



# E-learning in Tertiary Education

WHERE DO WE STAND?



Centre for Educational Research and Innovation

# **E-learning in Tertiary Education**

WHERE DO WE STAND?



ORGANISATION FOR ECONOMIC CO-OPERATION AND DEVELOPMENT

# ORGANISATION FOR ECONOMIC CO-OPERATION AND DEVELOPMENT

The OECD is a unique forum where the governments of 30 democracies work together to address the economic, social and environmental challenges of globalisation. The OECD is also at the forefront of efforts to understand and to help governments respond to new developments and concerns, such as corporate governance, the information economy and the challenges of an ageing population. The Organisation provides a setting where governments can compare policy experiences, seek answers to common problems, identify good practice and work to co-ordinate domestic and international policies.

The OECD member countries are: Australia, Austria, Belgium, Canada, the Czech Republic, Denmark, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Japan, Korea, Luxembourg, Mexico, the Netherlands, New Zealand, Norway, Poland, Portugal, the Slovak Republic, Spain, Sweden, Switzerland, Turkey, the United Kingdom and the United States. The Commission of the European Communities takes part in the work of the OECD.

OECD Publishing disseminates widely the results of the Organisation's statistics gathering and research on economic, social and environmental issues, as well as the conventions, guidelines and standards agreed by its members.

*This work is published on the responsibility of the Secretary-General of the OECD. The opinions expressed and arguments employed herein do not necessarily reflect the official views of the Organisation or of the governments of its member countries.*

Also available in French under the title:

**La cyberformation dans l'enseignement supérieur**

ÉTAT DES LIEUX

© OECD 2005

---

No reproduction, copy, transmission or translation of this publication may be made without written permission. Applications should be sent to OECD Publishing: [rights@oecd.org](mailto:rights@oecd.org) or by fax (33 1) 45 24 13 91. Permission to photocopy a portion of this work should be addressed to the Centre français d'exploitation du droit de copie, 20, rue des Grands-Augustins, 75006 Paris, France ([contact@cfcopies.com](mailto:contact@cfcopies.com)).

---

## *Foreword*

E-learning is becoming increasingly prominent in tertiary education. Rationales for its development are wide-ranging, complex and contested, including widening access, pedagogic innovation on-campus, enhancement of distance learning, organisational change, knowledge-sharing and revenue generation.


The OECD Centre for Educational Research and Innovation (CERI) has already addressed some of these issues in *E-learning: The Partnership Challenge* (2001) and *Internationalisation and Trade in Higher Education – Opportunities and Challenges* (2004). One issue addressed in the latter was the new forms of governance and collaboration that e-learning entails.

The new work reported in this report involved an in-depth survey of practices in 19 tertiary education institutions operating across the e-learning development continuum. Some are at the leading edge internationally, some in the mainstream and others in the early stages of development. The survey was designed to elucidate both good practice *and* international trends more generally. The selection includes institutions from 13 countries in the Asia-Pacific region (Australia, Japan, New Zealand, Thailand), Europe (France, Germany, Spain, Switzerland, the United Kingdom), Latin America (Mexico, Brazil) and North America (Canada, the United States). With the agreement of participants, institutions are often identified by name.

The survey sought rare information on institutional strategies and activities in order to understand more precisely the rationales, stages of development, and the accelerators and inhibitors of development. It addressed a wide range of questions: Why do different kinds of tertiary institutions engage in e-learning, and what forms of engagement are favoured? What do institutions perceive to be the pedagogic impact of e-learning in its different forms? How do institutions understand the costs of e-learning, and how does this affect financial management? How might e-learning impact on staffing and staff development? Do particular types of student (*e.g.* by gender, mode of study, domicile, discipline, etc.) favour e-learning?

While the case studies offer no definitive conclusions, they do point to important general issues that need to be considered by institutions and governments wishing to offer e-learning opportunities and to directions for future work. CERI itself is following up with related work on Open Educational Resources, from which results will be available in 2006. CERI partnered with the Observatory on Borderless Higher Education (OBHE), which carried out a larger-scale survey of online learning in Commonwealth universities covering some of the same topics in 2004. Its quantitative data were used in a complementary manner with the OECD/CERI survey.

The project was initiated by Kurt Larsen and then led by Stéphan Vincent-Lancrin. Miho Taguma was responsible for liaising with the sample institutions. The main author of this report was Richard Garrett from OBHE. Miho Taguma contributed to Chapters 1, 6, and 8 and compiled Annexes 1 and 4. Stéphan Vincent-Lancrin drafted the conclusion and prepared the final text of the report with the assistance of Fionnuala Canning, Delphine Grandrieux, Miho Taguma, and advice from other colleagues, especially Tom Schuller. The work was supported by a grant from the Hewlett Foundation, which is gratefully acknowledged. The book is published under the responsibility of the Secretary-General of the OECD.



Barry McGaw  
Director for Education

## *Table of Contents*

<b>Acknowledgements .....</b>	<b>9</b>
<b>Executive Summary .....</b>	<b>11</b>
<b>Introduction .....</b>	<b>21</b>
The OECD/CERI survey .....	22
The Observatory survey .....	26
Caveats.....	29
<i>References</i> .....	30

### **Part I. Activities and strategies**

<b>Chapter 1. E-learning provision and enrolments.....</b>	<b>35</b>
1.1. Type/scale of online presence .....	35
1.2. Online presence and programme delivery – results from the Observatory survey .....	41
1.3. Number of students “online” .....	47
1.4. E-learning provision in different disciplines.....	51
1.5. Levels and types of students .....	57
1.6. Students across borders.....	61
1.7. Cross-border delivery of e-learning .....	64
1.8. Conclusion .....	68
<i>References</i> .....	70
<b>Chapter 2. E-learning strategies and rationales.....</b>	<b>71</b>
2.1. Forms of e-learning strategy .....	71
2.2. Process of developing and revising e-learning strategies .....	80
2.3. Rationales for producing institution’s e-learning strategy .....	82
2.4. Conclusion .....	91
<i>References</i> .....	91

## Part II. Pedagogy, technology and organisation

<b>Chapter 3. Impacts on teaching and learning</b> .....	95
3.1. Pedagogic impact.....	95
3.2. Who decides on e-learning pedagogy .....	105
3.3. Guidance for students about e-learning .....	108
3.4. Material and learning objects.....	109
3.5. Intellectual property.....	118
3.6. Conclusion .....	119
<i>References</i> .....	120
<b>Chapter 4. IT infrastructure: use of learning management system (LMS) and other applications</b> .....	123
4.1. Use of learning management systems.....	124
4.2. LMS challenges .....	133
4.3. IT networks .....	138
4.4. Portals .....	140
4.5. Use of other teaching and learning-related applications .....	142
4.6. Online applications for administration.....	144
4.7. Integration of academic and administrative systems .....	146
4.8. Computer/network access for staff and students.....	148
4.9. Strategy on electronic journals and e-books .....	154
4.10. Conclusion .....	157
<i>References</i> .....	158
<b>Chapter 5. Partnership and networking</b> .....	161
5.1. E-learning and other consortia.....	161
5.2. Third party access arrangements.....	168
5.3. Outsourcing.....	169
5.4. Conclusion .....	171
<i>References</i> .....	172
<b>Chapter 6. Staff development and organisational change</b> .....	173
6.1. Context of organisational change.....	174
6.2. Forms of organisational change .....	175
6.3. Barriers to development of e-learning .....	179
6.4. Developing human resource capacities.....	181
6.5. Models of staff development .....	186
6.6. Conclusion .....	189
<i>References</i> .....	190

### Part III. Cost efficiency and funding

<b>Chapter 7. Funding, costing and pricing</b> .....	193
7.1. Funding .....	193
7.2. Costing and pricing .....	200
7.3. Conclusion .....	206
<i>References</i> .....	207

<b>Chapter 8. Current government roles: funding and beyond</b> .....	209
8.1. Current roles of governments .....	209
8.2. Government and its funding role .....	210
8.3. Non-funding roles of governments .....	214
8.4. Conclusion .....	216
<i>References</i> .....	217

<b>Conclusion</b> .....	219
Activities and strategies .....	219
Pedagogic, organisational and technological challenges .....	221
Cost and funding .....	224
Policy challenges .....	225

<i>Annex 1. Institutional information on the OECD/CERI case studies respondents</i> ..	227
<i>Annex 2. OECD/CERI case study questionnaire</i> .....	231
<i>Annex 3. OBHE survey, 2004</i> .....	243
<i>Annex 4. Overview of government-led initiatives to promote e-learning</i> .....	253

#### List of tables

Table 1.1. Weighted “online presence” at the sample institutions .....	40
Table 1.2. What estimated proportion of current programmes/courses offered by your institution have the following kinds of online component? .....	42
Table 1.3. Major online elements in the majority of the curriculum .....	45
Table 1.4. Students on relevant online modules/programmes .....	50
Table 1.5. E-learning provision in different disciplines .....	52
Table 1.6. Relevant online provision by discipline .....	54
Table 1.7. Number of offshore students and categories of cross-border provision .....	62
Table 2.1. Institutions with an institution-wide “online learning strategy” or equivalent .....	78
Table 2.2. Rationales for e-learning development .....	85



Table 4.1. Type and number of LMS.....	125
Table 4.2. Has your institution implemented a learning management system institution-wide? .....	128
Table 4.3. Observatory respondents by LMS .....	131
Table 4.4. Computer/student ratio .....	151
Table 6.1. Form of organisational change .....	175
Table 6.2. Typology of staff development for e-learning .....	184
Table 7.1. Cost implications of e-learning .....	202

### List of figures

Figure 1.1. Weighted online presence – OECD and Observatory respondents ....	44
Figure 2.1. Patterns of development of e-learning strategies.....	81
Figure 2.2. Comparison of “key rationales” in institutional online learning strategies in 2004 and 2002.....	87

### List of boxes

Box 1.1. Higher Education E-learning Courses Assessment and Labelling (HEAL) ...	67
Box 2.1. E-strategy at the University of British Columbia .....	76
Box 2.2. The Greater Mekong Sub-region Virtual University (GMS-VU).....	86
Box 3.1. Carnegie Mellon West and the Story-Centred Curriculum.....	97
Box 3.2. Open Learning Initiative at Carnegie Mellon University.....	115
Box 3.3. Edusource – Canadian Network of Learning Object Repositories.....	117
Box 4.1. Sakai/LAMS.....	135
Box 5.1. U21 Global .....	162
Box 7.1. The New Zealand Open Source Virtual Learning Environment Consortium.....	196
Box 8.1. Swiss Virtual Campus .....	211

## ACKNOWLEDGEMENTS

This study would not have been possible without the substantial contributions made by participating institutions. The study has enjoyed extensive inputs by dedicated experts from each institution, who followed the analysis and were always keen to give their comments and views. We wish to acknowledge their invaluable contribution:

- Yoni Ryan, Monash University, *Australia*
- Bruce Kind, University of South Australia, *Australia*
- Carlos Alberto Barbosa Dantas, University of Sao Paulo, *Brazil*
- Michelle Lamberson, Tony Bates and Neil Guppy, University of British Columbia, *Canada*
- Christiane Guillard, University of Paris X-Nanterre, *France*
- Ulrich Schmid, Multimedia Kontor Hamburg, *Germany*
- Thomas Berkel and Andrea Haferburg, FernUniversität, *Germany*
- Michihiko Minoh, Kyoto University, *Japan*
- Fumio Itoh, Munenori Nakasato and Yasushi Shimizu, Aoyama Gakuin University, *Japan*
- Jose Escamilla de los Santos, Tecnológico de Monterrey, *Mexico*
- Ken Udas, The Open Polytechnic of New Zealand, *New Zealand*
- Andreu Bellot Urbano, Sylvia Gonzalez and Emma Kiselyova, Open University of Catalunya, *Spain*
- Eva Seiler Schiedt, University of Zurich, *Switzerland*
- Jean-Phillippe Thouard, Asian Institute of Technology, *Thailand*
- Richard Lewis and Paul Clark, The Open University, *United Kingdom*
- Joel Smith, Carnegie Mellon University, *United States*
- Robert Lapiner, University of California, Los Angeles, Extension, *United States*
- Robert Jerome, University of Maryland University College, *United States*
- Gary Matkin, University of California, Irvine, *United States*

Following a meeting of international experts jointly organised with the OECD Programme on Institutional Management of Higher Education (IMHE), the questionnaire of the OECD/CERI survey was developed in

2003 within the Secretariat, with the help of Tony Bates, Svava Bjarnason and Richard Garrett. The initial analysis of the institutions' responses was discussed at a meeting of participating institutions and experts in Paris in March 2004. This book draws on the discussions of these meetings. We wish to thank all the participants not already mentioned above: Susan D'Antoni (IIEP/UNESCO), Monika Lütke-Entrup (Bertelsmann Stiftung; Germany), Robin Middlehurst (University of Surrey, UK), Keiko Momii (OECD/CERI), John Rose (UNESCO), Jacqueline Smith (OECD/IMHE), Zeynep Varoglu (UNESCO), Richard Yelland (OECD/IMHE).

Finally, Mike Smith and Catherine Casserly from the Hewlett Foundation are gratefully thanked for their helpful comments on the design of and their support throughout the study.

## Executive Summary

E-learning is becoming increasingly prominent in tertiary education. All available evidence point to growing enrolments and provision, although from a low starting point. However, after the hype of the new economy, growing disenchantment with e-learning has replaced over-enthusiasm. Failures of e-learning operations have, at least temporarily, overshadowed the prospects of widened and flexible access to tertiary education, pedagogic innovation, decreased cost, etc., that e-learning once embodied. So where do we stand after the end of the hype of the new economy?

The OECD Centre for Educational Research and Innovation (OECD/CERI) undertook a qualitative survey of practices in 19 tertiary education institutions from 13 countries to better understand e-learning practices and issues at institutional level. This qualitative survey was completed by available quantitative evidence, notably the 2004 survey of online learning carried out by the Observatory on Borderless Higher Education (OBHE).

---

### *What is e-learning?*

---

E-learning refers to the use of information and communications technology (ICT) to enhance and/or support learning in tertiary education. While keeping a presiding interest in more advanced applications, e-learning refers to both wholly online provision and campus-based or other distance-based provision supplemented with ICT in some way. The supplementary model encompasses activities ranging from the most basic use of ICT (*e.g.* use of PCs for word processing of assignments) through to more advanced adoption (*e.g.* specialist disciplinary software, handheld devices, learning management systems, adaptive hypermedia, artificial intelligence devices, simulations, etc.). Different kinds of online presence can be defined as follows:

- None or trivial online presence.
- Web supplemented (*e.g.* course outline and lecture notes online, use of email, links to external online resources).

- Web dependent: students are required to use the Internet for key “active” elements of the programme – *e.g.* online discussions, assessment, online project/collaborative work – but without significant reduction in classroom time.
- Mixed mode: students are required to participate in online activities, *e.g.* online discussions, assessment, online project/collaborative work, as part of course work, which *replace* part of face-to-face teaching/learning. Significant campus attendance remains.
- Fully online.

The typology is based on the extent to which e-learning reduced rather than simply supplemented time spent in the physical classroom. It assumes both a campus-based institution, and a conception of e-learning tied to the Internet or other online network.

---

*What do we know about e-learning adoption and enrolments, and about institutional strategies?*

---

First, although student take-up is growing, at most campus-based institutions enrolments are relatively low and represent a small share of total enrolments. On the available quantitative evidence, provision with “high” online presence (that is with at least “web dependent” online presence) accounted for well under 5% of total enrolments at most OECD/CERI sample institutions. However, it should be noted that enrolments are currently difficult to track, not least because e-learning enrolments were often located at credit rather than degree level: in some institutions, the number of students enrolled in at least one course with high online presence would typically be much higher, and sometimes from 30 to 50% of total enrolments.

Second, e-learning activities across tertiary education institutions are very diverse, with programmes located at different points of the e-learning spectrum described above. The diversity found within the case study institutions matched the diversity found on a larger scale by the Observatory survey. In most campus-based institutions, the growth of e-learning to date has not challenged the centrality of the face-to-face classroom setting. Contrary to the predictions of the dot-com boom, distance online learning in general and cross-border e-learning in particular (*i.e.* programmes taken by students in a country other than where the institution’s central campus is located) have generally failed to emerge as significant activities or markets to date. A small number of OECD/CERI respondents reported significant general cross-border enrolments, and the Observatory data reinforced the

view that in most institutions this form of activity is small-scale, peripheral and poorly tracked centrally. The complex possibilities of remote international delivery were typically left to small-scale, department-led experiments.

Third, modules (or courses) accounted for the majority of e-learning activity, reflecting the dominance of e-learning as supplementary to on-campus delivery at undergraduate level. Whole award programmes with relevant online presence were more common at postgraduate level. This is in line with the view that this type of provision favours the experienced learner wanting to combine work/family and study. The intensity of online learning also varies significantly across disciplines: IT and business/management emerged as the most commonly cited disciplines that make significant use of some form of e-learning (notably the mixed mode and fully online categories).

Almost all OECD/CERI sample institutions reported some form of central strategy for e-learning or were in the process of developing one. More representatively, only 9% of the 2004 Observatory survey respondents indicated neither any form of institution-wide online learning strategy nor any initiative under development – a decline from 18% in 2002. Should the discrepancy between institution-wide strategy and institution-wide use be interpreted as a sign of the immaturity of e-learning that will be overcome over time? Only partially. Current institutional strategies do not back the assumption that tertiary institutions will gradually move their provision towards fully online delivery. The OECD/CERI and Observatory surveys clearly demonstrate that fully online provision at campus-based institutions will remain very much a minority in the short to medium term. Consistent with their current activities, institutions' dominant rationales for e-learning strategies at campus-based institutions centred on on-campus enhancement through increased flexibility of delivery and enhanced pedagogy. Both the OECD and Observatory surveys found relatively little interest in international and new markets and in cost reduction. Virtual and distance-learning only institutions pointed to the greatest extent in this direction (but not all to the same extent). Distance learning declined significantly as a cited rationale between 2002 and 2004 in the Observatory survey.

---

*E-learning has the potential to improve  
and even revolutionise teaching and  
learning*

---

The overwhelming view of respondents of the OECD/CERI survey was that e-learning had a broadly positive pedagogic impact. However, few were able to offer detailed internal research evidence to this effect. Indirect

evidence, including student satisfaction surveys and retention/attainment data, were widespread but these data may not be compelling enough to convince the bulk of sceptical students and academics of the pedagogic value of online learning.

One reason for the scepticism probably lies in the fact that e-learning has not really revolutionised learning and teaching to date. Far-reaching, novel ways of teaching and learning, facilitated by ICT, remain nascent or still to be invented. The “learning object” model is perhaps the most prominent “revolutionary” approach to date. A learning object can be described as an electronic tool/resource that can be used, re-used and re-designed in different contexts, for different purposes and by different academics/actors. Redesign – for example through the use of pre-existing software, third party materials, peer/automated feedback – appears to be crucial for e-learning to reap the key pedagogic benefits (and cost efficiencies). Sample institutions expressed considerable interest in this model but were also faced with a range of primarily cultural and pedagogical challenges hindering widespread adoption. These included tensions between the decontextualised object and the contextualised learning encounter/programme, faculty unwillingness to use third party materials and object access, re-use and copyright concerns. Although the OECD/CERI survey reveals that institutions pay a lot of attention to learning objects, they still consider them as immature tools. At present, it appears that e-learning is continuing to grow in scale and significance in the absence of an explicit learning object economy. This partly reflects the influence of a “conventional” course development paradigm, but is also indicative of infancy (and thus poor utility) of any such economy – a situation that may change over time.

---

*ICT has penetrated tertiary education,  
but not often the pedagogic  
fundamentals of the classroom*

---

The limited impact of ICT in the classroom setting to date cannot be imputed to a limited usage of ICT in the tertiary education sector, as was often the case in the early 1990s. The adoption of learning management systems (LMS) – that is software designed to provide a range of administrative and pedagogic services related to formal education settings (e.g. enrolment data, access to electronic course materials, faculty/student interaction, assessment) – appears to be one of the prominent features of e-learning development in tertiary education worldwide. This is clearly illustrated by both OECD/CERI and Observatory findings. The current immaturity of online learning is demonstrated by low adoption of content management systems – that is software where electronic content is split into

learning objects that can be manipulated and recombined for multiple pedagogic purposes: only 6.6% of the Observatory respondents reported institution-wide adoption in 2004. ICT has penetrated tertiary education, but has had more impact on administrative services (*e.g.* admissions, registration, fee payment, purchasing) than on the pedagogic fundamentals of the classroom.

The limited impact of IT in the classroom seen to date should not be dismissed as a lack of innovation or change in tertiary education as a whole: even if IT does not induce any change in the classroom, it is changing the learning experience of students by relaxing time and space constraints as well as providing easier access to information (online journals and e-books; student portals; etc.) and greater flexibility of participation.

While the two leading commercial vendors of LMS software have attained significant market share, development of in-house software and use of open source software are noteworthy trends at tertiary institutions, typically among dedicated virtual, mixed mode and distance institutions. The appeal of in-house/open source sometimes lies in perceived inadequate functionality/pedagogic limitations of commercial offerings, despite platform functionality becoming increasingly customisable. The study demonstrates a willingness to maintain institutional autonomy over processes that are increasingly at the heart of instruction, especially as they can represent valuable intellectual property. Although the multiplication of platforms typically shows the novelty and relative immaturity of LMS, it might also represent a wasteful duplication of effort. Furthermore, it might also correspond to an over-emphasis on the technological infrastructure when the real challenge could lie in the innovative and effective use of the functionalities offered to faculty and students. The pedagogic impact and institutional take-up of new and prominent open source platforms (*e.g.* Sakai and LAMS) remains unclear.

---

*Engaging faculty and students to use innovatively and effectively existing technological functionalities is the next challenge*

---

All sample universities are in the midst of thinking through and negotiating the potential contribution of e-learning in its various forms to their organisational future. For some institutions, and in some countries, key barriers remain. Infrastructure and funding are among the important ones, but stakeholder scepticism about the pedagogic value of e-learning and staff development are probably the most challenging. Institutions are commonly grappling with mainstreaming adoption, mainstreaming funding and are



beginning to contemplate restructuring in terms of staffing, staff development, instructional design and student support. All institutions acknowledged the need to recruit a broader range of staff to complement academic staff, such as technologists, instructional designers, learning scientists, etc. Another challenge, however, lies in engaging current faculty to use and develop e-learning. The general concept of “staff development” is widely seen as key to mainstreamed and sustainable e-learning in tertiary education. Institutions are struggling with the balance between faculty and “new” staff roles, and the division of labour between the two. Interestingly, commercialisation and internationalisation were infrequently cited as aspects of organisational change.

While faculty resistance can partially be imputed to (at least perceived) pedagogic limitations of e-learning and insufficient maturity of the tools, it can also be explained by a lack of time (or motivation) to carry out what is foremost an additional task, by insufficient ICT literacy, or insufficient pedagogical literacy related to e-learning. E-learning development, with its standardisation aspects, might also conflict to some extent with the professional culture of academics, based on autonomy and a reward system often based on research. Concerns about intellectual property rights (and shared rights between faculty, institutions and technologists) may also be seen as a barrier for e-learning development. The sample institutions illustrate a diversity of methods for developing institutional human resources. Building a community of e-learning adopters within and across institutions and, more generally, knowledge management processes related to e-learning, are clearly crucial for further e-learning developments. The development of faculty-led initiatives appeared to be an important ingredient for success at many sample institutions. However, the scaling up of successful experiments and the sharing and mainstreaming of good practices remain the real challenges. Just as there is no one best model or trajectory for e-learning development for institutions, nor is there a “one-size-fits-all” staff development model for mainstreaming e-learning.

Partnerships are certainly a key characteristic of contemporary e-learning that could help institutions to share knowledge, good practices, and achieve benefits such as advanced technology and quality curricula and pedagogy, in addition to enhanced market presence and lower costs. At the sample institutions, partnerships encompassed activities such as building the infrastructure; developing learning management systems and applications; creating e-learning materials; developing joint programmes; joint-marketing; collaborating for research; sharing best practices; and sharing costs of hardware and software. But partnerships also raise potential issues. One is the arrangement under which e-learning materials should be made available to third parties (free or fee-based use?). Another is the attitude towards

outsourcing of non-core e-learning activities. The OECD/CERI survey found that the tertiary education institutions saw minimal or short-term value in outsourcing activity and that making learning materials to third parties was rarely given much strategic attention. Partnerships could still be used more effectively to enhance sectoral organisational learning.

---

*Reducing costs thanks to online learning*

---

During the dot-com boom, the promise of lower programme development and delivery costs (compared to conventional campus-based provision) was one of the most frequently cited advantages of e-learning in tertiary education and beyond. It was argued that lower costs would result from increased automation of development and delivery processes, reduced marginal costs, and the removal/reduction of travel and accommodation costs. The approach of the industrial era could at last be applied to education, with rationalised materials development, reduced number of full-time faculty, higher staff/student ratios, etc. Given that the major impact of e-learning has been on-campus where it acts as a supplement to classroom activities, most direct travel/accommodation savings have been factored out. Even online applications for administrative purposes seem to typically complement rather than substitute for traditional procedures – also undermining significant cost reductions. Lower development/delivery costs have also been challenged by the high cost of software development and, in many instances, demand for face-to-face tutorial support for remote online activities. Finally, it has become clear that online learning will induce ongoing and significant infrastructure costs. This implies that many conditions that could lead to a higher cost-efficiency of e-learning compared to conventional learning are not met. In this context, reducing overall teaching costs appears as a crucial component of the equation.

While a number of respondents expressed positive expectations about the cost reduction potential of differing forms of e-learning, few were able to offer direct evidence of this impact. However, in many instances, institutions would have as much difficulty evaluating the cost of traditional education. The conditions under which e-learning could become a less expensive model compared to conventional face-to-face or distance education may come from a number of different sources: substituting some online provision for on-campus (rather than duplicating it), facilitating increased peer/automated learning, use of standard/pre-existing software, drawing on the open standards and learning objects model to increase material re-use and sharing, avoidance of duplication of effort, and greater course standardisation. In any case, re-organisation should involve a decrease in course development costs, a decrease in the student/staff ratio or

savings due to less facility use (e.g. classrooms). Norms on class size and course design still appear as major barriers.

A strong theme was a call to evaluate e-learning in pedagogic as well as cost terms: e-learning could indeed prove to be more cost effective than face-to-face education (rather than more cost-efficient). The overall enhancement of the student experience due to online presence supports the argument, but pleading cost effectiveness would be pleading a different case – although one that should not necessarily be dismissed.

Internal resources currently represent the biggest source of funding for e-learning at most sample institutions, but much of its development has benefited from governmental and other non-commercial agency funding (rather than from tuition fees). No clear sustainable business model has yet emerged for commercial provision of e-learning, and failures have been more numerous than successes to date. Special internal or external funding remains a prominent feature of e-learning development in tertiary education. This stems from a perception of e-learning as a novel activity that merits experimentation and research. Many institutions are now clearly attempting to move to “normal” funding, typically through a combination of mainstream internal funds and student fees (balance depending on the type of programme and the country concerned), especially as external funding raises the problem of sustainability.

---

*What policy agenda for further progress in e-learning?*

---

In all OECD countries (and in all countries where institutions are based), state/national governments play a significant role in the strategic direction and funding of higher education in general, and e-learning in particular. Even in countries where institutions have significant autonomy and governments are not expected to play a direct part in institutional management, governments play an important role in influencing the behaviour of institutions by means of strategic funding/policy. What can governments and related agencies do to create an enabling environment for e-learning development and to reap all its benefits?

In some countries, notably those in emerging economies, the basic infrastructure still needs further development and governments need to focus on this structural investment, directly or indirectly. In the developed world, government investment in infrastructure was widely praised. However, rather than lacking the technological infrastructures necessary to fully embrace the advantages of e-learning, countries now need development and changes within the “softer” social, organisational and legal contexts in order

to foster the further development of e-learning. This is where governmental policies should now focus.

Building a framework that would help shift e-learning to the mainstream and maximise its impact in the classroom is the current priority. Practical and experimental knowledge of e-learning is too often scattered within and across institutions, so that even successful practices and interesting experiences have limited impact and visibility.

Given that e-learning is still a novel and immature activity and that it has already improved the overall student experience (first and foremost through administrative rather than pedagogic changes), there is a case for continued government funding. However, governments and institutions need to have a clearer understanding of the costs and benefits of e-learning. For example, while e-learning could incur both cost reduction and enhanced quality, the two underlying agendas might not be similar.

In brief, a better knowledge management has become crucial for the advancement of e-learning. Governments could thus:

- Encourage the dissemination of good (and lessons from bad) practices to stimulate innovation, avoid wasteful duplication of efforts, and scale up successful experiments.
- Encourage appropriate staff development, collective as well as individual, in order to ensure progress at institutional level.
- Support research and development on learning objects and other promising pedagogic innovations.
- Against the background of uncertainty about best practices, explore the issues surrounding intellectual property in e-learning.
- Promote a dialogue between IT providers and institutions, and support public-private partnerships, in order to keep costs at a reasonable level.

In designing their policies, governments should take into account the importance of academic autonomy and diversity and avoid micro-managing change. Most importantly, they should adopt a suitable timeframe for development: patience is a key condition to any capacity building policy. E-learning could then be well-placed to transform tertiary education for better in the long run.



## Introduction

E-learning is becoming increasingly prominent in tertiary education. Rationales for its growth are wide-ranging, complex and contested, including widening access, on-campus pedagogic innovation, enhancement of distance learning, organisational change, knowledge-sharing and revenue generation.

“E-learning” in this book refers to the use of information and communications technology (ICT) to enhance and/or support learning in post-secondary education. This implies that “e-learning” refers to both wholly online provision and campus-based or other distance-based provision supplemented with ICT in some way. The supplementary model would encompass activities ranging from the most basic use of ICT (*e.g.* use of PCs for word processing of assignments) through to more advanced adoption (*e.g.* specialist disciplinary software, handheld devices, learning management systems, adaptive hypermedia, artificial intelligence devices, simulations, etc.), with a presiding interest in more advanced applications.

During the dot-com boom, e-learning embodied many promises: enhanced quality of teaching/learning, increased and widened access for students, decreased costs for students and governments, as well as new business and organisational models for tertiary education institutions. The possibilities of cross-border delivery through e-learning were also seen as opportunities (and challenges) that would reshape national tertiary education systems and offer emerging economies and developing countries a quick way to build their human resources capacity. Many observers and institutions speculated on the emergence of a huge market for e-learning and created (or merely announced the future creation of) new dedicated ventures. Fully online learning and the shift from physical to virtual campuses was even sometimes seen as a probable future for tertiary education in the medium run. After the burst of the new economy bubble in 2000, irrational beliefs about the market value of e-learning and over-investment were mocked, although the dot-com boom generated more announcements than actual delivery. Scepticism replaced over-enthusiasm.

While it is still growing at a rapid pace, from a very low starting point, does e-learning live up the promises it once embodied? Probably not. However, the fact that pace and extent of change have not generally been in line with dot-com era predictions (Massy and Zemsky, 2004; OECD, 2004) may be first and foremost indicative of the nature and speed of innovation,

and not a judgement about the long-term contribution of e-learning to tertiary education. In the United States, a wide-ranging survey of technology leaders, scholars and industry officials reported that among eleven social institutions/activities (*e.g.* government, military, entertainment, media, healthcare and families), it was predicted that education would experience the most radical technology-driven change over the next decade (behind only “news organisations and publishing”) (Pew Internet and American Life Project, 2005, pp. 24-25).

Dot-com boom rhetoric aside, where do we stand? Why do different kinds of tertiary education institutions engage in e-learning, and what forms of engagements are favoured? What do institutions perceive to be the pedagogic impact of e-learning in its different forms? How do institutions understand the costs of e-learning, and how does this affect pricing? How might e-learning impact on staffing and staff development? Do particular types of student (*e.g.* by gender, mode of study, domicile, discipline, etc.) favour e-learning? This book seeks to address these and many other questions, drawing on two surveys on online learning, one qualitative and the other quantitative.

There are three major parts to the book:

- Part I gives an overview of the current activities and strategies of tertiary education institutions. It documents the magnitude of different forms of e-learning, the level of student enrolments, as well as current institutional strategies for e-learning.
- Part II documents and analyses the changes induced and required by e-learning at the pedagogic, technological and organisational levels.
- Part III focuses on the cost impact and funding of e-learning, and presents institutional views on what governments roles should be in funding e-learning and beyond.

## **The OECD/CERI survey**

In 2003, following a study of cross-border higher education (OECD, 2004), the OECD Centre for Educational Research and Innovation (OECD/CERI) embarked upon a study to improve understanding of international trends and practice in e-learning, focusing on tertiary education. The work was supported by a grant from the Hewlett Foundation.

Central to the study is an in-depth survey of practice at 19 post-secondary education institutions, carried out at the end of 2003. Sample institutions operate across the e-learning development continuum – some institutions are at the leading edge internationally, some in the mainstream

and others are in the early stages of development. The sample was selected by means of a combination of OECD member country nominations and direct approaches by OECD/CERI. The objective was to elucidate both good practice *and* international trends more generally. The survey was also intended to cover aspects of cross-border e-learning, so that OECD member countries were asked to nominate institutions with some cross-border e-learning activity. This is why nominated institutions were not always the leading edge in their country, although they are probably much more advanced than the average institution in e-learning. This cross-border focus was abandoned as the study unfolded.

The survey was primarily qualitative in nature, covering a wide range of topics, and requesting supporting documentation. The overall aim is to provide a detailed picture of the ways in which higher education institutions are developing e-learning. The survey sought to obtain rare detail concerning institutional strategies and activities, in order to more precisely understand rationales, stages of development, accelerators and inhibitors. The key interest of the study was teaching and learning, rather than research, administration or other aspects of institutional activity (although clearly there is often significant blurring between the different areas).

The survey was organised under eight headings (see questionnaire in Annex 2):

- Institutional strategy and different forms of e-learning.
- Platforms and infrastructure.
- Students' access to e-learning.
- Teaching and learning.
- Students and markets.
- Staff and materials.
- Funding and government.
- Organisational change, scenarios and barriers.

### ***Types of respondents***

The sample included 19 institutions from 11 OECD countries and 2 non-OECD countries: Asia-Pacific (Australia, Japan, New Zealand, Thailand), Europe (France, Germany, Spain, Switzerland, United Kingdom), Latin America (Mexico, Brazil) and North America (Canada, United States of America). With the agreement of participants, institutions are often identified by name.



The 19 institutions that participated in the study are set out in the following table.

### Institutions that participated in the OECD/CERI survey

<b>Institution</b>	<b>Country</b>	<b>Type</b>
Aoyama Gakuin University (Graduate School of International Management)	Japan	Campus
Asian Institute of Technology	Thailand	Campus
Carnegie Mellon University	USA	Campus
FernUniversität Hagen	Germany	Distance
Kyoto University	Japan	Campus
Monash University	Australia	Campus
Multimedia Kontor Hamburg	Germany	Campus
Open Polytechnic of New Zealand	New Zealand	Distance
Open University	United Kingdom	Distance
Open University of Catalunya	Spain	Distance
Virtual University of the Tecnológico de Monterrey (Tec de Monterrey)	Mexico	Distance
University of British Columbia	Canada	Campus
University of California, Irvine	USA	Campus
University of California, Los Angeles Extension (UCLA Extension)	USA	Mixed
University of Maryland University College	USA	Mixed
University of Paris X Nanterre	France	Campus
University of Sao Paulo	Brazil	Campus
University of South Australia	Australia	Mixed
University of Zurich	Switzerland	Campus

Of the 19 sample institutions, 16 have a university title. Of the remaining three, one (Multimedia Kontor Hamburg) is an organisation that co-ordinates a consortium of universities, one is an institute (Asian Institute of Technology) and one is a polytechnic (Open Polytechnic New Zealand).

