

# **On-line Innovation in Higher Education**

**Professor Sir Ron Cooke  
Chair of JISC Board**

Submission to  
the Rt Hon John Denham MP

Secretary of State for Innovation,  
Universities and Skills

8 October 2008

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# On-line Innovation in Higher Education

Professor Sir Ron Cooke, Chair of JISC Board<sup>1</sup>

## 1. Executive Summary

- 1.1 Information and Communications Technology (ICT) is international and UK Higher Education (HE) plays a very active part in it. The UK is seen as world class, and often world leading, in networking, content and digital libraries, access management, and many areas of e-learning. Until recently the UK was world class in providing e-infrastructure for research and in e-science. We lag behind in generating and making available high quality modern learning and teaching resources. It is essential that the UK does not lose its lead, and continues to play a full and leading role internationally in the ICT world.
- 1.2 A successful HE sector at the forefront of research and learning and teaching needs to enjoy and exploit world class ICT infrastructure tailored for the needs of Higher Education Institutions (HEIs) which can be personalised for students, lecturers, researchers and administrative staff. This includes the provision of national services and a significant involvement in defining and developing international co-ordination.

### Overview of Recommendations

- 1.3 UK higher education enjoys a world class ICT infrastructure; this should be maintained. But more effective leadership, at all levels, is required to exploit this infrastructure. In particular the UK should, and can, be world leading in on-line learning; it must manage and curate research data more effectively; and HEIs need to treat information as a resource to be managed strategically.
- 1.4 HE and the research funding bodies should continue to support and promote a world class ICT infrastructure and do more to encourage the innovative exploitation of this infrastructure through:

1) a new approach to virtual education based on a corpus of open learning content: the UK must have a core of open access learning resources organised in a coherent way to support on-line and blended learning by all higher education institutions and to make it more widely available in non-HE environments. This needs to be supported by national centres of excellence to provide quality control, essential updating, skills training, and research and development in educational technology, e-pedagogy and educational psychology. All HEIs should be encouraged and helped to exploit virtual education technologies as appropriate to their student's requirements and their strategies.

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<sup>1</sup> In preparing this paper, whilst it has been written in a personal capacity I have drawn extensively on the very substantial contributions of Dr Malcolm Read and Ms Alice Colban, and advice from a large number of members of the JISC, and evidence from a wide range of individuals and organisations, all of which are gratefully acknowledged. I have broadened the remit to include other areas of HE than learning and teaching, in particular research and my recommendations are applicable to all the UK countries and not restricted to English higher education.

Actions to meet this recommendation are detailed in the table overleaf and include the establishment of a small number of centres of expertise (probably big clusters of institutions addressing similar student populations) in educational technology and e-pedagogy, charged with changing the culture across HE, a comprehensive staff and student skills training programme, and the creation of a national co-ordinated collection of open learning resources.

Building an effective and competitive on-line learning capacity at both undergraduate and postgraduate level will help meet the changing needs of students and stimulate growth in both higher education and the skills sector. A coherent collection of learning resources can also be exploited to save staff time. Failure to do so will reduce the UK's ability to exploit e-learning; an aspect of learning and teaching where the UK should aspire to, and gain, a world leading position.

2) revitalised investment into e-infrastructures: central investment through the funding councils and research councils needs to be maintained in the core infrastructure of networking and high performance computing. More investment and policy leadership is required for the curation of research data, including international collaboration, to build a layer of academic and scholarly resources readily available to all. This should be a priority for DIUS, RCUK and others where clear policy leadership is urgently required. This is different from and complementary to public online resources such as Google. The Research Councils should be invited to review their approach to e-science in order to re-establish the UK's pre-eminent position in this important research process.

Actions to meet this recommendation are detailed in the table overleaf and include creating a comprehensive mechanism for co-ordinating the curation of research data, a review of e-science, and an extensive digitisation programme.

Research data is a significant national asset that is not uniformly well managed or curated; it is costly to collect and has the potential to improve the research process. Failure to protect and exploit the UK investment in research data will eventually reduce our international standing and the effectiveness of research.

3) development of institutional information strategies: HEIs should be encouraged and supported to develop integrated information strategies against their individual missions, which should include a more visionary and innovative use of ICT in management and administration. This should include the consideration of shared administrative services, more innovation through ICT for business and service delivery, and measures to improve the sustainability of institutions particularly by reducing energy consumption.

