

CPHC Response to BIS Postgraduate Review

Theme 1: International

[The UK needs to remain internationally competitive in both attracting overseas students and in the prospects of UK postgraduates in the global employment market. International Students provide a crucial fee income for many institutions, as well as enriching the UK's international networks.]

How can the UK remain an attractive place for postgraduate study?

The fee level charged for overseas students by many institutions is significantly high in relation to the income levels of their countries of origin. Therefore fee support in the form of scholarships, fee waiver schemes, and guaranteed part-time income generation work, are all of benefit. Brokering graduate loan deals through international bank organisations, to enable students to have access to funds for fees and maintenance, would also be of significant benefit. In general, the UK remains an attractive place to study for overseas students, because of the quality of the educational experience, and the fact that our cost base has reduced in recent times, but we should never forget that this is still relative to the much lower income bases that these students come from.

A significant problem for a number of years has been obtaining visas for overseas students in a timely fashion for students wishing to come to the UK. In some parts of the world this is attributable to political unrest and fears of terrorist activity, but in many other places it simply represents an over bureaucratic and inefficient service. The revisions to UK border controls recently brought in have added another level of complexity to this process, and as a result the service has been even less reliable and more fragmented in its operations. This has had a significant effect on the willingness of students to approach study in the UK, and while many of the stories circulating amongst the potential student communities overseas may be apocryphal, they are damaging to the future success of UK recruitment of overseas students. We would urge a review of the requirements for student visas and the development of a fast track process which, while meeting the security requirements, will address this particular problem. While we recognise that there are already changes taking place within the visa system, our concern is that the existing levels of bureaucracy are likely to be undiminished and may even be extended as a result of the new requirements, when what we actually need is a faster and less bureaucratic process. It should be noted that current recruitment processes for overseas postgraduate students have to terminate a couple of months prior to the start date of the postgraduate programme in order to accommodate visa requirements, whereas for home students recruitment to these programmes continues right up the starting date. This clearly has an impact on the capability and

responsiveness of the recruitment system in relation to these overseas students and is outwith the control of the recruiting institutions.

For many postgraduate students, the issue of earning a part-time income while studying, and having the opportunity to stay on in the country to gain work experience post degree, is of significant importance. Schemes such as the New Talent initiative in Scotland offered the opportunity for students completing a degree qualification at a UK university to remain in the UK and work, allowing them up to two years to find employment and the guarantee of a work permit once employment was found. Similar schemes have been run and proposed in the UK but recent changes in regulations on immigration have impacted on these schemes and they are therefore no longer an attractive selling point for study in the UK. Within the new points scoring system for immigration, we would wish to see some consideration being given to again providing incentives for students to study in the UK by guaranteeing them the opportunity to remain and work in the UK after successful completion of their studies.

During their studies, students are entitled to work up to a set number of hours per week in paid employment, and we find that this is popular with many students coming from poorer countries, as a means of supplementing their maintenance. In the current economic climate, there is obviously competition for all forms of paid employment, which means that it is harder for these students to find these opportunities. We would encourage consideration of a tax break scheme for Universities where they might offer part-time paid employment to their own students, on the basis of a mutual benefit. To some extent this already takes place, but developing a tax break model could result in the development of a broader and more consistent approach across the sector.

Whilst all of the foregoing are important, we would argue that the key driver for the attractiveness of study in the UK remains the reputation of the UK HE sector, and it is necessary to take all measures to ensure this reputation is maintained. Obviously, investment in resources and staffing, for both teaching and research, is of prime importance and this is the remit of the individual universities, but it is imperative that appropriate funding levels are provided by central Government to enable Universities to maintain existing service levels.

Concern must be voiced about the declining level of student interest in computing as a degree subject following on from similar declines in the other STEM subjects. Applicants to (first degree) Computing courses more than halved from 31,000 in 2001 to 15,000 in 2007. However, data for 2008 has shown a rise to 16,000 indicating that the trend seen over the previous 6 years may have reached its lowest point in 2007 and that the number could now be increasing¹.