Fifteen responses refer to the whole institution/consortia; while one is a virtual/distance arm of a university (Virtual University of Tec de Monterrey), one is a semi-independent campus of a larger university network (University of California, Irvine), one is a university extension programme (UCLA Extension), and one is a single graduate school (Aoyama Gakuin University – Graduate School of International Management). Ten institutions are primarily campus-based, while the remainder are either majority distance or distance-only operations (entirely virtual, or employing others forms of distance learning), or combined significant on-campus and distance provision. The consortium is a service and co-ordinating body (assisting member universities in their e-learning activities), and does not offer programmes (aside from staff development) in its own right. Eight institutions exhibited substantial offshore recruitment (mostly offline), and most had at least some of this kind of activity. It is difficult to precisely assess the balance of teaching and research in particular cases, but six institutions might be said to have a predominant teaching mission (although all engage in research to some extent, often in distance learning), while the remainder of institutions combine a strong teaching and research orientation (and many engage in a range of other activities).

Fourteen respondents described themselves as public institutions, although one of these pointed to an imminent change of status from “national institute” to “independent government agency” (*i.e.* assuming incorporated status – entailing more “private” structures), and another highlighted the ambiguity between “public” and “private” university status in their country (*i.e.* private in the sense of independence from government, but public in the sense of heavily dependent on public funds). One of the fourteen indicated that despite being “public” in the sense that public funds constituted the largest source of income, the institution had been set up along “private” lines to enhance “flexibility”. Three institutions described themselves as private, non-profit, and one as for-profit (a for-profit arm of a non-profit private university). The final institution is a joint limited company (non-profit) formed by six public universities.

Many of the sample institutions had large student populations. While the survey asked for full-time equivalent (FTE) data, this terminology was not always familiar or did not correspond to local norms. Thus different institutions referred to headcount, total enrolment or FTEs. The graduate school (Aoyama Gakuin University) had only 150 students, and one other institution had less than 2 000. Two had about 8 000, three around 20 000, four between 30-35 000, four between about 45-55 000, one around 74 000 and two over 80 000. Where converted to FTEs, student numbers often fell significantly (particularly at distance-only institutions). The final institution (consortium) does not recruit students directly.

By discipline, fifteen respondents were comprehensive institutions, offering a broad range typically encompassing arts, humanities, science/technology, social science, professional and other subjects. (Not every “comprehensive” institution offered every major discipline). The remaining four institutions were more specialised, either in three cases in a cluster of disciplines (*e.g.* business, social science, education, humanities, IT; business, engineering, IT), or in one case a single discipline (as mentioned above, one respondent was a graduate school of management of a broader-based university).

Annex 1 gives an overview of the institutions participating in this study classified by mode of delivery, institutional status, type/orientation (teaching, research), size, as well as other characteristics.

## The Observatory survey

Because the OECD/CERI survey was primarily qualitative and designed to provide in-depth coverage of the issues, it was critical to have a small number of respondents. An obvious disadvantage, however, is that it is difficult to generalise these qualitative findings. Where relevant, a larger-scale survey conducted by the Observatory on Borderless Higher Education (United Kingdom) was used for comparative purposes (Garrett and Jokivirta, 2004; Garrett and Verbik, 2004). It is referred to as the Observatory survey in the rest of the text.

The Observatory survey is a rare example of a quantitative international survey of e-learning in higher education. The Observatory data provided quantitative coverage of many of the same issues as the OECD/CERI survey in some Commonwealth countries. Compared to the small-scale of the OECD/CERI survey (covering 19 institutions), the Observatory survey covered a larger number of institutions (122 in 2004). This allowed some of the OECD/CERI data to be put into a broader context, and to gauge whether OECD/CERI findings were in line with more general data. On the other hand, the OECD/CERI data provided depth in understanding the range and diversity of rationales and situations contained in one aggregate in the Observatory findings. The two studies, therefore, worked together in complementary manner.

This book drew on data from the 2004 Observatory survey. Indeed, the Observatory on Borderless Higher Education launched its first survey of e-learning in Commonwealth universities in 2002, and repeated it in 2004. The questionnaire of the 2004 Observatory survey is available in Annex 3. Where possible, comparison was made with 2002 data. All responding institutions from the 2002 survey were contacted again for the 2004 follow-up, and 40 of 101 institutions that responded to the 2002 survey

(40%) made a second response. To maximise the accuracy and purposefulness of cross-comparison, the Observatory directly compared the 2002 and 2004 survey data of the 40 “returning respondents”. This provided an opportunity to gauge the extent to which the trends identified among the respondents unique to the 2004 survey (compared to the position of the 2002 respondents as a whole) matched those observed among the 40 returning respondents. In general, the trends identified were comparable, supporting attempts to make a broad comparison between the 2002 and 2004 surveys. The direct comparison of returning respondents also permitted an assessment of predictions made in 2002 in the light of activity reported in 2004.

### ***Introduction to Observatory data***

To help the reader understand references to the Observatory data, the following is a brief overview of respondents by continent/country, and by category of analysis. The 500 member institutions of the Association of Commonwealth Universities and of Universities UK were contacted at the executive level to participate in the 2004 Observatory study. Twelve countries were represented among respondents, four of which being OECD member countries (Australia, Canada, New Zealand and the United Kingdom). The responses are summarised in the table below.

In four countries with relatively large university sectors (Australia, Canada, South Africa and UK), the survey elicited responses from a significant proportion of universities. In some countries with smaller university sectors, such as Singapore and Zimbabwe, the 2004 survey generated returns from a majority of institutions. In the case of the four countries that provided the bulk of returns, the respondents represented the following proportions of the membership of the relevant national university bodies: 39% of the total membership of Universities UK for the United Kingdom (47 out of 121); 33% of the total membership of the Association of Universities and College for Canada (30 out of 92); 47% of the total membership of Australian Vice-Chancellors’ Committee for Australia (19 out of 38); and 53% of the total membership of South African Vice-Chancellors’ Association for South Africa (10 out of 19). Arguably, Australia, Canada, South Africa and the United Kingdom provided adequate response rates to be considered largely representative of their national tertiary education system: indeed, in these four countries, the Observatory survey covered either a small majority or a large minority of all universities.

### Responses to the Observatory survey by country and continent

Origin	Responses 2004	Percentage
United Kingdom	47	38%
Europe	47	38%
Canada	30	24%
North America	30	24%
Australia	19	15%
New Zealand	2	2%
Oceania	21	17%
South Africa	10	8%
Nigeria	3	3%
Zimbabwe	3	3%
Cameroon	1	1%
Malawi	1	1%
Africa	18	16%
Hong Kong, China	2	2%
Pakistan	2	2%
Singapore	2	2%
Asia	6	5%
TOTAL	122	100%

Source: OBHE.

Given the small number of respondents in other countries, it was necessary to group the 16 institutions that were left. They encompassed both developed and developing countries, and were scattered across Africa, South Asia, South East Asia, East Asia, and Oceania. This diversity ruled out a separate category for the 16 remaining respondents. The decision was taken to isolate responses from Australia and South Africa, but also to combine these national returns into two broader categories: “Asia Pacific” or “low income/low-middle income countries” (LI/LMI). The latter adopted the World Bank’s income related classification.

Please note that in all subsequent tables concerning 2004 Observatory data, respondents from Australia and South Africa are presented *both* as separate categories, and combined into the Asia-Pacific and “low income/low-middle income countries” categories respectively. Analysis of the 2002 survey used “developed” and “developing” country categories. Given that Australia, New Zealand, Singapore and Hong Kong-China made up 100% of Asia-Pacific respondents, the 2004 survey findings did not reflect the economic disparities of the region. Similarly, the low income/low-middle income category contained an unrepresentative sample of institutions (dominated by South Africa).

The table below displays the responses to the 2004 Observatory survey according to these categories.

### Responses to the Observatory Survey by Category

	Total	% of total	Returning
United Kingdom	47	39%	20 (43%)
Canada	30	25%	0
Australia	19	16%	11 (58%)
South Africa	10	8%	5 (50%)
Asia-Pacific	25 (6)	21% (5%)	14 (56%)
Low income/Low-middle income countries	20 (10)	16% (8%)	6 (30%)
TOTAL	122	100%	40

*Note:* South Africa is included in the “Low income/Low-middle income countries” and Australia, in the Asia-Pacific category. Figures in brackets in the first and second columns exclude South Africa and Australia.

*Source:* OBHE.

Unlike the OECD/CERI survey for the purposes of this study, institutions that responded to the Observatory survey were not identified by name. The two surveys had two respondents in common: Monash University and the University of South Australia.

## Caveats

The reader should bear in mind some of the limitations of the study.

First, the study cannot be said to give a representative overview of e-learning adoption in tertiary education institutions in the OECD area. As

mentioned above, this is the downside of any qualitative survey. The study drew on the Observatory survey, which is arguably representative for the United Kingdom, Canada, and Australia. Relevant findings of other studies for the United States are also used to widen the picture. However, these (mainly Anglo-Saxon) countries seem to be more advanced overall in e-learning than most other OECD countries. Rather than giving a general overview, the study casts light on how fairly advanced institutions (and countries) view the opportunities and challenges of e-learning – a picture that will be relevant to all countries and tertiary educational institutions willing to use past experience to build their capacity in this field.

Second, for both surveys, there might be a (self-) selection bias. Respondents to the OECD/CERI survey are generally responsible for or engaged in e-learning in their institution. Therefore, they may tend to be more enthusiastic than average about the promises of e-learning as well as possibly overestimating its merits and barriers. However given they are also more knowledgeable than average, their enthusiasm should not be considered as a disadvantage. It is, of course, also likely that the Observatory survey attracted a disproportionate number of institutions committed to online delivery in some form, and thus its findings may overestimate activity in Commonwealth universities as a whole.

Finally, the institutional focus of the OECD/CERI survey perhaps downplays the role of cross-institutional subject communities in e-learning development in higher education (*e.g.* the growing electronic resource collections convened by a number of national subject groupings in the United Kingdom).<sup>1</sup>

## *References*

- Garrett, R. and L. Jokivirta (2004), “Online Learning in Commonwealth Universities: Selected Data from the 2004 Observatory Survey, Part 1”, Observatory on Borderless Higher Education. Available at: [www.obhe.ac.uk/products/briefings.html](http://www.obhe.ac.uk/products/briefings.html)
- Garrett, R. and L. Verbik (2004), “Online Learning in Commonwealth Universities: Selected Data from the 2004 Observatory Survey, Part 2”, Observatory on Borderless Higher Education. Available at: [www.obhe.ac.uk/products/briefings.html](http://www.obhe.ac.uk/products/briefings.html)

---

1. See the website of the UK Higher Education Academy for details [www.heacademy.ac.uk](http://www.heacademy.ac.uk)

Massy, W. and R. Zemsky (2004), “Thwarted Innovation: What Happened to E-learning and Why”, a final report for the Westherstation Project of The Learning Alliance at the University of Pennsylvania in cooperation with the Thomson Corporation. Available at: [www.irhe.upenn.edu/Docs/Jun2004/ThwartedInnovation.pdf](http://www.irhe.upenn.edu/Docs/Jun2004/ThwartedInnovation.pdf)

OECD (2004), *Internationalisation and Trade in Higher Education – Opportunities and Challenges*, OECD, Paris.

Pew Internet and American Life Project (2005), “The Future of the Internet”, Pew Internet and American Life Project, Washington.





# **Part I**

## **Activities and strategies**



## Chapter 1

### E-learning provision and enrolments

This chapter assesses the magnitude and importance of e-learning in terms of online presence of programmes and online learning (enrolments). It clearly shows the diversity of e-learning provision across tertiary education institutions, in terms of both current activities and targets. In most campus-based institutions, the growth of e-learning to date has not challenged the centrality of the face-to-face classroom setting. Like distance online learning in general, cross-border e-learning has generally failed to emerge as a significant market. The majority of e-learning has taken place on-campus, with the necessarily more complex possibilities of remote international delivery typically left to small-scale, department-led experiments.

What kind of online presence does e-learning involve? How many and what types of students chose to study through e-learning? Is it more popular in certain disciplines than others, to study across borders rather than at home, etc.? This chapter assesses the magnitude of e-learning in terms of online presence of programmes and online learning (enrolments). It first documents the type and scale of online presence of programmes at the OECD/CERI case study institutions (1.1) and, more widely, in the Commonwealth countries covered by the Observatory survey (1.2). This clearly shows the diversity of e-learning provision across tertiary education institutions, in terms of both current activities and targets. Both surveys demonstrate that full online provision will remain very much a minority form in the short to medium term. In most campus-based institutions, the growth of e-learning to date has not challenged the centrality of the face-to-face classroom setting. The inquiry then turns to students and enrolments. It tries to identify the numbers of students online (1.3), the major disciplines in which students use e-learning (1.4) as well as the level and background of e-learners (1.5). The study then tries to evaluate the importance of cross-border delivery of e-learning, *i.e.* programmes taken by students in a country other than where the institution's central campus is located (1.6-1.7).

#### 1.1. Type/scale of online presence (Question 1.6)

What is the type and scale of online presence across the case study institutions? The 19 tertiary education institutions participating in the survey

had to estimate the proportion of programmes/courses with different kinds of online presence – three years ago, at present and to predict the situation three years into the future. The different kinds of online presence were defined as follows:

- None or trivial online presence.
- Web supplemented (*e.g.* course outline and lecture notes online, use of email, links to external online resources).
- Web dependent: students are required to use the Internet for key “active” elements of the programme – *e.g.* online discussions, assessment, online project/collaborative work – but without significant reduction in classroom time.
- Mixed mode: students are required to participate in online activities, *e.g.* online discussions, assessment, online project/collaborative work, as part of course work, which *replace* part of face-to-face teaching/learning. Significant campus attendance remains.
- Fully online.

The typology was an attempt to draw out the extent to which e-learning reduced rather than simply supplemented time spent in the physical classroom. This typology assumes both a campus-based institution, and a conception of e-learning tied to the Internet or other online network. The survey offered respondents the opportunity to respond in an alternate fashion (*e.g.* from the perspective of a distance institution) and to report forms of e-learning that did not fit neatly into the typology.

All responding institutions pointed to plans to increase online delivery (or at least maintain a current high level of activity). Only one institution may reasonably be described as teaching fully online at present, and another institution aims to attain 100% online delivery within three years. A third institution already had the vast majority of programmes *available* online as an alternative to face-to-face delivery, and predicted that this will apply to all programmes within three years. However, face-to-face options will continue (with increasingly online characteristics for all students). One university was undertaking leading-edge research and project-based activity in this area, but the majority of programmes were currently “Web supplemented” or had no/trivial online presence (but with a clear trend for greater use of online delivery across the board). Seven campus-based universities had rapidly expanded on-campus use of online learning in recent years (*e.g.* about two-thirds of provision “web-supplemented” or above), with a steady broadening and deepening of the online presence. Four distance institutions were similarly moving online to a significant extent. Of

the remaining four institutions, two were committed to rapid online development from a low base over the next three years, and two expected such development to take place more slowly.

All institutions attempted to respond to Question 1.6 but very few had comparable statistics to hand. In some cases, this was partly due to tensions between local categories and those employed by the survey (*e.g.* one institution makes extensive use of satellite-delivered learning; another has created parallel fully online and online supplemented/dependent/mixed mode face-to-face programmes), but more often the difficulty was lack of central collation of this sort of information. One respondent described the figures provided as “blind guesses”. That said all respondents were content to offer estimates. Responses by mode are set out in turn, and then overall trends are discussed.<sup>1</sup>

### *Categories of online presence*

#### *Fully online*

Taking fully online programmes, only two sample institutions (Open University Catalunya and the University of Maryland University College) had a majority of provision in this mode in 2000/01 (one offering this as an alternative to parallel face-to-face provision), seven, 10% of programmes or less, and ten, zero. For 2003/04, three reported a majority of programmes fully online (Open University Catalunya, University of Maryland University College, Virtual University of Tec de Monterrey), one reported one third (Open Polytechnic New Zealand), ten 10% or less, and five zero. The prediction for 2006/07 time is three at or close to 100% (as above), one at 60% (Open Polytechnic New Zealand), one at up to 30% and one at 20%, 10 at 10% or less, and three at zero.

#### *Mixed mode*

Taking mixed mode in 2000/01, no institutions pointed to majority use; one reported 30% (UK Open University) and one 20% (University of South Australia), five at 10% or less and nine at zero. It should be noted, as above, that the Open University Catalunya claimed fully online provision, and the University of Maryland University College claimed a large majority of parallel online and face-to-face programmes (both effectively ruling out mixed mode). The final institution (Virtual University of Tec de Monterrey) pointed to majority dependence on satellite delivery in 2000/01 (it proved

---

1. Due to category problems at two institutions (and “stability” over time at the Open University Catalunya), responses under “Web supplemented/dependent/mixed mode” add up to 16 (rather than 19).

difficult to fit this into the typology). These caveats apply across the time span requested by the survey. In 2003/04, again no institution claimed majority adoption, but one cited 38% (UK Open University) and another 35% (University of South Australia). A third institution (University of Paris Nanterre) was at 15%; ten at 10% or less and three at zero. The prediction for 2006/07 was for two universities (University of South Australia and the UK Open University) to have attained majority mixed mode programmes (70% and 55%), five between 15-20%, six at 5-10% and two at zero. One institution's response was unclear.

### *Web dependent*

Taking Web dependent provision (again removing the two majority online institutions, and the satellite dependent institution, mentioned above), the situation in 2000/01 suggested no institutions with a majority of programmes in this mode: three cited 20-30% (FernUniversität Hagen, University of South Australia, University of Paris Nanterre), one 13% (Monash University), five 10% or less, and seven at zero. In 2003/04, five pointed to between 20-40% of programmes in this mode (FernUniversität Hagen, University of British Columbia, UCLA Extension, University of South Australia, University of Paris Nanterre), seven 10% or less, and three zero. One institution's response was unclear. In 2006/07, one institution (FernUniversität Hagen) predicted there would be 60% of programmes in this mode, two between 40-49% (Monash University, University of British Columbia), three at 20-30%, one at 14%, five at 10% or less and three at zero. One offered a range of 5-15%.

### *Web supplemented*

Taking Web supplemented provision in 2000/01 (again removing the two majority online institutions, and the satellite dependent institution, mentioned above), one institution reported 70% (Open Polytechnic New Zealand) and two, 50% of programmes in this mode (University of Irvine, California, University of South Australia). Three cited between 30-40%, and one cited 10-30%. One pointed to 10-15%, one at 13% and seven at 10% or less. None reported zero. In 2003/04, one institution cited 70-80% (University of Sao Paulo), four cited 50-60% (FernUniversität Hagen, Open Polytechnic New Zealand, UK Open University, University of California, Irvine), three 35-45%, one 31%, three 20%, one 15%, and three 10% or less. Again, none reported zero. In 2006/07, the prediction was for one institution at 90-100% (University of British Columbia), four between 50-65% (Asian Institute of Technology, Aoyama Gakuin University, Carnegie Mellon University, University of Sao Paulo), five at 30-40%, four at 15-20%, one at 10% and one at zero.

### *None/trivial presence*

Finally, taking “none/trivial” online presence (again removing the two majority online institutions, and the satellite dependent institution, mentioned above), eight institutions reported at least 70% of programmes in 2000/01, and a further five between 48-63%. Two cited between 25-30% and one 10%. In 2003/04, the number of institutions reporting 70% or more of programmes in this mode had fallen to four (Asian Institute of Technology, Kyoto University, Multimedia Kontor Hamburg, Zurich University), with one at 65% and two between 40-50%. Two were between 34-38%, two at 20-30%, three at 9-10% and one at zero. The response of one institution was unclear. The prediction for 2006/07 was only two institutions at 70% plus (Multimedia Kontor Hamburg, Zurich University), one at 54% (Kyoto University), four 20-30%, three at 5-15%, one at 0-10% and five at zero.

### *Data summary*

The following is a weighted summary of the data. Composite figures were obtained by weighting the institutional response under each mode, using a hierarchy of 1-5, with “fully online” as 5. This allows a clearer appreciation of trends over time, relative speed of adoption, and comparisons between institutions. The maximum score is 500 (*i.e.* all programmes “fully online”) and the minimum is 100 (*i.e.* all programmes with none/trivial online presence). The weighting is not designed to be normative, but merely to reveal past, present and future patterns and trends (see Table 1.1).

It is clear that for the majority of sample institutions, fully online programmes will remain very much a minority (if gradually increasing) activity in the short-to-medium term. This is certainly the case for campus-based universities, which predominately predicted the continuation of a vigorous campus-based face-to-face teaching and learning environment. No institution with a significant campus-based element predicted fully online provision greater than 10% of total programmes by 2006/07. There was no pattern in terms of more and less research-intensive campus-based institutions. The institutions that predicted to embrace fully online programmes to the greatest extent were all virtual/distance learning-only institutions or branches (although not all such institutions pointed in this direction to the same extent).



**Table 1.1. Weighted “online presence” at the sample institutions**

Institution <sup>1,2</sup>	Type	2000/01	% change	2003/04	% change	2006/07
Multimedia Kontor Hamburg	C	102	7%	109	28%	140
Zurich University	C	102	20%	122.2	26%	154
Kyoto University	C	110	26%	139	22%	169
University of Sao Paulo	C	120	46%	175	11%	195
Carnegie Mellon University	C	118	44%	169.5	16%	197
Aoyama Gakuin University	C	135	15%	155	29%	200
Asian Institute of Technology	C	104	10%	114	78%	203
University of California, Irvine	C	150	42%	213	29%	275
University of Paris Nanterre	C	200	19%	238	18%	280
Monash University	C	171.5	21%	207	38%	285
University of British Columbia	C	154	40%	215	41%	303
FernUniversität Hagen	D	190	32%	250	28%	320
UK Open University	D	230	20%	276	18%	325
UCLA Extension	D	136	51%	206	71%	352.5
Open Polytechnic New Zealand	D	190	47%	280	36%	380
University of South Australia	M	250	30%	325	20%	390
Virtual University of Tec de Monterrey <sup>3</sup>	D	50	550%	325	54%	500
Open University Catalunya	D	500	0%	500	0%	500

*Note:* C = Campus based; D = Distance learning; M = mixed.

1. Ordered by 2006/07 score.

2. The University of Maryland University College is excluded from this table. The institution is moving to a model where all face-to-face programmes have parallel online versions. The respondent noted that the survey categories did not adequately represent this situation, and declined to complete the question. However, it is clear that the institution is among the “most” online in the sample.

3. The weighted scores for the Virtual University Tec de Monterrey for 2000/01 and 2003/04 are artificially low due to uncertainty about the nature of satellite delivery.

*Source:* OECD.

Given the diversity of the sample, there was no simple trend in respect of Web supplemented/dependent/mixed mode provision. Every institution reported at least some programmes in these categories, and all pointed to a significant reduction of programmes in the “none/trivial” category over time. Thirteen institutions predicted that in three years time, less than 10% of programmes would be in this category (eight saying zero). No institution reported present majority adoption of either mixed mode or Web dependent provision, none predicted majority adoption of the latter by 2006/07, and only one majority provision of the former over this timescale.

Table 1.1 also indicates extent of development over time, with some institutions moving much faster than others. Excluding the Virtual University of Tec de Monterrey, six institutions reported growth between 2000/01 and 2003/04 at over 40% (Carnegie Mellon University, Open Polytechnic New Zealand, University of British Columbia, University of California, Irvine, UCLA Extension and the University of Sao Paulo). Predicted growth up to 2006/07 was very high at two institutions (over 70% – Asian Institute of Technology, UCLA Extension), with many others over 20% (four less than 20%). There was an even split between institutions citing faster, slower and similar patterns of growth between 2000/01 and 2003/04 and 2003/04 and 2006/07.

It is important to emphasise that the index concern extent of online presence as such, not how that presence might become more sophisticated over time. It is a measure of quantity not quality. Thus the Open University Catalunya’s stability at “500” over time should not obscure the fact that the institution has sought to develop the quality/sophistication of its online presence over this period, and plans to continue to do so.

## 1.2. Online presence and programme delivery – results from the Observatory survey

The Observatory survey also asked respondents to estimate the proportion of current programmes delivered and the different kinds on online presence. It did not ask respondents to provide data on the situation three years ago. A related question offers a sense of predicted circumstances in three years time. The Observatory category of “modest” corresponds to the OECD/CERI “Web supplemented” category; “significant” to “Web dependent” and “Web dependent” to “mixed mode”. Table 1.2 summarises the results.

In view of the larger number of respondents to the Observatory survey, it was helpful to average returns by level of online presence. In line with the OECD/CERI findings, the Observatory respondents on average exhibited a majority of provision in the “none/trivial” and “modest” categories, and few respondents reported significant activity as “Web dependent” or “wholly online”.

**Table 1.2. What estimated proportion (%) of current programmes/courses offered by your institution have the following kinds of online component?**

	% none or trivial	% modest <sup>1</sup>	% significant <sup>2</sup>	% Web dependent <sup>3</sup>	% conducted online <sup>4</sup>
<b>2004</b>					
UK	41	34.8	15.5	5.8	2.8
Canada	43.4	32	14.5	3.7	6.4
Australia	36.5	29	18.4	11.7	4.5
South Africa	52.5	32.5	7.4	4.7	2.9
Asia Pacific	33.4	31.8	21.8	9.5	3.5
LI/LMI	59.3	28.8	6.4	3.3	2.4
Returning <sup>5</sup>	39.3	35.1	14.1	8.3	3.2
<b>TOTAL</b>	<b>43.1</b>	<b>32.5</b>	<b>15.1</b>	<b>5.6</b>	<b>3.7</b>
<b>2002</b>					
Developing	83.0	10.5	3.6	N/A <sup>6</sup>	2.7
Other developed	44.7	34.9	14.4	N/A	5.7
UK	36.6	39.4	20.7	N/A	3.6
Returning <sup>5</sup>	49	34	14.6	N/A	2.5
<b>TOTAL</b>	<b>49.4</b>	<b>31.6</b>	<b>14.7</b>	<b>N/A</b>	<b>4.2</b>

1. For example course outline/lecture.

2. Key “active” elements of the programme are online BUT no significant reduction in face-to-face classroom time).

3. As “significant” BUT face-to-face classroom time is significantly reduced.

4. Wholly or very largely.

5. The “returning” row corresponds to institutions that responded to both the 2002 and 2004 surveys.

6. Institutions were not given this option in the 2002 survey.

Source: OBHE.

Table 1.2 suggests incremental growth between 2002 and 2004. In 2002, an average of 81% of programmes/courses at responding institutions had either no online presence at all, or only a trivial or modest presence. In 2004, the figure dropped to about 75%. The average for “none/trivial” fell from

49% to 43%. Amongst respondents from Australia, Canada and the United Kingdom, on average between a quarter and a third of provision was judged “significant” or higher – with Australia (34.6%) in a significant lead over the United Kingdom (24.1%) and Canada (24.6%). In 2004, 20 institutions (16%) claimed that 50% or more of current programmes/courses had at least a “significant” online presence, compared to eleven in 2002 (almost 11%). On average, in both 2004 and 2002, the strongest “positive” category remains “modest” online presence. Overall, less than 4% of provision was reported as “wholly or very largely conducted online”, in fact down slightly from 2002. This decline may simply be a matter of sampling, but may also reflect the failure of some hasty wholly online ventures conceived during the dot-com boom.

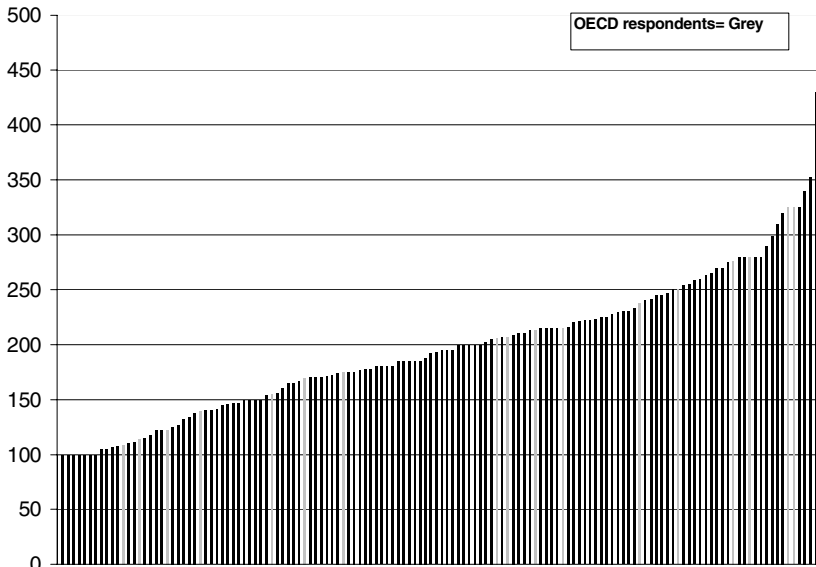
Of course, in the Observatory survey, within each average the range was wide. In the United Kingdom between 100 and 5% of courses/programmes had none or trivial online presence, in Canada this figure was between 100 and 1, in low income/low-middle income countries between 100 and 3 and in Asia Pacific between 90 and 5. Australia and South Africa were both between 90 and 0%. Under “none/trivial” the standard deviation was 33%, under “modest”, 25%, under “significant”, 17%, under “dependent”, 9% and under “wholly online”, 8%. Only three institutions (one Australian, one Canadian, one from the United Kingdom – including two campus-based) reported a majority of provision as “Web dependent” and above. Only one institution (distance learning) reported a majority of provision as “wholly online”, and only fourteen (11%) reported 10% or more of provision in this category. In 21% of cases, zero provision was allocated to the “wholly online” and “Web dependent” section, and in a further 31% of cases, the figure was 5% or less. This indicates that in about half of responding institutions, forms of online delivery that are significantly non-dependent on the face-to-face classroom remain small-scale and of peripheral importance. Even at institutions where this form of online provision is more significant, in the vast majority of cases it remains very much a minority activity.

Figure 1.1 presents both the OECD/CERI and Observatory data in weighted form. The distribution of the OECD/CERI institutions reinforces the view that the survey sample broadly reflects spread of practice more generally.

The figures for returning Observatory respondents were in line with the overall figures. In 26 cases (65%), the proportion of programmes/courses in the “none/trivial” category fell significantly between 2002 and 2004, and in three other cases the position was stable. In the remaining cases (just over 25%), 2004 data showed a decline compared to 2002. This may simply reflect the fact that different individuals completed the two surveys, and only one (or neither) had access to reliable figures. However, in some cases

the decline may, as above, reflect a reining-in of uncoordinated or under-performing online provision, and/or a re-assessment of which provision fitted into which category.

**Figure 1.1. Weighted online presence – OECD and Observatory respondents**



Source: OECD and OBHE.

Another question provided a sense of future online presence at course/programme level among Observatory respondents (see Table 1.3). This question asked institutions to indicate whether “integration of major online elements into the majority of the curriculum” was currently 1) in place institution-wide; 2) to be implemented institution-wide in the next 12 months; 3) to be implemented institution-wide in the next five years; 4) in place in one or more sub-sections of the institution; or 5) not a strategic priority. The term “major online elements” was not defined.

Roughly the same percentage of institutions in 2004 (24%) as in 2002 (22%) claimed to have already integrated, or to be integrating in the next year, major online elements into their curriculum. Australia is leading in this respect with 37% of institutions claiming major online presence across the majority of the curriculum. While only 14% of respondents (up from 11% in 2002) currently claim institution-wide integration of major online elements,

24% expected to be able to make such a claim within twelve months (compared to 22% in 2002) and 56% within five years (compared to 61% in 2002). Optimism to implement remains particularly high in low-middle income economies (63%), where no university has yet integrated institution-wide use of major online elements.

**Table 1.3. Major online elements in the majority of the curriculum**

	In place institution-wide	To be implemented institution-wide – next 12 months	To be implemented institution-wide – next 5 years	In place – one or more sub-sections of institution	Currently not a strategic priority	No response	Total
2004							
UK	5 (11%)	6 (13%)	16 (34%)	16 (34%)	4 (8%)	0	47
Canada	4 (14%)	0	5 (17%)	12 (41%)	8 (28%)	1	29
Australia	7 (37%)	3 (16%)	7 (37%)	2 (11%)	0	0	19
South Africa	0	1	4 (40%)	3 (30%)	2 (20%)	0	10
Asia-Pacific	8 (32%)	4 (16%)	7 (28%)	6 (24%)	0	0	6 (25)
LMI	0	2 (10%)	10 (53%)	3 (16%)	4 (21%)	1	10 (20)
Returning	6 (16%)	6 (16%)	13 (34%)	11 (29%)	2 (5%)	0	(38)
TOTAL	17 (14%)	12 (10%)	38 (32%)	37 (31%)	16 (13%)	2	122 (100%)
2002							
Developing	0	4 (18%)	8 (36%)	2 (9%)	7 (32%)	1	22
Other Developed	4 (11%)	5 (14%)	16 (43%)	9 (24%)	0	3 (8%)	37
UK	7 (17%)	2 (5%)	15 (36%)	11 (26%)	7 (17%)	0	42
Returning	4 (11%)	5 (13%)	19 (50%)	6 (16%)	4 (11%)	2	(38)
TOTAL	11 (11%)	11 (11%)	39 (39%)	22 (22%)	14 (14%)	4 (4%)	101 (100%)

Source: OBHE.

Department-led initiatives remained a significant focus for online institutional activity with 31% of institutions claiming to have major online

elements in place in one or more sub-sections. Canada constitutes a case in point. Although only 14% of Canadian respondents presently feature an institution-wide integration of major online elements, no university expressed plans to implement in the next twelve months and only 17% in the next five years. Canadian responses accounted for half of those institutions that consider online learning not to be a strategic priority, with 28% of the country total making this claim. However, it is notable that Canada boasts the highest percentage of institutions with department-led initiatives in place (41% of respondents, in contrast to 34% in the United Kingdom, 24% in Asia Pacific and 16% in LMI countries). Similarly, not a single South African respondent cited institution-wide online activity, whilst 30% reported integration into one or more sub-sections. Conversely, the majority of Asia-Pacific respondents claim to have integrated significant online learning into the majority of the mainstream curriculum, with 76% predicting an institution-wide integration within the next five years and 24% preferring department-led initiatives. No Asia-Pacific respondent considered this form of online integration to be of low priority. Again, the distribution bias of the Canada and Asia-Pacific country categories should be taken into account (see Introduction).

Overall, the results indicate that substantive online learning has not yet touched the mainstream curriculum in the vast majority of universities. Although over 70% of respondents claimed to have implemented an institution-wide online learning platform (see Chapter 4), only 17% are shown to have actually integrated online elements into the majority of classroom activity. This reinforces the important distinction between institution-wide strategy and institution-wide use. Nevertheless, a majority of respondents (56%) affirm plans to effect such integration in the relatively near future and only a small minority view the task to be of low priority (13% of total). According to the implementation strategies of 2004 respondents, in five years, 56% of all universities expect to have incorporated significant online elements into the majority of their mainstream curriculum (63% in low-middle income economies [41% in South Africa], 76% in Asia Pacific [90% in Australia], 58% in the United Kingdom and Canada lagging behind with 31%).<sup>2</sup>

Analysis of 2002 and 2004 data from returning respondents suggests that these predictions may be overly ambitious. Four institutions that predicted “integration of major online elements into the majority of the

---

2. The figures for department-led initiatives in online learning may be higher than indicated above. Given that respondents were asked to provide only one answer for this question, those institutions that reported plans to implement on an institution-wide basis may also have major online elements in place in one or more sub-sections.

curriculum” in 2002 reported that this had been achieved by 2004. Three of the four had indicated up to a five-year horizon in 2002, and yet claim to have met their target within two years. Four other institutions that predicted such integration in 2002 within twelve months did not report success. Two shifted the prediction to up to five years hence, one cited another twelve months and the fourth pointed to department-led initiatives only. Of the sixteen additional institutions that cited a five-year development horizon in 2002, 50% made the same claim in 2004, and three predicted attainment within a year. Of the remaining four, three cited department-led initiatives, and the fourth indicated that this form of integration was no longer a strategic priority.

