all degree disciplines, not only IT-related degrees, and this is seen to provide a healthy mix of skills in the workforce. However, IT-related Higher Education is an important source of talent for the sector's workforce and the vitality of this community is essential to the UK economy.

Of 141,000 new entrants a year into IT professional job roles, around 27,000 come directly from education. Higher Education Statistics Agency figures suggest that around 55% of graduates entering IT professional occupations come from IT related degrees.

A quarter of employers say they have been unable to fill the number of graduate IT professional positions they had available during the past three years. The prospects for IT graduate recruitment remained robust in mid-2008, with 37% of employers expecting to increase graduate recruitment over the next three years and 57% expecting no change.

The IT sector has a strong interest in encouraging greater uptake of IT-related degrees, as well as supporting curriculum evolution to match the breadth of IT professional job roles.

"I am impressed by the calibre of graduates I see coming through with IT-related degrees. There are just not enough of them any more... I believe that technology degrees could attract more students if they emphasised their consultative relationships with business. Business and technology are converging at an ever increasing pace."

John Gillard, Capgemini



>1.2 Addressing the problems

Universities have been actively developing new methods to increase applications to IT-related courses for a number of years. This includes working closely with industry to develop new degree offerings that are backed by employers, and adopting innovative approaches to engaging with students in schools and colleges.

In order to make a step change, we need to promote and scale these activities. Four example case studies are included here, followed by an introduction to the work of Revitalise IT in this area.

Case Study 1: Inspiring students through Subject Ambassadors

The University of Greenwich

An 'Ambassador' programme runs at the University of Greenwich as part of the national Undergraduate Ambassadors Scheme, which now involves more than 50 universities. This has recently been extended to Computing following its success in Mathematics. Undergraduates work in schools by assisting teachers and inspiring school students to consider studying computing at university. The programme aims to make computing degrees more attractive by introducing school students to the "real" people studying computing at university.

The undergraduates benefit by gaining teaching experience and course credits.

Greenwich also plans to use video conferencing to allow the Ambassadors to watch how IT is taught in schools, and technology will be used to enable undergraduates to provide advice and mentoring to school students.

For more information, please see www.uas.ac.uk

Case Study 2: Making programming "Serious Fun"

University of Kent

Greenfoot, developed at the University of Kent, is a beginners' learning environment that makes the learning and teaching of programming engaging and motivating. Greenfoot lets school students develop interactive graphical applications, such as games and simulations, very quickly and easily. The environment follows an approach that has been described as "Serious Fun" – learning real programming concepts, while having fun in the process. The system offers support for teachers, with a wide range of teaching scenarios being available, as well as motivation for students, who can easily develop interesting applications and publish them to the internet for others to see.

Example quotes from teachers show how much it is valued:

"I absolutely love Greenfoot! Thank you for making Java so accessible."

"Greenfoot is a brilliant instructional tool, and it's setting off sparks in my students' heads like I've never seen before."

"My students love Greenfoot! They worked harder than ever on this challenge."

"Greenfoot is a great, motivating way to introduce students to objects and the principles of inheritance. They love creating classic games like frogger, as well as inventing their own."

"We are having a great time working with Greenfoot. The students can relate to the scenario and are anxious to add additional capabilities."

For more information, please see www.greenfoot.org

You may also be interested in the University of Glasgow's 'Computer Science Inside' resources for schoolteachers csi.dcs.gla.ac.uk/index.php and Queen Mary, University of London's Computer Science for Fun (CS4FN) www.cs4fn.org

Case Study 3: Multi-university collaboration

Universities of Edinburgh, Napier and Herriot Watt

The Universities of Edinburgh, Napier and Herriot Watt, all located in the city of Edinburgh, have entered a partnership to increase applications to IT-related degree courses.

In 2007, the universities ran a joint all day workshop for around 250 15 year old students. The aim of the "IT4U - Computing Careers Day for Schools" programme was to raise the interest levels of students in the subject, show them potential career paths and inspire them to study IT-related courses. The target age was students who were making decisions about what to take at Higher Grade (two years away from applying to university).

The universities worked with e-skills UK's partner in Scotland, ScotlandIS, to attract employer participation. 16 employers, including IBM, Google, Oracle, Logica, Amazon and Sun, attended the workshop and ran a mini-careers fair. Students were provided with booklets of example questions to ask employers about their companies and the industry, with questions encouraging the injection of fun into the activity.