¹ e-skills UK analysis of UCAS data

The DIUS STEM report [1] concurs that the “*There have been falls in the number of First Degree graduates in Chemistry and Engineering, but also in Computer Science.*” In terms of other levels the report continues, “*In fact, the number of Computer Science graduates has also been falling at Other Undergraduate and Masters level (but has seen significant growth at PhD level).*”

This results in the dual problem of potential reductions in staffing and resources, coupled with reduced numbers of Home and EU students in these degree areas. As reported by CPHC in previous submissions to DIUS [2], the potential damage to the UK HE Computing sector, and as a result to the UK IT industry, is significant and alarming. The growth in the number of overseas postgraduate students has tended to mask some of these concerns but there is the potential for considerable reputational damage if these students have no interaction with fellow students from the UK and return home with a UK degree having studied in classes predominantly composed of their fellow countrymen.

Currently, 64% of Computing postgraduate (qualifiers) are non-UK domiciled (10% Europe and 54% other overseas) compared to 13% of the Computing first-degree/undergraduate qualifiers.

In order to protect the reputation of UK HE Computing and to provide a suitably qualified workforce for the UK IT industry, mechanisms to encourage and support higher levels of take up of postgraduate study by UK students, whether for first career or as a re-skilling exercise, are urgently needed. It would also be useful to carry out some detailed studies to determine reasons for the low take-up of Computing postgraduate study by UK students.

How can those who have studied in the UK continue to be competitive in the international marketplace for talent?

From a CPHC perspective, there are two answers to this particular question. Firstly, UK HE Computing must remain competitive and of high reputation through continued investment and development in high quality research and teaching. Thus, as a result, students emerging from programmes at UK universities will have the skills and knowledge, combined with their own individual talents, to compete in a global market place. Secondly, there is a need to continue the development of strategies to support lifelong learning in the UK, particularly in considering those who wish to change career and re-skill, or up-skill, as a result of changes brought about by market and industry conditions.

The decision by the current Government to reduce funding for ELQ was particularly damaging to this particular market sector, and sent a very negative message to those looking for lifelong learning opportunities. While it is clear this decision will not be reversed, the potential to extend exemptions for industry-supported Computing programmes, in keeping with the New Industry New Jobs strategy, should be investigated.

The UK HE sector is looking at ways in which it can be more flexible in the provision of postgraduate qualifications, in considering professional industry based programmes, extended part-time placements programmes and a variety of credit accumulation mechanisms. However, this takes place in a landscape of very limited funding opportunities, and very fixed funding models predominantly associated with timelines for completion of study rather than funding of credits for completed study elements and there needs to be a change in this landscape in order for new opportunities to emerge. We would encourage the review to consider the proposition that credit based funding could be used to support existing HE models, and would also offer the opportunity for new, more flexible, lifelong learning opportunities to be developed. As envisaged in the Leitch Review [3], and further reported by CPHC [4], there is a need to offer opportunities to the significant number of potential students currently in the workforce who have already completed their tertiary education but whose skills are not at the level necessary to meet the envisaged demand for graduate level skills and knowledge. In the CPHC report [2], projections for the UK IT industry will reach a shortfall of approx. 50,000 by 2016 without intervention.

Does the proportion of UK domiciled students in the UK PG population matter?

Yes, as identified earlier, there is potential reputational damage as a result of the minority of UK domiciled students in the UK postgraduate population, this is particularly true in Computing where just over one-third (36%) of Post-graduate qualifiers are UK-domiciled. There are also considerable concerns, as identified above, over the shortfall of qualified staff emerging to work in the UK IT sector and while we have identified the need for incentives to encourage overseas students to remain in the UK workforce for a period of time, UK domiciled students would offer the best opportunity to address this need. There is also a concern that the relationship between undergraduate and postgraduate teaching, and research, becomes fractured if they are involved with distinct and separate communities, in that our UG programmes predominantly teach home based students (87% UK-domiciled) whilst our postgraduate programmes predominantly teach overseas students (64% EU & overseas).