In a related question, a slightly greater proportion of respondents reported institution-wide use of online learning at a distance (17%) than in on-campus curriculum (14%). However, as in 2002, the predicted figure in five years time was lower for distance learning at 34% in contrast to 56% for on-campus. For online learning at a distance, 2004 respondents preferred ongoing local development (53%) rather than an institution-wide strategy (34%). Again, these figures are in contrast to trends in on-campus development, with 31% adopting department-led initiatives and 67% institution-wide strategies. Data from returning respondents in 2002 and 2004 denote a similar trend. In five years time, 64% of 2004 returning respondents (versus 74% in 2002) predict integration of major online elements into the majority of the (typically on-campus) curriculum – more than twice as high as the figure cited for distance learning (26% in 2004, down from 33% in 2002). As in 2002 survey findings, these figures indicate that on-campus delivery, rather than distance learning, remains the core business of the majority of responding institutions.

### 1.3. Number of students “online” (Question 5.2)

An obvious but rarely encountered measure of online learning is number of students enrolled, and what proportion this represents of all students at a particular institution. The first question is: what is meant by “online learning”? Given the growing role of ICT on-campus, at most institutions almost all students undertake some form of online or e-learning.

The OECD/CERI survey tried to estimate the numbers of students online by focusing on students in the “Web dependent” category and above. Respondents were asked to provide their “best estimate” of full-time equivalent student numbers on “Web dependent”, “mixed mode” and “fully online” courses/programmes (aggregated) divided into undergraduate modules, undergraduate short awards, undergraduate degrees, postgraduate (graduate) modules, postgraduate short awards and postgraduate degrees. Of



course, some institutions operate at only undergraduate or postgraduate level, and some also run large continuing education programmes that fall outside these categories. Most respondents found this question difficult to complete, and/or provided non-comparable data. The metric is deceptively simple.

### ***Difficulties of the data collection and OECD/CERI findings***

The first difficulty concerned “full-time equivalent” (FTE) students. This concept is familiar in some countries (*e.g.* Australia, New Zealand, the United Kingdom) but not in many others. Thus many returns concerned headcounts rather than full-time equivalents. Related to this, some respondents reported in terms of “enrolments” rather than students, allowing for double counts as one student might enrol on more than one course. Where both a total enrolment and total headcount figure was provided, it was clear that enrolments might exceed headcount by some distance.

The second difficulty was that few institutions collected data in the manner requested by the survey. For example, some institutions reported the practice whereby students enrolled on a number of modules that might be a path towards a master’s degree, but might stand alone as credit or an alternative award. The final “destination” of the enrolment, or a final award, would only emerge with time.

In those cases where an institution was able to provide broadly accurate and comparable data, it was at module level that the bulk of activity appeared. A few institutions (*e.g.* University of British Columbia, University of South Australia, UCLA Extension and Zurich University) reported around a third to a half of all students enrolled on at least one relevant course. Given the absence of comparable local data, some institutions used learning management systems (LMS) based course registrations as a proxy for relevant online student numbers, a decision that may result in an artificially high total for some LMS-based activity maybe below “Web dependent” level.

By contrast, reported enrolments at degree level were generally much smaller – up to about 250. However, in a few cases the numbers were larger. For example, Monash University reported 750 students on (relevant) online undergraduate degrees; Multimedia Kontor Hamburg reported 1 500, and the University of British Columbia 2 000. In respect of postgraduate degrees, Carnegie Mellon University and the University of South Australia reported 250 students, while Monash University cited 1 000. Many respondents stressed that stated figures were estimates only.

## ***OBHE results***

The Observatory survey asked a similar question, but with a problematic difference. While the OECD/CERI survey asked for student numbers for the three “highest” categories of online presence, the Observatory survey asked for data for only the top two. That said, the same methodological difficulties arose, and the overall findings were similar. In the vast majority of institutions, provision with “high” online presence (as defined by the respective surveys) accounted for well under 5% of all students.

The greater number of respondents to the Observatory survey allowed use of averages. Total reported FTEs (Observatory “Web dependent” category and above) represented 8.4% of all FTE students at the 105 institutions with adequate data. However, a small number of institutions accounted for a majority of the total. Only three institutions claimed a majority of total FTEs as relevant online FTEs (two in the United Kingdom, one in Canada – two campus-based). Seven institutions (two in Asia-Pacific, one in Canada and four in the United Kingdom) accounted for 44% of all relevant online students; and twenty institutions (19%) accounted for 68% of the total. Forty-three per cent of respondents either did not answer the question or reported less than 300 relevant students. In the case of 62% of respondents, relevant online students either amounted to 5% or less of total FTEs, or the respondent did not answer the question. A further 25% of institutions claimed between 5 and 20%, and the remaining 12% claimed in excess of 20%. E-learning enrolments were thus concentrated in a small number of active institutions.

Analysis of the OBHE results by category suggested higher levels of relative activity in Asia-Pacific and the United Kingdom, compared to Canada and low income/low-middle income countries. Canadian institutions accounted for 15% of the total number of online students (and for 27% of the total number of students) but for 25% of respondents. The United Kingdom on the other hand accounted for 54% of the total number of online students (but for only 34% of the total number of students) and 39% of respondents. Asia-Pacific accounted for 25% of the total number of online students (but only 11% of the total number of students) and 20% of respondents. Low-middle income countries accounted for 6% of online students (and 28% of the total number of students) but for 16% of respondents. Australian respondents accounted for 22% of relevant online students, 21% of total students, and only 17% of respondents. The figures for South Africa were 5% of relevant online students, 14% of total students, and 8% of respondents. However, as set in Table 1.4, a small number of outliers skewed the figures.

**Table 1.4. Students on relevant online modules/programmes (2004)**

	No. of online students	% of all students	% if one outlier removed	% reporting zero <sup>2</sup>
Australia	30 723	8.8%	7.3%	11% (2)
Canada	21 404	7.1%	5.8%	None
South Africa	7 240	3.3%	2%	None
UK	76 995	15.6%	11.1% <sup>1</sup>	4.3% (2)
Asia-Pacific	36 148	8.2%	7%	None
Low income/low-middle income countries	7 570	2.7%	1.7%	30% (6)

1. Removal of additional outliers would reduce the United Kingdom's figure significantly.

2. Figures in brackets refer to the corresponding number of institutions reporting zero.

Source: OBHE.

Analysis of the OBHE results by level suggest an association between these forms of online learning and relatively short learning “units” – whether short awards (including masters degrees) or modules. For example, taking the 47 United Kingdom institutions, total undergraduate headcount in 2002/03 was 570 370, while total postgraduate headcount was 172 415.<sup>3</sup> Taken as a whole, this may be expressed as 77% undergraduate and 23% postgraduate. Taking reported relevant online FTEs for the same 47 institutions (whole awards only), reveals figures of 42% undergraduate and 58% postgraduate. This suggests (in the United Kingdom at least) that forms of whole award “distance” online learning are much more prevalent at postgraduate level, in terms of absolute FTEs and relative to the general undergraduate/postgraduate ratio. This finding fits the common view that whole award “distance” online learning is most suited to experienced learners who combine the need for flexible delivery and motivation to study remotely. Only when module FTE data are compared is the general ratio of undergraduate and postgraduate take-up replicated in the online data. Arguably, this is because relevant online module FTEs, particularly at undergraduate level, are primarily made up of campus-attending students.

How did 2002 and 2004 data compare? In order to make a general comparison, undergraduate and postgraduate figures were combined at each

3. Figures derived from HESA (2004). It is assumed that comparison of “whole award” headcount and FTEs is valid in terms of proportion.

level. The picture was mixed and ambiguous. The first problem was that at each “level” between one third and a half of returns were incomplete – *i.e.* only either 2002 or 2004 data were available, or no data were available at all. In the remaining cases, about equal numbers of institutions reported increased and decreased FTEs. In some cases the increase or decrease was in line with the 2002 figure, but in other cases was dramatically different. The latter may reflect genuine success/failure (and the post dot-com boom volatility of remote online provision), but may also be indicative of different individual respondents in 2002 and 2004, and either improved central data in 2004, or poor (but conflicting) data in both years. Given these difficulties it was not possible to draw any further conclusions about FTEs in 2002 compared to 2004.

In general, the high level of non-response to this question on both the OECD/CERI and Observatory surveys emphasises that in many institutions corporate data on relevant online provision remain inadequate. Equally, it seems clear that at most campus-based institutions, student take-up is relatively low, and does not represent a significant proportion of total students.

#### **1.4. E-learning provision in different disciplines (Questions 4.2 and 5.3)**

Is e-learning provision evenly spread across disciplines? Is e-learning more suitable for some fields of study than others?

##### ***Areas of concentration***

Question 5.3 of the OECD/CERI survey specifically asked whether or not the use of e-learning was evenly spread across particular faculties/departments/courses. Of the 19 institutions, eight cited areas of concentration, four reported an even spread, and two pointed to an emerging even spread following historical concentration. Of the remaining five, four split e-learning by “level” (*e.g.* saying that “Web supplemented” provision was evenly spread across the institution, whereas “Web dependent/mixed mode/fully online” was more concentrated), and one answered that it was too early to generate a trend, since the introduction of e-learning was still new to the institution (see Table 1.5). In cases where the respondent did not distinguish between different “levels” of e-learning, it is probable (in line with responses to other questions) that the reported activity is concentrated at one or two levels rather than across the entire spectrum.

**Table 1.5. E-learning provision in different disciplines**

Name of the institution	Types	Disciplines where e-learning is concentrated
Aoyama Gakuin University	C	Business/Management
Asian Institute of Technology	C	Primarily in IT and Electronics, but becoming more evenly spread
Carnegie Mellon University	C	Even spread. Exception – Performing Arts (Web supplemented); Science and Engineering (Web dependent), Business/Management, IT (Mixed mode/fully online)
Kyoto University	C	Engineering, Medicine
Monash University	C	Widely distributed, but Medicine in the lead (up to Web dependent); Business/Management, IT (mixed mode/fully online)
Multimedia Kontor Hamburg	C	Too early to generate a trend
University of British Columbia	C	Even spread (up to Web dependent); Nursing, Arts, Agricultural Sciences, Education, Forestry, Medicine, Dentistry (fully online)
University of California, Irvine	C	Business/Management, Law
University of Paris Nanterre	C	Education, Languages, Literature, Philosophy, Social Sciences
University of Sao Paulo	C	Dentistry, Education, Engineering, IT, Mathematics/Statistics, Medicine.
Zurich University	C	Concentrated in faculties of Medicine, Arts and Mathematics/Science. Less use in other disciplines
FernUniversität Hagen	D	Evenly spread
Open Polytechnic New Zealand	D	Accountancy, Business/Management, Communications, IT
UK Open University	D	Initially Business/Management, IT, Mathematics, Science and Technology (use spreading quickly across the university)
Open University Catalunya	D	Evenly spread
Virtual University of Tec de Monterrey	D	Evenly spread
UCLA Extension	D	Widely distributed. High but adoption in Design, Engineering, Performing Arts, Science and Technology (Web supplemented/dependent); Business/Management, Creative Writing, Education/Teacher-Training (fully online).
University of South Australia	M	Evenly spread, but heaviest use within Business/Management and IT disciplines
University of Maryland University College	M	Evenly spread

*Notes:*

C = Campus; D = Distance; M = Mixed.

Disciplines are listed in alphabetical order, except in cases where the institution ranked relative take-up.

*Source:* OECD.

The five institutions that reported the even spread were either distance-based (3) or mixed (2). This institutional grounding in distance/flexible delivery shaped historical disciplinary development, and tends to mean a better alignment between disciplinary range and suitability for e-learning enhancement in some form. For example, the Open University Catalunya or the Virtual University of Tec de Monterrey offer little or no natural/physical sciences, engineering or performing arts. The Open University Catalunya has however offered “engineering informatics” programmes since 1997 and plans an “engineering telecommunications” programme in 2006. The new programme will use simulation labs. These are the three broad subject areas widely said to be least amenable to majority online delivery – due to the centrality of physical equipment and/or face-to-face interaction. This absence is also true for the University of Maryland University College, although the institution does offer natural science as an undergraduate minor, but not online. FernUniversität Hagen offers science and engineering subjects at a distance and increasingly online in some form (notably drawing on simulation tools). More generally, distance/mixed institutions have a history of facilitating provision in non-traditional forms. In this respect, the social/interactive benefits of forms of e-learning (as opposed to, say, paper-based or “lecture” video-based distance learning) stand out; whereas for campus-based institutions the advent of e-learning presents a significant challenge to face-to-face norms for perhaps the first time. Thus for campus-based institutions e-learning may appear first and foremost as a second-rate substitute for conventional delivery, while for distance/mixed institutions it may appear as a pedagogic breakthrough.

In general, business/management and IT emerged as the most commonly cited disciplines making significant use of e-learning in some form, and dominated the “mixed mode” and “fully online” categories. However, in a number of institutions, at the “Web supplemented” and “Web dependent” levels, almost all disciplines were active. Even for the “fully online” category, one institution (University of British Columbia) pointed to a range of faculties involved, including nursing, arts, agricultural sciences, education, forestry, medicine and dentistry. It must be remembered that this refers to particular courses within these faculties, and not provision across each faculty. One institution (University of South Australia) reported the results of a 2002 student feedback survey, which revealed significantly more positive student reaction to the role of online learning among business students, compared to education, arts and social science students. However, it is not clear what role the nature of the online learning undertaken by each group of students may have played.

Focusing solely on the two “highest” levels of online presence (“mixed mode” and “wholly online” in the OECD/CERI survey), the Observatory

survey asked for information on relevant activity by discipline. Respondents were given eleven pre-defined disciplinary groupings, and asked to indicate whether each was a major, medium or minor area of relevant online activity, or whether there was currently no relevant activity. The responses were weighted (“major area of activity” = 3; medium = 2; minor = 1). About 70% of respondents answered this question (see Table 1.6).

**Table 1.6. Relevant online provision by discipline**

	Australia	Canada	South Africa	UK	Asia-Pacific	LI/LMI	TOTAL
<b>Business/management</b>	2.24	1.96	1.33	1.82	2.26	0.86	1.8
<b>IT/computer science</b>	2.31	1.35	1.63	1.72	2.32	1.36	1.69
<b>Education</b>	1.73	1.52	0.5	1.54	1.69	0.31	1.38
<b>Nursing/health related (excluding medicine)</b>	1.63	1.33	0.38	1.48	1.56	0.23	1.27
<b>Social sciences</b>	1.88	1.32	0.25	1.31	1.88	0.15	1.25
<b>Physical sciences (including engineering)</b>	1.65	1.15	0.88	1.04	1.75	0.58	1.18
<b>Humanities</b>	1.5	1.45	0.38	0.86	1.44	0.23	1.05
<b>Natural sciences</b>	1.38	1.2	0.89	0.81	1.41	0.79	1.04
<b>Medicine</b>	1.08	0.78	0.83	1.23	1.21	0.5	1
<b>Law</b>	1.13	0.33	0.63	1.04	1.13	0.42	0.78
<b>Performing arts</b>	0.64	0.47	0.13	0.59	0.64	0.08	0.49

*Note:* LI/LMI = Low income/low-middle income countries.

*Source:* OBHE.

In line with OECD/CERI findings, business and IT emerged as the most commonly cited disciplines provided online, and with the partial exception of Canada (where humanities ranked second), were the most commonly cited disciplines in each country/regional grouping. With one exception (medicine in the United Kingdom), Australian respondents cited higher levels of activity across all disciplinary areas compared to Canada, South Africa, low income/low-middle income countries and the United Kingdom. A handful of institutions cited “other” disciplines, including agricultural sciences, communications and theology (which other respondents may have allocated to pre-existing categories).

To provide an indication of disciplinary intensity of “distance” online learning (*i.e.* “mixed mode” and “wholly online” in the OECD/CERI survey), the weighted scores were summed for each institution. The maximum possible score was 33 (3 x 11). The overall average score was 10.6, with a range of zero to 27. Only ten institutions scored in excess of 20. Thus if one takes all respondents it is fair to say that “distance” online learning (*i.e.* “mixed mode” and “wholly online”) is being developed across a wide range of disciplines. However, in most institutions activity is more concentrated, and only two disciplines (business and IT) achieved an average in excess of half of the possible range (0-3). There were clear differences by country/region. The average sum for Australian institutions was 15.2, compared to 10.8 for the United Kingdom, 9.9 for Canada and 7 for South Africa. This suggests that in the majority of institutions development of online “distance” learning is concentrated in a handful of disciplines, but that overall Australian institutions are developing this form of online capacity across a wider range of disciplines than their counterparts elsewhere in the Commonwealth.

### ***Areas of enhancement***

The OECD/CERI survey asked respondents for their views on whether particular subject areas, types/levels of programme, and learning activities were best suited to enhancement through e-learning (Question 4.2). While there was no dissent as to the administrative value of e-learning (*e.g.* online schedules, submission of work, email contact, etc.), its pedagogic value in different circumstances was seen to be more complex. A number of institutions (*e.g.* University of South Australia, UK Open University, Open University Catalunya, University of British Columbia, University of Maryland University College) asserted that their institutions were committed to ongoing experimentation and development with a view to extending appropriate e-learning enhancement to all subject areas/programmes. Faculty at Carnegie Mellon’s new campus, Carnegie Mellon West (see Box 3.1), were said to regard all subject areas as equally suited to e-learning enhancement in some form. The respondent from the University of Maryland University College stated that his institution continued to experiment with “pedagogical techniques and learning objects”, and saw no subject area/level/activity as inherently inappropriate for e-learning enhancement. However, this did not necessarily mean that at present all provision at those institutions was characterised by e-learning enhancement in the same way and to the same extent. Only two institutions declined to express a view, saying that no study had been done.

Most institutions claimed that certain subjects/programmes/levels were more appropriate for e-learning enhancement than others. Among the



campus-based institutions, there was strong support for the pedagogic value of face-to-face provision supplemented, rather than replaced by e-learning. Zurich University argued that while all subjects/programmes/levels might benefit from “Web supplemented” provision, and most from “Web dependent” and “mixed mode”, fully online programmes were not appropriate at university level at all. The respondent stated that “face-to-face experience” was essential at this level. The University of British Columbia made the same point, if less strongly, by saying that the institution placed a high value on face-to-face learning, and thus the focus for the majority of provision was on the “Web dependent” modality.

The Aoyama Gakuin University respondent commented that e-learning was most suitable in cases where the topic was well-defined and widely agreed upon. This was said to make e-learning enhancement more suitable for introductory rather than advanced courses. The Asian Institute of Technology reported that core competency provision was particularly suitable to e-delivery. With its science and technology focus, the Institute’s students require a firm grounding in mathematics, statistics and economics, but recruitment from a wide geographical area means that many students are in need of remedial work. The availability of a set of online self-study resources would enable students to get up to speed in their own time (perhaps prior to enrolment), and help standardise the entry population. The Asian Institute of Technology also cited potential for e-learning as a means whereby students on exchange programmes may keep in touch with course developments and fellow students. The Carnegie Mellon University respondent reported a “general belief” among faculty at its main campus that e-learning is better suited to “teaching “skills”, *e.g.* solving formal problems or acquiring a second language, than for the kinds of judgement involved in, say, “historical analysis or political analysis”. Others disagreed with these limitations. The UK Open University respondent pointed to successful e-learning courses in arts and literature, as well as the more common business and technology. The Virtual University of Tec de Monterrey argued that in their experience it was possible to engender online equivalents of face-to-face discussion and collaboration. Indeed, it was argued that collaborative work was particularly amenable to electronic delivery, insofar as it enabled remote, sustained and asynchronous interaction – something typically beyond the scope of a face-to-face setting.

The Open University Catalunya and the University of British Columbia respondents commented that even in subjects that demanded extensive practical/experimental work, electronic simulations were possible and even desirable (*e.g.* where the costs of conventional practice are very high, or the consequences of mistakes very great), but cost prohibitive. However, the very fact of being able to repeat an exercise or experiment electronically an

infinite number of times – at little or no additional cost – might offset development costs long-term. The UCLA Extension respondent noted that increased bandwidth at low cost and the ubiquity of a growing range of sophisticated software on home computers were rapidly opening up the possibilities of, and access to, forms of e-learning across all subjects.

The experimental status of e-learning at the Asian Institute of Technology meant a preference for adoption in non-credit, rather than credit courses. As an aside to the comment above about the widespread commendation of the administrative value of e-learning, the Monash University respondent pointed to the cost to the student of printing large volumes of online material. This cost, and the sense that the desire to print (*e.g.* to increase the portability of materials) would not decline significantly over time, was said to have persuaded some faculty to turn back from shifting all academic and administrative content solely online.

In conclusion, e-learning appears as unevenly spread across disciplines, except in distance education institutions, IT and, business/management being the most commonly cited as significant users of e-learning. Institutions had differing views on the suitability of e-learning for all academic users. The most active users of e-learning were the most optimistic about the possible versatility of e-learning.

### **1.5. Levels and types of students (Questions 5.2-5.6)**

Institutions were also asked about the adoption/appropriateness of e-learning at different levels and for different types of students (Question 5.2). Of the 19 institutions, 17 responded to the question, and two did not respond (citing lack of experience/evidence).

#### ***Undergraduate/postgraduate students***

Among the 17 responses, two campus-based institutions offered only graduate level courses, one distance-based institution offered only undergraduate courses, and another distance-based institution offered mainly postgraduate courses. Focusing on the remaining 13 institutions (seven campus-based, four distance-based and two mixed), the trend that emerged was that at campus-based institutions, e-learning (particularly forms substantially online) was more popular with and more often used by postgraduate and professional students than by undergraduates, while any such distinction was less marked at distance/mixed institutions. A number of campus-based institutions said that at present they did not offer any fully online programmes at undergraduate level.

The Monash University return described what the respondent regarded as an ideal form of e-learning enhancement for the taught postgraduate student, almost regardless of discipline. This view was echoed by a number of other campus-based respondents. Such students tended to be part-time, have limited capacity to attend evening and weekend face-to-face classes, and were often highly motivated (linked to a desire for professional advancement) with honed independent study skills. In Monash University's experience, these students preferred a mix of delivery modes – print for content heavy materials, online resources, links and graded discussions, email communication between faculty and students, and face-to-face sessions at key junctures in the programme. A technical helpdesk was also desired, accessible by email and telephone. Due to the cost of face-to-face attendance (*e.g.* for non-local students), this ideal was said to not always be realised.

For campus-based undergraduates, the ideal was seen to be provision of a range of resources and information in electronic form (ideally accessible remotely) to support on-campus interaction with faculty and other students. Indeed, the Monash University respondent indicated that at present the majority of on-campus students and faculty preferred “Web supplemented” provision. The implication was that “Web supplemented” delivery provided useful additional resources, accessed on a largely voluntary basis, but did not challenge undergraduate face-to-face teaching and learning norms. This was supported by other studies of undergraduate preferences (*e.g.* Kvakik *et al.*, 2004, p. 49). The University of British Columbia argued that undergraduates should be gradually introduced to online study through “Web supplemented” and “Web dependent” provision, with the extent of online activity increasing through a degree programme. This, it was argued, will help prepare undergraduates to take best advantage of the increasingly online characteristics of postgraduate/professional programmes.

The distance/mixed institutions all reported that there was no difference in their students' interest in e-learning, *e.g.* between undergraduates and postgraduates. As stated above, this a reflection of the non-traditional character of such institutions, where the traditional face-to-face encounter is by definition not central to delivery. Forms of e-learning offer such institutions/students opportunities to enhance traditional distance modalities. Equally, the undergraduate population at many distance/mixed institutions is less traditional (typically older, part-time) than the campus-based equivalent. This further undermines any correlation between level and interest in e-learning. One caveat came from the Open Polytechnic New Zealand – related to access to facilities rather than level. Historically rooted in paper-based distance learning, the institution noted the advantages of the shift to e-learning in terms of shorter material revision cycles and more interactive

learning between students. However, it was also pointed out that while all New Zealand residents are guaranteed a postal service, Internet access or quality is not guaranteed. In this sense, print-based distance learning might for the present be regarded as more equitable from an access perspective; and may disadvantage some types of non-traditional learner (e.g. low income).

### ***Full-time/part-time students***

Institutions were then asked whether use of e-learning had affected the balance between full-time and part-time students. Greater use of e-learning might enable more individuals to combine full-time work and part-time study. This might engender a gradual shift away from the campus-based model of physical attendance. Of course, many distance/mixed responding institutions already have a majority part-time student body, and given their student profile, this is unlikely to change. For campus-based institutions, the common response to this question was that greater use of e-learning was expected to increase flexibility of attendance. While this was not a shift to part-time study as such, it did indicate a move away from the traditional residence-based campus model. This trajectory was also seen as a means to recruit additional students, and from a broader geographical area. Zurich University again emphasised the centrality of the campus experience (whether the student is full-time or part-time), and cited student concerns that greater use of e-learning did not dispense with that experience.

The University of British Columbia noted a trend towards a combination of full-time study and part-time work, and argued that greater use of e-learning assisted its development. Thus, greater use of e-learning helped some students at campus-based institutions to study full-time, whereas the demands of conventional physical attendance might have made part-time study the only option for those students. Monash University pointed out that the general increase in part-time study in tertiary education in many countries was driven by broader funding and participation changes, rather than greater use of e-learning, but agreed that e-learning might give students more options and flexibility. The University of South Australia, a mixed-mode institution that has gradually moved away from a traditional campus-based approach, cited changes to the physical campus to accommodate a more diversified and part-time student body. These included wireless Internet access campus-wide, varied social spaces and computer access in both large and small clusters. The aim was to enable different kinds of students to gain value from the campus, and to maximise the value of limited or infrequent attendance.

### *Academic, culture and gender differences*

Institutions were asked whether they had any views/evidence as to whether traditional or non-traditional students (in terms of academic preparedness) responded better to e-learning, and whether gender, ethnicity or age played a role (Questions 5.4 and 5.5). No respondent said they had directly investigated these matters to date, but the majority said (based on experiential/anecdotal evidence) that non-traditional students (however defined) responded as well or even better than their “traditional” peers. (Of course, some institutions had a particular mission to serve various kinds of non-traditional students, and thus had no “traditional” students to contrast any experience with (or vice versa). Monash University acknowledged anecdotal evidence that less academically prepared students were generally more dependent learners, and thus less able to cope with significant e-learning. The University of Maryland University College argued that the key distinction was between “strong” and “weak” students, and cited little correlation between “weak” and “non-traditional” (however defined). The respondent admitted that significant use of e-learning caters to the more independent and self-motivated students (but then the same could be said of campus-based study), but with adequate support (*e.g.* assistance with academic writing, self-study tutorials, guidance against plagiarism, etc.): “students from all demographics respond well to online learning”. Some respondents asserted that any lack of academic preparedness connected with “non-traditional” students was often compensated for by enhanced motivation/greater work and life experience (compared to the “traditional” entrant). At the Open University Catalunya, the typical student was described as between 25 and 45 years old and in work. Forty per cent students already had a degree, and another 20% had some prior tertiary education experience.

The University of British Columbia cited some experiential evidence of cultural differences relating to online delivery. Specifically, the respondent noted that some students felt more at ease than others posting comments online, or participating in an open online discussion. The Asian Institute of Technology predicted that given its regional in-take, increased use of e-learning might require some customisation of learning objects and/or awareness of cultural norms of learning and interaction. Multimedia Kontor Hamburg cited “some evidence” that female students exhibited less confidence about their IT skills. Kyoto University claimed that e-learning provision was more popular among younger and female students, but cited no evidence. Overall, it was clear that the institutional evidence base on the impact of gender, ethnicity/culture and age on e-learning is weak.

## 1.6. Students across borders

It is possible to distinguish four different forms of cross-border education: 1) people mobility (whether students or faculty), 2) programme mobility, 3) institution mobility and 4) service mobility (*e.g.* institution-building and accreditation) (OECD, 2004). Examples of form 4 was the UK Open University's institution-building role vis-à-vis the Arab Open University, and the Open University Catalunya's consultancy service activities in China. "Offshore students" concerned forms 2 and 3. In some instances, programme mobility may involve people mobility (*e.g.* visiting faculty and/or exchange students).

"Offshore students" studying in their home country may be categorised as follows:

- Students taking courses at a branch campus/centre of a foreign institution (institution mobility).
- Students taking courses at a local partner organisation of a foreign institution (programme mobility, with perhaps some people mobility).
- Students studying on a distance education programme offered by a foreign institution (programme mobility).

Table 1.7 summarises the numbers of "offshore students" studying in their home country as a percentage of all students at each institution, categories of cross-border provision to students, and types of institution. Caution should be taken when interpreting the figures. Institutions were asked to provide data in terms of full-time equivalents, but a number provided headcount or enrolment figures (or this was unclear). The term "offshore students" was differently interpreted by some institutions (*e.g.* to also include "domestic" students studying abroad). Finally, many institutions did not make a clear distinction between the three "offshore student" categories mentioned in the list above.

Only five institutions reported offshore FTEs/enrolments/headcount in excess of 10% of the total student population, and only one (University of Maryland University College) reported offshore headcount as a majority of total headcount. At eight institutions, either no offshore enrolments were reported, or as a proportion of all enrolments/headcount amounted to 1% or less. At three institutions, figures were not available, but it was clear that in two cases (Asian Institute Technology and particularly the Virtual University of Tec de Monterrey) the level of activity was significant.

**Table 1.7. Number of offshore students and categories of cross-border provision**

Name of the institution	Country	Offshore students (% all students)	Categories of cross-border provision			Type
			1	2	3	
Kyoto University	Japan	None				C
University of California, Irvine	US	None				C
University of Paris Nanterre	France	None				C
University of Sao Paulo	Brazil	None				C
Aoyama Gakuin University	Japan	None <sup>1</sup>			X	C
Zurich University	Switzerland	Handful		X	X	C
Open Polytechnic New Zealand	New Zealand	0.9%			X	D
University of British Columbia	Canada	1%		X	X	C
Carnegie Mellon University	US	Approx. 3%	(X)	X	(X)	C
UCLA Extension	US	<5%		X	X	D
FernUniversität Hagen	Germany	Approx. 8%	X	X		D
Monash University	Australia	10.4%	X	X		C
UK Open University	UK	15%		X	X	D
University of South Australia	Australia	20%		X	X	M
Open University Catalunya	Spain	21%			X	D
University of Maryland UC	US	57%	X		X	M
Multimedia Kontor Hamburg	Germany	Unclear				D
Virtual University of Tec de Monterrey	Mexico	Unclear		X	X	D
Asian Institute of Technology	Thailand	Unclear <sup>2</sup>	X	X	(X)	C

*Notes:*

C = Campus; D = Distance; M = Mixed.

(X) Indicates “under development”.

1. Aside from some “sub-programmes” delivered jointly with a foreign institution.

2. One branch campus in Vietnam.

Source: OECD.

With the exception of Monash University (which has embarked on the unusual strategy of working towards a number of branch campuses and centres worldwide), the most active institutions in terms of offshore enrolments were distance/mixed institutions. Mode of offshore delivery included forms of branch campus/centre (Asian Institute of Technology, Monash University, and the University of Maryland University College), international delivery partnerships (University of South Australia) and forms of distance learning, some with elements of face-to-face support (UK Open University). The Open University Catalunya, with centres in Catalonia and worldwide, provides information and administrative services, in addition to teaching. The GOLD (Global Online Learning and Development) programme at Monash University (a dedicated fund for faculty/units to bid for) is an attempt to develop the role of e-learning in the university's internationalisation policy. The University of British Columbia respondent pointed to similar moves at the programme level, concerning a face-to-face programme (University of British Columbia's International Master of Business Administration) offered at Shanghai Jiao Tong University in China.

A key difference between the two leading offshore providers (University of Maryland University College and the University of South Australia) was the target student body. The offshore students at the University of Maryland University College were primarily US citizens abroad (military servicemen and women and their families), accessing the University of Maryland University College programmes at almost 150 installations throughout Europe, the Middle East, and the Pacific. Thus, the University of Maryland University College does not advertise to attract "foreign" students but "domestic students abroad". This respondent stated "the online environment has allowed us to move beyond our traditional markets (students in their State) to reach a broader national and international audience of part-time students". On the contrary, the University of South Australia targets "local students abroad" through partnerships with local organisations. A number of other institutions said that a significant proportion of offshore enrolments were accounted for by individuals with strong connections with the source country (*e.g.* citizens of that country, individuals who had studied in that country in the past, or where "significant others", such as parents, had studied in that country). Two institutions (Carnegie Mellon University and UCLA Extension) cited plans to expand offshore activity, in terms of branch campuses (*e.g.* Carnegie Mellon University in Qatar), international delivery partnerships (UCLA Extension – building on longstanding customised provision for visiting companies/governments interested in aspects of the southern California economy) and online (*e.g.* Carnegie Mellon University "Open Learning Initiative" – see Box 3.2). The Zurich University respondent speculated that the Bologna Process would facilitate bachelor's



and master's degree-granting partnerships across borders, in which e-learning was expected to play a growing role.

### **1.7. Cross-border delivery of e-learning (Questions 5.7-5.10)**

The OECD/CERI survey tried to evaluate the importance of cross-border delivery of e-learning and to draw lessons of institutions' experience in the field.

#### ***Offshore delivery***

There is little hard data on the extent of international take-up of online distance learning sourced from abroad (see Observatory data below). There is some evidence that individuals seeking non-local undergraduate higher education are, like their counterparts taking local programmes, resistant to fully online delivery. According to one study, such students “equate the method of delivery as a trade-off between cost and risk”, and make strong connections between campus-based delivery and quality (Kulchitsky and Leo, 2003).

Examples of online offshore delivery reported by OECD/CERI respondents were either fully online, asynchronous/synchronous delivery with a combination of foreign and local support, or a combination of online and face-to-face delivery. For example, Carnegie Mellon University offers synchronous online programmes with their local support at the Athens Institute of Technology in Greece. The University of British Columbia and the Virtual University of Tec de Monterrey run a joint online masters of educational technology, with the majority of students based in Canada and Mexico. Aside from the Open University Catalunya, the University of Maryland University College and the Virtual University of Tec de Monterrey, no respondents portrayed cross-border online delivery as a major proposition in the short-term, and much cited provision was department-led and small-scale.

A number of respondents did see potential. For example, the UCLA Extension respondent argued that the accessibility of online programmes suggested a mixed model, where national and international students enrol in the same programmes, and benefit from diverse perspectives: “... thus a UCLA Extension online class can be a learning microcosm that reflects an integrated global society”. The Asian Institute of Technology respondent predicted that greater use of e-learning would enhance current “visiting faculty” offshore delivery arrangements, whereby faculty travel to offshore locations for intensive face-to-face sessions. E-learning, it was thought, would provide students with more structured activities between face-to-face sessions. While the respondent expected a blended approach to be adopted,

the expectation was that the face-to-face element might decline in significance. The Open University Catalunya respondent emphasised that the rationale for cross-border e-learning was to forge “strong and potent networks of university cooperation” (enhancing the student experience, opening research opportunities) as well as commercial gain.

The Observatory survey also attempted to elicit figures on full-time equivalent (FTE) online students studying in their home country on provision sourced from abroad. A number of methodological difficulties (e.g. relatively high non-response rate, non-adherence to FTE reporting, suspected inclusion of mobile international students) meant that these figures must be treated with caution. Using reported data, purportedly non-resident international students amounted to about 17% of total relevant online students (i.e. “mixed mode” and “fully online” using the OECD/CERI categories), and about 1.4% of all students at those institutions. Reported recruitment at both undergraduate and postgraduate levels was strong, but methodological difficulties inhibited a straightforward comparison between the two. In line with the OECD/CERI results, these figures pointed to international online delivery as currently of peripheral significance and inadequately tracked centrally in most institutions.

Question 5.10 asked about major offshore markets for e-learning, but it was impossible to gauge relative uptake in each cited market, and the overall number of countries cited was quite large. In some cases, online international recruitment retained a regional/linguistic character (e.g. Open University Catalunya’s enrolments in Latin America and the University of South Australia’s recruitment in parts of Asia), while in other cases recruitment was small-scale and scattered.

### ***Issues related to offshore delivery***

The OECD/CERI survey asked if institutions had learnt any lessons from providing online learning to students abroad (Question 5.9). Despite the fact that this activity was still new to many institutions, thirteen institutions shared their experiences and views.

### ***Infrastructure***

The Carnegie Mellon University respondent commented that unreliable or poor quality technology can quickly lead to student/faculty frustration, which may undermine perceptions of the value of the programme as a whole. The Monash University respondent noted that many current offshore students are in countries without widespread and reliable Internet access – and that this had hindered any attempts to introduce a significant e-learning element into existing cross-border activity.