The workshop was developed in consultation with schools and teachers who had input into the event format and content. The 2007 workshop was held at Edinburgh University and the initiative will be repeated this year, with the role of host university rotating.

More information on is available at www.inf.ed.ac.uk/outreach/schools

Case Study 4: Inspiring school teachers

University of Washington, Seattle, USA

The University of Washington runs an annual 3-day workshop for high school teachers of maths and science, sponsored by Google. The goal is to show these teachers the importance, breadth and relevance of computer science, and to inspire them to encourage talented students into this field. The workshop is held jointly with Carnegie Mellon and UCLA.

More information is available at cs4hs.cs.washington.edu

"Greenfoot is a brilliant instructional tool, and it's setting off sparks in my students' heads like I've never seen before."

>1.3 Revitalise IT: Creating the BigAmbition

A key output from the 'Revitalise IT' programme has been the development of the 'BigAmbition' campaign. The objective is to transform the attitudes of 14-19 year olds towards IT-related degrees and careers by:

- Bringing employers, universities and schools together with young people to increase understanding of IT-related degrees and careers;
- Demonstrating the excitement and relevance of IT and IT careers to modern day lives;
- Capturing the enthusiasm students already have for everyday technology and translating this into an interest in degrees and careers in IT;
- Giving young people a central role in the ongoing development of BigAmbition.

The BigAmbition campaign is fronted by a website (www.bigambition.co.uk) featuring interactive tools including a "Dream job finder" and a "Did you know?" quiz. Supported by employers across the sector, video profiles of IT professionals are featured, to illustrate the diversity of the sector and show how rewarding a career in IT can be.

Following research into the titles of IT-related degrees and the confusion this can cause for students and employers, the BigAmbition site segments the multitude of courses on offer into four broad 'degree families':

1. Business Information Technology (including Information Technology and Information Systems courses);
2. Computing (including Computer Science and Software Engineering courses);
3. Computer Games & Digital Media;
4. Computer Engineering.

This high level segmentation was developed having explored approaches in other countries (including that of the Association of Computing Machinery (ACM)), and following discussions with the Council of Professors and Heads of Computing (CPHC) and the mapping of over 180 different types of IT-related degrees in the UK. Its purpose is to help students better understand the options available to them and to focus on the choices most likely to suit them and their potential career interests.

"BigAmbition is a great site that is really raising the profile of IT as interesting and rewarding career choice. As Chair of e-skills UK CIO Board I have been involved in BigAmbition from the start. We are looking to recruit IT professionals this year in London and Newcastle, so I do urge anyone interested in IT as a career to take a look at the site and see what you can look forward to working at BA and other employers."

Paul Coby, CIO, British Airways

> 2.0

The evolution of IT-related curricula

> 2.1 Current challenges

There is increasing need for a blend of technical, interpersonal and business skills

Existing research suggests that employers of IT professionals need increasingly sophisticated skills from new entrants to the workforce, and that an increasing number of roles in the UK are demanding high levels of business and interpersonal skills to complement technical capabilities².

As part of the 'Revitalise IT' programme, supplementary research was commissioned to assess the extent to which graduates entering IT professional roles are prepared for their initial jobs. The research included a quantitative survey of 500 employers who recruit graduates into IT professional roles; a survey of 1000 graduates in the early phase of their career as an IT professional; qualitative employer consultations and group workshops with graduate employees.

Interpersonal skills are an issue for employers of graduates from all disciplines

Overall, employers reported that graduates entering IT careers are reasonably well equipped to enter the workplace but expressed a general dissatisfaction with the quality of interpersonal skills that graduates from all disciplines bring to the labour market. Of particular concern is the ability to communicate effectively in a business environment, which is seen as essential for both client-facing roles and internal team working.

46% of employers responded to the questions about mismatches between their expectations of their graduates and the actual skills presented. Of these 30% cited mismatches in terms of communication skills, 20% cited experience (emphasising the need to encourage work industrial placements), 18% specific technical skills and 9% teamwork/relationship management³.

² Reference: e-skills UK's IT & Telecoms Insights 2008 research publications.