However, probably the most important argument for a higher proportion of domiciled students in the postgraduate population is in the continued development of world class research in the UK HE sector and in the wealth creating knowledge economy leaders, competing in a global marketplace. As we continue to develop the skills of our competitor nations, but do little to halt a decline in the same skill development within our own indigenous population, the likelihood of our being able to continue at world class level in either research, or as a knowledge economy, is significantly diminished.

Theme 2: Value of PG

[The highly skilled postgraduates that the UK produces power our research base and drive our innovative businesses. Undertaking postgraduate education provides individuals with pathways into a wide range of careers.]

What are the benefits of postgraduate education, to the individual, to HEIs, to businesses and to the wider economy and society?

As identified above, the development of world class research and a globally competitive knowledge economy is predicated upon the relevant skills and knowledge being available within the UK HE sector and UK IT sector. These globally competitive activities bring significant benefits in wealth creation and opportunities for new employment, new industry, and the development of next generation systems that will benefit all levels of UK society. The economic benefits to the UK are clear, in that the products and services developed through the research activities and knowledge economy activities are sold on a global basis and thereby provide a strong basis for the further development of the UK economy. At an individual level postgraduate education offers the opportunity to move forward on a career basis in advanced specialisms within industry and commerce, or to move into a research career within the HE sector.

Currently the IT workforce in the UK is highly qualified with 15% of those employed in the IT industry having already achieved a "level 5" (equivalent to post-graduate) qualification compared to 9% in the UK workforce overall².

The very strong preference of employers of IT & Telecoms staff is to recruit experienced people to meet growth and replacement demand. In terms of recruitment from education, preferences are for graduate level (Level 4) and above and so IT-related Higher Education remains an important source of talent for the sector's labour force requirements. There is already significant potential for post-graduate development; the majority of current development need is already at professional level (27%) and senior professional level (38%) - equivalent to Level 4 and above.

Turning to demand from individuals, research looking at graduate employment in IT/Computing [5] found that around one half of the graduates interviewed said they would be prepared to commit 5-8 hours of their own time every week to train for further academic qualifications and around one fifth would commit 15 hours a week. Further, over three-quarters of graduates say they would be keen for further on-the-job training to count towards academic qualifications. This clearly links to the government skills activism strategy of New Industry New Jobs, with its focus on the digital economy, and there is a clear incentive for the development of more flexible approaches to industry-supported postgraduate study, as identified in the previous section, if the funding models can be clearly established.

² e-skills UK analysis of ONS LFS Q2 2009

In terms of the UK IT sector, as reported before by CPHC [4], the shortfall in higher-level skills, knowledge, and people, requires a higher level of postgraduate output.

Is there an optimal number of taught / research postgraduates studying in the UK?

The evidence gathered in various reports, such as the Leitch Review, the Microsoft report [6], and CPHC's own research [4], suggests that there is a need to develop graduate-level skills in a significantly larger number of the population and, as a corollary, there is a similar requirement to see a growth in postgraduate knowledge and skills within the workforce. This is not achievable with the current level of recruitment to postgraduate programmes in Computing, so we can confidently predict that there is a need to grow the number of taught postgraduate students although we would also argue for a change in the form and nature of those programmes, as described earlier. With regard to postgraduate research funding, significant reductions in the number of studentships and the way in which they are allocated have caused issues for the continuity of research groups and research activities within individual UK HE institutions. This has unfortunate consequences in maintaining the consistency and quality of postgraduate research student provision, particularly in advanced technical subjects such as Computing. We would argue for a more structured allocation of postgraduate research studentships to institutions based on research record, with continuity, for a reasonable period of time i.e. in the order of 5 years, to ensure the quality of vision for research students. If we are to maintain existing world leading research capability in Computing research in the UK, then at the very least, we must be able to maintain the existing level of research postgraduate study. However, since this is seen as a potential growth and wealth creation area by the UK Government, further investment to increase numbers should be a priority.

Theme 3: Business, Employment and Skills

[Postgraduates have the higher-level skills required in key sectors of the economy, in particular in the growth industries identified by the Government in [New Industry, New Jobs](#). Many employers and professions require postgraduate qualifications for entry or offer postgraduate-level continued professional development.]