Actions to meet this recommendation are detailed in the table overleaf and include encouragement and support for HEIs to produce integrated information strategies including the consideration of shared services and green computing.

Information resources are expensive and need to be managed as strategically as financial and human resources to improve the effectiveness of institutions. Failure to do so hampers leadership and innovation and puts at risk the UK's ability to provide world class higher education.

- 1.5 Few HEIs can achieve this on their own. It will require collaboration, and a coherent infrastructure to maintain and enhance the UK HE's international competitiveness.
- 1.6 The cost of meeting these recommendations would largely be met within the HEIs and represent good management practice. For example it should not cost more to make course material openly available on professionally managed repository platforms. Preserving research data will get expensive in the longer term but it is assumed that the need for culture change within the research community will mean relatively little data will be preserved in the short term: and by no means all data needs preserving. But it will represent an additional cost to the research process as the cost of describing data and putting it into a format that is usable by others could be significant. On the other hand there has been and continues to be significant efficiency in research through the availability of online resources and improved ICT procedures such as those developed under the e-science programme.
- 1.7 It is however essential that central expenditure on ICT infrastructure (both at the national level through JISC and within institutions in the form of ICT services and libraries) are maintained. HEFCE has already allocated funding for open educational pilots with monies earmarked until 2011; the programme would need to continue for at least a further two to three years however.
- 1.8 Establishing a small number of centres of excellence to help establish the UK as world leading in on-line learning would require additional investment by HEFCE of the order of £4 million per year in additional to their existing open educational content resources investment.
- 1.9 The actions proposed for the other recommendations can be met from existing recurrent and capital investments in JISC and other centrally funded organisations. A complete list of actions is provided in the table below.

<b>ACTIONS PROPOSED</b>	<b>GOVERNMENT</b>	<b>RESEARCH COUNCILS/FUNDING COUNCILS/JISC AND OTHER NATIONAL BODIES</b>	<b>HIGHER EDUCATION INSTITUTIONS</b>
<b>LEARNING AND TEACHING</b>			
i) Centres of expertise in educational technology and e-pedagogy (probably big clusters of institutions addressing similar student populations), including comprehensive staff and student skills training programme.		Funding Councils in conjunction with relevant national bodies	HEIs to embrace centres and training
ii) Review to identify key players in HE e-learning, current practice and strategies, benefits, benchmarking; and advise on ToRs for centre(s) of excellence.		HEFCE and other Funding Councils	

iii) National co-ordinated collection of freely available open learning resources.		HEFCE and other Funding Councils	HEIs to embrace open learning resources
iv) Negotiation to ensure the Gowers Review of IPR facilitates the use and sharing of all types of open learning content across multiple platforms of delivery to enable the UK to excel as a world leader in e-learning provision.	DIUS		
v) Bring together key parties to discuss how best to embed digital literacy good practice across the HE, FE and skills sectors.		JISC in conjunction with other relevant national bodies	
<b>RESEARCH AND INNOVATION</b>			
i) Independent assessment of where the UK is at in relation to the original strategy (OSI e-Infrastructure Report: Developing the UK's e-Infrastructure for Science & Innovation) and how it compares with key countries.	DIUS/RCUK		
ii) Policy leadership and a comprehensive mechanism for co-ordinating the curation and preservation of research data.	DIUS	Research and Funding Councils and JISC	
iii) Review approach to e-science, in light of current review, in order to re-establish the UK's pre-eminent position across research disciplines.		Research Councils	
iv) Look across research and learning to ensure techniques developed in one environment are applied to the best effect in the other.	DIUS/DCSF	JISC	HEIs to support this approach
v) Extensive digitisation programme.	DIUS		
<b>MANAGEMENT AND ADMINISTRATION</b>			
i) Encouragement and support for HEIs to include the integration of their library, information and IT services in the development of their strategies for research and learning and teaching. Such strategies to include a coherent approach to the management and exploitation of infrastructure resources, sustainability and the consideration of shared services with other HEIs where appropriate.		Funding Councils and JISC	HEIs to prioritise this approach
ii) Continuation of work on security, privacy, interoperability, the transfer of data workflow, resilience and data recovery.		JISC	HEIs to continue and prioritise such work