³ Reference: 'Researching Graduate Employment in IT', Experian Business Strategies for e-skills UK, September 2008

Graduates want the technical content of degree courses to be better synchronised with the needs of business

Graduates who have recently entered IT professional careers also believe that they are insufficiently prepared for the workplace in terms of interpersonal and business awareness skills required of them. In addition, although computing graduates generally believe the technical skills learned in their degrees were relevant, many did note skills mismatches and believe courses need to be better synchronised with the business world.



> 2.2 Addressing the problems

Universities invest considerable effort in updating and evolving curricula to support the needs of employers. This includes working closely with employers to develop new degree offerings, involving employers in delivery of curriculum and encouraging more students to commit to placements in industry. The IT sector has a strong interest in supporting curriculum evolution to match the breadth of IT professional job roles in the UK, particularly in areas of industry growth.

However, as with developments to market IT-related degrees, there is a need for greater promotion and continual development of these activities. Five example case studies are included here, followed by an introduction to the work of 'Revitalise IT' in this area.

“Graduates who have done joint business and IT degrees offer a high standard in both areas. Students who have completed purely technical degrees can lack interpersonal and communications skills; while those who have just studied business can require a lot of technical training.”

Susannah Garside, Logica

Case Study 5: Collaborating with employers across the IT sector

The Information Technology Management for Business (ITMB) degree

The Information Technology Management for Business (ITMB) Honours degree was developed in response to demand from employers for IT graduates with both a solid grasp of technology and the business-related and interpersonal skills to work effectively in project teams and client-facing roles. Employers collaborated with universities to develop a curriculum based on equal contribution of technical, business, project and interpersonal skills content.

Brought together by e-skills UK, a group of leading employers across the IT sector worked collaboratively to develop a 'blueprint' that described the skills of an ideal graduate entering typical IT professional roles. Universities then developed their individual course content to meet the employer-defined learning outcomes, and the courses went through a formal process of sector endorsement.

The ITMB degree is now being delivered by 13 universities, supported by 50 employers. The growing partnership of employers supports marketing, delivery and ongoing development of the programme. Practical contributions include the provision of 'guru' lectures, awards, project challenges and extended business placements for students. More than 300 students have benefited from ITMB so far and application rates have grown to 1,000 for the coming year. The degree results for the first cohort to have completed the programme were outstanding and there has been a marked impact on gender mix (32% of students being female, double the UK average for IT-related degrees).

The following universities are currently delivering ITMB courses: Birmingham City, Exeter, Greenwich, Hull, Keele, Lancaster, Loughborough, Manchester, Northumbria, Oxford Brookes, Sheffield, University College London, and University of the West of England.

More details can be found at www.e-skills.com/itmb

“The ITMB programme provides graduates with exactly the right mix of business, technical and interpersonal skills we need as a company that prides itself on its cutting edge technology solutions.”

Paul Binks, British Airways

“I think the ITMB programme is important and groundbreaking. It is phenomenal to have such a diverse group of employers around a table and collaborating.”

Rafik Ishani, Deloitte

“e-skills UK has broken new ground managing such successful collaboration between employers, universities and the government.”

Jenny Taylor, IBM UK

“We've had great success with ITMB... We received about 280 applicants for 50 places.”

Richard Pettinger, University College London

“The quality of the applicants in terms of the A-Levels that they achieve has increased... The whole ethos in the way education programmes are delivered is beginning to change because of this initiative.”

Kevin Doyle, ITMB Course Leader – University of the West of England

“Right from the start, we have been meeting with employers... I would recommend ITMB 100%... it is a fantastic degree.”

Christine McKibbin, Student, Northumbria University



Case Study 6: Creating a student run IT company

Genesys Solutions

The University of Sheffield's project 'Genesys' is focused on meeting the need for graduates who have good levels of technical skills, individual skills (communication, planning, presenting) and teamwork skills (working with others, leading, negotiating), and the ability to apply these skills and others in a real business context.

Genesys Solutions is a student run company set up by the University. The company is, as far as possible, independent, with minimum input from the university and lecturers. The students are fully responsible for all areas of the business, including the strategy of the company, the negotiation of possible products with clients, setting up quality assurance and managing the projects. The company has its own physical resources paid for through its own earnings. Genesys Solutions has recently been incorporated into epiGenesys Ltd, a university spin-out company which employs four full time graduates. The staff from the parent company provide training, support and mentoring to the Genesys Solutions students. In particular, they ensure rapid training of new students at the start of the academic year so they are able to quickly become involved in commercial development projects.