Are postgraduates equipped with the right skills, experience and knowledge to progress in employment and get significant value from the investment in their education?

Considerable progress has been made in recent years in the provision of support for employment skills, particularly in developing the business knowledge and skills of students coming from technical disciplines. However, there is still room for improvement, and discussions and work are on-going between UK HE, employers, the British Computer Society and eSkills UK to

consider a variety of options such as work placements and internships, however, funding models for these are an issue. In terms of the technical nature of the discipline, the evidence in terms of world class research in UK HE and global competitive IT products and services within the UK IT sector, indicates that postgraduates do have the necessary technical skills and knowledge to pay back the investment in their education.

Do businesses in the UK make good use of the experience and skills that postgraduates can offer?

Within the UK IT sector, a number of organisations working in advanced product development and high level services already demand and utilise postgraduate skills, knowledge and experience, from their employees to a higher level than other industries, and this provides a significant benefit to the UK economy. More generally it would be difficult to argue that all business specifically target postgraduate skills and experience when looking for employees, however, it is the case that postgraduates entering industry to take on a role directly related to their studies will be of significant value to the business they work for. It can also be argued that postgraduates taking on roles that are not specific to their area of study will still be able to offer a better critical faculty and generic transferable skills that will be of benefit to an organisation. As the number of postgraduate qualified personnel grows, businesses will be in a better position to understand the benefits that they offer, so we can expect that there will be an improvement in this area, and it is an area being reviewed currently by eSkills UK.

How can postgraduate provision in the UK better respond to the needs of business, especially new and emerging industries?

The UK HE sector already responds well in the provision of postgraduate programmes to meet business needs and this is especially true for new and emerging industries. There has been a considerable body of work over the past 10 years that has looked at the relationship between HE and industry, and has identified opportunities, synergies, projects and a variety of other initiatives. As a result, it would be inappropriate to suggest that UK HE computing is not responsive to business need, however, there is still room for improvement and initiatives sponsored by UK Government, eSkills UK and the British Computer Society are all currently seeking to improve this interface.

Theme 4: Participation

[The recent report *Higher Ambitions* states the Government's continuing commitment to widening participation in Higher Education. Although much is known about the make-up of the undergraduate population, more information is required about those undertaking postgraduate study.]

What factors affect decisions of individuals as to whether or not to undertake postgraduate study?

There are a number of factors of which the most important generally is finance. Undertaking postgraduate study usually implies giving up an existing career or changing career and with it a source of income, therefore unless students are individually funded or employer funded, the major issue is the availability of financial support and the cost of their studies. One significant problem in this area is the availability of any form of funding for postgraduate study since Local Authority funding tends to focus priorities on undergraduate study.

Apart from finance, other major factors are: desire to undertake a research career; re-skilling to change career; up-skilling for advancement; and remediating a poor undergraduate result; all of which may be viewed as career based decisions which will imply that the student has a clarity of view as to the benefits the postgraduate degree will offer in terms of that career. One increasingly important factor particularly for overseas postgraduate students is the need to compete in the job market place, since in many parts of the world, such as India, China and Malaysia, a masters degree is now the expected level of qualification for graduate status jobs.

How important are alternative models of postgraduate provision (e.g. part-time, distance learning) in supporting expanding and widening participation?

The existing postgraduate population can be seen to accurately reflect the interest of UK students in undertaking traditional full-time postgraduate degrees, in the current economic climate. If our goal as stated above is to increase the number of home students taking both taught and postgraduate research degrees, then we must be able to provide alternative mechanisms for the achievement of those studies to bring in a larger percentage of the potential population. Flexible part-time provision and distance learning can offer the opportunity for those in work or otherwise committed, to continue to develop their qualification level and thereby their careers without the major life changes currently required.

Theme 5: Fees and Funding

[The findings of this review will inform the Independent Review of Higher Education Funding and Student Finance, which will consider the affordability of the current system and the link between financial support and the goal of widening participation.]

Is the current model of funding postgraduate provision sustainable, and does it offer the best possible value for money?