### *Cultural adaptation*

Even where the language of instruction is common, curricula, teaching content, support must be tailored to local needs. The Open Polytechnic New Zealand respondent stated that the institution had been criticised for use of materials off-shore perceived to be New Zealand-centric. This is a common theme in the literature. Cross-border online delivery cannot simply involve minor revisions to domestic materials, but rather “significant investment in market research and in development of an understanding by course developers of the context in which their projected student audience is living and studying, of their expectations of teachers and of the ways in which they will be learning” (Alexander, 2002, p. 197). This may affect technologies employed, pedagogies adopted and materials used. A localisation approach obviously stands in tension with the potential cost efficiencies of a standardised curriculum.

The Asian Institute of Technology respondent indicated that plans for local language delivery through the GMSVU (Greater Mekong Sub-Region Virtual University) (see Box 2.2) might be organised whereby the local partner would take on responsibility for translation/localisation, rather than the Asian Institute of Technology taking responsibility for this.

### *Quality assurance and host country regulation*

Respondents offered few details, other than general commitments to the effect that offshore students were entitled to the same levels of service as domestic students. Number of institutions stated that national regulation was diverse and often constraining, but offered no specific examples.

### *Partnerships*

Partnerships are seen as a way to enhance “brand” in offshore markets, understand local regulation, overcome language barriers, and facilitate student support. Equally vital was said to be vetting potential partners in terms of financial and academic viability. The HEAL (Higher Education E-learning Courses Assessment and Labelling), in which University of Paris-Nanterre is involved with other higher education institutions across five European countries, is an example of partnership promoting virtual mobility (see Box 1.1).

### *Assessment/equity*

The Open Polytechnic New Zealand respondent described arrangements whereby offshore students were required to locate a suitable local examination centre, and to cover the cost of couriering completed papers to New Zealand. For students taking the same programme in New Zealand, all such matters were taken care of by this institution.

### **Box 1.1. Higher Education E-learning Courses Assessment and Labelling (HEAL)**

The European Commission supports the HEAL programme, as a pilot project within the framework of the SOCRATES. It aims to explore the possibility of establishing a virtual mobility programme in the universities, a kind of e-Erasmus of the European Union. In 2003-04, as an experimental endeavour, six institutions from five countries (Finland, France, German, Italy and Portugal) participated, coordinated by a French inter-governmental agency, EduFrance. EduFrance was created in 1998 by the French government to promote the French education system internationally. The HEAL offers online courses to students, with the option of validating their learning with ECTS (European Credit Transfer System) points.

At the end of the course, a symposium was organised to share the experiences among the participating institutions (including institutional decision-makers, faculty, technologies, and students) and relevant authorities. The advantages were reported from students (both from traditional age group and from adult learners) and faculty. The major challenges focused on four issues: 1) organisational and administrative issues, 2) cultural diversity, 3) technological difficulties, and 4) the importance of individual coaching. As for the organisation and administration of the project, the biggest challenge reported was how to guarantee the equivalence of the credits transferred. The established ERASMUS exchange agreements do not apply and, therefore, new agreements needed to be signed between partner institutions. Awareness-raising of virtual mobility among institutional decision-makers is believed to be of critical importance. To strengthen and ensure the credit equivalence, student's work was meticulously tracked and processed. In terms of maintaining cultural diversity, the issues included ensuring linguistic pluralism and diversity in contents, teaching methods, and evaluations. Technological difficulties were mainly found on platform interoperability and the degree of user-friendliness (the importance of technical support and monitoring mechanisms were reported). Occasional face-to-face meetings are believed to be key to e-Erasmus success and consequently a dual tutoring system was proposed: one at the host university and one at the home university.

The final report *Toward a Virtual Erasmus* was produced in early 2005. Based on an evaluative questionnaire analysis as well as discourse analysis from the Symposium, the report presents: 1) the geographical differences in the development of e-learning in general, 2) the kinds of courses available, 3) the strengths and limitations of the e-Erasmus (e.g. transculturality, platforms, the role of coordinators, visibility, global ethics, pedagogies, quality assessment of the courses, etc.), and 4) the next steps including: reinforcement of cultural diversity, advancement of e-ERASMUS within the LMD framework, promotion of European e-learning markets, and development technologies to allow intercultural mobility.

The project website can be found at: [www.heal-campus.org/](http://www.heal-campus.org/)

### *Currency*

When targeting offshore students, it was interesting that a number of institutions opted to advertise course fees in US dollars (designed to utilise the currency most commonly “understood” internationally). In fact, in the case of the Open Polytechnic New Zealand, the decision was later taken to advertise only in New Zealand dollars (primarily to avoid processing difficulties associated with foreign currency).

## **1.8. Conclusion**

This chapter addressed the online presence of programmes, the number and types of students “online”, and e-learning across-borders.

Overall, higher education institutions appear to be at vastly different stages of development in terms of the online presence of programmes. It is clear that for the majority of OECD/CERI sample institutions, fully online programmes will remain very much a minority (if gradually increasing) activity in the short-to-medium term. This is certainly the case for campus-based universities, who predominantly predicted the continuation of a vigorous campus-based face-to-face teaching and learning environment. No institution with a significant campus-based element predicted fully online provision greater than 10% of total programmes by 2006/07. Only virtual/distance learning-only institutions or branches predicted to embrace fully online programmes to the greatest extent (although not all such institutions pointed in this direction to the same extent).

Given the diversity of the sample, there was no simple trend in respect of Web supplemented/dependent/mixed mode provision. Every institution reported at least some programmes in these categories, and all pointed to a significant reduction of programmes with no or only trivial online presence over time. Thirteen institutions predicted that in three years time, less than 10% of programmes would be in this category (eight saying zero).

The Observatory data supported these findings and showed that the case study institutions were well distributed across the spectrum of e-learning practice, at least in the Commonwealth. In general, and in most campus-based institutions, the growth of e-learning to date has been incremental and the dominant forms it takes have not fundamentally challenged the centrality of the face-to-face classroom. There is nothing to suggest that this pattern will alter significantly in the medium term.

Most OECD/CERI sample institutions were unable to provide accurate and detailed figures on the number of full-time equivalent students on programmes with at least “Web dependent” online presence. Judging by the information available, it appeared that modules accounted for the majority

of relevant activity, reflecting the dominance of e-learning as supplement to on-campus delivery at undergraduate level. Whole award programmes with relevant online presence were more common at postgraduate level, in line with the view that such provision favours the experienced learner wanting to combine work/family and study. One suggestion was for online presence to be gradually increased across an undergraduate degree, not least to prepare students for the increasingly online characteristics of graduate/professional advancement.

While business and IT provision dominated e-learning activity in many institutions, there was considerable evidence of growing diversification by discipline, with many respondents confident that sophisticated use of technology could (if not now, then in the relatively near future) match or even surpass face-to-face delivery in almost every subject. At present, a number of respondents saw e-learning as most amenable to remedial work and “training” (*i.e.* presentation of a fixed body of knowledge rather than fundamentally discursive or analytical activity).

Respondents were able to offer only limited evidence of any impact of gender, ethnicity/culture and age on effectiveness of e-learning.

As for cross-border e-learning, although it was a key feature of dot-com rhetoric, like distance online learning in general, it has generally failed to emerge as a significant market to date. Much e-learning innovation has taken place on-campus, with the necessarily more complex possibilities of remote international delivery typically left to small-scale, department-led experiments. A few months after completion of the survey, UK eUniversities Worldwide (perhaps the world’s most ambitious and well-funded international recruitment e-learning initiative) folded in the light of disappointing early enrolments and concerns about long-term viability (see Garrett, 2004).

A small number of OECD/CERI respondents reported significant general cross-border enrolments, and some cited new technology as a useful supplement to existing forms of delivery, but there was no sense in which 100% online modalities were viewed as a short or even medium term replacement. Observatory data on relevant international enrolments reinforced the view that in most institutions this form of activity is small-scale, peripheral and poorly tracked centrally. OECD/CERI respondents raised a range of issues, such as the balance between standardised and localised curricula and support, local regulation, partnerships and pedagogy.

## *References*

- Alexander, S. (2002), “Designing Learning Activities for an International Online Student Body: What Have we Learned?” *Journal of Studies in International Education*, Vol. 6, No. 2, pp. 188-200.
- Garrett, R. (2004), “The Real Story Behind the Failure of the UK eUniversity”, *EDUCAUSE Quarterly*, Vol. 27, No. 4.
- HESA (2004), Table 0a – All students by institution, mode of study, level of study, gender and domicile 2002/03, Higher Education Statistics Agency, [www.hesa.ac.uk/holisdocs/pubinfo/student/institution0203.htm](http://www.hesa.ac.uk/holisdocs/pubinfo/student/institution0203.htm)
- Kulchitsky, J. and A. Leo (2003), “Targeting International Business Students: Online versus Campus-based Instruction”, Hawaii International Conference on Business, June 18-21. Available at: [www.hicbusiness.org/biz2003proceedings/Jack%20D.%20Kulchitsky.pdf](http://www.hicbusiness.org/biz2003proceedings/Jack%20D.%20Kulchitsky.pdf)
- Kvavik, R., J. Caruso and G. Morgan (2004), “ECAR Study of Students and Information Technology, 2004: Convenience, Connection and Control”, Research Study from the EDUCAUSE Centre for Applied Research, Boulder, Colorado.
- OECD (2004), *Internationalisation and Trade in Higher Education – Opportunities and Challenges*, OECD, Paris.

## Chapter 2

### E-learning strategies and rationales

The chapter set out to give a detailed picture of how, “where” and to what extent e-learning in the broadest sense was a feature of institutional strategy; how strategies came about, what they consist of, and whether and how they have been revised.

The previous chapter has shown that in most campus-based institutions, the growth of e-learning to date has not challenged the centrality of the face-to-face classroom setting. Does this reflect the current under-development of e-learning or correspond to institutional strategies? The OECD/CERI survey set out to gain a detailed understanding of how, “where” and to what extent e-learning in the broadest sense was a feature of institutional strategy (2.1); how any strategy came about, what it consists of, and whether and how it has been revised (2.2-2.3).

#### 2.1. Forms of e-learning strategy (Questions 1.1-1.5)

One way to understand how institutions view e-learning is to look at the documentation that they have developed about their strategy. Development of e-learning strategies is one component of the effort to integrate e-learning more widely in the institution.

It should be noted that the existence or absence of a particular form of e-learning strategy does not necessarily by itself reveal a great deal about the nature, extent and longevity of the e-learning activities at the institution concerned. A strategy may be designed to focus an entirely new development, or may be intended to rationalise and enhance a range of longstanding local developments, or a combination of the two. For example, a number of respondents had considerable experience of flexible/remote delivery, and positioned e-learning as a re-working of this approach. An e-learning strategy may stand on its own, or may be a component of another strategy (*e.g.* teaching and learning, IT, or a broader e-strategy). Some respondents represented units within larger institutions; hence any strategy was local rather than central (in the context of the parent institution as a whole).



## ***Codification***

The development of e-learning strategy is taking place in the context of a rapid codification of institutional decision-making in tertiary education more generally. As the scale and complexity of tertiary education in most countries has increased in recent decades, and as external accountability requirements have become more demanding, institutions now utilise documentation to articulate a central “position” in more areas and in more detail than ever before: this is what we call “codification”. For example, in England, all tertiary education institutions must now produce a range of central strategies, including teaching and learning, as a condition of funding. The University of Sao Paulo stated that their e-learning strategy had to comply with a particular resolution from the federal Ministry of Education (see Annex 4).

However, it would be wrong to assume that codification was solely externally-driven. A number of respondents cited benefits from the process of codifying intent and practice in key areas, in terms of clarifying purpose, generating debate, and providing a vehicle whereby the strengths of the institution could be made more “visible” to stakeholders. Responses to the questions on strategy and rationales reflected a debate within institutions about the merits of discrete (clarity, detail) versus integrated (co-ordination, synergy) strategies, and “top down” (consistency, scale, efficiency) versus “bottom up” (ownership, nuanced) approaches. Cornford and Pollock (2003) argue that ICT is accelerating the codification trend. They describe the “virtual university” as the “university made concrete”. By this is meant the effect whereby the challenge posed by increased use of technology across teaching and administration necessitates both the formalisation of previously tacit arrangements, and the standardisation of what was previously diverse. The irony is that in some ways the conventional university was more “virtual” than the “virtual university” as typically understood, and vice versa.

### ***Existence of e-learning strategies (Question 1.1)***

Eighteen out of nineteen institutions cited the existence of some form of central strategy for e-learning or were in the process of developing one. The remaining institution (Kyoto University) said no such strategy existed, nor was one under development, and nor were there equivalent local strategies. While the institution acknowledges the growing interests in e-learning from the demand side (students), from the supply side, the faculty has not yet seen the importance of its integration. Of the eighteen institutions, ten had a distinct institution-wide written e-learning strategy; five, the integration of e-learning into other central strategies (typically teaching and learning,

or IT). Two reported no distinct central strategy, but rather the existence of local strategies. In one case, Carnegie Mellon University was said to be solely to support and facilitate local initiatives that met certain criteria. One institution reported the combination of a distinct central strategy, integration into other strategies, and the existence of local strategies. Two institutions that cited an integrated approach and one that reported local strategies indicated work towards a distinct central strategy. Some respondents represented units within larger institutions; hence any strategy was local rather than central (in the context of the parent institution as a whole).

All of the longer documentation followed a broadly similar pattern – putting e-learning in an institutional/national/regional/global context (different documents emphasised different contexts), some assessment of current practice/strengths and weaknesses, a vision statement/key principles or questions, and specific actions assigned. Some documents were presented as “finished” statements of intent, while others were statements of progress towards next-level documentation (*e.g.* listing various options for the institutional community to consider). For example, the Open Polytechnic New Zealand had a “strategic document” described as “not a strategic plan” but as an “artefact created while formalising the discussions around the role e-learning will take” at the institution. Thus some documents were primarily discursive, while others more task-oriented. Again, this did not necessarily match stages of e-learning development, but rather different approaches to documenting and advancing that development.

The “e-learning strategy” documents at institutions such as Monash University and the UK Open University, where e-learning has been documented as a component of existing learning and teaching strategies, conformed to the more established, task-oriented style of the broader document; whereas moves toward discrete e-learning strategies at the University of British Columbia and the Open Polytechnic New Zealand necessitated the development of new documentation structures and styles, and were seen to require what might be called the “pre-strategy” document described by the Open Polytechnic New Zealand above. It was difficult to determine whether similar “pre-strategy” documents existed at the likes of Monash University and the UK Open University, and whether a discrete strategy or sub-strategy might emerge in time.

The outward face of strategic documentation, even as supplied to a survey such as this one, may not necessarily be a complete account of the actual strategic process that led to that documentation or of the strategic development of e-learning more generally. Strategy documents reveal as much about how an institution wishes to present itself and its deliberations, as about the “real” strategic processes, developments and activities concerned. Equally, a short “e-learning strategy” may interact with other

documentation (e.g. a teaching and learning, or IT strategy) not mentioned by respondents, achieving the same “sense” of integration and detail as the longer documents provided by some other institutions. A comment from the Open Polytechnic New Zealand makes clear that work towards a discrete e-learning strategy does not necessarily mean that the institution has paid little central strategic attention to e-learning to date: “... the e-learning effort at the Open Polytechnic had started as a project with strategic implications, but not supported by a strategic mandate that included e-learning. E-learning is now a well-integrated and pervasive component of the Open Polytechnic’s strategic documents and has been included in the operational and functional plans throughout the institution”.

Most documentation had an internal character, consisting of often quite detailed descriptions of current practice with statements of ambition and vision, and how this would or might be achieved. The audience appeared to be senior management within the institution, specialist staff and general faculty. Most documents consisted of text only (or text, plus boxes and tables) and monotone presentation. Only two documents (“overview” of Monash University’s learning and teaching plan and the University Of British Columbia’s Trek document) had an unmistakably “public” face. The former combined outline achievements/principles/plans with colour photographs, glossy presentation and a signed foreword by the Vice-Chancellor.

### ***Approaches to e-learning***

In terms of the documentation provided, without exception institutions positioned e-learning (and IT more broadly) as central to their development, and as something of concern across the institution. Of course, for some institutions (e.g. Open University Catalunya), e-learning was fundamental to the very creation of the institution in the first place. While most strategies invoked consultation and diversity to some extent, the dominant approach was top-down implementation of a broadly common strategy across the institution. E-learning was viewed as a general agent of transformation, something to be integrated into almost all aspects of institutional activity.

Almost all institutions made reference to high quality, student-centred pedagogy, flexibility of delivery/access, faculty and student IT literacy, service/application integration, infrastructure enhancement/availability, consistency of application/service, quality assurance/evaluation, cost-effectiveness and procedures to ensure strategic awareness of future technology. The University of British Columbia’s e-strategy website was a rare example of policy co-ordination and presentation across institution, subsuming e-learning as part of a broader and comprehensive ICT strategy

covering all aspects of institutional activity (see Box 2.1). The overarching theme for campus-based institutions was an articulation of “blended learning” (*i.e.* creative combinations of face-to-face and electronic delivery) as the way forward. Many institutions cited a specialist e-learning/IT/teaching and learning unit or units as central to its development. The distance education and teaching and learning units were merged at the University of South Australia to create an integrated “Flexible Learning Centre”, precisely to facilitate the combination of high quality pedagogy and non-traditional delivery. The University of Maryland University College was the only example of a partially campus-based institution that has made an explicit commitment to providing all programmes and services online (alongside an ongoing commitment to forms of offline delivery). This reflects its mission to be responsive to the demands of “non-traditional students (working adults)”.

Exceptions to this institution-wide, integrated approach to e-learning were rare. An example comes from Aoyama Gaukin University concerning the Graduate School of International Management within the university. The main focus of the e-learning strategy was a teleconferencing facility, established in 1992, to allow real-time collaboration with overseas universities. In this case, the e-learning strategy was as much a marketing as a learning strategy. This approach positions e-learning as a specialist function appended to conventional structures and processes, rather than a transformative agent across the institution (faculty) as a whole.

A partial exception was the response from Carnegie Mellon University, which put forward a central e-learning strategy that consisted only of criteria under which the centre would support faculty efforts. The criteria were that a proposal must be “informed by well-confirmed teaching and learning theories” and either “designed to gather data relevant to hypotheses about improving teaching and learning” or “provide productivity increases freeing faculty and/or student time for other activities that improve teaching and learning”. All proposals must also be committed to rigorous evaluation. While positioned as “not a central strategy”, one might argue that the implicit central strategy is that e-learning should be pedagogically sound, provide empirical data to inform pedagogic theory and generate productivity increases. However, the Carnegie Mellon University line was distinct from the bulk of respondents insofar as it constituted a bottom-up rather than top-down approach. There was little sense in which Carnegie Mellon University was planning for the development of e-learning institution-wide, but rather allowing faculties/individuals to make their own strategic choices, and setting out the circumstances in which the centre would offer support. Nonetheless, it would be a mistake to assume that this approach signalled lack of central attention to IT infrastructure. Carnegie Mellon University is

one of the most IT-enabled universities in the world, achieved in large part due to a number of centrally-co-ordinated initiatives. Carnegie Mellon University's new Carnegie Mellon West campus in California, is taking more of a top-down approach, experimenting with e-learning as a central plank of its mission (see Box 3.1).

#### **Box 2.1. E-strategy at the University of British Columbia**

The University of British Columbia, Canada, has an all-encompassing “e-strategy”. A dedicated website provides public access to the components of the strategy, the over-arching conception and progress to date. The e-strategy is positioned as a guiding framework to align technology initiatives with the University's mission. “The University of British Columbia's e-Strategy enables students, faculty and staff to excel in one of the world's leading universities by enhancing learning, research and community through leading-edge technology initiatives.” The aim is to avoid a silo approach and to maximise the value of synergies between people and initiatives. Founded in 2001, the e-strategy initially focused on e-business activities. The e-strategy now has five key components: e-learning, e-research, e-community, e-business and connectivity. The website links to the latest on-campus developments in each.

The website attempts to be more than a collection of strategy documents, and is akin to a portal where users can find out about the latest developments, including visiting speakers, student projects and research breakthroughs. The site also serves as a user feedback mechanism. There is an annual “e-Strategy Town Hall”, offering a chance for users across the university to learn more about particular initiatives, make connections and raise questions. The e-strategy is led by an Executive Steering Committee, consisting of the University of British Columbia's five vice-presidents and other senior administrators, and works with an Advisory Council representing faculty and departments.

For further information, see [www.e-strategy.ubc.ca/about.html](http://www.e-strategy.ubc.ca/about.html)

### ***Toward institution-wide online strategies***

The Observatory survey asked whether respondents had an “institution-wide online learning strategy or equivalent”. The main finding, in line with the OECD/CERI data (see Table 2.1), is that it appears to be increasingly common for universities to employ an institution-wide strategy for online or e-learning. (The data on returning respondents broadly matched that for 2004 respondents as a whole, supporting a general comparison between 2002 and 2004 returns.)

Among respondents that participated in both the 2002 and 2004 surveys, the proportion reporting some form of institutional online learning strategy

“discrete”, “related” or “integrated”) rose from 65% in 2002 to 71% in 2004. The proportion of all respondents that indicated neither any form of institution-wide strategy for online learning, nor any initiative under development declined from 18% to 9% between 2002 and 2004. Another striking trend is the growing preference for institution-wide online learning strategy through its integration into a range of existing institutional strategies (on teaching and learning, and human resources, for example), rather than as a discrete document. That said, because the “integrated into other strategies” option was not given in the 2002 survey, the 2004 results may simply more accurately reflect institutional practice now and then, rather than a shift in approach. Nonetheless, the “integration” option was checked by 28% of institutions, compared to 18% for “discrete” strategy.

There is a tendency towards an integrated approach; however, “integration” is not necessarily superior to “discrete”. For example, one Asia-Pacific respondent reported a number of related strategies on aspects of online learning, but indicated that a single policy was under development. Aside from only 9% of institutions reporting no central strategy at all, nor one under development, only 3% of respondents cited the existence of faculty/department-led strategies as the sum of their approach to date. In general, Canadian institutions appeared to be less strategically developed in this territory (proportion with “discrete”, “related” and “integrated” strategies – 31%) compared to 68% for Asia-Pacific, 64% for the UK, 63% for Australia and 60% for South Africa. However, with a 50% “under development” return for Canada, the disparity may not last long. The low-income figure (*i.e.* low-income/low-middle-income minus South Africa) was only 20%.

It is possible to contrast these figures with US data. The 2003 Campus Computing Survey (a detailed quantitative survey of IT use across higher education institutions in the United States) asked respondents to indicate the existence of a “strategic plan for instructional technology/instruction integration”. This produced a positive response from only 38% of respondents, with a further 26% saying that such a plan was under development. Similar questions concerning a “plan for integrating IT into the curriculum” and a “plan for using Internet resources in instruction” produced positive responses from only around 40% of respondents (Green, 2003, p. 16). These rates of positive response are considerably lower than positive responses across the four main countries to the Observatory survey (Australia, Canada, United Kingdom, South Africa). The US figure for “strategic plan for instructional technology/instruction integration” was actually down from 40% in 2002 (the question was not posed in 2001). The rate of positive responses to the other two questions also declined slightly between 2001 and 2003.

**Table 2.1. Institutions with an institution-wide “online learning strategy” or equivalent**

	Yes	No	Under development	Faculties/ departments own strategies	Related strategies	Integrated into other strategies	No response	Total
<b>2004</b>								
UK	9 (19%)	2 (4%)	15 (32%)	0	4 (9%)	17 (36%)	0	47
Canada	2 (7%)	4 (13%)	15 (50%)	2 (7%)	2 (7%)	5 (17%)	0	30
Australia	6 (32%)	1	6 (32%)	0	1	5 (26%)	0	19
South Africa	3 (30%)	0	2 (20%)	2 (20%)	1	2 (20%)	0	10
Asia-Pacific	8 (32%)	2 (8%)	6 (24%)	0	3 (12%)	6 (24%)	0	6 (25)
Low-income/low-middle income countries	3 (15%)	3 (15%)	4 (20%)	2 (10%)	1	5 (25%)	2	10 (20)
Returning	11 (28%)	2 (5%)	10 (25%)	0	3 (8%)	14 (35%)	0	(40)
<b>TOTAL</b>	<b>22 (18%)</b>	<b>11 (9%)</b>	<b>40 (33%)</b>	<b>4 (3%)</b>	<b>9 (7%)</b>	<b>34 (28%)</b>	<b>2</b>	<b>122 (100%)</b>
<b>2002</b>								
Developing	6 (27%)	9 (41%)	6 (27%)	-	0	-	1	22
Other developed	18 (49%)	3 (20%)	10 (27%)	-	6 (16%)	-	0	37
UK	16 (38%)	6 (14%)	10 (24%)	-	10 (24%)	-	0	42
Returning	18 (45%)	4 (10%)	10 (25%)	-	8 (20%)	-	0	(40)
<b>TOTAL</b>	<b>40 (40%)</b>	<b>18 (18%)</b>	<b>26 (26%)</b>	<b>-</b>	<b>16 (16%)</b>	<b>-</b>	<b>1</b>	<b>101 (100%)</b>

*Note:* South Africa is also included in the low-middle income countries' row and Australia, in the Asia-Pacific. The "Total" row is thus not equal to the rows above.

*Source:* OBHE.

The low positive response rate and decline in positive responses in the US may reflect the achievement of strategic aims, and thus a reduced need for an integration plan. However, commentary on institutional experience of “strategic integration of instructional technology” suggests an ongoing need for strategy revision, as technologies, conceptions and applications develop (Albrecht *et al.*, 2004). In fact, two US institutions in our case studies which reported having an institution-wide strategy (University of Maryland University College and UCLA Extension) noted that forming an e-learning strategy is an ongoing process and that their e-learning strategy had been revised along the evolution of e-learning at their institutions. The lower positive response from US institutions (striking given that it is widely assumed the US leads the world in terms of development of online learning in higher education) may be due to the high number of respondents. Over 550 institutions responded to the 2003 Campus Computing survey, out of 884 institutions contacted – a 63% response rate. Akin to the Canadian response to the Observatory survey, the US returns may better reflect the full spread of practice in higher education. This may reinforce the possibility that the Australia and UK returns disproportionately represent the more active institutions in this territory in those countries.

In response to the 2004 Observatory survey, a third of institutions indicated that an institution-wide strategy in some form (discrete, related or integrated) was under development, up from 26% in 2002. The rise is partly explained by the greater number of responses from Canada (which in general, as above, displayed a less developed, institution-wide strategic approach to online learning than, say, responses from the UK or Asia-Pacific), but may also suggest the strategic development of online learning is not a straightforward linear process. The proportion of respondents ticking “under development” also rose for the UK between 2002 and 2004. Out of 10 returning respondents stating that they were developing an institution-wide online learning strategy in 2002, by 2004 five had such a strategy in place, whether as a single overarching document or in the form of online learning integrated into other key documents. The remaining five were reported to be still in the development stage. Of the five returning respondents who indicated that an institution-wide online learning strategy was “under development” in 2004, but gave a different response in 2002, four had ticked the “related” strategies option in 2002, and one had cited the existence of an over-arching strategy. As new technologies appear or are introduced, and as new thinking, applications and problems emerge, institutions will need to revise strategies accordingly, and may opt for an entirely new direction or formulation.

To sum up, almost all OECD/CERI sample institutions cited the existence of some form of central strategy for e-learning. Without exception,



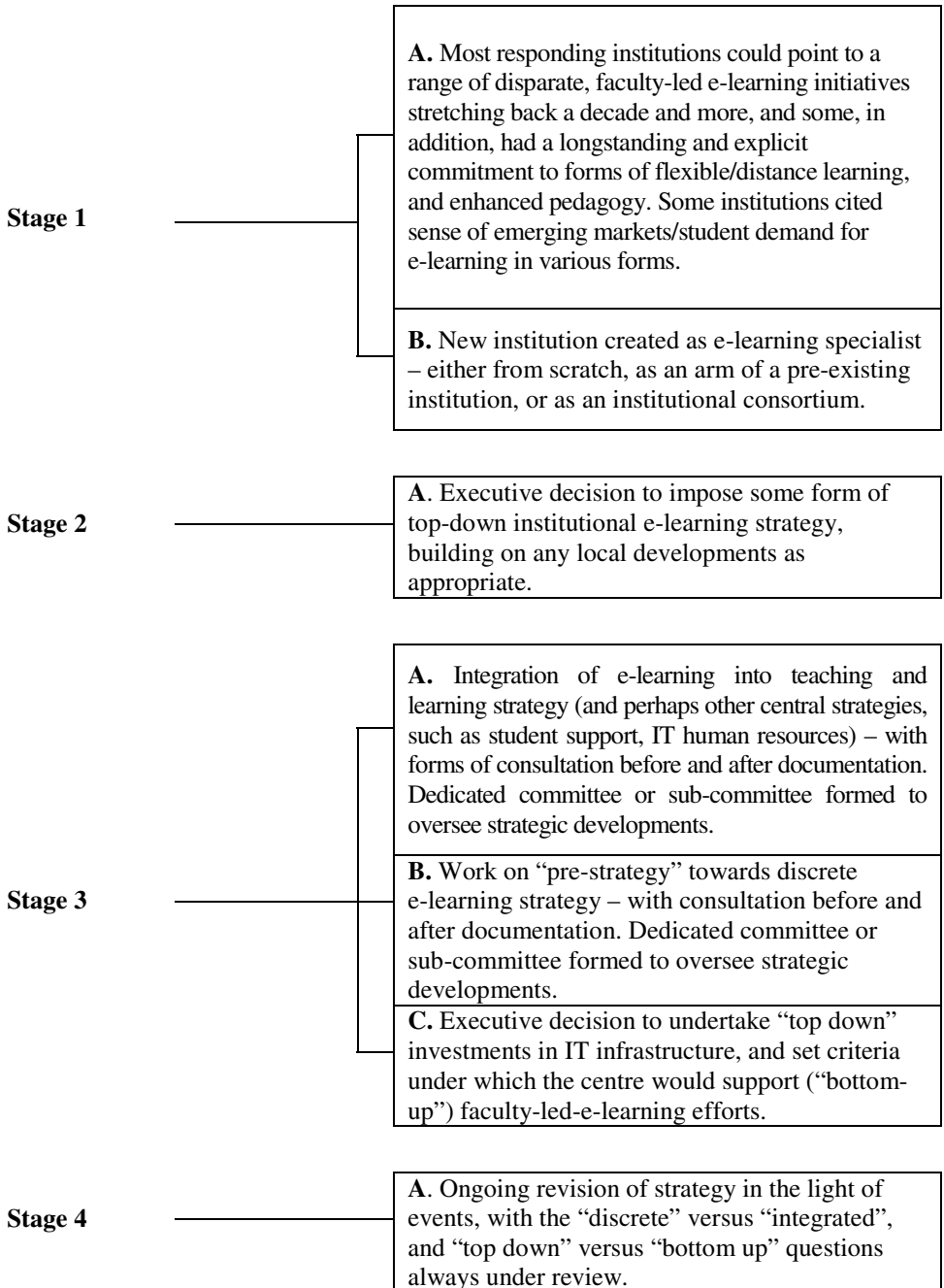
the documentation that was provided on these strategies positioned e-learning (and IT more generally) as central to the institutions' development. Although consultation and diversity were invoked in most strategies, the dominant approach was top-down implementation of a broadly common strategy across the institution. This trend was in line with the Observatory finding that institution-wide e-learning strategies were increasingly common in the Commonwealth. However, it should be noted that integrated strategies are not necessarily better than discrete strategies, nor do they reflect the actual nature, extent and longevity of e-learning at an institution.

## **2.2. Process of developing and revising e-learning strategies (Questions 1.2 and 1.4)**

The OECD/CERI survey asked how the e-learning strategy came about (*e.g.* when it was written, who was involved and who was consulted) as well as whether the e-learning strategy had been revised and if so, why and how (Questions 1.2 and 1.4).

It was difficult to compare timelines across respondents. There was little correlation between extent of online presence (see Chapter 1) and form or stage of e-learning strategy. E-learning strategies are not an indication of actual e-learning advancement. The key point was that some institutions appeared to have undertaken more extensive consultation and document development processes than others. In some cases, desire for a discrete e-learning strategy (typically demanding considerable effort to produce in any detail) only emerged some time after a practical commitment was made to advancing e-learning across the institution. For example, the University of South Australia emerged as one of the respondents with the greatest online presence in terms of programmes of study, but a “draft online strategy discussion paper” was prepared as recently as 2003, and a major consultation was planned for 2004. It reported that it had made “significant progress in meeting its goals for the use of online technologies for teaching and learning as well as e-business”, and regarded many key processes as well-established and “bedded-down”. The e-learning strategy development process was a means to draw out “reflection and evaluation of where we have been and where we should now be heading”. Similarly, UCLA Extension was an example of an institution that formulated its first e-learning strategy in the early 1990s, but revised the documentation over time in the light of experience. The University of Paris Nanterre was unusual in stating that their e-learning strategy had to be signed off by the national Minister of Education.

In terms of strategic development, it was possible to discern a broadly common pattern of development with institutions at different stages. Figure 2.1 presents this pattern.

**Figure 2.1. Patterns of development of e-learning strategies**

The University of British Columbia provided a detailed account of a consultation process undertaken to inform the work of its ad hoc committee created for proposing an institution wide strategy – called “Academic Committee for the Creative Use of Learning Technologies”. It included the following: workshops on learning technology – organised by the University of British Columbia’s Distance Education and Technology Centre – in all twelve faculties, including faculty, staff and students; three university-wide public meetings; discussions with faculty-based educational technology support staff; in-house creation of a video presentation on the consultation process and the issues at hand; production of a preliminary discussion paper; presentations to the University of British Columbia Senate and Board of Governors; focus groups with students; review of relevant documentation from peer institutions; finally, visits to peer institutions, and presentations from external experts.

### **2.3. Rationales for producing institution’s e-learning strategy (Question 1.3)**

The OECD/CERI survey investigated the main rationales for producing the institution’s e-learning strategy when the e-learning strategy was first written, why it invested in certain forms of e-learning (Question 1.3, and to a lesser extent 1.2 and 1.4)

#### *Specific rationales for central e-learning strategies*

All institutions that cited some form of central e-learning strategy were concerned with using e-learning to enhance flexibility of access for learners in general or a particular sub-section, and enhance pedagogy in some way. The specific rationales were identified under the following subheadings.

##### *Creation of a dedicated virtual institution*

- To replicate the physical university online, encompassing teaching, administration/services and social spaces (Open University Catalunya).

##### *Reputation*

- To build a “truly distinctive” online capability (University of South Australia); to build a reputation for quality in this area, consistent with the standards of the parent institution, and where the branch has flexible learning remit for the whole (UCLA Extension); to build a reputation in distance learning for the wider University of California, Irvine; to build on current leadership – *e.g.* development of webCT (University of

British Columbia); to address deficiencies of “traditional” forms of distance learning (FernUniversität Hagen).

- To develop e-learning in line with status of institution – in terms of being as good as or better than campus-based experience, and addressing pedagogic theory and practice (seen as part of institution’s key strengths) (Carnegie Mellon University).
- As a top-tier university, the perceived need to be in or near the lead in terms of learning technology (University of British Columbia).
- To build on longstanding legacy of local/national leadership in distance learning/accessible learning (UCLA Extension, University of Maryland University College, University of Paris Nanterre).
- To gain regional visibility as a leading research university (Zurich University).

### *Pedagogy – specific*

- To cope better in pedagogic terms with the phenomenon in several subject areas of increasing numbers of students and too few faculty (Monash University, Zurich University).
- Specific “story-centred” approach to pedagogy with ICT at its heart (Carnegie Mellon University West).
- Personalisation of learning (Open Polytechnic New Zealand, Open University Catalunya).

### *Respond to market demand/reach new markets*

- To respond to student demand for online provision (University of British Columbia, University of Maryland University College, Virtual University of Tec de Monterrey).
- To expand market share/enter new markets (domestic) (UCLA Extension), (domestic and international) (Open University Catalunya, Virtual University of Tec De Monterrey); to produce first rate low cost/free e-learning programmes for access worldwide (Carnegie Mellon University).