Students' work on the Genesys project is assessed and contributes to their academic grade. Assessment takes into account such measures as customer satisfaction, business procedures and quality control as well as business performance and deliverables.

For further information, please see www.shef.ac.uk/dcs/undergrad/coursestructure/genesys.html

You may also be interested in similar initiatives at the University of Kent (www.cs.kent.ac.uk/students/careers/KITC/index.html) and the University of Bedfordshire (www.beds.ac.uk/departments/computing/abc).

Case Study 7: Recognising changing working methods in the IT industry

Active Learning in Computing (ALiC)

Active Learning in Computing (ALiC) is one of 74 Centres for Excellence in Higher Education (CETL) funded by HEFCE. It is a collaborative effort between four partner institutions: Newcastle University, Durham University, Leeds Metropolitan University and the University of Leeds.

The ALiC project team is exploring innovation in group and individual project work in Computing Science in order to better prepare students for the realities of working in their chosen profession.

This initiative is based on the premise that a global perspective of industry is needed to help make computer science graduates more employable. Cross-site working is particularly characteristic of the way IT professionals work, with, for example, software often being developed collaboratively by virtual teams located across different geographies.

In response to such changing work dynamics, the universities of Durham and Newcastle collaborated to change the curriculum of their Software Engineering Modules to incorporate problem-based learning and distributed team working. The trend towards cross-site work in industry is emulated via a shared software development project between Newcastle University and Durham University in which teams from each site form 'companies' to develop software products using virtual teams.

For further information, please see www.dur.ac.uk/alic

Case Study 8: Revamping a full degree portfolio

Threads

In response to the problem of declining student numbers, the Georgia Institute of Technology, Atlanta, USA took a radical approach, completely revamping their whole computer science curriculum. Their objective was to more closely align students' undergraduate education with their needs post-graduation.

The undergraduate curriculum is now structured around a concept called 'Threads', which enables students to personalise their courses to reflect their particular interests and career aspirations. Eight 'Threads' are defined currently: modeling & simulation; devices; theory; information internetworks; intelligence; media; people; and platforms. Each of these 'Threads' combines general computer science instruction with classes related to a particular area of application. Students can further 'accessorise' their degree by association with one of five roles: mater practitioner; entrepreneur; innovator; communicator; and policy maker.

This approach is based on the imperative for graduates with a higher level of specialisation, holding not only generalist knowledge, but also able to accomplish tasks in a specific business environment.

Notably, since the introduction of this new curriculum in 2006, Georgia reports that student intake has increased by 33%.

For further information, please see www.cc.gatech.edu/education/undergrad/bscs/bcs-threads

Case Study 9: Designing new games courses with industry

Multi-employer engagement

The University of Washington, Seattle, USA adopts a number of approaches to engaging multiple employers to help produce work-ready students, making use of the fact that many leading software companies have sites in the Seattle area, including Microsoft, Google, Amazon, Adobe, Intel and RealNetworks.

The university has undertaken a range of initiatives to increase engagement with the IT industry and establish their role as one of the top providers of graduates to many companies in the sector. This includes designing courses in collaboration with multiple employers, for example a Digital Animation course designed and delivered with Pixar, DreamWorks and Industrial Light & Magic, and a Videogames Design course designed with Microsoft and supported by a number of local games companies.

The university also runs an 'Affiliate Faculty' consisting of 49 'staff' from 19 different organisations who teach courses, take seminars, and advise and mentor students. They organise industry panels and workshops to help students learn what employers are looking for at interview and operate team projects involving mentors from industry.

For further information, please see www.cs.washington.edu

“The University of Washington, Seattle, USA adopts a number of approaches to engaging multiple employers to help produce work-ready students...”

> 2.3 Revitalise IT: A catalyst for action

Complementing the 'BigAmbition' campaign emanating from the 'Revitalise IT' programme, e-skills UK has also been working with employers and universities on another Revitalise IT workstream, 'Catalyst'. 'Catalyst' sets out to encourage and promote curricula development which meets the growth needs of the IT sector.