The current model of funding postgraduate provision is extremely variable across the UK. For example the SAAS awards postgraduate funding on a fees and maintenance basis, within a quota level identified to individual institutions

and subject areas. Whereas, funding of postgraduate study within England and Wales through HEFCE and LEA model provides little support, since the majority of that funding is targeted to undergraduate provision. Other funding schemes, such as those supported by EPSRC to provide block studentships have, as a result of funding cuts, now been withdrawn or significantly diminished in scope. The result of these variances in provision, is that there is no single clear viable model of postgraduate funding supported by the state, the majority of postgraduate students are self-funding or industry-funded within UK HE computing, and therefore the argument would be that the Government obtains considerably more provision than it funds and therefore absolutely the best value for money, but cannot be guaranteed.

Are there models of providing postgraduate financial support that would be more efficient and productive?

Two models that are currently in use in other parts of the world could be of interest. Firstly, provision of a tax fund whereby people who have completed a first degree and are working can nominate to set aside a certain amount of their tax payments into a fund to support them for future education. They can then draw on this fund by agreement with the tax authorities to support agreed studies. Secondly, provision of industrial tax breaks to organisations funding their own staff to undertake postgraduate development, allowing those organisations to see the further development of their staff as cost neutral.

Are the current sources of financial support for postgraduate students widely understood by potential and existing students?

No for the reasons given above, the funding model is frequently unclear or not there. Better information would only be of value if there was a more coherent and consistent system and an enhanced level of funding available to support postgraduate studies.

Theme 6: The Student Experience

[The student experience is vitally important, and cuts across each of the other themes.]

What are the key elements of a high quality PG student experience?

For taught postgraduate students the key elements would be high quality teaching, good resources and facilities, ease of access, a good mix of group and individual assessment modes, a multi-cultural experience, and a challenging developmental and internationalised curriculum personalised to them and appropriate to their future career.

For the research postgraduate experience, working with a high quality cutting edge team, regular and well targeted supervision, very high quality resources, opportunities for conference and workshop dissemination, appropriate training in research methods, paper generation and thesis development.

For all postgraduate students, their study experience should prepare them appropriately with the skills and knowledge they need for their chosen future direction, whether that be in a research career, as a high-quality specialist IT knowledge worker, or as an entrepreneur developing their own ideas into products and services.

Are there innovative delivery models or mechanisms that benefit the student experience, which could be applied more widely?

From the CPHC perspective, we are aware of a large number of innovative models and mechanisms being used by our members to improve and benefit the student experience, and as much as possible, we disseminate that practice amongst the membership, and, in collaboration with the HEA-ICS, arrange workshops and seminars on these topics. Examples would include: internships and placements during postgraduate study, e-learning and blended learning tools and techniques, multi-disciplinary partnerships with industry and other academic institutions. There is also an international dimension in this area, in that many institutions send their best postgraduate research students for periods of study and/or internship at Universities, Research Centres and companies in other countries, thereby enhancing the global reach of the students and UK HE Computing.

References

- [1] "The Demand for Science, Technology Engineering and Mathematics (STEM) Skills", DIUS, January 2009
- [2] "A Threat to the Knowledge Economy and Global Competitiveness prepared by CPHC for a meeting with DIUS", July 2008, <http://www.cphc.ac.uk/docs/cphc-computinggraduates-june08.pdf>
- [3] Leitch Review of Skills
http://www.hm-treasury.gov.uk/media/6/4/leitch_finalreport051206.pdf
- [4] "A Study on the IT Labour Market in the UK", CPHC commissioned report authored by Research Insights Ltd, June 2008, <http://www.cphc.ac.uk/docs/reports/cphc-itlabourmarket.pdf>
- [5] Researching Graduate Employment in IT, e-skills UK/Experian, 2008
- [6] Microsoft "Developing the Future" report June 2007. <http://download.microsoft.com/documents/UK/developingthefuture/Developing%20 The Future 07.pdf>

This response has been produced on behalf of the Council of Professors and Heads of Computing (CPHC), and is endorsed by the BCS Academy of Computing and the UK Computing Research Committee (UKCRC). It contains inputs and data from those organisations and from eSkills UK, the IT Sector Skills Council.