### *Cost reduction*

- Reduce costs/risks associated with certain experiments in the medical/other sciences, in a context of rising student numbers and declining public funding per student (Monash University).
- Achieve economies of scale relative to current multi-format delivery model, where increased costs are aligned with increased enrolments (Open Polytechnic New Zealand).

*Other*

- To bring e-learning up to the level of investment in electronic enhancement of research and administrative functions; and synergise all three (University of British Columbia).
- To build on existing role in dissemination of ICT in the region – *e.g.* through providing access to online materials to partner institutions and more generally building e-learning capacity in the region (Asian Institute of Technology).
- External requirement (funding body) to produce a strategy on teaching and learning (UK Open University); external requirement (Bologna Process) to engage with e-learning (Zurich University).
- Reposition the institution in the wake of rapid uptake on e-learning in mainstream institutions; decline in interest from traditional markets (UK Open University).
- Collaboration with other tertiary education institutions in same country (Multimedia Kontor Hamburg, Open Polytechnic New Zealand).
- Collaboration with tertiary education institutions in other countries (Asian Institute Technology – to advance regional capacity building; Aoyama Gakuin University – to benefit from status and expertise of partner institutions).
- Reduce duplication of effort among members of a consortium (Multimedia Kontor Hamburg).

Table 2.2 offers a rough outline of relative institutional priorities and foci, across eight main headings. Kyoto University's lack of a central e-learning strategy or plans to develop one, meant it was excluded from this table. The higher the score (0-3) the more significant the rationale.

It is clear from Table 2.2 and above bulleted points that different sample institutions prioritised different rationales in terms of e-learning strategy. A few institutions (*e.g.* Carnegie Mellon University, University of British Columbia, University of Maryland University College, UCLA Extension) aspire to become or remain leaders in this territory (whether in terms of enhancement of on-campus delivery or distance learning, or both). All distance/mixed institutions saw e-learning as a natural development, and a way of both remaining current and carving out an enhanced/re-positioned brand. For example, one distance institution noted that the recent rise of e-learning, and its adoption to varying extents at campus-based institutions had eroded the distinctiveness and market certainties of distance learning specialists. Only a minority of institutions specifically mentioned student demand, new market potential or cost reduction as central to their strategic thinking. The particular missions of certain institutions gave a distinctive twist to rationales. For instance, the Asian Institute

of Technology is participating in the Greater Mekong Sub-region Virtual University (GMS-VU) with an aim to build capacity for regional sustainable development (see Box 2.2). The attempt to indicate the rough priority given to each rationale in different institutions was partly to emphasise that in most cases all the rationales used in Figure 2.2 were accorded at least some priority in almost all institutions.

**Table 2.2. Rationales for e-learning development**

Institution	Type	Reputation	Pedagogic enhancement	Cost reduction	Meet student demand	Enter new markets	Collaboration	External demands	Regional development
Aoyama Gakuin University	C	1	1	1	1	0	3	1	0
Asian Institute of Technology	C	2	2	1	1	1	3	1	3
Carnegie Mellon University	C	3	3	1	2	2	1	0	0
Monash University	C	2	2	1	2	1	1	1	1
Multimedia Kontor Hamburg	C	2	2	2	2	2	3	2	3
University of British Columbia	C	3	3	1	2	1	1	1	1
University of California, Irvine	C	2	2	1	2	2	2	1	1
University of Paris Nanterre	C	3	3	1	2	1	2	1	1
University of Sao Paulo	C	2	2	1	2	2	1	2	1
Zurich University	C	2	3	2	2	1	3	2	2
FernUniversität Hagen	D	2	3	1	2	2	1	1	2
Open Polytechnic New Zealand	D	2	3	3	2	1	2	1	2
UK Open University	D	3	3	1	2	2	1	2	1
Open University Catalunya	D	2	3	2	2	2	3	2	3
Virtual University of Tec de Monterrey	D	2	2	1	2	2	1	1	2
UCLA Extension	D	3	3	2	2	2	2	1	1
University of South Australia	M	3	3	2	3	2	1	1	1
University of Maryland University College	M	3	3	2	3	2	1	1	2

*Note:* C = Campus; D = Distance; M = Mixed.

*Source:* OECD.

### Box 2.2. The Greater Mekong Sub-region Virtual University (GMS-VU)

Capacity Building for Regional Sustainable Development. In 2001 the UNESCO Pacific Regional Bureau of Education began an initiative to shape concrete and substantive cooperation in the area of higher education in order to encourage capacity building for sustainable development of the six counties including China (Yunnan Province), Cambodia, Lao PDR, Myanmar, Thailand and Vietnam (Known as Greater Mekong Subregion [GMS]). The role of ICT in higher education, and especially within distance education, was identified as critical and the GMS-VU was launched as a pilot project. The primary purpose of the project is to narrow the digital and knowledge divides among and within the countries through e-learning and e-teaching. E-learning in particular is expected to grow at a fast rate, “leap-frogging” current technological advances and encouraging the generation of new approaches. The project also aims to create International learning platforms beyond the Asian region, gradually developing links and establishing strong networks with Europe.

Developments and progress were identified within many related sectors, but three particularly salient areas received special attention for the pilot project: *i.e.* IT, GMS tourism and GMS studies. They are recognised as the areas which make a fundamental impact on bridging the digital and knowledge divides, maintain economic and environmental sustainable development, and preserve cultural diversity.

The first pre-pilot phase was completed in November 2004, and new steps were discussed for the next phase. The challenges and issues that were identified included lack of human resources, curriculum and courseware discrepancies, infrastructural problems, language issues, as well as problems surrounding mutual recognition of credit and qualifications. In addition, what is unique about the project is the funding structure: it has attracted many donor agencies. In moving forward the project aims to increase communication, co-ordination and information sharing within and between donor agencies. Other challenges include the generation of guiding principles for a digital library and groupware services.

The project website can be found at: [www.stou.ac.th/Thai/GMSVU/index.asp](http://www.stou.ac.th/Thai/GMSVU/index.asp)

### *Change over time in specific rationales for e-learning strategies*

The observatory study asked those institutions with an institution-wide online strategy (whether discrete, related or integrated) to indicate their key rationales in a list of thirteen (see Figure 2.2). Although the question was slightly modified between 2002 and 2004, responses gave an overview of the significance of these rationales and of its evolution over time.<sup>1</sup> The

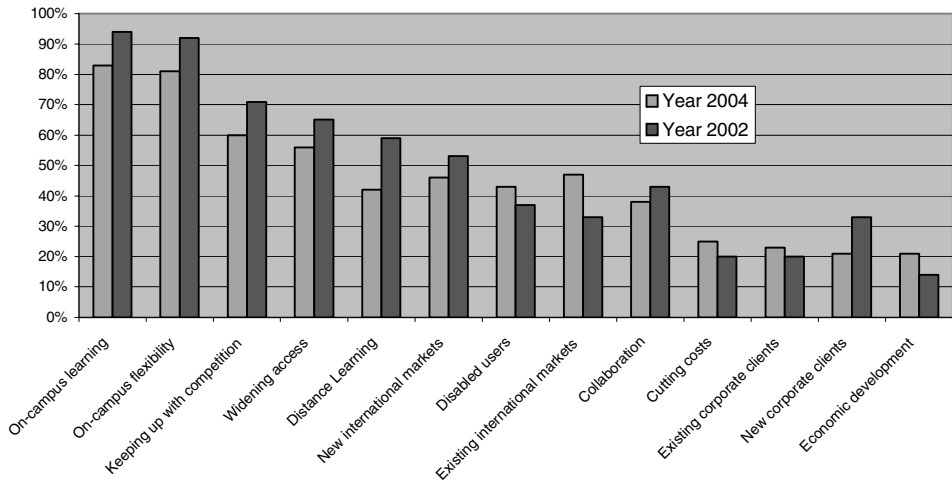
1. The Observatory survey asked: “If your institution has an institution-wide online learning strategy, which of the following are given as key rationales for undertaking online learning in the current version of the strategy?”. The survey listed the thirteen rationales appearing in Figure 2.2, plus an “other” option. This question was slightly modified from the original 2002 document. In the 2002 survey, respondents were asked to tick as many key rationales as appropriate. The 2004 survey asked

overall comparison between 2002 and 2004 is shown in Figure 2.2. The main findings are presented below.

### *On-campus enhancement*

As in 2002, on-campus enhancement continued to be the dominant focus of almost all university online learning strategies (distance learning institutions aside), followed by a correlative desire to improve flexibility of delivery for students (Figure 2.2). Across all categories, enhancement of distance learning ranked considerably lower than enhancement of on-campus learning. Only nine institutions (10%), almost all campus-based, cited “enhancement of distance learning” as a more important rationale than “enhancement of learning on-campus”. The slight decline in the proportion of respondents that cited on-campus learning enhancement/flexibility as a “key rationale” (*i.e.* 4.0 or 5.0) can largely be explained by a small number of campus-based institutions allocating 3.0 for these rationales, indicating “medium” rather than “high” priority.

**Figure 2.2. Comparison of “key rationales” in institutional online learning strategies in 2004 and 2002**



Source: OBHE.

respondents to quantify the priority given to key rationales on a scale of 1 to 5, 1 being “very low priority” and 5 “very high priority”. Given the different format of the question, divergent distribution of countries within each “country” category, and the reduced number of valid returning respondents, comparison between 2002 and 2004 should be made with caution.



### *Distance learning*

As a cited rationale, distance learning exhibited a significant decline between 2002 and 2004. Returning respondents expressed less interest in distance learning in 2004 compared to 2002. Among the 19 returning respondents (*i.e.* the 19 that responded to this question in 2002 and 2004, out of the total of 40 returning respondents), 42% considered distance learning as a rationale of high to very high importance, versus 53% (who identified it as a key rationale in 2002). Yet in a related survey question (Question 1a in the survey document – see Annex 3), 54% of all 2004 respondents agreed or strongly agreed that off-campus online learning will play a major role at their institution over the next five years, up from 36% in 2002.

How might this disparity be explained? This may be an example where overall comparison between the 2002 and 2004 surveys was not justified. Canadian respondents expressed a particular interest in online learning at a distance, with 86% (6 out of 7) and 70% (21 out of 30) ranking it of high to very high importance in the 2002 and 2004 surveys respectively. The high Canadian response rate in the 2004 survey appears to be the main reason behind the rise in the proportion of 2004 institutions predicting a major role for online distance learning in the future (6 out of 30 2004 Canadian respondents specialise in off-campus online learning). Another explanation may be that respondents continue to view online distance learning as a potentially valuable activity, but do not currently devote strategic attention to it. Perhaps now that the hype of the dot-com boom has faded and the predicted scale of the market has not emerged, the activity has lost its centrality and urgency, and does not feature strongly as a rationale in current strategies.

### *Cutting costs*

Whereas “cutting teaching costs long-term” was the second lowest-ranking rationale among responding institutions in 2002, the follow-up survey results indicate a shift in institutional priorities. The proportion of respondents that identified cost-effectiveness as a key rationale rose in the higher income country categories between 2002 and 2004: from 10% of “Other Developed” to 21% in the combined Asia Pacific and Canada country categories; and from 19% to 27% in the United Kingdom. The figures from returning respondents pointed to a similar trend. In 2004, 37% of relevant returning respondents classified “cutting teaching costs long-term” as a rationale of high to very high importance—compared to 21% in 2002. The cost implications of online learning are further discussed under Chapter 7. Citation of “cutting teaching costs” fell in the lower income country category, dropping from 57% of “Developing countries” in 2002 to

27% of low middle/low-middle income respondents in 2004. While the overall trend of greater attention to online delivery as a way of reducing teaching costs is clear, comparisons between 2002 and 2004 data should not be over-emphasised given the modified format of the question and divergent distribution of respondents within each category.

### *New International markets*

In 2004, overall respondents expressed less interest in new international student markets than their 2002 counterparts. “Entry into new international student markets” maintained its sixth ranking in 2004 (out of a possible fourteen), but the proportion of “high” citations fell (46% of respondents categorised it as an institutional priority in 2004 versus 53% in 2002). “Safeguarding existing international student markets” was identified as a high priority by 33% of respondents in 2002, rising to 47% of 2004. In both cases, interest from the UK was particularly strong. One might speculate whether the development of the UK eUniversity (a national initiative to market UK tertiary education online internationally) boosted interest in this area in the UK, and whether its recent demise (announced just after most of the UK returns to the Observatory survey were received) might dampen enthusiasm. The increased interest in safeguarding existing international markets might suggest more modest ambitions for online delivery, and may indeed refer to strategies to attract international students to study in the UK (e.g. using leading-edge IT infrastructure as a marketing tool) as much as development of online distance learning aimed at the international market. Similarly, the proportion of institutions that cited “Pursuit of new corporate clients” as a key rationale fell from 33% in 2002 to 21% in 2004, while “Safeguarding existing corporate clients” rose slightly to 23%. However, these trends were not uniformly adhered to. Among returning respondents, proportionate interest in “new international student markets” as a “key rationale” rose between 2002 and 2004, and interest in “safeguarding existing corporate clients” fell.

### *Keeping up with the competition*

“Keeping up with the competition” maintained its 2002 status as the third highest-ranking priority among responding institutions, even as the novelty or “hype” of online learning continues to wane. Yet 2004 survey respondents may no longer be investing in ICT infrastructure simply to “keep up” with emerging trends. Instead, this may indicate competition in terms of more clearly defined conceptions of online delivery as value-added (for a range of users), rather than inchoate responses to hype.

Overall, the average number of strategic foci cited was broadly stable – 6.5 (standard deviation 2.6) in 2002 and 5.8 (standard deviation 2.9) in 2004. In both years, a handful of institutions cited ten or more rationales as central to their online learning strategy. There was no clear pattern of increased or decreased foci among returning respondents, nor any pattern of average number of key rationales between different categories in 2004.

In conclusion, it is clear that campus-based enhancement/flexibility remain the most commonly cited rationales for online learning, and there is some evidence that institutional ambitions are (on average) becoming more modest and localised. For example, there would appear to be increased interest in disabled users, local economic development and cutting teaching costs, and decreased interest in pursuit of new international markets and corporate clients. A large minority (43%) of respondents identified “widening access to local under-represented groups” as a more important rationale than “entry into new international student markets”. However, it is fair to say that international markets remain a major priority for many institutions. Thirty-three per cent of respondents cited “new international markets” as more important than “widening access”. There remains significant breadth of rationale for online learning among respondents, but equally significant diversity in terms of the weight given to particular rationales.

### ***Lack of central strategy***

Institutions that reported (on the Observatory survey) no central online learning strategy were asked to explain their current position against a list of six options,<sup>2</sup> plus “other”. Not a single respondent considered online learning to be “unproven” as a learning medium, and only a small minority (2 of 27 respondents, or 4%) cited lack of disciplinary relevance. A slightly higher percentage of respondents (26%, or 7 out of 27) considered there to be little demand for online learning among staff and students, down from 42% of comparable respondents in 2002. Canadian responses account for nearly half of this figure. As in 2002, the majority of universities without a central strategy (59%, or 16 out of 27) cited a “bottom-up” or “department-driven” approach as the most common reason for not having an institution-wide strategy. Overall, in line with 2002 results, responses to this question suggest that virtually no universities are avoiding online learning due to a

---

2. These were: 1) little perceived demand from staff/students; 2) lack of disciplinary relevance; 3) preference for a “bottom up” or department-driven approach; 4) inadequate infrastructure; 5) view of online delivery as “unproven” as a technology and learning medium; 6) other issues currently more pressing.

perceived lack of demand, poor disciplinary relevance or unproven effectiveness.

## 2.4. Conclusion

Almost all institutions in the OECD/CERI sample cited the existence or development of some form of “online learning strategy”. The documentation submitted by each institution offered only a partial account of the institutional thinking and development. Although consultation and diversity were invoked in most strategies, the dominant approach was top-down implementation of a broadly common strategy across the institution. This trend was in line with the Observatory finding that institution-wide e-learning strategies were increasingly common. One should bear in mind that implementation of an institution-wide online learning strategy does not necessarily imply institution-wide adoption of e-learning (*e.g.* institution-wide use of substantive online elements in the majority of academic programmes). Furthermore, integrated strategies are not necessarily better than discrete strategies, and the absence of a strategy does not imply an absence of interest for e-learning as whole: in some cases, this might on the contrary indicate that strategic goals have already been achieved.

Within the case study institutions, the cited rationales for e-learning included increasing delivery flexibility, enhancing pedagogy and in all cases these strategies were concentrated on existing student populations. Both the OECD and Observatory surveys found relatively little interest in international markets and cost reduction. On-campus enhancement through “blended learning” was the dominant focus of most campus-based universities.

## *References*

Albrecht, B., B. Bender, R. Katz, J. Pirani, G. Slaway, T. Sitko and J. Voloudakis (2004), “Information Technology Alignment in Higher Education”, Research Study from the EDUCAUSE Centre for Applied Research, Boulder, Colorado.

Cornford, J. and N. Pollock (2003), “Putting the University Online: Information Technology and Organisational Change”, Society for Research into Higher Education/Open University Press.

Green, K. (2003), “Campus Computing 2003: the 14<sup>th</sup> National Survey of Computing and Information Technology in American Higher Education, Encino”, CA, The Campus Computing Project.

## **Part II**

# **Pedagogy, technology and organisation**



## Chapter 3

### Impacts on teaching and learning

This chapter explores how institutions perceive the pedagogic impact of e-learning and how they are trying to enhance it. The “learning object” model, perhaps the most prominent revolutionary pedagogic approach of e-learning to date, is given a special focus.

The pedagogic impact of e-learning is one of the key topics interesting researchers, practitioners and institutional managers. What do we know about it? This chapter explores how institutions perceive this and how they are trying to enhance it. What are the perceptions of the pedagogic impacts of e-learning? Do institutions offer students special assistance to enhance the possible impact of e-learning? Is pedagogy developed and delivered centrally or locally? The first part of the chapter addresses these questions (3.1-3.3). The chapter then focuses on one of the emblematic features of e-learning, which could potentially revolutionise teaching and learning: “learning objects”. Learning objects are electronic tools that can be used and re-used in different contexts, for different purposes and by different academics (3.4). The survey reveals that institutions pay much attention to learning objects, although they still consider them as immature tools. Some of the challenges of the further advancement of the “learning object economy” are also highlighted, especially intellectual property issues (3.5).

#### 3.1. Pedagogic impact (Questions 4.1 and 4.5)

All the 19 institutions participating in the OECD/CERI survey reported “positive” impacts of greater use of e-learning on teaching and learning while five institutions also addressed some concerns. The Observatory survey asked respondents to express an opinion on how online learning will enhance on-campus learning over the next five years. The overall average return was 1.8 (only six institutions disagreed), suggesting a generally positive view of the pedagogic potential of e-learning over time, at least on-



campus. More generally, there are various examples of tools and criteria used to evaluate the pedagogic effectiveness of e-learning provision.<sup>1</sup>

Few OECD/CERI respondents were able to offer detailed evidence of the positive pedagogic impact. Different respondents answered this question in different ways. Some referred only to the findings of formal research into the pedagogic impact of e-learning (or its absence to date), while others cited anecdotal/indirect evidence and impressions (*e.g.* invigoration of teaching and learning strategies, rates of student and faculty satisfaction, greater flexibility in learning delivery, better communication, and comparable retention rates and grades between face-to-face student and online students).

This analysis is first and foremost an account of the answers respondents gave to the question, and situations pertaining at their respective institutions. The task is then to compare this account with other literature.

### ***Positive pedagogic impacts from e-learning***

It would be misleading to imagine that only the institutions listed below under each sub-heading held the views expressed. Far more likely is that certain perceived pedagogic benefits of e-learning (*e.g.* flexibility of access, enhancing the value of face-to-face delivery) are commonly held within institutions worldwide. The comments below largely reflect varying interpretations of the question (*e.g.* formal versus informal evidence) and the nature/experience of e-learning at the institution concerned.

Respondents reported a range of positive pedagogic impacts from e-learning.

### ***Specific techniques***

It is fair to say that almost all respondents to the OECD/CERI survey made at least some reference to learner-centred pedagogy, using terms such as non-didactic, constructivist, story-based, problem-based, etc. However, few institutions commented in detail on the ways in which teaching and learning techniques/impact had changed by means of e-learning.

---

1. "Online Course Development Guidelines and Rubric" produced by the Michigan Community College Virtual Learning Collaborative ([www.mccvlc.org/~staff/Course-Guidelines-Rubric-v1.2.html](http://www.mccvlc.org/~staff/Course-Guidelines-Rubric-v1.2.html)); University of Maryland's "Peer Course Review for Online Teaching Rubric" ([www.UniversityofMarylandUniversityCollege.edu/ide/wit/](http://www.UniversityofMarylandUniversityCollege.edu/ide/wit/)); "Quality on the Line: Benchmarks for Success in Internet-based Distance Education" prepared by the Institute for Higher Education Policy ([www.ihep.com/Pubs/PDF/Quality.pdf](http://www.ihep.com/Pubs/PDF/Quality.pdf)).

### Box 3.1. Carnegie Mellon West and the Story-Centred Curriculum

Carnegie Mellon West, founded in 2001, is the new branch campus of Carnegie Mellon University, based in Pittsburgh, United States. The institution is located in California, and at present is restricted to graduate studies and continuing education. The main subjects taught include software engineering and business studies, with various multidisciplinary programmes (e.g. legal education for technical professionals). Carnegie Mellon University programmes have been “engineered from the ground up to provide [the student] with a new and better educational experience focused on learning by doing instead of lectures, collaboration instead of competition, and one-on-one mentoring”. The institution draws on decades of research at the parent institution into cognitive science and its application to learning.

The Carnegie Mellon West experience is based on a “Story-Centred Curriculum” approach to learning, said to be a “dramatic departure” from the mainstream master’s curriculum. The idea behind the Story-Centred Curriculum (SCC) is that a good curriculum should consist of a story in which students play a key role (for example, manager of e-business technology or of software engineering). These roles are selected to be ones that the graduate of such a programme might actually do in real life or might need to know about (because he or she will manage or collaborate with someone who performs that role). Students, working in groups, are given detailed information about the simulated company they are working for together with detailed and authentic projects. Supporting materials and resources are available as well as faculty and online mentors, to answer questions and point students in the right direction on an as-needed basis.

The effect of the SCC model is that as students work through the story to achieve the missions the story puts forth, they learn the critical skills required to successfully accomplish their tasks. The SCC implements true learning-by-doing across an entire curriculum, not just within the scope of a single course. In fact, the SCC is about the elimination of courses in favour of a curriculum that tells a meaningful story – a story in which the student plays roles that he or she is likely to play in the real world after graduation.

The project website can be found at: <http://west.cmu.edu/index.htm>

One exception was Carnegie Mellon University which cited enhanced student learning using particular e-learning techniques compared to traditional model (“lectures alone”). For example, StatTutor (developed by psychologist Martha Lovett at the University) is an “intelligent tutoring system designed to help students learn to solve data-analysis problems by giving immediate feedback flexibly, offering hints when students have difficulty, and reiterating a general set of statistical problem-solving steps. Each of these different kinds of “scaffolding” can be reduced depending on

the student's changing needs".<sup>2</sup> For an overview of Carnegie Mellon University's "Open Learning Initiative" (a foundation-funded effort to develop and make available research-led online programmes), see Box 3.2. Another example from Carnegie Mellon University is a curriculum, namely "Story-Centred Curriculum". This curriculum is specific to Carnegie Mellon West where e-learning lies at the heart of its teaching/learning. The "Story-Centred Curriculum" allows students to learn through the simulated work environment and learn to work collaboratively in virtual groups on authentic projects, with the assistance from faculties and online tutors (see Box 3.1).

For campus-based institutions, a question is often raised if blended learning is the way forward. The Sloan Foundation has established the Sloan Consortium (Sloan-C) ([www.sloan-c.org/index.asp](http://www.sloan-c.org/index.asp)) with an aim to help learning organisations continually improve the quality, scale, and breadth of their online programme. The Sloan-C launched an online research workshop in summer 2004. One of the research topics includes "blended environments" to specifically examine the impact of the ALN (asynchronous learning networks) on teaching and learning (Hartman *et al.*, 2004; Harwood and Miller, 2004; Laster, 2004). In addition, for learning effectiveness, the importance of scaffolding is highlighted with respect to issues of interface, teaching presence and learner characteristics (Swan, 2004).

### *Flexible access to materials and other resources*

This was cited as particularly valuable for students wishing to revise a particular aspect of a class, or for students with a relatively weak grasp of the language of instruction (Aoyama Gakuin University). Others mentioned general access flexibility for part-time students (Aoyama Gakuin University, Monash University); and remote access to library materials (Monash University).

### *Enhancement of face-to-face sessions*

Availability of archived lectures online frees up faculty time to focus on difficult points and application. This was said to add value to face-to-face sessions (Asian Institute of Technology, Aoyama Gakuin University). The introduction of e-learning was said to have started a general debate about pedagogy, including in the traditional classroom (Zurich University).

---

2. Learning and Problem Solving Laboratory (2005), "Description of StatTutor", available at: [www.psy.cmu.edu/LAPS/stattutor\\_new.html](http://www.psy.cmu.edu/LAPS/stattutor_new.html)

### *Communication*

There is “some evidence” that e-learning eases faculty/student communication – *e.g.* reducing cultural/personal student shyness (Asian Institute of Technology), quicker faculty responses to student queries (Monash University) and enhanced peer learning (Monash University). Faculty from other countries can deliver online lectures and joint classes with remote non-local students (Aoyama Gakuin University).

### *Retention and attainment*

A number of respondents offered evidence under this heading. The Open University Catalunya simply cited its nine years experience as a wholly online institution – with over 4 000 degree completions. UCLA Extension and the University of Maryland University College cited the results of large-scale and regular student/alumni satisfaction surveys that revealed high levels of satisfaction with the quality/academic rigour of online provision compared to face-to-face/other distance delivery, plus appreciation of enhanced flexibility of access. The University of Sao Paulo reported on an evaluation of a large mixed mode teacher education programme – under 10% dropout and high demand for similar programmes. The University of British Columbia respondents cited evaluation of some fully online courses that revealed 10-15% better attainment compared to the traditional print version. The improved performance was thought to be due to need (in the online course) for a common cohort to enable discussions and testing. The print version gave students more flexibility over start and finish dates, but meant that some students fell behind. The University of British Columbia also reported that at undergraduate level, fully online courses produced similar grades to face-to-face equivalents, but 5-10% lower completion rates overall. The respondent did not offer an explanation, but one can speculate that the nature of online provision (*e.g.* requiring more independent learning than face-to-face provision at undergraduate level) and cohort characteristics (*e.g.* part-time versus full-time) may play a role. The Open Polytechnic New Zealand said there was evidence that wholly online programmes (“Open Mind Online”) were attracting more learners than traditional distance learning provision (normalised annual growth of 30-40% compared to single digits). Some institutions pointed to high levels of re-enrolment in other online programmes – *i.e.* students who completed one programme chose to enrol in another (Open University Catalunya, Virtual University of Tec de Monterrey, UCLA Extension). UCLA Extension reported a steady increase in student satisfaction in line with the introduction of on-campus e-learning. However, it was not possible to demonstrate cause and effect. The growth of e-learning occurred alongside a general drive to improve the student experience.

### *Employer interest*

Employers seem to be interested by graduates of a wholly virtual institution – due to their “persistence, knowledge of IT, consistency, and hard work” (Open University Catalunya).

### *Student satisfaction*

The UK Open University respondent argued that student satisfaction with e-learning, or any other learning activity, was correlated with whether a particular activity was mandatory. This implied that students were less likely to engage with an activity if it was not required for assessment purposes. This is not to say that making an activity mandatory will necessarily raise rates of satisfaction, but rather that a requirement will “force” students to more fully engage with a particular activity and thus gain a more rounded appreciation of its strengths and weaknesses. In reverse, a student may rate a voluntary activity more negatively due to lack of experience as much as informed critique.

There is growing literature surrounding student satisfaction with respect to e-learning. A study in the United States found a correlation between greater student use of an LMS and more positive assessment of its benefits (Borrenson Caruso, 2004, p. 3). The Sloan-C places “student satisfaction” as one of the core pillars, and investigates what affects students’ satisfaction. It was reported that high levels of students’ satisfaction result from access, quality of programme, students’ support and opportunities for personal interaction (Benke *et al.*, 2004); the role adjustment of students from a more didactic traditional teacher-centred face-to-face learning environment to self-directed learning is critical in students satisfaction and success (Garrison and Cleveland-Innes, 2004); and teaching presence is important and, thus, the faculty development plays the pivotal role in students satisfaction (Shea, Pickett and Pelz, 2004).

### *Quality assurance processes*

One pedagogic-related characteristic of e-learning not mentioned by respondents is what Slater (2005) refers to as “QA-ability”. This refers to the fact that e-learning course development necessitates much greater specification of materials and activities, making e-learning more amenable to quality assurance processes. As well as offering programme leaders/faculties/institutions better oversight of provision, forms of e-learning also have the potential to provide the student with fuller information on process and content. To facilitate the quality assurance processes in e-learning, some countries have started to work in the area at the governmental level (see Chapter 8).

### ***Negative pedagogic impacts from e-learning***

Some respondents also pointed to negative impacts, or phenomena said to undermine effective e-learning pedagogy.

#### ***Inconsistency***

This concerned inconsistent course/materials terminology; non-uniform faculty/student access to technology; clumsiness of some interfaces (Carnegie Mellon University); system reliability, and lack of integration between online and print materials (Monash University).

#### ***Loss of face-to-face contact***

The University of British Columbia cited a study in one field (agricultural sciences) that found that while students were generally satisfied with e-learning, there was a strong sense that it should complement, not replace face-to-face time. Zurich University stated that the introduction of e-learning had elicited a general concern from faculty about potential loss of classroom teaching. A strong theme in the literature is a correlation between “social affordances” (*i.e.* forms of social interaction supportive of student learning) and the quality of student participation in online provision (particularly distance online programmes) (Volet and Wosnitza, 2004).

#### ***Inexperience***

The response from Carnegie Mellon University highlighted the common disparity between adoption of administrative aspects of ICT (*e.g.* the management functions of an LMS) and substantive impact on pedagogy. While 70% of faculty surveyed in 2001 used an LMS to “manage their course”, only 22% thought that their LMS use would have a positive impact on student learning. Only 13% had redesigned the course to suit the LMS. This reinforces the argument in Chapter 4 that many faculty use an LMS (the most common e-learning tool) first and foremost for administrative purposes. Consideration of the pedagogic advantages of LMS use tends to take longer to conceive and apply. Carnegie Mellon University is planning a follow-up to its 2001 LMS survey, and it will be interesting to see whether perceptions of positive pedagogic impact and rates of redesign have improved over time as faculty gain more e-learning experience.

### ***Pedagogic evaluation***

As seen above, the overall impression given by respondents as to the pedagogic impact of e-learning was a positive one. That said, in most institutions, evidence was either informal or derived from more general

pedagogic evaluation (*e.g.* user satisfaction surveys or attainment data). Systematic, multi-dimensional research into the pedagogic impact of e-learning was conspicuous by its absence. Fifty per cent of respondents to the Observatory survey answered “yes” when asked whether their institution conducted “formal evaluations of the impact of online learning on the student/faculty experience”. However, this relatively high figure may mask a diversity of practice, and, unlike the OECD/CERI survey, it did not ask for specific details.

In the OECD/CERI sample, the main examples of systematic research were evaluation associated with Carnegie Mellon University “Open Learning Initiative” (an attempt to develop cutting-edge open access e-learning materials – fundamentally informed by cognitive science and the experience of key individuals/programmes at the institution).

Other examples are associated with longstanding detailed satisfaction surveys/focus groups utilised by the UK Open University, the University of California, Irvine, the University of Maryland University College and UCLA Extension. UCLA Extension stated that in order to “invite greater institutional comparative oversight into student experience and attitudes”, quarterly reports are prepared on student evaluations of online programmes. At the University of California, Irvine, the Student Focus Group<sup>3</sup> for the “Electronic Educational Environment”, prepared an evaluation report, which evidences the increasing use of the “Electronic Educational Environment” tools among students and faculty. The University of British Columbia cited its local-led initiatives and reported some discipline-specific results: *e.g.* the mixed mode project in an introductory English course reported a positive experience; the survey in Agricultural Sciences proved positive on online course resources while learning should be complementary but not replace face-to-face time; the Faculty of Education finds that the use of e-learning has created a stronger culture of more student-centred teaching and learning, etc. Zurich University reported the instigation of a dedicated evaluation model for e-learning programmes. What was described as an “e-learning enhanced course” must be evaluated after the first semester, and must take into account both faculty and student views. The University’s e-learning Centre has developed a standardised evaluation form to facilitate this. The system was implemented in 2003, with the intention that evaluations would be repeated annually. The findings are submitted to the institution’s Executive Board.

---

3. An on-going cross-divisional collaboration between the Division of Undergraduate Education, Network and Academic Computing Services, the Registrar’s Office and University CI Libraries to enhance the online learning environment.

A number of institutions pointed to plans to evaluate e-learning more systematically (e.g. Monash University and the University of South Australia). The University of British Columbia cited evaluation work concerning specific courses, and indicated plans for systematic institution-wide evaluation through its new Office of Learning Technology. FernUniversität Hagen and Multimedia Kontor Hamburg also pointed to initiatives to expand the scope and sophistication of evaluation (e.g. LMS user tracking and video conferencing to hear the views of remote students). This sort of LMS user tracking was already employed at the Open Polytechnic New Zealand (by means of automated data collection by the LMS itself). The University of Paris Nanterre pointed to its role in HEAL (Higher Education E-learning Courses Assessment and Labelling – a project funded by the European Commission across five European countries to develop online delivery in the European credit framework) as a source of future evaluation data in this area (see Box 1.1). The Greater Mekong Sub-region Virtual University, of which the Asian Institute of Technology is a member, was said to have pedagogic evaluation of e-learning built in from the start (see Box 2.2).

Most negative comments concerned sub-optimal facilities and user inexperience, rather than direct criticism of the pedagogic reality or potential of e-learning. The point about loss of face-to-face contact is anxiety about the positioning of e-learning in relation to face-to-face provision, not a specific criticism of the former. Data from the Carnegie Mellon University survey reinforce the point that e-learning in all its forms remains a recent phenomenon in most tertiary institutions and thus pedagogic impact in terms of both conception and evaluation is necessarily in its infancy. A recent study in the United States concluded that “the longer faculty work with the web, the more likely they are to pursue and derive pedagogic benefits from the technologies, but this process may take longer and require more collaboration than anticipated” (Wingard, 2004, p. 34).

The literature on the impact of ICTs, or other non-traditional modes of delivery, on teaching and learning is ambiguous. Many studies report either positive or negative effects, and many others report no significant difference. A Canadian website lists hundreds of studies across all sides of the argument (see <http://teleeducation.nb.ca/significantdifference/>). It is simplistic to imagine that there will ever be a “magic bullet” study that shows that e-learning *ipso facto* is beneficial in tertiary education. E-learning is not a “treatment” but a large and very diverse category of treatments, and effectiveness in teaching and learning is not a single outcome but a large, varied and even contradictory array of criteria for judging effectiveness. The context of application and the variants of specific situations (e.g. students, faculty, materials, experience, technology,



discipline, level, setting, etc.) may have a significant effect on pedagogy and pedagogic outcomes (Sener, 2004). This is not an argument for not seeking to address research questions about the benefits of e-learning versus face-to-face learning; but that such a research project and the research methodologies applied would have to be contextualised. The key underlying question concerns the isolation of those variables that contribute to learning, whether online or face-to-face.

In fact, teaching and learning specialists in tertiary education are in broad agreement about what constitutes an effective student learning experience. This reflects a wholesale shift from behaviourist/cognitivist to constructivist theories of learning, emphasising the role of the learner in “making sense” of received material, and the significance of peer and student-faculty interaction. Key elements include: student motivation to learn; clear expectations – with some student input; opportunities to learn by doing; use of a range of activities (reading, writing, discussion, experimentation, hands-on); the value of peer learning; balance between tutor-led, group and independent learning; recognition that individual students prefer to learn in different ways; learning strengths and weaknesses (and for tutors to both accommodate and stretch students); the value of regular and constructive feedback; the opportunity to “make sense” of what has been learned through personal or professional application; and some form of official recognition of achievement.