A series of 'Industry Insight' events have brought together influential leaders in the IT sector, Higher Education and government, focused on improving collaboration between industry and academia for mutual benefit.

The e-skills IT internship

Informed by these discussions, by the outputs of the Revitalise IT research, and by consultation with the partner employers and universities supporting the programme, e-skills UK is exploring the possibility of launching a new 'IT internship' programme. The plan would be to help universities significantly increase the numbers of students in placement schemes.

The employability benefits of student placements within degree courses are highly regarded by both employers and graduates. For employers, placements help to develop business-ready employees; for graduates they increase employability and enable better informed decisions about career options. Although many excellent placement schemes already exist in the Higher Education sector, less than 29% have participated in a placement scheme, much lower than the European average of 55%. This UK figure is falling fast. In 1998 there were 28,730 undergraduates on placement. In 2004, the number had fallen to 20,390.

To increase student participation in IT placement schemes will require attention at pre-university level. Research undertaken by e-skills UK suggests that school students thinking of taking Business Studies or Engineering degrees are far more likely to expect their degree to include a placement than those considering IT-related degrees. e-skills UK will help address this through the BigAmbition site.

The proposed e-skills IT internship will build on the work that universities already do in this area, to encourage greater uptake of industry placements and to add value to them. This sector-backed scheme will:

- Encourage more employers to participate, because of the clear objectives of the placement, significantly increasing the number of placements that are available;
- Encourage more students to participate, because of the linkage between the placement and both degree achievement and employability. The BigAmbition website will be used to enthuse young people and to develop the idea of placement schemes becoming the norm for IT degrees;
- Enable universities to have their existing or new placement schemes recognised against a set of employer-endorsed professional competencies (sector-agreed placement scheme learning outcomes). This will be achievable with minimal effort, where possible fitting into existing university assessment schemes.

"We love the enthusiasm, positive attitude and ability that our new graduates bring to the company. Our assessment is tough as we need them to be able to hit the ground running. We always find that those who have had previous work experience have greater skills and understanding. Employability is something students have to learn, and placements help them to do this."

Clare Riley, Microsoft

"It's all well and good spending years at university being lectured on how to do things, but nothing can beat the experience of actually getting stuck in and having a go yourself, especially in the IT industry."

The university degree just doesn't teach you the practical skills you require to do a job like this, so if this is what you're looking to do when you graduate, a placement year is an ideal way to get experience."

Simon Todd, Final Year Student, Computing and Business Administration (with a Year in Industry), University of Kent

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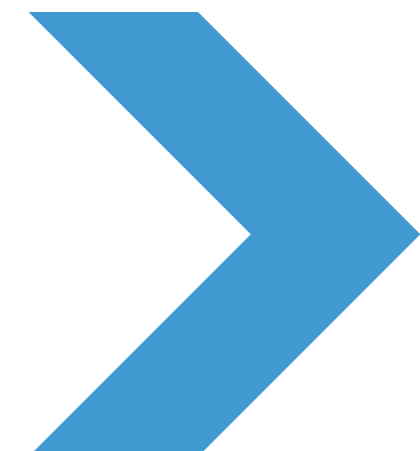
Getting involved

...transform the attitudes of young people towards IT-related degrees and careers

We are keen for as many stakeholders as possible to engage with the work emanating from Revitalise IT, both the BigAmbition campaign to transform the attitudes of young people towards IT-related degrees and careers, and the e-skills IT internship and other work to encourage the incorporation of employer-valued skills and capabilities within IT-related degrees.

Our wiki at www.e-skills.com/revitalise is intended to help with this by enabling stakeholders to promote developments taking place in this area, and to generate discussion and new ideas concerning the IT-related education in universities, colleges and schools. Please visit the wiki to have your say.

We also encourage employers and universities to get involved with schools and colleges through the Diploma in IT and Computer Clubs: more information on these is available in the Annex.



> Annex

Related activities in schools and colleges

Part of e-skills UK's forward strategy is to bring together employers with universities and other stakeholders to help ensure that the technology-related curriculum in schools and colleges (including GCSEs, A-levels and the Diploma):

- Provides coherent progression and accommodates diversity in previous student experience;
- Is highly valued by Higher Education and employers, and benefits from their active support in delivery;
- Is inspiring increasing numbers of boys and girls to progress into IT-related degrees and careers.