Twigg (2002) and others have attempted to explicitly utilise ICT to support learning design in accordance with the above list of learning elements. The methodology holds that tertiary education programmes (particularly large-scale, introductory undergraduate provision) can achieve student learning gains, increased student numbers and reduced costs through specific redesign principles partly facilitated through use of ICT. The effect is to move away from the conjecture that use of ICT as such has a major and inevitable learning impact. Instead the assertion is that certain pedagogical approaches have the biggest impact on learning, and that use of ICT can facilitate such approaches if used in particular ways. The Pew Charitable Trusts, a major US funding body, sponsored a four-year trial of the methodology at 30 US institutions between 1999 and 2003, with encouraging outcomes.<sup>4</sup> Moreover, because Pew-funded institutions were required to implement a relatively standardised set of pedagogic and administrative practices, the variation that typically hinders straightforward assessment of impact was reduced. It is this normative approach that opens up new possibilities in causation attribution. The Twigg rationale is to move

---

4. See the website of the Centre for Academic Transformation, Programme in Course Redesign. Available at: [www.center.rpi.edu/PewGrant.html](http://www.center.rpi.edu/PewGrant.html)

beyond current uncertainty about the cost, access and pedagogic impact of greater use of ICT in higher education, and address concerns about rising costs, access pressures and teaching innovation. In addition, the aim is to assist academics, institutional managers and national policy makers with the complex task of integrating ICT into mainstream strategy, realising the benefits of past bottom-up/experimental approaches and enhancing understanding of, and options for, organisational change. The cross-institutional and cross-subject evidence from the Pew Grant Programme in Course Redesign is also important. (For an overview of this approach, see Twigg, 2002.) Twigg is now leading a follow-up initiative (Roadmap 2 Redesign) designed to disseminate redesign practice more widely and to overcome the need for special funding to kick-start the process at an institution ([www.center.rpi.edu/R2R/R2R.html](http://www.center.rpi.edu/R2R/R2R.html)). Twigg and associates have now formed a non-profit organisation to disseminate the methodology – the National Centre for Academic Transformation.

In conclusion, it is difficult to assess the pedagogic impact of e-learning. There is certainly no compelling evidence of its positive or negative impacts. However, most institutions believe that it has improved the student's learning experience. The pedagogic impacts on teaching and learning are not exclusively related with ICT use but also with other elements such as student support and new pedagogies.

### 3.2. Who decides on e-learning pedagogy (Question 4.3)

The OECD/CERI study tried to determine who controlled the delivery of e-learning as far as pedagogy is concerned. Institutions were specifically asked about the balance of power between centre-led initiatives, faculty/departmental guidance and the preferences of individual faculty members.

In general, the pattern was for e-learning to begin as discrete enthusiast-led initiatives and externally-funded projects. This is e-learning development as faculty research interest, and particular initiatives may struggle when an individual's research agenda moves elsewhere and/or when special funding runs out. The next stage saw the engagement of larger groups, moving to joint ventures by one or two departments/faculties, perhaps alongside the creation of an institutional e-learning unit (or similar) that starts to develop the outlines of a central approach. After that, the next stage was for the institution as a corporate entity to formulate some kind of e-learning strategy, and to make decisions about the extent to which branches of the institution will conform to a single blueprint. The Open Polytechnic New Zealand described an interesting "e-learning unit" arrangement. An "e-learning Office" was set up in March 2003 and is

scheduled to be dissolved in March 2005. The Office was established to shift e-learning from project status to core business. “The fixed term of the e-learning Office allows the office to operate more freely than other business units”, and assume “higher risk exposure than permanent offices”. It will be notable to see whether the Office is actually dissolved or becomes a permanent support unit.

While many institutions have developed a central strategy on teaching and learning (e.g. asserting the value of student-centred, problem-based, interactive approaches, etc.), there were virtually no cases where such a strategy directly and in detail impinged on the day-to-day pedagogic decision-making of faculty members. This probably reflects the importance of faculty autonomy and academic freedom in tertiary education.

At one extreme, the central position at Carnegie Mellon University is to facilitate maximum decentralised decision-making about adoption/nature of e-learning (as above, Carnegie Mellon West is different in this respect, adopting – initially at least – a centralised approach to pedagogy – see Box 3.1). At many other large, established universities, the balance of power was also with the academics. Alongside any central imposition of particular technologies as institution-wide standards, respondents reported that individual faculty members retained significant control over the details of mode of delivery, and whether and how to make use of available ICT. Multimedia Kontor Hamburg pointed to the fact that pedagogy as the right of the individual professor was enshrined in the German constitution. Curricula were determined through consensus across the programme or department, or in Multimedia Kontor Hamburg’s case, the consortium. At the University of South Australia, a broad policy statement had been issued to the effect that all students “will experience some part of their programme online”. What this might mean for a particular course, or whether a particular course will have any online elements, remains a matter for the individual academic.

Many campus-based universities presented a model where a central committee or committees undertook an approval role for new programmes, but where pedagogic details were largely left to individuals. Matters such as tool selection (which may have a significant effect on pedagogic possibilities) was said to be decided locally, but increasingly centrally, as institutions saw value in standardising on particular platforms (although in most cases departments/individuals were free to continue with local preferences; see Chapter 4 for more details). Many respondents reported forms of central “e-learning unit” tasked to spur innovation and share good practice, but in a context of individual academic autonomy. Use of such a unit to develop particular e-learning programmes may impose elements of commonality. At the University of British Columbia, this limited

centralisation is under review, following faculty concerns that project-based funding allocated by the unit inhibited faculty-led development. The respondent from this institution suggested that in future these funds might be allocated directly to faculties to spend as they saw fit rather than being only available by means of formal bidding to the centre. In this scenario, the central e-learning unit (called the “Distance Education and Technology Unit” at the University of British Columbia) would retain its role as disseminator of good practice, but would not be in a position to steer faculty through administration of dedicated funding. At Zurich University, alongside a general commitment to academic autonomy, all substantive e-learning development must – unless utilising free tools or paid for from non-university funds – be undertaken through the equivalent central e-learning unit. It has been argued by Slater (2005) that the traditional “final” course approval model (by committee) was ill-suited to e-learning, insofar as it did not offer earlier and more frequent quality assurance interventions appropriate for more complex, experimental and potentially costly course development.

At the other extreme was the more centralised approach traditionally taken at the Open Polytechnic New Zealand. In both the pre-e-learning era and more recently, the institution’s “Learning Materials Design Group” played a major “gate keeping” role in the design and development of learning materials. Faculty members served on development groups, and may initiate course development/re-development, but the “Learning Design Group holds control over content”. Almost all pedagogic aspects of a programme (e.g. use of a discussion tool) are pre-built at the design stage, rather than being something faculty could decide to introduce once a programme was underway. Similarly, “faculty do not have the ability to dynamically post supplementary materials”. The rationale for this centralised approach was to ensure consistent quality, and indeed this was viewed as a competitive advantage for the Open Polytechnic New Zealand. However, the flexibility and dynamism of e-learning materials (compared to say, print) forced a re-think. Final arrangements are not yet clear, but the thrust of reform was to decentralise course development to department level, and to allow faculty members (in line with certain protocols, and not affecting stated learning objectives or assessment methods) to make substantive pedagogic interventions throughout the lifecycle of a course. The advent of Moodle was said to have greatly facilitated this proposed change. It would appear that the Design Group function will retreat to a model more akin to “e-learning units” in other institutions, with a support and best practice remit – although reforms may remain at the pilot stage.

A number of dedicated virtual/distance institutions (notably the Open University Catalunya) exhibited some form of centralised pedagogic vision

and development process. The UK Open University reported that to date individual academics/departments/faculties had majority control over how e-learning pedagogy was developed, but indicated that the intention was to establish a “more centralised approach in future ... to implement ‘course models’ which will be more prescriptive in terms of the design of courses”. UCLA Extension described a faculty-dominated pedagogic/course development model, but the respondent reflected that this “tends to foster incremental, sustainable and low risk-initiatives, but may stifle boldness”. This issue was to be addressed in the institution’s next strategic planning round.

### 3.3. Guidance for students about e-learning (Question 4.4)

The availability of guidance and support for students regarding e-learning was unevenly distributed across the case study institutions.

General IT/information literacy programmes were commonplace – and were beginning to feature e-learning elements (*e.g.* use of an LMS) – as were ICT/e-learning support services for students enrolled in e-learning provision. The latter were designed to deal with technical functionality, as well as subject-based problems. The majority of respondents did not offer centralised special assistance/guidance to students about e-learning specifically (*i.e.* how to learn using various forms of ICT), although particular departments/programmes did. The Monash University respondent commented that the institution had yet to “systematically address these learning skills for off-campus or on-campus students”.

Not surprisingly, guidance or students support for e-learning is provided at institutions with a more developed online presence and sufficient experience of providing e-learning. A number of institutions (*e.g.* UK Open University, Open University Catalunya) pointed to the use of a generic “introduction to learning online” course, course-based online assistance of various kinds, and the availability of academic/other staff to answer student questions throughout their experience. The Open Polytechnic New Zealand described online assistance as standard across all relevant programmes. “The online support provided is designed to guide learners through the full cycle of the study year, from getting started to successfully completing assessments, to final exams.” The institution also offered online FAQs and study tips, “how to” pages and so on. The Open University Catalunya respondent emphasised the role of the academic tutor, responsible for academic and pedagogical matters. At the University of South Australia, all students had access to the “Learning Connection” website, a resource for student learning; and all new students were given a copy of a CD-Rom

“Online at University South Australia”, a reproduction of some University South Australia online courses for offline access.

At UCLA Extension all students were strongly encouraged to take an LMS orientation course prior to commencing an e-learning programme, and each programme was assigned a “Course Manager”, trained to handle service, policy and technical matters. The aim was to ensure that all non-learning/content difficulties were dealt with swiftly and smoothly to allow “students to concentrate on the learning process, and not anxiety over technology”. The University of Maryland University College has made its LMS and online library introduction courses mandatory, and made technical support and library services available 24/7. At Carnegie Mellon West, mentors were employed to guide students through the e-learning process, and shadow virtual work teams (reflecting the story/team/problem-based pedagogic approach followed at that institution: see Box 3.1). In some cases, the central “e-learning unit” (or equivalent) ran some form of “introduction to e-learning/distance learning”. The University of British Columbia emphasised that a point of good practice in instructional design was to ensure that a new user could make full use of an online course with minimal introduction and experience.

A recent study of over 4 000 students at 13 higher education institutions in the United States recommended greater attention be paid to student IT literacy more generally. It was found that in general students “know just enough technology functionality to accomplish their work ... they do not have in-depth application knowledge or problem-solving skills” (Borrenson Caruso, 2004, p. 1). Sixteen per cent of faculty surveyed said they had decreased LMS use because students found the technology difficult to use (Kvavik *et al.*, 2004, p. 83-84). The report notes that “few studies elaborate effective practices in this area”, and debates the merits of institution-wide threshold standards on entry, required courses for credits, peer learning and the balance between generic and discipline-specific foci.

In conclusion, students appear to have a limited IT literacy: availability of guidance and tutorship is generally provided at institutions with a developed online presence.

### 3.4. Material and learning objects (Questions 4.8 and 6.6)

Learning objects are viewed as a promising way forward for e-learning as they can potentially cut costs and revolutionise pedagogy. The OECD/CERI survey asked whether institutions had a strategy to support the development of learning objects and the rational and challenges. While it is commonplace for faculty to utilise a third party textbook, or for some institutions to obtain rights to use/re-purpose third party materials, the

notion of a “learning object economy” goes further. “Learning objects” has become a widely used term to describe a model of materials development that manipulates and combines/re-combines discrete “chunks” of material designed to be re-used and re-purposed for different needs. There is no fixed definition of what constitutes a learning object, and an object may range from a single chart or diagram to an entire course. Various tools are available and various initiatives underway to tag/specify objects in a consistent manner to ensure maximum flexibility of use and re-use, and interoperability between platforms. The “learning object” model is widely seen as offering a potentially efficient approach to e-learning materials development (*i.e.* reduced faculty time, lower cost, higher quality materials, more faculty time for teaching), and an enhanced student experience in terms of pedagogic impact (Roy, 2004). The latter stems from the customisation and media-rich potential of the learning object model.

The “learning object” model raises many issues, like *e.g.* copyright, the range of actors in and “location” of the creative process, creation versus adoption. Learning objects foreshadow a model of materials/course development that departs from the craft-model where the individual academic is responsible for majority of the work (and where courses are generally created whole, rather than compiled from pre-existing materials), and is rather one where the individual assembles a course largely or entirely from third-party materials, or even adopts an entire third party course. Aside from private institutional collections, there are various public learning object repositories that individuals may draw upon (*e.g.* MERLOT – [www.merlot.org](http://www.merlot.org); e-teaching – [www.e-teaching.org](http://www.e-teaching.org)).

### ***Production and adoption of learning materials***

A number of institutions are grappling with different approaches to the production of learning materials. Many learning management systems offer authoring functionality and “coursepack/e-pack” creation, empowering individual faculty members; and institutional “e-learning units” (or equivalent), often backed by central funding/strategy are building a range of development and support functions. In some cases (*e.g.* FernUniversität Hagen), a central unit administers a competitive development fund that faculties/individuals may bid for. No sample institution reported major use of learning objects, although many expressed interest and cited early plans/trials. Across respondents, there was a common sense that the learning object model had potential but was untested. The University of South Australia said it had adopted a “wait and see” policy. One of the most active institutions was the University of British Columbia. Through a competitive central fund, the University has invested over CAD 300 000 in a range of learning object projects, and has appointed a co-ordinator to support and link

them. The University of British Columbia has adopted the CAREO repository developed at the University of Calgary, and funded by the national Canarie ICT fund; and has experimented with MIT's D-Space system (D-Space is an online searchable archive of institutional documentation, with research papers as the main focus. The system is available for use by other institutions).

As developed below in Chapter 4, the Observatory survey found low-level adoption of content management systems (*i.e.* software that coordinates the creation and use of learning objects of various kinds). Overall, the rate of institution-wide adoption climbed slightly from 4% in 2002 to 6.6% in 2004. However, this functionality was widely cited as a matter for future development. The bulk of institutions (61% – down from 64% in 2002) reported implementation of a content management system as a strategic priority on a one- to five-year horizon. A good example of a university – or rather a state university system – that has addressed the learning object model head-on is the University System of Georgia in the United States. Dissatisfied with a website that simply brought together all online first and second year undergraduate courses, the University System of Georgia's "Advanced Learning Technologies Unit" set about disaggregating the courses into learning objects and grouping objects by subject/topic/learning objective (the Sharable Content Object Reference Model [SCORM] compliant to aid re-use – see below). The objects were stored in a mainstream commercial LMS. The aim is to reduce the time and cost of course development for first and second year undergraduate provision – although formal return-on-investment data have yet to be generated (for more information, see Lasseter and Rogers, 2004).

### ***Interoperability standards***

Question 4.8 also asked about use of international interoperability standards. Such standards are seen as critical to ensuring the smooth flow of data between diverse applications, and enabling more detailed and consistent data mining within content repositories. SCORM (Shareable Content Object Reference Model) and IMS (Instructional Management Standards) have emerged as the world's two leading initiatives in the learning sphere. SCORM was developed by the US Department of Defence as a way to connect the disparate systems and materials generated by third parties in support of the organisation's "Advanced Distributed Learning" initiative – an in-house training and development push. The "reference model" part of SCORM refers to the bringing together of various specifications or standards (or parts of these) that describe the totality of the creation, deployment and behaviour of learning objects in an LMS (*i.e.* how the various discrete specifications work together) ([www.adlnet.org/index.cfm?fuseaction=scormabt](http://www.adlnet.org/index.cfm?fuseaction=scormabt)). The IMS Global Learning Consortium was founded in 1997, bringing together a range of technical standards bodies, vendors, governments and education



institutions/agencies to collaborate on the development of standards for the interoperability of learning resources. An example of an IMS specification is IMS Enterprise, a specification for transferring data from one application to another (e.g. student records from a learning management system into a central student records system). Generally speaking, SCORM and IMS are complementary, and both utilise “core” metadata (notably “Learning Object Metadata” from the Institute of Electrical and Electronics Engineers – IEEE). Various updates of SCORM have featured in particular IMS specifications. The newly announced model by the Advanced Distributed Learning Initiative is the Content Object Repository Discovery and Resolution Architecture (CORDRA), in which Carnegie Mellon Learning Systems Architecture Lab participates. The CORDRA is designed to bridge the worlds of learning content management and delivery, and content repositories and digital libraries.

Respondents to the OECD/CERI survey offered little detail in this area. Most acknowledged the existence of SCORM and IMS, and some indicated that their LMS was compliant in some sense. Only one (UK Open University) said that it was an active contributor to the process (IMS). There was no sense that lack of appropriate standards was the problem, rather that rationales and processes for systematic compliance (*i.e.* how and why to embrace an object economy) were rarely clear across the board. Multimedia Kontor Hamburg said that the intention, as part of its efforts to improve the quality of learning materials, was to make international standards mandatory for all e-learning development. As noted in Chapter 4, the Observatory survey found low-level adoption of SCORM/IMS.

### ***Issues around learning objects***

A number of OECD/CERI respondents pointed to concerns and issues that had inhibited or might inhibit the widespread adoption of learning object economies in tertiary education. Some were critical of the “building-block” analogy of learning objects as the future of learning materials. A key pedagogical challenge was to reconcile the notion of the decontextualised learning object with the context of a specific learning encounter. To quote the Carnegie Mellon University respondent: “Effective courses are often facilitated by having a ‘theme’ that runs throughout the course. Themes give students the ‘big picture’ of the subject matter, e.g. a physics instructor may choose to use conversation principles as a thread that ties together all the parts of an electricity and magnetism course. Themes can also follow from single examples that are treated with greater precision and complexity as students develop more knowledge of a subject. This need for a thread to tie a course together militates against breaking the course into learning objects.” The UK Open University respondent made the same point. The argument here is that the pedagogical value of discrete learning objects may be over-

rated. The Open Learning Initiative at Carnegie Mellon University, an attempt to develop online courses for use by individual learners not enrolled in formal education, retains a learning object conceptualisation, but those involved hold the view that a lot more work needs to be done to ensure the pedagogical effectiveness of the object model.

Another important issue was faculty motivation. Is this attempt to standardise content between institutions a matter of simple efficiency, or a “dumbing down” of tertiary education and a brake on academic autonomy? Is a learning object model in conflict with prevailing reward/career structures? The University of British Columbia respondent commented: “It is a challenge to convince instructors that reusable resources exist that may be of use in their practice.” As noted above, the traditional “craft-model” of materials development generally pulls against adoption of third party materials, or making materials available for use by others. The Monash University respondent commented that it is often cheaper and less complicated for faculty to develop their own materials than attempt to gain copyright clearance for those of third parties. While a growing number of copyright cleared materials repositories are in operation (*e.g.* XanEdu in the United States), many charge a fee, and in all cases material that a particular academic wishes to include may not be in the repository. Another respondent commented that only when development of learning objects met a specific departmental need (*e.g.* cost reduction) was faculty buy-in sufficient.

The counter-argument to this is that such a perspective takes an overly content-centric view of teaching, and over-plays the contribution of the individual. Slater has argued that content is “slowly acquiring a prominence more aligned with its perceived worth” (Slater, 2005, p. 16). By this is meant a realisation that content by itself plays only a relatively minor part in the student experience. The Massachusetts Institute of Technology’s (MIT) decision to gradually place all course content online for free is an indication of the relative value of place, faculty, face-to-face interaction, assessment, accreditation, research environment, etc., which MIT students are willing to pay such a high premium for. Particularly at undergraduate level, in most subjects, content is broadly comparable between institutions, at least within the same country. Moreover, few institutions would claim to be at the leading edge in every subject taught within their “walls”. A reduced focus on content creation shifts the emphasis onto facilitation of learning, guiding students with the assistance of materials. One vision is for most institutions to rely on world-class materials developed by third parties (*e.g.* the handful of leading universities in each subject), and only invest in content creation where an individual/department has something genuinely unique to contribute. Carnegie Mellon University’s Open Learning Initiative might be

viewed as an example of this approach (see Box 3.2). The aim of the Open Learning Initiative is to develop high-quality materials (based on the subject and pedagogic expertise at Carnegie Mellon University) and make these available (either free or for a fee) to third parties. The question is how other institutions might adopt such materials (on a whole course basis, or in smaller chunks), whether faculty members/departments will in practice agree to take on standardised content from elsewhere, and how much local customisation will be deemed to be necessary (possibly undermining the entire model). The US leads the way in this initiative. In addition to the case study institution, Carnegie Mellon University's Open Learning Initiative, others include the MIT's Open courseware, Rice University's Connexions, Utah State University's Open Learning Support, Footfill-De Anza Community College District's Sofia Open Content Initiative and Eastern Oregon University's Eduresources Portal.

The University of British Columbia respondent suggested that given the challenges of intellectual property and technical complexity related to standards, "the model of faculty-driven contribution of resources appears to be a non-starter", at least by itself. While the flow of materials from faculty was said to be "disappointing", a number of strategies to address this shortfall exist – such as streamlining processes, raising the visibility of available support, and drawing on the resources created by the university's distance education and instructional support units. It is also hoped that engaging the community through workshops that attract attention to well-stocked collections that do exist (such as MERLOT and the National Science Digital Library – NSDL [US]) will demonstrate the teaching and learning value of well-designed shareable learning resources. University of Maryland University College reported active central tagging of e-learning materials in anticipation of potential future needs, to ensure the institution was able to utilise an object economy as and when this was deemed appropriate. This was being done at undergraduate level, where a central instructional design team (heavily involved in the development of undergraduate online provision) had identified and tagged "learning objects" across over 400 courses. By contrast, at graduate level, despite a range of central materials development resources (*e.g.* the Centre for the Virtual University and the Faculty Media Centre – both educational media production units), to date there has been no co-ordinated effort to tag such materials to facilitate re-use across courses.

Other concerns raised about some forms of learning object included cost – cost to the student of use of third party e-packs of materials often available through adoption of a proprietary LMS; and cost to the institution in terms of development of sophisticated multimedia production facilities. It has been argued that smaller institutions may be unable to bear such costs (Paulsen,

2003). Such a scenario points to many institutions adopting a less content-centric, less craft-model approach to materials development, and a greater willingness to adopt third party materials.

### Box 3.2. Open Learning Initiative at Carnegie Mellon University

The Open Learning Initiative (OLI) started in the autumn of 2002, funded by a grant from the William and Flora Hewlett Foundation. The Foundation's interests include providing access to high-quality post-secondary education and educational materials to those who otherwise would be excluded due to geographic, economic or time constraints. These aims are in concert with the research and teaching interests of a number of faculty at Carnegie Mellon with considerable experience of producing high-quality online education. The result has been a dual focus for the Open Learning Initiative, incorporating both product delivery in the form of online courses and research on how to make such courses more and more effective in facilitating learning.

The objectives of the OLI project are to:

- a) Design online courses and course materials using *best current knowledge* from the cognitive and learning sciences.
- b) *Document the methods* of course development and the assumptions underlying the application of results and methods from the cognitive and learning sciences.
- c) Establish and implement procedures for *routinely evaluating* the courses and use that formative evaluation for corrections and iterative improvement.
- d) Feed information from these evaluations back into the research communities that have postulated the theories on which the designs are based upon.
- e) Develop *communities of use* for OLI courses that will not only deliver the courses but also contribute to their continued development and iterative improvement.
- f) *Explore economic models* for combining free access to the courses for individual learners with commercial access to the courses for degree-granting institutions.

As of February 2005, there are six subject areas for which there are either full courses or substantial course materials available through the OLI web site (see below): Causal and Statistical Reasoning, Statistics, Economics, Logic, Biology, and Physics. Work is underway to add courses in Calculus, French, Statistics, and Research Methods. Material from these additional courses was planned to appear in the spring of 2005.

The project website can be found at: [www.cmu.edu/oli](http://www.cmu.edu/oli)

*Source:* Smith and Thille (2004).

### *Sharing learning objects*

Given that sharing learning objects is so important for the efficiency of the learning object economy, how common is the practice? Question 6.6 asked whether institutions had established any internal mechanisms to share learning materials. The common response concerned general co-ordination work of e-learning units (or equivalent), “show and tell” sessions, special interest groups, and informal contact between faculty members (often at or about the design stage, rather than the finished materials themselves). Only one institution (FernUniversität Hagen) cited the existence of an in-house learning object repository, although a number (*e.g.* Monash University, UK Open University) pointed to developments in that direction. The Virtual University of Tec de Monterrey described a system called “Digital VideoTec”, a repository of All Audio-Visual Material Ever Created by the Institution. At the University of British Columbia, learning object project co-ordinators were part of a “Learning Object Steering Committee”, and often shared resources and experience. At Zurich University, each faculty has an “e-learning Co-ordinator” tasked to facilitate communication between faculty members. The Open University Catalunya stated that while a learning object model as such was not in place, institutional policy was to make all learning materials available to faculty and staff across the institution.

The most obvious example of a sample institution in membership of a collaborative group for the production of e-learning materials was the University of British Columbia. In fact, the respondent cited several networking initiatives judged to have assisted the university in its development of e-learning materials. The University of British Columbia is a member of edusource, Canada’s network of learning object repositories (see Box 3.3). The aim of edusource is to gradually link existing repositories, work towards their common searchability and “provide leadership in the ongoing development of the associated tools, systems, protocols and practices that will support such an infrastructure”. The University of British Columbia is also active in the US National Learning Infrastructure Initiative (NLII), part of EDUCAUSE (a leading network concerned with use of ICT in higher education). NLII, an initiative to use ICT to improve teaching and learning in higher education, features as “Learning Object Virtual Community of Practice”. Through edusource, the institution is a secondary partner in MERLOT, the US repository. Finally, the respondent cited the University of British Columbia’s membership of Universitas 21, the group of research-intensive universities worldwide. Networking opportunities within this group were said to have been “immensely helpful in terms of developing a community of practice among professionals working to develop learning object strategies, and in terms of developing and selecting tools”. The University of California, Irvine is also a member of MERLOT. Of course, some repositories, such as MERLOT, admit individual members, as well as institutions; and some

respondents indicated that they were aware of the involvement of faculty members in such activities. Only two institutions specifically indicated that membership of learning materials co-operatives was not a favoured approach. Carnegie Mellon University said that from their perspective a cost/benefit analysis was not favourable, and the University of Maryland University College was committed to in-house production.

In conclusion learning objects are generally seen as immature tools. Although many institutions pay attention to their potential, none of them reported major use. The learning object economy faces several challenges: interoperability, knowledge management issues as well as, possibly, a conflict with traditional academic autonomy and rewarding systems.

### **Box 3.3. Edusource – Canadian Network of Learning Object Repositories**

Edusource is an attempt to link and make interoperable a wide range of learning object repositories from across Canada, and to advance the development of associated tools and mechanisms to facilitate use of learning objects by educators. Primary partners in the project include universities such as Athabasca University (a leading distance learning institution) and University of Waterloo (a research-intensive campus university with a tradition of leadership in learning and technology), as well as provincial consortia such as TeleEducation NB (New Brunswick's distance learning portal and development hub) and Netera (Alberta's information infrastructure corporation, bringing together government, universities and companies). Secondary partners include many other Canadian universities and colleges (including University of British Columbia). Edusource is funded by CANARIE (Canada's Internet development body) and partner institutions.

The project is still under development but goals include the creation of a learning object evaluation system (assisting educators to judge the nature and potential of an object), and the formulation of re-purposing criteria to maximise re-use possibilities. Primary partners have developed or are working on key aspects of the edusource vision. To facilitate interoperability, edusource has adopted CANCORE, a Canadian metadata schema (compatible with emerging international standards, such as IMS).

Mainstream broadband is seen as vital to a vibrant learning object economy, and so edusource is forging links with major national and provincial telecommunications initiatives. The long-term aim is to make the meta-repository available free to all Canadians (although per-object access will be subject to particular licensing criteria, depending on source). A variety of funding models are being assessed including memberships, subscriptions, support and service contracts, licenses and pay-per-use. All material will be available in the two national languages: English and French.

The project website can be found at: [www.edusource.ca/](http://www.edusource.ca/)

### 3.5. Intellectual property (Question 6.9)

Who owns the learning objects or material collected and used for e-learning? Are institutions addressing this intellectual property issue? The Observatory survey found that 39% of institutions had a “formal policy on intellectual property rights associated with online learning materials and resources”, with a further 29% saying that such a policy was under development. Not surprisingly, those institutions more active in e-learning were more likely to have such a policy. For example, the positive response from Asia-Pacific respondents was 76%, compared to 33% for Canada and 36% for the United Kingdom.

The OECD/CERI survey gives a good overview of the disparity of arrangements in this area. In some cases, answers were clear cut – either the institution or the course creator owned such materials, and this was specified in institutional policy and/or national legislation. At some institutions (*e.g.* Monash University, Asian Institute of Technology), this question of ownership was said to be in flux. In the United States, it is commonplace for faculty members to own all teaching and learning materials they create in employment at an institution, while in, for example, New Zealand, the law states that all creative work undertaken while in employment belong to the employer. A number of respondents (*e.g.* University of British Columbia, University of Maryland University College) described a situation where ownership resided with faculty unless “substantial university resources” were deployed in the material’s creation. In such cases, a contract was signed setting out the rights of both parties. For example, at the University of British Columbia all courses developed in conjunction with the “Distance Education and Technology Centre” begin with a contract between the Centre, the author and his/her department. In general, the faculty member retained the right to use ideas and content in other formats, and retained ownership of anything created prior to the course being developed. The institution owns the final materials, including websites. The University of British Columbia respondent indicated that this arrangement was controversial, and was subject to legal challenge by the institution’s Faculty Association. Since the survey was submitted, the legal challenge was settled in favour of the Faculty Association.

UCLA Extension made a distinction between the curricula (owned by the institution) and the “expression of course content” (*i.e.* any personalised act of instruction, including associated materials) owned by the instructor. While the institution was free to develop the curricula as it sees fit, it could not (without express permission) pass personalised materials to another instructor. This respondent indicated that their institution did not wish to appropriate personalised materials for use by other instructors. It was argued that UCLA

Extension’s reputation was partly based on the expertise of individual instructors, and that “canned lectures”, that is common materials delivered by multiple instructors, were deliberately avoided on quality grounds. Carnegie Mellon University commented that a faculty ownership policy had caused some complications when the institution wished to use certain materials; and University of California, Irvine made reference to negotiations with particular faculty to clarify rights to certain materials. At the Virtual University of Tec de Monterrey, a dedicated “logistics” department was tasked with negotiating rights from authors at the parent institution.

At Multimedia Kontor Hamburg, the institution owns the rights to materials for two years (with an extension option) – if those materials were created using public funds (*i.e.* including paid employment at a member university). At Zurich University, the institution owns the rights to publicly-funded materials indefinitely. At the Open Polytechnic New Zealand, the UK Open University, the University of South Australia and the University of Paris Nanterre, all materials developed by employees were owned by the institution. The Open University Catalunya preferred to own materials (to enable ease of re-use), but was open to negotiation with authors.

The Carnegie Mellon University respondent raised an important point about collective creation and ownership. Many e-learning materials were created by a team consisting of instructional designers and technologists as well as academics. It was said that many faculty “think” they own materials they have contributed to while in the institution’s employment, and may fail to acknowledge the claims of others. The University has developed a policy of clear attribution. This institution also mentioned the appointment of a central “copyright officer” to handle faculty questions about the right to use third party materials. Not least because the University operates in a number of offshore locations with diverse legal positions on such matters, the individual was overwhelmed with work. A revised structure has now been put in place, with a designated copyright officer in each faculty as a “first filter” for queries, allowing both central and devolved support.

In all cases, the ownership of intellectual property of e-learning material appears as important and complex. Finding the right balance between institutions, academics and technologists will be one of the challenges for the further development of e-learning objects and materials.

### 3.6. Conclusion

The overwhelming view of respondents was that e-learning had a broadly positive pedagogic impact. However, few were able to offer detailed internal research evidence to this effect. Indirect evidence (*e.g.* student satisfaction surveys, retention and attainment data) were widespread. More generally, work



at Carnegie Mellon University and under the auspices of the Centre for Academic Transformation at Rensselaer Polytechnic Institute are leading examples of research-led programme redesign efforts that have produced strong evidence of the positive pedagogic impact of certain forms of e-learning. Indeed, redesign (*e.g.* use of pre-existing software, third party materials, peer/automated feedback, economies of scale) would appear to be crucial in order for e-learning to obtain key pedagogic benefits and cost efficiencies. Crucially, both initiatives are also concerned with dissemination of methodology, offering other institutions valuable sources of expertise.

E-learning opens up the possibilities of redesign, not least through the “learning object” model. Sample institutions expressed considerable interest in the learning object model but were faced with a range of primarily cultural and pedagogical challenges to widespread adoption. These included tensions between the decontextualised object and the contextualised learning encounter/programme, faculty unwillingness to use third party materials and object access, re-use and copyright concerns. A number of institutions pointed to early work to disaggregate in-house materials, with explicit and widespread re-use seen to be some way off.

At present, it is plausible to say that e-learning continues to grow in scale and significance in the absence of an explicit learning object economy. This partly reflects the influence of a “conventional” course development paradigm, but is also indicative of infancy (and thus poor utility) of any such economy. Over time, one might expect cost, faculty time and competitive concerns (alongside an ever-more efficient learning object model) to drive e-learning in a “learning objects” direction.

## *References*

- Benke, M., T. Bishop, C. Scarafioti, C. SchWeber and M. Thompson (2004), “Promoting Student Support and Satisfaction in Online Learning”, Sloan-C series, CD-ROM Vol. 5.
- Borrenson Caruso, J. (2004), “ECAR Study of Students and Information Technology, 2004: Convenience, Connection and Control”, *ROADMAP – Tools for Navigating Complex Decisions*, EDUCAUSE Centre for Applied Research, Boulder, Colorado.

- Garrison, D.R. and M. Cleveland-Innes (2004), “Critical Factors in Student Satisfaction and Success: Facilitating Student Role Adjustment in Online Communities of Inquiry”, Sloan-C series, CD-ROM Vol. 5.
- Hartman J., C. Dziuban, P. Moskal, S. Sorg and B. Truman (2004), “Three ALN Modalities: An Institutional Perspective”, Sloan-C series, CD-ROM Vol. 5.
- Harwood J.T. and G. Miller (2004), “Using ALN in a Blended Environment: Implications for Institutional Planning”, Sloan-C series, CD-ROM Vol. 5.
- Kvavik, R., J. Caruso and G. Morgan (2004), “ECAR Study of Students and Information Technology, 2004: Convenience, Connection and Control”, Research Study from the EDUCAUSE Centre for Applied Research, Boulder, Colorado.
- Laster, S. (2004), “Model-driven Design: Systematically Building Integrated Blended Learning Experiences”, Sloan-C series, CD-ROM Vol. 5.
- Lasseter, M. and M. Rogers (2004), “Creating Flexible e-Learning Through the Use of Learning Objects”, *EDUCAUSE Quarterly*, Vol. 27, No. 4.
- Paulsen, M.F. (2003), “Online Education and Learning Management Systems: Global E-learning in a Scandinavian Perspective”, NKI Forlaget, Oslo.
- Roy, M. (2004), “Learning Objects”, report from the EDUCAUSE Evolving Technologies Committee, EDUCAUSE, Boulder.
- Sener, J. (2004), “Escaping the Comparison Trap: Evaluating Online Learning in its Own Terms”, *Innovate – Journal of Online Education*, Vol. 1, No. 2 (<http://innovateonline.info/index.php?view=article&id=11>).
- Shea, P., A. Pickett and W. Pelz (2004), “Enhancing Student Satisfaction through Faculty Development: The Importance of Teaching Presence”, Sloan-C series, CD-ROM Vol. 5.
- Slater, J. (2005), “Spent Force or Revolution in Progress? eLearning after the eUniversity”, Oxford, Higher Education Policy Institute, sponsored by webCT.
- Smith, J. and C. Thille (2004), “The ‘Open Learning Initiative’ – Cognitively Informed E-learning at Carnegie Mellon University”, Observatory on Borderless Higher Education. Available at: [www.obhe.ac.uk/products/reports/](http://www.obhe.ac.uk/products/reports/)

- Swan, K. (2004), “Learning Online: A Review of Current Research on Issues of Interfact, Teaching Presence and Learner Characteristics, Sloan-C series, CD-ROM Vol. 5.
- Twigg, C. (2002), “Improving Quality and Reducing Costs – Designs for Effective Learning Using Information Technology”, Observatory on Borderless Higher Education ([www.obhe.ac.uk/products/reports/](http://www.obhe.ac.uk/products/reports/)).
- Volet, S. and M. Wosnitza (2004), “Social Affordances and Students’ Engagement in Cross-national Online Learning: An Exploratory Study”, *Journal of Research in International Education*, Vol. 3, No. 1, pp. 5-29.
- Wingard, R. (2004), “Classroom Teaching Changes in web-Enhanced Courses: A Multi-institutional Study”, *EDUCAUSE Quarterly*, Vol. 27, No. 1, pp. 26-35.