This Annex provides background information related to the Diploma in IT and Computer Clubs.

The Diploma in IT

A significant change is taking place in England's secondary education system, with the introduction of new Diplomas for 14-19 year olds from September 2008.

The Diploma in IT, one of the first five Diplomas to be offered, was developed in partnership with employers, universities, teachers and awarding bodies working together through e-skills UK. Its objective is to provide a highly valuable education which opens doors to a myriad of degree and career choices, whilst inspiring young people about technology.

The Diploma in IT blends general education with applied learning, set in the context of the technology sector. Designed to prepare students for university and to improve employability, the Diploma in IT places an equal emphasis on each of the three themes of business, people and technology.

Students will explore the potential of technology and its contribution to organisations, individuals and society. They will learn how to deliver successful projects, create technology solutions to meet customer requirements, and develop the ability to work effectively in a professional business environment. The learning will be brought to life through relevant contexts, for example, the Internet and its impact on business and society; computer games and the integration of software, graphic design and art; and the technology behind the music industry.

As input to the development of the Diploma, e-skills UK assessed the impact of global trends on the UK, analysed research from more than 3,000 employers, and sought direct input from more than 600 companies of all sizes. Employers who have been playing a leading role in designing the Diploma in IT include BT, CA, the Cabinet Office, Centrica, Cisco, EDS, Fujitsu, IBM, John Lewis, Logica, Microsoft, Oracle and Vodafone.

More information is available at www.e-skills.com/diploma

"The Diploma will provide students with a sound understanding of the contribution of technology and of what can be achieved through commitment and entrepreneurship."

Ian Smith, Oracle

"We have all been focused on the same priorities – the need for young people to understand technology in the context of business and society; the need to increase standards of English and Maths; the importance of developing interpersonal skills; and a passion for continued learning throughout life."

Judy Stapleton, John Lewis

"The development of the Diploma represents an opportunity to address some important issues: introduce a radical change in the way IT is taught; help young people really understand the world of work; and, in relating education to real world scenarios, provide them with a purpose for their study."

Simon Marsden, Springfield School, Portsmouth

Computer Clubs

CC4G is an online club for 10-14 year olds, established in response to research showing that negative misperceptions were affecting interest in IT careers. CC4G's creative projects bring IT to life in contexts to which young people can readily relate, for example fashion, music, celebrity and crime scene investigation. Through CC4G, students gain an insight into the relevance of IT and a better understanding of career options.

More than 124,000 girls in over 3,700 schools have benefited from CC4G so far. Employers support clubs with funding, software, events, volunteers who run clubs and training for teachers. More than 500 partners are actively supporting CC4G, and industry has provided contributions worth more than £11 million. 65% of CC4G members are more likely to consider a career in IT as a result. 89% of CC4G members want to continue with CC4G. 98% of facilitators believe CC4G is having a positive effect on girls' achievement in IT at Key Stage 2 / 3 and 83% believe it is benefiting the girls across all of the Key Stage 2 / 3 curriculum.

The CC4G programme was pioneered in the South East of England by the South East Economic Development Agency (SEEDA) and is supported by the Department for Children, Schools and Families (DCSF) via Becta.

The next generation CC4G will be launched in 2009, providing a dynamic and flexible learning environment for students and a virtual staffroom for teachers to co-ordinate activity. The focus is shifting to widening participation of CC4G, such as making the learning content gender-neutral to appeal to boys, using the materials to support family learning and piloting the use of CC4G to deliver the broader school curriculum.

To find out more, please visit www.cc4g.net

"CC4G has made a profound difference to the attitude and aptitude of girls. It has helped to reinforce the fact that IT is an essential part of any career nowadays."

Deborah Forster, Trinity School, Newbury

"One of the most innovative and successful schools' programmes to be introduced in recent years, CC4G is changing the attitude of a generation of girls towards IT and careers in IT."

Richard Lambert, CBI

"CC4G develops key skills in IT, team-working, problem solving and communications that are valued by employers and universities and which will stand the girls in good stead throughout their future lives."

Rt. Hon. Jim Knight MP, Minister of State for Schools and Learners, DCSF