## Chapter 4

# IT infrastructure: use of learning management system (LMS) and other applications

This chapter gives an overview of the adoption and usage of different software and techniques. It first focuses on the adoption, use and challenges of learning management systems (LMS), that is, software designed to provide a range of administrative and pedagogic services related to formal education settings (*e.g.* enrolment data, access to electronic course materials, faculty/student interaction, assessment). It reports the reasons for institutional decisions to use proprietary or open source systems, to prefer in-house developments or commercial outsourcing, and points to the challenges for further development, notably in terms of integration and functionalities. It also explores investment in IT infrastructure and usage of applications other than LMS by institutions in order to support or complement e-learning: IT networks; student portals; use of other teaching and learning related applications aside from an LMS; the extent to which administration (*e.g.* admissions, registration, fee payment, purchasing) has moved online; integration of academic and administrative systems; computer/network access for faculty and students; and strategy on online journals and e-books.

To what extent have ICTs penetrated the tertiary education sector? Is access to IT infrastructure and to appropriate software a barrier to e-learning development? This chapter gives an overview of the adoption and usage of different software and techniques. It first focuses on the adoption, use and challenges of learning management systems (LMS), that is, software designed to provide a range of administrative and pedagogic services related to formal education settings (*e.g.* enrolment data, access to electronic course materials, faculty/student interaction, assessment, etc.). It documents the increasing adoption of LMS and reports the reasons for institutional decisions to use proprietary or open source systems, to prefer in-house developments or commercial outsourcing, and points to the challenges for further development, notably in terms of integration and functionalities (4.1-4.2). While LMS adoption appears as one of the prominent features of e-learning development in tertiary education worldwide, the OECD/CERI and Observatory surveys reveal only limited impact in the classroom so far. The remainder of the chapter explores investment in IT infrastructure and

usage of other applications than LMS by institutions in order to support or complement e-learning: IT networks (4.3); student portals (4.4); use of other teaching and learning related applications aside from an LMS (4.5); the extent to which administration (*e.g.* admissions, registration, fee payment, purchasing) has moved online (4.6); integration of academic and administrative systems (4.7); computer/network access for faculty and students (4.8); and strategy on online journals and e-books (4.9). It will show that at many OECD/CERI case study institutions, development plans relating to IT infrastructure concentrated on extension of services (*e.g.* wireless) operation-wide, bandwidth management (to both offer sufficient capacity to accommodate greater use of audio and video, but also to manage student use) and overall quality of service.

#### **4.1. Use of learning management systems (LMS) (Questions 2.2-2.6)**

What is a learning management system (LMS)? In this book, the term LMS refers to software designed to provide a range of administrative and pedagogic services (related to formal education settings *e.g.* enrolment data, access to electronic course materials, faculty/student interaction, assessment, etc.). The most common such systems worldwide are Blackboard and webCT. Other terms used to describe such applications include “virtual learning environments” and “course management systems”. Some use LMS to refer to a broader functionality that encompasses the above activities plus a range of other administrative tasks (*e.g.* relating to fee payment, human resources, fund raising, etc.); while others describe this broader configuration as a “managed learning environment” or with reference to use of adapted ERP (Enterprise Resource Planning) or CRM (Customer Relationship Management) systems. Use of LMS in this report refers to the narrow definition outlined above. Use of other applications, including ERP-type systems, is discussed in Sections 4.3-4.7.

##### ***Data from the OECD/CERI survey***

Almost all sample institutions reported use of a “learning management system” (LMS). Table 4.1 presents the breakdown by type and number.

Only two sample institutions reported no current LMS use. One was predictable insofar as the institution had little experience with online learning. The other was a distance learning university with reportedly high levels of online presence across many of its programmes. This was a reminder that the LMS is not essential to online delivery. The institution concerned had, up to that point, made extensive use of email and online conferencing. However, it was notable that both institutions said that adoption of an LMS was under active consideration. So while not essential

to online delivery, these findings confirm the view that the LMS has become almost synonymous with e-learning in tertiary education. A few institutions, particularly those with less e-learning experience, made reference to a greater diversity of systems ostensibly under the LMS label, many of which performed specific functions rather than the broader construct of the typical LMS. These are included below.

**Table 4.1. Type and number of LMS**

Institution	Type	Institution-wide LMS	Local LMS	Type of LMS
Multimedia Kontor Hamburg	C	Clix Campus, WebCT	There are several others at faculty level	Proprietary; Clix Campus
Zurich University	C	OLAT, WebCT, BSCW	BSCW, Hyperwave, IBT Server	Open source, proprietary
Kyoto University	C	Under consideration	Under consideration	Undecided
University of Sao Paulo	C	CoL	Panda, FEA-EAD Online, CyberTutor	In-house
Carnegie Mellon University	C	Blackboard	CMU Online, OLI LMS	Proprietary; both local are in-house and at least OLI is open source
Aoyama Gakuin University	C	Dot campus	Financial Trading System	Proprietary
Asian Institute of Technology	C	VClass	Various (unidentified)	Open source (in-house); local use includes proprietary
University of California, Irvine	C	Electronic Education Environment, Moodle	None	In-house, open source
University of Paris Nanterre	C	E-Comete	None	In-house, open source
Monash University	C	WebCT	InterLearn	Proprietary, in-house
University of British Columbia	C	WebCT	None	Proprietary (but first developed in-house)
University of Maryland University College	M	WebTyco	None	In-house
FernUniversität Hagen	D	Platform 2003	None	In-house, open source
UK Open University	D	Under consideration	None	Undecided
UCLA Extension	D	Blackboard	None	Proprietary
Open Polytechnic New Zealand	D	Online Campus (moving to Moodle from mid-2005)	Blackboard (plan to discontinue from mid-2005)	In-house; proprietary. Open source from mid-2005
University of South Australia	M	UniSAnet	None	In-house
Virtual University of Tec de Monterrey	D	Blackboard, WebTec,	Docent, WebCT	Proprietary, open source (in-house)
Open University Catalunya	D	UOC CV	None	In-house (proprietary)

Note: C = Campus-Based; D = Distance; M = Mixed.

Source: OECD.

All other institutions have adopted at least one institution-wide LMS. Seven institutions (37%) reported use of a single, institution-wide LMS, and no local use of other systems. Three institutions cited two institution-wide systems (and again, no local use of other systems). The remainder combined simultaneous institution-wide and local activity.

Ten institutions (53%) reported use of proprietary systems, eight had installed such a system as at least part of an institution-wide arrangement, but only two of these positioned such a system as sole institution-wide application. The proprietary system used by one institution in fact began life as an in-house system at that very institution (webCT at University of British Columbia). Seven institutions made specific reference to current use of open source systems, and a further four implied that such a system was available. Four institutions made use of both proprietary and open source systems, but only two of these employed both types as joint institution-wide standards. No institution employed an open source system as sole institution-wide standard, and only one did so in combination with an in-house system. However, the Open Polytechnic New Zealand plans to drop Online Campus and Blackboard by mid-2005, and adopt Moodle (open source) from then on as sole institution-wide standard. Some institutions suggested that commitment to the incumbent LMS was stable, while others pointed to an ongoing search for an alternative.

A number expressed interest in emerging large-scale open source models (*e.g.* the new Sakai project in the United States (see Box 4.1). The Open Polytechnic New Zealand has been awarded government funding to lead a national consortium (now encompassing 20 institutions, including universities, polytechnics and private providers) to develop an open source “e-learning platform” (encompassing a portal and content management system, as well as core LMS). The project is also looking at how the consortium might organise hosting, helpdesk, technical support and staff development for member institutions (see Box 7.1 for an overview of New Zealand’s e-learning strategy). It was envisaged that this system will eventually supersede the current LMSs at the institution. The University of Sao Paulo cited local government plans to fund a common LMS for all institutions in the area.

Eleven institutions mentioned in-house systems, six of which functioned as the sole institution-wide standard. An in-house system might be open source (in the sense that code is made available to third parties at no cost), or may be proprietary to the institution. One institution has made extensive adaptations to a third party open source system, effectively turning it into a “proprietary” system, but the terms of the original open source license may mean that the product remains open source. In-house systems were found across the institutional online development spectrum. Five of the most active

institutions reported in-house LMS development, but so did more mainstream and less developed institutions. The Open University Catalunya respondent noted that the institution's in-house (proprietary) LMS had been sold to other universities (*e.g.* Quilmes National University in Argentina) and to the private sector.

While the sample is small, these findings suggest that while leading proprietary vendors such as Blackboard and webCT have attained significant market share in tertiary education (and were the only proprietary systems to be mentioned by more than one institution), many universities have invested considerable resources in local systems. This offers a view of the LMS as valuable intellectual property for an institution, customised to local needs; as opposed to the mass market (if increasingly customisable) model of the leading commercial vendors, and the open source model of shared development. There was a pattern whereby distance learning/mixed mode institution generally reported in-house systems, while campus-based institutions more often made use of proprietary solutions. But there were a number of exceptions. It is interesting to speculate whether this scale of in-house development signifies valuable institutional autonomy over processes that are increasingly at the heart of instruction, or wasteful duplication of effort.

### ***Data from the Observatory survey***

The Observatory survey asked both whether respondents had implemented one or more LMSs (and whether implementation was institution-wide or local), and which systems were in use (see Table 4.2).

The figures are testament to the widespread and sustained perception of the value of institution-wide adoption of learning management platforms. Seventy-three per cent of respondents in 2004 (compared to 60% in 2002) claimed to have such a system in place institution-wide, with 90% expecting to make such a claim within five years. Asia-Pacific appears to be leading, with 84% of respondents citing a platform in place institution-wide, rising to a predicted 96% within a year. Australia and South Africa also reported extensive institution-wide adoption. Canada and the United Kingdom were about ten percentage points behind Asia-Pacific in terms of current implementation institution-wide, and exhibited greater numbers of respondents with longer development horizons. Predictions from low-middle income countries were equally optimistic (79% by 2009), although only one non-South Africa respondent cited current institution-wide implementation. Similarly, only one non-South African low-middle income respondent plans to implement in the next twelve months, with the remaining five citing a five-year horizon. Only 8% of all respondents (almost all in the United Kingdom and Canada) preferred department-led initiatives, and a negligible



3% dismissed learning management platforms as currently not being of strategic priority. It is notable that no Australian or Asia-Pacific respondent cited dependence upon local adoption.

**Table 4.2. Has your institution implemented a learning management system (e.g. Blackboard/webCT) institution-wide?**

	In place institution-wide	Institution-wide in 12 months	Institution-wide in five years	One + sub-sections of institution	Not a strategic priority	No response	Total
<b>2004</b>							
UK	35 (74%)	1	4 (9%)	6 (13%)	1	0	47
Canada	22 (73%)	2 (7%)	3 (10%)	3 (10%)	0	0	30
Australia	15 (79%)	3 (16%)	1	0	0	0	19
South Africa	8 (80%)	0	0	1	1	0	10
Asia-Pacific	21 (84%)	3 (12%)	1	0	0	0	6 (25)
LMI	9 (47%)	1	5 (26%)	1	3 (16%)	1	10 (20)
Returning	34 (85%)	2 (5%)	2 (5%)	2 (5%)	0	0	(40)
<b>TOTAL</b>	<b>87 (72%)</b>	<b>7 (6%)</b>	<b>13 (11%)</b>	<b>10 (8%)</b>	<b>4 (3%)</b>	<b>1</b>	<b>122 (100%)</b>
<b>2002</b>							
Developing	9 (41%)	5 (23%)	3 (14%)	1	3 (14%)	1	22
Other developed	28 (76%)	6 (16%)	1	1	0	1	37
UK	24 (57%)	8 (19%)	5 (12%)	4 (10%)	1	0	42
Returning	26 (67%)	6 (15%)	5 (13%)	1	1	1	(40)
<b>TOTAL</b>	<b>61 (60%)</b>	<b>19 (19%)</b>	<b>9 (9%)</b>	<b>6 (6%)</b>	<b>4 (4%)</b>	<b>2 (2%)</b>	<b>101 (100%)</b>

Source: OBHE.

Analysis of 2002 and 2004 data for returning respondents reinforces the above trends. Out of 11 (28%) returning respondents that in 2002 indicated

plans to implement a learning platform institution-wide (whether within twelve months or up to five years), eight reported success by 2004. Two respondents reported to still be in the development stage, and the remaining institution cited implementation at a departmental level. However, as will be clear from earlier discussion, institution-wide implementation of a learning platform does not necessarily equate to institution-wide use of online learning, whether on-campus in some form or at a distance. There is a striking contrast between rate of institution-wide adoption of learning platforms, and the extent to which substantive online presence has penetrated mainstream courses/programmes. When asked to indicate the proportion of current courses/programmes with various levels of online presence (see Chapter 1), responses were hardly indicative of revolutionary change. In 2004, on average respondents reported that 44% of their existing courses/programmes had no or trivial online presence, while an average of 32% of provision had “modest” online presence (*e.g.* course information and lecture notes online). Although an average of 15% of classes had “significant” online presence (incorporation of key “active” elements online such as online discussions and assessment tools), only 6% of campus-based provision was said to have an online presence sufficient to significantly reduce face-to-face classroom time. On average, a mere 4% of provision was “wholly or very largely conducted online”. The same disparity is reported in the United States. In 2003, while 82% of institutions have adopted a “single product standard for a course management system”, an average of only 34% of “classes” make use of such a system (Green, 2003, p. 15). One study of LMS usage concluded that such systems are “highly valued by many but used innovatively by only a few” (Dutton *et al.*, 2004, p. 147).

It will be interesting to see whether, and the rate at which, platform adoption spurs classroom adoption, and whether the bulk of provision will settle at the “modest” level, or continue to progress into “significant” presence and beyond. Overall, as discussed in Chapter 1, comparison with 2002 data suggests some progress, with the “non/trivial” category falling from 49% to 44%, “modest” stable, “significant” (not split in 2002 between significant reduction and non-reduction of classroom time) up from 15% to 25% and “wholly online” stable.

Another indication of the relative immaturity of online learning in many institutions concerns the low level of adoption of “content management systems” (*i.e.* software where electronic content is split into “learning objects” able to be manipulated and recombined for multiple purposes – see Chapter 3). “Content management” pushes online learning beyond administrative enhancement into the core of materials development and delivery. Overall, the rate of institution-wide adoption climbed slightly from

4% in 2002 to 6.6% in 2004, with the bulk of institutions (61% – down from 64% in 2002) citing implementation as a strategic priority on a one- to five-year horizon. Between 2002 and 2004 a number of learning platform vendors have developed content management functionality in some form, but widespread institutional adoption by this means is not apparent in the 2004 data. Indeed, one explanation in line with the above analysis is that institution-wide implementation and faculty adoption of learning platforms are in many institutions presently concerned with core administrative functionality only, rather than direct application to materials development/teaching. This is supported by evidence from the United States, which found student use/competence of LMS (and ICT generally) to typically be similarly limited (Kvavik, Caruso and Morgan, 2004).

All Observatory respondents were asked whether their institutions offered faculty members any formal incentives to develop online teaching and learning. Thirty-four per cent said “yes”, 50% “no”, and 16% maintained that an incentive programme was under development. The absence of specific incentives may be another factor in the disparity between online infrastructure and faculty adoption.

### *Platforms employed*

Table 4.3 summarises which platforms Observatory respondents employed.

WebCT emerged as the most popular platform. Almost 46% of respondents had instituted webCT institution-wide (37% in 2002), compared to 22% in the case of Blackboard (19% in 2002) and 12% for in-house systems (5% in 2002). The webCT figures were skewed by the much higher Canadian return in 2004 (see below). If Canadian institutions are excluded, webCT’s share of the total is reduced to 38%, in line with 2002 figures. In the United States, Blackboard outdid webCT in 2003, with over 40% of respondents citing Blackboard as their “single product standard”, compared to almost 33% for webCT. “Other” systems (including Lotus Learning Space and eCollege) made up about 9% of US returns (Kvavik, Caruso and Morgan, 2004). In the 2004 Observatory survey, the growth in use of in-house systems is notable (and supports the case study findings above), but it should be borne in mind that in-house systems were least likely (compared to Blackboard, webCT, open source and other) to be the sole institution-wide system. Also, returning respondents presented no growth in this area, suggesting sampling as a factor behind the general increase. Only four institutions reported institution-wide implementation of an open source system, plus one installation of Lotus Learning Space and six instances of “other” systems. Only three institutions (2.5%) had installed solely an open

source system, nine (7%) solely an in-house system and six (5%) solely an “other” system.

**Table 4.3. Observatory respondents by LMS**

	Black-board	Lotus Learning Space	webCT	Open-source system <sup>1</sup>	In-house system	Other	Under consideration	None	Blank	Total
<b>2004</b>										
UK	17 (15) <sup>2</sup>	0	16 (14)	1 (1)	5 (4)	2 (2)	4	1	0	47
Canada	0	1 (0)	21 (18)	2 (1)	6 (2)	2 (2)	0	0	0	30
Australia	6 (5)	0	12 (11)	0	0	1	0	1	0	19
South Africa	0	0	5 (4)	1 (1)	0	0	1	2	0	10
Asia-Pacific	8 (8)	0	14 (12)	0	4 (3)	0	0	1	0	25
LI/LMI	2 (2)	0	4 (4)	1 (1)	0	2 (2)	3	7	1	20
Returning	14 (11)	0	20 (15)	2 (2)	2 (0)	2 (2)	2	2	0	40
<b>TOTAL</b>	<b>27 (25)</b>	<b>1 (0)</b>	<b>56 (48)</b>	<b>4 (3)</b>	<b>15 (9)</b>	<b>6 (6)</b>	<b>7</b>	<b>9</b>	<b>1</b>	<b>122</b>
<b>2002</b>										
Developing	2 (1)	0	7 (6)	N/A <sup>1</sup>	1 (0)	1 (0)	5	12	0	22
Other developed	10 (8)	0	20 (19)	N/A	2 (1)	4 (2)	1	0	1	37
UK	10 (10)	0	12 (12)	N/A	2 (2)	2 (2)	4	1	1	42
Returning	12 (10)	0	17 (17)	N/A	1 (0)	3 (2)	4		5	40
<b>TOTAL</b>	<b>22 (19)</b>	<b>0</b>	<b>39 (37)</b>	<b>N/A</b>	<b>5 (3)</b>	<b>7 (4)</b>	<b>10</b>	<b>13</b>	<b>2</b>	<b>101</b>

1. This category was not included in the 2002 survey.

2. The figures in brackets represent the number of institutions which have implemented a particular platform as a single standard institution-wide. The other figures represent those institutions, plus those that reported implementation of more than one platform institution-wide. The columns do not add up to the total number of respondents in each category due to the fact that institutions were able to tick more than one option.

Source: OBHE.

The combination of systems varied between respondents. Only three institutions (2.5%) had implemented both webCT and Blackboard

institution-wide. The other institutions reporting implementation of more than one system combined either Blackboard/webCT and an in-house/other system, or combined Lotus Learning Space and “other”, or open source and “other”. The most commonly cited open source systems were Moodle, Claroline and LON-CAPA. “Other” systems cited included First Class, Learnwise and Centra.

There were notable differences between countries. In Canada, out of the 28 institutions reported to have deployed an LMS institution-wide, 22 (79%) used webCT, and 18 used webCT as their only institution-wide system. No Canadian institution reported the use of Blackboard. The dominance of webCT in Canadian institutions may be due to the Canadian origins of the system (University of British Columbia). Blackboard was also absent from South African returns. In Australia, webCT outdid Blackboard by about two-to-one, while in the United Kingdom; institutions were more or less equally divided between the two leading vendors.

Out of the 105 institutions that reported at least one institution-wide LMS, thirty (29%) also reported faculty/department use of other systems. This in fact represents a small rise compared to 2002, where only 25% of institutions that reported at least one institution-wide LMS also reported local use of other systems. This rise may represent better central knowledge of local activity, alongside possible higher incidence of local activity. It was not possible to gauge the extent to which local LMS use constitutes dissatisfaction with central arrangements (*e.g.* preference for a discipline-specific tool).

In respect of returning respondents, 23 out of 29 (79%) institutions that cited institution-wide use of an LMS in 2002, referred to the same system in 2004. Of the remainder, one moved from webCT to Blackboard, one switched from “other” to Blackboard and webCT, and two shed in-house/“other” systems in favour of a single institution-wide implementation (either Blackboard or webCT). These findings suggest further consolidation in favour of the two leading vendors. Two institutions appeared to have given up institution-wide implementation altogether. These two institutions were South African, perhaps reflecting infrastructure changes associated with the institutional merger programme underway across the country. Of the remaining eleven returning respondents (*i.e.* those that did not cite institution-wide LMS adoption in 2002), six had achieved this by 2004.

Overall, the data reinforce the LMS adoption trend seen in 2002, and the dominance of the two leading vendors, Blackboard and webCT. Institution-wide LMS implementation is now the overwhelming mode of adoption in Commonwealth universities. As noted above, the LMS is an e-learning success story, and has become all but synonymous with e-learning in tertiary

education. However, LMS adoption is primarily a matter of fund allocation and technical implementation. The ways in which and the extent to which individual faculty adopt such tools (compare average rates of “online presence” at course/programme level with rates of LMS adoption) is a more complex equation.

## 4.2. LMS challenges (Questions 2.3-2.6)

The fact that LMS adoption strongly increased without necessarily leading to more e-learning raises the question of their actual use and current limitation according to institutions. The OECD/CERI survey requested the case study institutions to report on LMS functionality, usage trends, integration with other systems and locus of control.

### *Functionality*

In those cases where the institution listed LMS functionality, there was little to choose between different systems (aside from different versions of the same system). The past seven years of intensive LMS development and adoption in tertiary education have seen considerable system convergence, along with steady updating and additional features (*e.g.* content management). Some respondents asserted that a particular system was the “only genuine” enterprise LMS, or “by far the easiest” to use, but it was difficult to evidence such claims. Others voiced the complaint that the leading commercial systems were insufficiently responsive to diverse pedagogies, while some disagreed (again, different versions of the same system accounted for some of these differences). One institution speculated that concern about lack of flexibility may sometimes reflect “self-protection” by academics who feel uncomfortable with the “sudden” significance of the LMS.

Those institutions with in-house programmes often pointed to the lack of a commercial alternative as the initial motivator for local development. For example, the University of South Australia system, UniSAnet, was envisaged as a non-technical interface accessible from the desktop and not requiring special plug-ins or programmer interventions. Many embarked on such work prior to the post-1997 LMS boom<sup>1</sup> (and prior to aforementioned systems convergence and mainstreaming), although others have more recently resorted to in-house development despite the plethora of commercial/open options. One institution cited sensitivity to variable regional bandwidth as a key consideration for development of an in-house LMS. Institutions with two or more enterprise-wide systems often cited

---

1. For a study of two of the leading providers, Blackboard and webCT, see Garrett (2002).

choice as a useful way to address faculty concerns about being tied to a single solution. For commercial systems, some institutions adopted an LMS after market analysis (one respondent surveyed 171 vendors against 180 variables, and eventually trialled five systems, before selecting two), some adopted the system used by a partner institution (whether academic or commercial) and one (University of British Columbia, as noted above) cited a historical connection. The edutools website, hosted by WCET (a co-operative in the United States dedicated to the enhancement of effective use of technology in higher education) is a resource that allows the user to compare a wide range of LMS across many functions and features. Edutools have now also developed an equivalent resource for content management systems (see [www.edutools.info/](http://www.edutools.info/)).

The debate about the merits of particular commercial systems, commercial versus in-house versus open source is ongoing, despite what is arguably manifest convergence between different systems in terms of core functionality. Large-scale open source efforts, such as Sakai in the United States, Learning Activity Management System – LAMS (developed at Macquarie University, Australia, and with international support) (see Box 4.1) and the New Zealand Open Source Virtual Learning Environment (NZOSVLE) project (see Box 7.1), are predicated on a desire for non-proprietary models (on cost and code access grounds), but as importantly on a conviction that leading commercial systems are overly content-centric.

One of the future challenges with LMS functionality and usage will be the development of technologies supporting collaborative learning environments. To quote the LAMS website: “E-learning has a well developed approach to the creation and sequencing of content-based, single learner, self-paced learning objects. However, there is little understanding of how to effectively create and deliver sequences of learning activities which involve groups of learners interacting within a structured set of collaborative environments, or how teachers can make these sequences easily re-usable”.<sup>2</sup> The rationale behind the (incomplete) in-house LMS developed with Sun Microsystems for the defunct UK eUniversity was similar (Garrett, 2004). The question is whether such systems can develop demonstrably different and superior functionality to commercial incumbents, and whether the latter will continue to outflank the former in terms of innovation. The underlying question is the extent to which the functionality of the LMS itself dictates pedagogy versus the influence of the practitioner and their informed use of particular “standard” LMS tools (Carmean and Haefner, 2002).

---

2. Website of the “Learning Activity Management System”. Available at: [www.lamsinternational.com/about/](http://www.lamsinternational.com/about/)

### Box 4.1. Sakai/LAMS

Sakai and LAMS are two open source initiatives designed to enhance the functionality of core education software (*e.g.* learning management systems, portals, assessment tools, etc.). Both subscribe to a vision of e-learning as rooted in interoperability and as pedagogically flexible, and support community rather than proprietary development (and encourage the interoperability of proprietary software with third party applications). Both subscribe to the view that leading proprietary systems (notably popular learning management systems such as those from Blackboard and WebCT) have critical ownership and pedagogic limitations.

The Sakai Project is a US\$6.8M community software (*i.e.* open source but involving more specific commitments from participants) development project founded by the University of Michigan, Indiana University, MIT, Stanford, the uPortal Consortium, and the Open Knowledge Initiative (OKI) with the support of the Andrew W. Mellon Foundation. Sakai builds on a number of pre-existing applications in particular member institutions, with a view to the creation of “code mobility”, improving interoperability between institutions and synchronisation of need. The aim is to enhance functionality, simplify implementation/development and reduce costs. Products will include an Enterprise Services-based Portal, a complete Course Management System with sophisticated assessment tools, a Research Support Collaboration System, a Workflow Engine, and a Technology Portability Profile as a clear standard for writing future tools that can extend this core set of educational applications. The first release was in July 2004. The Sakai Educational Partners’ Programme (SEPP) extends this community source project to other academic institutions around the world, and is supported by the William and Flora Hewlett Foundation and SEPP member contributions.

LAMS is more focused on teaching and learning software, specifically the development of a “revolutionary new tool for designing, managing and delivering online collaborative learning activities”. The initiative is based at Macquarie University in Sydney, Australia, and is the combined effort of the LAMS Foundation (a non-profit company), LAMS International (a commercial services firm) and the Macquarie University E-learning Centre of Excellence (MELCOE), a dedicated research centre focused on e-learning technology and standards development within Macquarie University. The rationale behind LAMS is that much e-learning to date has been structured in terms of learner interaction with content, rather than interaction with teachers/peers. The developers behind LAMS argue that social interaction is a key component of learning. Arguing that the current concept of learning objects is too content-centric, the developers are using an emerging educational meta-language (drawing on instructional management systems [IMS] and other components) to describe learning processes independent of subject, content and technology. From February 2005, it is planned to make LAMS open source and freely available. LAMS International, the commercial services part of the initiative, offers a range of installation and support services for institutions not wishing to go it alone. LAMS will be available under a dual license arrangement allowing third parties to buy the software and integrate with proprietary applications (and thus not be forced, as under a conventional open source license, to make the integrated software available as open source to others).

The project website can be found at: [www.sakaiproject.org/](http://www.sakaiproject.org/) and [www.lamsinternational.com](http://www.lamsinternational.com)

*Source:* Sakai and LAMS.



### *Integration with other systems and open standards*

There is evidence of a strong trend towards standardisation on a single system, and integration with a range of administrative programmes (*e.g.* student records, admissions, assessment, finance, etc.). There are examples of government funding for such work (*e.g.* The Joint Information Systems Committee's (JISC) "Linking Digital Libraries with Virtual Learning Environments" programme) and attempts to build-in integration from the outset (*e.g.* the Sakai project aims to facilitate linkages between the core LME and library systems, object repositories, etc.). By definition, 100% virtual institutions reported more advanced development in this respect, while campus-based institutions or other distance institutions are in the midst of typically complex integration strategies. Some institutions have created LMS-compatible administrative systems to facilitate integration, often turning to the LMS vendor for assistance. However, some institutions have not addressed integration as yet, largely because of its second-order characteristics (*e.g.* some institutions have yet to embark on significant LMS use). One respondent was unusual in commenting that such integration was considered unnecessary because students "expect" to have to go to different places for different things. Many institutions regarded LMS integration with other systems as part of a broader "portal" strategy (see below). One institution highlighted the "problem" whereby greater systems integration revealed shortcomings in data quality/consistency, suggesting that integration is more than a technical issue.

A number of institutions appreciated the shift to so-called open standards (*i.e.* common technical standards that afford interoperability between applications from different sources) by leading vendors such as Blackboard and webCT, offering enhanced customisation and integration with third party applications. It might be argued that this compromise between proprietary and open source was embraced by vendors partly to head-off the "threat" from open source. Vendors face a tension between maximising interoperability with third parties (with the risk that the core product all but "disappears", resulting in what might be described as an expensive "open source" system), and focusing on making the core product as high quality and flexible as possible, reducing the need for interoperability in areas that might be considered (or become) core functionality. The latter strategy asserts the proprietary LMS an all-encompassing solution, with all the R&D and high prices this implies. Raising the quality of the "out-of-the-box" solution might also be regarded as a good defence against open source. Moreover, proprietary vendors are selling a range of support services, trying to persuade institutions that neither LMS development nor support are core business for higher education institutions. The danger for vendors is that open standards may generally be

adopted to the point where the “programming commitment” for a university in adopting an open source LMS is significantly reduced. The Open Polytechnic New Zealand respondent argued that the New Zealand government’s support for a national open source e-learning strategy was in many ways aligned to this outcome (see Box 7.1).

### *Locus of control*

In terms of locus of control over LMS content development, most institutions reported a highly devolved system, whereby academic staff had considerable control over whether, when and how to post content, and over the nature of that content. As one would expect, such an approach favoured academic autonomy, but also meant inconsistent presentation/quality. All institutions reported some form of central unit or units that offered advice and support to academic staff in this area, and typically responsible for underpinning technical support. Another model was much greater central control vested in such a unit, requiring all academic staff to discuss their plans and to an extent conform to centralised instructional design. In a mirror image to the devolved model, the centralised approach ensures consistency of presentation/quality, but was said to also lead to a somewhat bland homogeneity.

Another problem is bottlenecks whereby central action is needed for even minor changes to the content. The Open Polytechnic New Zealand was in the process of reducing centralisation in an attempt to combine the best elements of the two models. Adoption of Moodle (enabling greater local control of online course development and maintenance, disrupting conventional roles and responsibilities), plus dedicated staff development, was said to have advanced this agenda. A centralised approach was typically found in either recently created virtual institutions, or those with a weaker tradition of academic autonomy.

### *Staff and student usage*

In terms of LMS usage, no institutions had precise figures, although some offered considerable detail. By definition, dedicated virtual institutions reported almost universal usage by staff and students. One mixed mode institution cited majority usage (but did not collect specific data), and among the more active institutions (as defined by Question 1.6) that provided data, staff usage range from about 20-40%. One less active institution estimated that “only a few percentage of academic staff” were using the in-house system.

Kyoto University cited little LMS use, arguing that most systems were not particularly suitable for their domestic students, on grounds of medium

(personal computer – domestic students said to have a preference for mobile phones) and pedagogy (assuming student/teacher/peer interaction as central to the learning process – whereas domestic students were said to embody a more “passive” approach to learning). Japanese students were said to be generally not willing to “study by themselves”. This highlights the issue of the LMS as an increasingly global product (particularly Blackboard and webCT), and the tension between mass marketing and local customisation. The comments may also reflect a perception of “e-learning” as distance learning, rather than a supplement to face-to-face contact. The comment that an LMS is characterised by student/teacher/peer interaction can be juxtaposed against the more general criticism of the LMS as overly content-driven.

### 4.3. IT networks

The OECD/CERI survey also asked to report about other IT applications than LMS. All sample institutions reported significant and ongoing investment in IT networks to support on-campus activity and/or distance learning, and many reported adequate functionality/bandwidth to support e-learning in the short-to-medium term. On campus, the standard model was Ethernet linked by fibre optic connections between buildings/campuses (typically one gigabit backbone, and around 100 megabit to the desktop) – with some institutions reporting plans to upgrade to one gigabit Ethernet within buildings. To give an indication of capacity, a number of institutions reported operation-wide multicast streaming functionality, or cited imminent upgrades to this effect. Some institutions reported examples of ongoing dependence on BNC cables as well as Ethernet.<sup>3</sup> Many institutions were connected to both the commodity Internet and dedicated, higher bandwidth academic networks (*e.g.* Internet 2). The sample included some of the pioneers on IT networks in tertiary education. For example, in the early 1980s the Carnegie Mellon University developed one of the first distributed networks of computer workstations in the United States. From the mid-1990s, all offices, classrooms and student dormitories at the institution have had Ethernet connections.

The current capacity of IT networks at most sample institutions were seen by some respondents to foreshadow greater use of audio and video in e-learning (above and beyond traditional usage such as audio/video lectures). The Carnegie Mellon University respondent was enthusiastic about peer-to-peer video conferencing, and institutional repositories of short

---

3. BNC Cables are used to connect two or more computers to share files and printers, etc. Ethernet refers to a local area network allowing several computers to transfer data over a communications cable.

videoed explanations of key topics. Some respondents expressed concern about cost of bandwidth, and whether this might prove an obstacle to scaling up e-learning. The Open Polytechnic New Zealand is a member of the “Next Generation Internet New Zealand” consortium, working on faster connectivity. The UCLA Extension respondent cited the position of the parent institution as a barrier, insofar as the institution did not view distance learning as a key strategy. This meant that UCLA Extension did not sufficiently benefit from the parent institutions experience/applications, and larger resource base.

The Observatory survey asked respondents to indicate the importance of “upgrading campus technology infrastructure” over the next three years (5 signalled “very high importance” and 1 “very low importance”). The overall average score was 4.1, indicating high importance. Canadian institutions reported, on average, the lowest importance (3.9), while low income/low-middle income produced the highest average score at 4.3. Only three institutions (one in Canada, one in a low income/low-middle income country and one in the United Kingdom) entered a score of one or two – indicating low or very-low importance. Thirty-four per cent of respondents entered “5” for this question, suggesting that in many institutions current infrastructure is perceived to be critically inadequate despite the fact that most case study countries have already worked on major programmes/projects to support infrastructure, and the trend is now shifting towards contents developments and process support (see Annex 4).

In terms of wireless access, most case study institutions (where relevant) reported at least partial campus coverage – *e.g.* major meeting and conference facilities and a growing number of classrooms; or one out of a number of campuses; and some (*e.g.* University of British Columbia) institution-wide coverage. Again, Carnegie Mellon University is a leader in the field. From 2000, the entire campus – including student dormitories – has been covered by an 802.11b wireless network, which currently has over 9 000 individual registrations. This respondent reported dramatically increased usage of the wireless network since complete coverage was achieved. Indeed, the wireless network has become the primary network, and was said to be enabling forms of e-learning. For example, faculty was said to increasingly depend on the wireless network for in-class presentations and assignment of in-class computer-based work. To accommodate growing usage and higher bandwidth, Carnegie Mellon University planned to upgrade to 802.11g/a. Those institutions with limited or without wireless access (*e.g.* Aoyama Gakuin University), reported development plans, and expected future demand from students. The University of Paris Nanterre stated that blanket wireless coverage was key to mainstreaming e-learning. Other respondents (*e.g.* Monash University) cited

obstacles to further wireless development, such as competing standards and low student laptop ownership.

In general, there was nothing to suggest that wireless would replace “wired” infrastructure in the short-to-medium term. Higher cost and functionality limitations of wireless modalities point to wired and wireless as complementary, serving different purposes and meeting different needs (Paulsen, 2003). This dual future may mean higher infrastructure costs for institutions.

Among Observatory respondents, only 8% reported an institution-wide wireless network, but a further 61% reported partial coverage. Sixteen per cent cited implementation plans (either partial or total) and 15% indicated that wireless functionality was currently not a strategic priority. Total/partial coverage was highest in Asia-Pacific (88%), then in Canada (80%), then in the United Kingdom (72%), then in low income/low-middle income countries (21%).

#### **4.4. Portals (Question 2.7)**

A portal refers to a single gateway to a range of academic and administrative information/services, typically with single sign-on. Many institutions in the OECD/CERI sample had functional portals, and were gradually extending their coverage and functionality (often under the auspices of a dedicated committee). Common functionality included searching the course catalogue, course registration, access to assessment results, library access and course syllabi; with different levels of access (and personalisation options) for students, staff and faculty. Some institutions mentioned plans to integrate the portal with other systems (*e.g.* finance and LMS). Other portals were more limited, *e.g.* just general information about e-learning systems and programmes. At some distance learning institutions, particularly dedicated online universities such as the Open University Catalunya, portal functionality has been integral to institutional development from the outset. Some portals were developing in-house out of student information systems (*e.g.* SIS at Asian Institute of Technology, or what was described as a “minimal links engine” at the University South Australia), while others were purchased from vendors (*e.g.* the Vignette Portal adopted by Carnegie Mellon University), or were the fruit of collective open source development (*e.g.* Uportal in the United States; and adaptation of Tiki Wiki groupware and content management software at the Open Polytechnic New Zealand). University of Maryland University College reported plans to roll out dedicated portal functionality as part of third party ERP (Enterprise Resource Planning) installation.

Many installations were recent, inhibiting any in-depth evaluation of value and usage. At the Open Polytechnic New Zealand, a new and expanded portal was a key component of a planned new platform framework, encompassing a range of open source tools being developed with government funding and in partnership with a number of other local tertiary education institutions and other organisations (see Box 7.1). At the UK Open University, the planned LMS was seen to subsume the current portal functionality, rather than vice versa as on the traditional conception. Clearly, it is misleading to draw sharp lines between what is an LMS, what is a student information system and what is a portal. The overarching vision is application integration. Indeed, a functional student information system is critical to portal development. The Zurich University respondent said that improvement of its central information system was underway with a view to university-wide portal adoption in 2005.

A number of respondents articulated a rationale for portal development. The Carnegie Mellon University respondent argued that “without the capacity to aggregate and personalise information available on the university intranet (along with a powerful search), individuals will have a harder and harder time finding the information and resources they need to operate.” The Monash University respondent agreed, saying that portal development was in response to growing user frustration at finding information, and multiple entry points offering sometimes conflicting or different information. A key challenge was to make the portal the single entry point for all users, including those outside the university. Only then would the portal fulfil its role, and enable single sign-on. While the technology was viewed as immature and understanding of its potential was poor, the Carnegie Mellon University respondent expected the portal to become the primary means for students, faculty and staff for inputting and obtaining information.

In response to the Observatory survey, 31% of institutions reported an institution-wide portal system currently in place, and a further 24% said that such a system would be in place within a year. Another 24% indicated that implementation would take place within five years. A handful cited local portal usage, and 17% said that an institution-wide portal was currently not a strategic priority. In terms of current institution-wide implementation, about 50% of Asia-Pacific respondents (dominated by Australia) made a positive response, compared to about a third in Canada and the United Kingdom, and about 15% in low income/low-middle income countries. In the United States (with lower figures reflecting sample size), the figures for 2003 were 28% for portal in operation, plus a further 19% for installation within a year. Interestingly, in contrast to LMS take-up, the US figures suggested much higher use of in-house portals. Only Campus Pipeline (now owned by SunGard – a US\$3 billion software and information management firm

specialising in financial services) was more frequently cited than than “homegrown/local” category (Green, 2003, p. 14). As the portal grows in significance in tertiary education, commercial interest and consolidation will grow, not least from leading LMS vendors wary of diminution as a result of platform integration.

#### **4.5. Use of other teaching and learning-related applications (Question 2.8)**

Sample institutions were asked to comment on any other tools or platforms that are widely used at their institution in support of e-learning. The examples given in the question (instant messaging and handheld computers) generally directed responses to applications of that sort, rather than standalone disciplinary software (mentioned by almost no respondents, despite what one may assume is widespread use in many subjects). Those institutions with less experience of e-learning typically reported no significant use of other tools or platforms – although steady rollout of wireless coverage was reported by some to prefigure wider use of handheld computers and other collaboration tools.

A common situation was that reported by the Open Polytechnic New Zealand. This respondent stated that while some faculty use instant messaging and other standalone tools (*e.g.* Macromedia resources and video-conferencing), activity was said to be small-scale, not centrally supported and rarely integrated into formal e-learning. The major sites of activity were institutions with longstanding experience of forms of e-learning, pre-dating the LMS boom. As the LMS grows in dominance and scope in tertiary education, the trend is for the LMS to absorb/supplant previously standalone technologies. As in response to the portal question, Open University Catalunya stated that the institution’s LMS “Virtual Campus” had been built/modified over time to encompass all required functionality. The trend for leading LMS vendors (*e.g.* Blackboard and webCT) to enable interoperability with third party applications (such as instant messaging, video conferencing, etc.) means that the line between LMS and non-LMS applications has begun to blur. For example, the Virtual University of Tec de Monterrey cited a wide range of tools (library, collaboration, assessment, video) but it was not clear whether these were standalone or part of an LMS.

Among the major sites of activity were Carnegie Mellon University and the University of British Columbia. At Carnegie Mellon University, both a discrete instant messaging system and bulletin board service are in widespread use and pre-date the contemporary LMS-centric model of e-learning. These have long been used at this University as tools for peer

and student/faculty communication outside the classroom. Both were reported to be gradually giving way to “free” commercial instant messaging services from the likes of AOL and Microsoft, and to LMS-based tools, such as Blackboard’s bulletin board function. The Carnegie Mellon University respondent complained of points of inadequate functionality in the latter – particularly lack of integration between bulletin board postings and email notification. Another longstanding tool at this University is the “Andrew File System” (AFS). This allows a student to submit computer programming assignments to a particular location, where the assignment is then graded automatically. While commercial automated assessment tools are now commonplace, no supplantation of AFS was reported. This institution cited AFS as a harbinger of the future of e-learning, seen to involve increasing use of intelligent automated feedback programmes. This was seen to have application beyond formal systems such as computer science. The Head of the English Department at Carnegie Mellon University, Prof. David Kaufer, was reported to have developed an automated tool to parse text for reader response patterns, and uses it as part of feedback to composition students. Finally, as part of its wireless initiative, the institution has invested in handheld computers (*e.g.* as student response tools in class, and collaboration tools outside), but the respondent reported minimal usage to date, and questioned the cost/benefit analysis (*e.g.* the view that handheld functionality was too limited relative to cost).

At the University of British Columbia, initiatives included a pilot of electronic portfolios, allowing students (and faculty) to build an online portfolio of their academic and other achievements, supporting both educational and employment purposes. The university is trialling a number of solutions including a vendor hosted tool called iwebfolio from a firm called Nuventive, a tool under the webCT umbrella and the open source OSPI system.<sup>4</sup> The overall aim, in line with the University of British Columbia’s portal investment, is to “strengthen students’ and staff’s ability to manage, store, be assessed upon their work products, demonstrate their individual competencies and be more reflective learners and practitioners”. A number of science classes were reported to be using simple student response technology in the classroom, and faculties/schools of medicine, nursing and education were said to be engaged in Personal Data Assistant (PDA) trials (*e.g.* issuing PDAs to medical/nursing students in their experience year, to given them handheld access to a wide range of text resources, and to keep them in touch with the university). Use of blogs (personal online commentaries/journals) and wikis (simple website

---

#### 4. The Open Source Portfolio Initiative.



creation/editing tools) were also said to be increasingly used at the University of British Columbia, with examples of pedagogic application.

Late adopters of an LMS, or cases where an LMS had not yet been adopted, also reported high usage of other tools and platforms. For example, the UK Open University cited a number of standalone systems – computer-mediated conferencing, audio conferencing, interactive whiteboard, assignment handling and digital library. Additional examples of use of others tools and platforms included use of mobile phones to access student information (Kyoto University – utilising a tool widely owned by students), and uses of SMS messaging as a basic communication tool (one faculty at Zurich University). The UCLA Extension respondent mentioned website creation software such as Adobe's GoLive and video editing software such as Apple's Final Cut. The University of South Australia, as part of a state-wide initiative, is using US firm Centra's synchronous video/audioconferencing system.

#### 4.6. Online applications for administration

Alongside aspects of teaching and learning, a widespread trend has seen a range of administrative functions move online in various ways. Examples include application, course/examination registration, fee payment, library services and student/faculty purchasing. This e-administration is positioned as key to e-learning development, providing more flexible and in-depth access to information and day-to-day processes and transactions. To emphasise the inter-dependent agenda, at the University of British Columbia e-administration or e-business development is one component of an all-encompassing e-strategy (see Box 2.1). While some respondents claimed that all or the vast majority of academic and commercial transactions could already be completed online (*e.g.* Open University Catalunya, Monash University), and a few were in the very early stages (*e.g.* Aoyama Gakuin University, Kyoto University, Multimedia Kontor Hamburg), most institutions were in the midst of long-term efforts to gradually shift to e-administration, and integrate a wide range of administrative and academic systems. Accessibility and integration often focused on portal development (see above).

Some institutions offered details of e-administration functionality. For example, the University of British Columbia respondent provided a detailed list of e-administration functionality aimed at students. This included online application (93% of applicants said to apply online), check application status, register for/withdrawn from classes, pay tuition and other fees, apply for financial aid, vote in student elections, request transcripts, change email address/password, manage housing/meal plan accounts, and book parking spaces. A common pattern was for an in-house student information system

to sit alongside third party human resources and finance systems (typically from Oracle, PeopleSoft<sup>5</sup> or SAP). The University of South Australia library system allows users to reserve books, order cross-campus/inter-library loans, renew books, set up journal alerts and receive electronic articles by email. While most e-administration systems were commercial or institutional in scope, the University of Paris Nanterre respondent cited use of a national student information system, APOGEE (Application pour l'organisation et la gestion des enseignements et des étudiants).

Presently, key barriers to ever-greater e-administration include hard-copy provision of supporting documentation (*e.g.* proof of English language competence), and limitations of particular legacy systems. For example, the Open Polytechnic New Zealand respondent stated that the version of institution's current LMS and the in-house student database prevented online payment. The UK Open University said that by 2005 all students would be required to engage with online administration, raising important questions about accessibility.

As an aside, the Carnegie Mellon University respondent mentioned work to re-write the in-house student information system (part of a future integration plan across all institution's systems). The current version of the system was described as "class centric" and "faculty centric", whereas the aim for the re-write was a "student-centric" system. This was in order to meet the challenges of disparate time schedules and locations for e-learning. This will allow the "normalisation" of a range of non-traditional arrangements such as short classes taught outside the standard semester structure, and "mastery learning designs" that encourage students to be enrolled in class for as long as is required for them to demonstrate mastery of the subject.

The Observatory survey asked whether "e-commerce facilities" (*e.g.* student/faculty purchasing and payment online) was currently in place institution wide. This question was somewhat limited in scope compared to the OECD/CERI survey question, but offered the closest approximation. Only 20% of respondents answered in the affirmative, with 22% predicting implementation within a year, and a further 29% within five years. This concentration of responses in the "middle" (*i.e.* implementation planned within up to five years) is in agreement with the OECD/CERI data. Thirteen per cent cited "local" e-commerce activity, and 14% said that this area was currently not a strategic priority. Similarly, a study of over 200 universities in Europe found that just under 20% of respondents cited such things as online course/examination registration as in place across all programmes;

---

5. In late 2004, Oracle purchased PeopleSoft.

with about another third saying this was available in some instances (PS RAMBOLL Management, 2004, p. 38).

The use of online applications for administrative purposes has and will probably continue to become increasingly common. It is currently supplementing rather than substituting for traditional procedures.

#### **4.7. Integration of academic and administrative systems**

As the range and scope of academic and administrative software has proliferated (typically involving both in-house and third party solutions), inefficiencies arise where different systems are unable to communicate. A recent trend has been for institutions to attempt to integrate disparate systems, or replace certain systems with a single, more comprehensive application (*e.g.* implementation of an Enterprise Resource Planning (ERP) system – see below). Integration offers an opportunity to rationalise legacy systems,<sup>6</sup> and to formally consider how each system relates to the others, and how any consolidation/integration might affect different stakeholders (Duncan, 2004). Almost all respondents described integration initiatives or plans. At one extreme was the Open University Catalunya, where the respondent simply stated that academic and administrative systems are “completely integrated”. This once again was explained by the relatively recent creation of the Open University Catalunya as a dedicated virtual university.

Aside from obvious factors such as longevity of any integration project, extent of in-house system development appeared to be a positive variable (*e.g.* integration may be built into a range of applications from the outset), rather than needing to contort a range of third party solutions to work together. Rather than attempt to adapt in-house/legacy systems, some institutions (*e.g.* Asian Institute of Technology) have purchased ERP (Enterprise Resource Planning) systems. ERP systems (essentially use of a single database to integrate/replace independent legacy systems) can provide an overarching structure for integration efforts, although many systems are not optimised for use in tertiary education. Cornford and Pollock (2003) provide a detailed account of the misalignments between generic ERP systems and higher education institutions, and pressures on the latter to articulate and adjust structures and processes to conform. The authors argue that the tendency for institutions to bargain collectively for procurement

---

6. A legacy system refers to a computer system or application programme which continues to be used because of the prohibitive cost of replacing or redesigning it and despite its poor competitiveness and compatibility with modern equivalents. The implication is that the system is large, monolithic and difficult to modify.

purposes may exacerbate this standardisation/conformity trend. Some OECD/CERI sample institutions, having surveyed third party offerings, opted to develop in-house (*e.g.* UCLA Extension). The steady development and dissemination of various open standards relating to e-learning and education more generally (*e.g.* IMS enterprise standards) has been central to integration efforts, although specifications, coverage and adoption are far from complete. The University of British Columbia respondent said that lack of well-developed technical standards for single sign-on had been a particular challenge; and that delay in provision of this functionality often proved a major obstacle in terms of successful adoption of integrated systems.

Respondents set out a number of benefits of integration, including greater efficiency in terms of information management (from the perspective of students, faculty and staff), improved data integrity, reduced paper costs, a finer-grade view of accounts and self-service access to core systems. One commentator argued that integration arms unit leaders with enhanced adoption/impact information. “Successful convergence means library and IT leaders can more effectively justify ever-rising expenditures to an institution’s financial and administrative leaders” (Duncan, 2004). Cited drawbacks included the time and complexity of adapting non-higher education systems to a higher education context, time and budget over-runs and staff resistance to new systems. The Asian Institute of Technology initially used an external consultancy to implement its ERP system, but then moved the entire operation in-house. While this resulted in higher internal costs, experience suggested the limitations of external consultancy (notably the consultants’ lack of familiarity with a higher education context, and the internal effort required to re-configure/re-write retained legacy applications). One respondent indicated that integration had not been attempted on the insistence of senior management who feared that integration would compromise security (*i.e.* would make confidential information easier to obtain on an unauthorised basis). The respondent implied that such a view demonstrated an inadequate understanding of IT systems and security. The Open Polytechnic New Zealand respondent listed five separate academic/administrative systems and plans over the next three years to reduce five to an integrated two (that from the user perspective would appear as one). The two were identified as a learning environment and a student management system. The shift to Moodle from Online Campus/Blackboard was key to the former.

The Observatory survey asked about both compliance with emerging international interoperability standards, and integration of academic and administrative IT systems. Only 11% of respondents asserted that their IT systems were currently compliant with the relevant emerging international

standards. This low figure is partly the result of the fact that such standards are, in many cases, still under development, and (as in the case of single sign-on mentioned above by Carnegie Mellon University) some areas are even further from agreement. There may also be cases of rival interoperability standards. Forty-one per cent of respondents predicted compliance within up to five years (and 18% cited only “local” or limited compliance), but 30% said this area was not currently a strategic priority. The question cited SCORM and IMS (see Chapter 3) as examples of interoperability standards specifically concerned with e-learning. If one considered standards adoption across IT in higher education as a whole (both formal and de facto standards), then levels of compliance would be much higher (although not uniform in detail).

Was interoperability compliance in line with systems integration? A greater proportion of respondents (25%) claimed to have already effected systems integration institution-wide (compared to only 11% who claimed compliance with international interoperability standards). This suggests that some institutions have pursued integration by means of proprietary standards. Indeed, a number of respondents cited institution-wide systems integration alongside little interest in international interoperability standards. Sixty-one per cent of respondents pointed to systems integration within up to five years. Only 8% of respondents cited no strategic interest in systems integration. The disparity between rates of systems integration and compliance with interoperability standards may also partly be explained in terms of some respondents perhaps taking an overly narrow definition of “international interoperability standards”.

#### **4.8. Computer/network access for staff and students (Questions 3.1-3.5)**

Computer and network access are prerequisites to e-learning. Case study institutions were thus asked about the institutional provision of computer/network access for faculty and students (both within and outside the institution), and (in respect of students) the balance between labs, portable computers paid for or facilitated by the institution and computers owned by students. These questions did not concern policies on how students/faculty use computers (*e.g.* etiquette and confidentiality).

##### ***Policy on computer ownership***

All responding institutions reported at least a large majority of students owning (or with access to) personal computers (with Internet access), and none reported access to such hardware to be a significant problem. However, the vast majority of sample institutions did not mandate student computer ownership,

largely on cost grounds. For example, the Asian Institute of Technology respondent indicated that at present it would be unrealistic to expect every student to be able to afford to buy a personal computer (at the time of the survey about two-thirds of students at the institution were said to own computers). Some institutions operated leasing schemes, offering students an affordable alternative to personal ownership. The Asian Institute of Technology attempted such a scheme but was hampered by lack of interest from vendors. This respondent cited broadband connections in dormitories and the availability of ever-lower cost computers as the key drivers of independent student purchase, and predicted that within a few years all students at the Institution would own a personal computer. Without exception, all sample institutions reported 100% full-time faculty access to personal computers (*i.e.* a dedicated computer per faculty member). Access for part-time faculty might involve use of shared facilities. Only one institution (Monash University) mentioned threshold standards on minimum IT competency for staff (and plans for faculty).

The only sample institution to require computer ownership by students was the Virtual University of Tec de Monterrey. The respondent provided the detailed specification designed to guide student purchase (*e.g.* processor speed, capacity of hard drive, screen resolution, Internet speed, etc.). While the Open University Catalunya did not formally require students to own computers, the reality was that all students did own such a machine (or at least had access to one), and taking an Open University Catalunya programme would be impossible without such a facility. This was also the situation for most provision at the University of Maryland University College. The profile of the typical online student (working adult) was said to make computer ownership (or access through an employer) very likely.

At some institutions, particular faculties/departments mandated computer ownership. For example, the Graduate School of Industrial Administration (business school) and Heinz School of Public Policy at Carnegie Mellon University required every student to own a computer. At the Open Polytechnic New Zealand, from 2005 all bachelors business students will be required to have access to a computer and the Internet, and some other courses are expected to follow suit. At the UK Open University, the University's 2002 policy on IT access stated that: "the assumption [is that in] 2005 ... students have access to ICT for study". The document goes on to explain that some courses require computer access for study and assessment, while others "use ICT in such a way that occasional access is sufficient for a good learning experience, and while lack of access will inevitably entail a lesser learning experience, it should still be possible to pass the course". Another part of the policy states that "students will be required to use the Internet for administrative transactions by 2005". In 2004, all Associate Lecturers (part-time staff based remotely) were required to have access to a personal computer and to the Internet. Students taking the bachelor

degree in business at the Open Polytechnic New Zealand were required to have computer and Internet access. The respondent characterised this as indirect facilitation insofar as the requirement meant that students could use government financial aid to purchase a computer. Without the requirement, this would not have been permissible. Zurich University mentioned student access to bulk discounted hardware and software through special arrangements with vendors. No sample institution, or unit within a sample institution, specified the brand of computer students must purchase.

At Carnegie Mellon University, it was debated whether mandated student computer ownership should be a policy across the institution as a whole, but this was resisted on cost grounds. While 95% of student in fact do own a computer, it was judged unreasonable to make such a demand on the remaining 5% – who were assumed to not be able to afford a computer. Other reasons for resisting such a policy were lack of evidence (from other institutions) of the pedagogic benefits of mandated ownership (beyond user satisfaction surveys) and concern that to maximise educational value the specialist software required by many subjects would need to be loaded onto every computer. The Monash University respondent cited a federal government commitment to equity as inhibiting institution-wide mandated student computer ownership at Australian universities.

Not a single respondent to the Observatory survey reported a “formal policy mandating computer ownership by all students”, and only six (5%) said such a policy was under development. Moreover, only 13 (11%) offered subsidies to students for computer purchase, and only one cited this as under development. In the United States 2003 Campus Computing Survey, only 5.4% of responding institutions said that computer ownership was required for all undergraduates. Thirty-nine per cent said ownership was recommended. For specific disciplines, the required figure rose to 12%. The predicted “required for all” figure for the academic year 2005/06 was almost 13% (Green, 2003, p. 13).

### ***Student/computer ratios***

Table 4.4 provides an overview of the ratio of computers to students at each sample institution. The table offers a sense of development over time (included predicted development), and compares the ratio concerning computers paid for/facilitated by (*i.e.* through an institutional loan or bulk purchase scheme) the institution, with the ratio when independently purchased student owned computers were included. For distance-only institutions, where students accessed materials from home/work, the first category (computer paid for/facilitated by the institution) often did not apply. Many respondents indicated that the data were not collected systematically, and thus that the figures given were estimates. Some respondents chose to express the ratio as a percentage.

**Table 4.4. Computer/student ratio**

Ratio	Computer paid for/ (Facilitated by the institution)			Computers paid for (Institution and students independently)		
	2000/01	2003/04	2006/07	2000/01	2003/04	2006/07
Time period	2000/01	2003/04	2006/07	2000/01	2003/04	2006/07
Aoyama Gakuin University	1:3-5	1:2	1:2	1+:1	1+:1	1+:1
Asian Institute of Technology	1:3-5	1:3-5	1:5	1:2	1:1	1:1
Carnegie Mellon University	1:1	1+:1	1+:1	1:1	1+:1	1+:1
FernUniversität Hagen	-	-	-	-	“Most”	-
Kyoto University	1:21-50	1:21-50	1:21-50	1:21-50	1:11-15	1:3-5
Monash University	1:30	1:20	1:35	-	-	-
Multimedia Kontor Hamburg	N/A	N/A	N/A	1:3-5	1:2	1:1
Open Polytechnic New Zealand	N/A	N/A (but see above)	N/A	-	85%	Expected to increase
UK Open University	N/A	N/A	N/A	81%	89%	99%
Open University Catalunya	N/A	N/A	N/A	1+:1	1+:1	1+:1
Virtual University of Tec de Monterrey	1:21-50	1:6-10	1:3-5	1+:1	1+:1	1+:1
UCLA Extension	N/A	N/A	N/A	Unknown	vast majority	Unknown
University of British Columbia	1:3-5	1:2	1:1	1:2	1:1	1+:1
University of California, Irvine	1:16-20	1:6-10	1+:1	1:2	1:1	1+:1
University of Maryland University College	-	Vast majority	-	-	Vast majority	-
University of Paris Nanterre	1:120	1:65	1:25	unknown	unknown	Unknown
University of Sao Paulo	1:16-20	1:11-15	1:6-10	1:3-5	1:2	1:1
University of South Australia	1:21-50	1:16-20	1:11-15	1:21-50	1:16-20	1:6-10
Zurich University	1:150	1:75	1:21-50	1:2	1:1	1+:1

Source: OECD.



Table 4.4 indicates that student-owned computers were a significant source of first resort hardware in many sample institutions, and the trend was predicted to continue. For example, at Kyoto University, while the ratio for institution-owned/facilitated computers remained constant between 2000/01 and 2003/04 (and was predicted to remain so until 2006/07 – at least in category terms), when student-owned computers are factored in the ratio improves dramatically over time. Zurich University was a good example of an institution where institution-owned computers are far outnumbered by student-owned systems. There was also evidence that growing student ownership of independently purchased computers was permitting some institutions to reduce their holdings. At the Asian Institute of Technology and Monash University, the predicted ratio of institution-owned/facilitated computers in 2006/07 represented a decline compared to 2003/04, and was explicitly compensated for by predicted growth in student ownership. No campus-based institution declared a policy to eliminate computer labs, seeing an ongoing role in terms of convenience, last resort and access to restricted software. It was notable that the new west coast campus of Carnegie Mellon University had no computer labs at all, and required every student to own a laptop. As student ownership grows, the task for the institution is to provide network access (including in classrooms) for student-owned machines, and flexible access to appropriate software. The University of British Columbia respondent stated that the “current view is that personal computers are like other learning aids (*e.g.* textbooks, paper) and as such are the responsibility of students”. This indicates a shift in perception from personal computing hardware as the responsibility of the institution, to it being the responsibility of the student (in terms of both purchase and maintenance). Insofar as it requires increasingly flexible access to ICT, e-learning may be driving this trend. There was no clear association between institutions with a low computer/student ratio and investment in e-learning.

Governments also play a role in the access issue. For instance, to secure access to the Internet, the French Ministry of Education, Higher Education and Research launched the Student Laptop Programme (September, 2004) in partnership with a set of private companies (hardware companies, telecommunication companies and banks). The scheme allows students to pay for a laptop with a Wifi card (credit facilities of one euro per day).

Among Observatory respondents, taking solely institution-owned/facilitated computers, only one institution reported ratios of one-to-one or better; and only a further 7% had attained a ratio of one computer for every three-five students. At 36%, the most common reported category was 1:6-10, with 1:11-15 and 1:16-20 constituting a further 33% of returns. When student-owned computers were included, almost all institutions

reported an improved ratio. Taking the average figures by category (*i.e.* the pre-defined ratio categories from one to nine), the overall average improved from 6 to 3.9, suggesting that student-owned computers make up a significant proportion of total available personal computing hardware. Asia-Pacific, Canadian and UK respondents exhibited a stronger improvement than low income/low-middle income respondents, reflecting the reduced purchasing power of the average student in low income/low-middle income countries. The Observatory survey did not request historical and predicted future ratios, ruling out an assessment of whether particular institutions (as some OECD/CERI sample institutions appear to have done) have or plan to reduce their holdings as student ownership grows.

### ***Remote access***

Most OECD/CERI respondents cited some form of remote network access for faculty and students (*e.g.* a remote access server or a VPN – Virtual Private Network – perhaps outsourced to an Internet Service Provider [ISP]). As one would expect, remote access was most comprehensive (in terms of services available) at dedicated/partial virtual institutions (*e.g.* Open University Catalunya, University of Maryland University College). Some institutions (*e.g.* Carnegie Mellon University) provided free dial-up remote access, with plans to move to broadband in the next few years (unless the market mainstreamed domestic broadband). Mainstream private broadband access was said to be already a reality in Japan. At the University of British Columbia, 20 hours per month of free dial-up access is provided. Citing data from January 2003, 50% of the University of British Columbia students were reported to have personal access to broadband.

The VPN approach solves the problem of log-in access determined by user domain name (*i.e.* a VPN provides remote users with authenticated “insider” status). Alternatives include use of person-based (rather than domain-based) authentication, or use of inter-institutional authentication (*e.g.* the Shibboleth protocol). The Carnegie Mellon University respondent reported problems with remote access to a particular LMS (*i.e.* the authentication structure would not operate across the corporate firewall). An example of person-based authentication was cited by the UK Open University. SAMS (Student Access Management System), an in-house development, permits remote access by students by means of a unique identifier and password structure. For a number of institutions, a longer-term vision was to enable secure remote access to an institution’s entire network from any location worldwide (*e.g.* to accommodate travelling faculty and remote students). This was particularly important to regional institutions

such as the Asian Institute of Technology. Remote access to an institution's network is a key part of the systems integration agenda described above.

#### **4.9. Strategy on electronic journals and e-books**

Alongside the development of online library support and advice services, all sample institutions reported growing acquisition and use of electronic journals, and to a lesser extent e-books. In general terms, notably in science, technology and medical fields, electronic journals, both due to lowering of publication barriers and streamlined delivery, have greatly increased the availability and range of titles. Major electronic journals publishers, such as Emerald, allow institutional consortia to bulk buy numerous titles at much reduced cost. There are examples of multi-institution, multi-publisher deals, such as those brokered by national organisations such as the Joint Information Services Committee in the UK (see National E-journals Initiative: [www.nesli2.ac.uk](http://www.nesli2.ac.uk)). At Monash University, it was reported that about 60% of library usage now took place electronically from outside the institution. Many respondents cited the currently limited range of e-book titles as a major reason for minimal take-up to date. The main rationales for electronic journal adoption were cost and space savings compared to paper-based equivalents, accessibility, functionality and the desire to increase the number of titles available. The UK Open University respondent argued that while online journal acquisition was primarily driven by faculty research, this meant that such resources were available at a distance to remote students for the first time. This was said to “open up new pedagogic models which closely match the independent resource based learning which students at campus universities undertake”.

Hard copy journal acquisition was widely reported to be in decline (specific figures not provided), with purchase of hard copy books generally stable or on the increase. At the University of British Columbia, to reduce costs and widen access, there was a policy to move in the direction of online only journal subscriptions “where a reliable, stable and up-to-date online version exists”. At the University of South Australia, the library did not initiate a print subscription if an online version was available unless there was a strong case made by the relevant school/research centre. Moreover, the library preferred to acquire e-book only versions of in-demand titles. Alongside this, the Multimedia Kontor Hamburg respondent asserted that many publishers bundled print and online versions together, making it difficult to purchase only one or the other. Thus at this institution the practice was to offer online journals in addition to the print versions (with a planned shift to online only from around 2008 as and when publisher models change). Some institutions set out a vision dominated by online resources,

while others saw print and online as complementary. For example, the Carnegie Mellon University respondent outlined a strategy to create a “predominantly digital library”, while at the Open Polytechnic New Zealand e-books were viewed as first and foremost a resource for students unable to access print copies. Even a virtual university such as the Open University Catalunya reported use of printed journals and books (housed in local support centres). The University had a policy of making some form of abstract available electronically to give remote students an indication of the contents of the item. By contrast, the Virtual University of Tec de Monterrey had no hard copy library at all. Evidence of the staying power of printed books came from the University of Maryland University College’s book delivery service to students in the United States and faculty members worldwide. The University of Maryland University College was also experimenting with an equivalent e-book service.

A number of respondents cited notable initiatives in this territory. The Carnegie Mellon University respondent described the University’s hosting of “The Universal Library”. This was an attempt to preserve and disseminate the world’s knowledge in digital form, with an initial target of one million books (Million Book Project). The work is funded by the National Science Foundation in the United States and by a number of companies and foundations. Various universities in India and China are responsible for scanning, indexing and hosting activity. The Carnegie Mellon University is also a founding partner of the “Text Archive”, an initiative announced in December 2004 by the non-profit Internet Archive, and also involving the US Library of Congress, the Canadian universities of Toronto, Ottawa and McMaster, China’s Zhejiang University, the Indian Institute of Science, the European Archives and Bibliotheca Alexandrina in Egypt. The “Text Archive” will pool a number of existing digital book archive initiatives, including Carnegie Mellon University’s Million Book Project. The alliance followed Google’s digital book archive partnership with the universities of Oxford, Harvard, Stanford and Michigan, and the New York Public Library. Both initiatives aim to make as much material freely available as possible.

The Virtual University of Tec de Monterrey is part of Tecnológico de Monterrey’s (the parent institution) “Biblioteca Digital” (Digital Library) scheme, whereby the 33 physical campuses of the university formed a consortium for the purchase of electronic books and journals. The Digital Library has mainly purchased bundled subscriptions from major publishers/aggregators such as Emerald and netlibrary, rather than individual items direct from publishers. At national level, the New Zealand National Library has organised a similar scheme called EPIC ([www.epic.org.nz/nl/epic.html](http://www.epic.org.nz/nl/epic.html)). EPIC is a non-profit consortium established to enhance access to e-resources for all New Zealanders and to negotiate and

facilitate access to quality e-resources for library and information organisations and their customers. EPIC has negotiated nationwide licences with EBSCO and Gale (two major global e-content aggregators). Every person in New Zealand will be able to access the electronic resources via a “New Zealand Library”, covering 171 libraries in all, comprising 94% of the country’s tertiary libraries, 91% of public libraries, 32% of New Zealand’s special libraries. All registered New Zealand schools are eligible to participate, and the Open Polytechnic New Zealand is a participant. The new “Libraries Australia” is a similar initiative.<sup>7</sup>

A number of institutions have developed some form of electronic repository to archive faculty research papers. For example, Monash University has an “e-press repository”. There was said to have been little faculty use to date, but further promotion was planned. Many institutions (*e.g.* University Sao Paulo) now encourage online archiving of masters and doctoral theses. UCLA Extension has an arrangement with Xan-Edu, a commercial repository of over five million items of popular and scholarly research, plus videos and graphics. Faculty are able to recommend particular items for students to access, and students have the option of taking out a blanket subscription to the entire resource. At the UK Open University, it was now policy to produce all learning materials in e-book format as well as print.

Some respondents identified concerns and issues. One present problem associated with online journals was replicating norms of inter-university access. The Carnegie Mellon University respondent noted that in the past faculty and graduate students had been encouraged to utilise the holdings of neighbouring libraries. With the advent of electronic journals/e-books, licence agreements or authentication requirements were said to have effectively barred this practice. Cross-institutional or national agreements ameliorate this tension.<sup>8</sup> Another problem seen to be a result of expanded electronic access to library-type resources was said to be a trend for students to rely more heavily on “short articles rather than extended texts”. The Open Polytechnic New Zealand respondent sounded a note of caution concerning the role of aggregators such as EBSCO and Emerald. At this institution, subscription to a hard copy journal was only stopped if an online subscription had been arranged directly with the publisher. The institution was wary of cancelling print subscriptions when electronic access was only available through an aggregator (which might drop a particular title from its “bundle”). The Virtual University of Tec de Monterrey respondent identified

---

7. [www.nal.gov.au](http://www.nal.gov.au)

8. Conyers, A. and P. Dalton (2005), NESLi2 – analysis of usage statistics (summary report), JISC. URL: [www.jisc.ac.uk/uploaded\\_images/jiscnesli2summaryeb.pdf](http://www.jisc.ac.uk/uploaded_images/jiscnesli2summaryeb.pdf). Last Accessed: 12 May 2005.

the need for more “local” content, such as Spanish titles. The institution plans to contract with a vendor to digitise in-demand items.

There was some evidence of a blurring between journals/books and electronic learning materials, the ease of integrating online items into e-learning provision, and a growing role for the institutional library as a generic repository/gateway for materials in the broadest sense. A large majority of respondents to the Observatory survey (73%) cited substantial investment in campus library access to online journals and e-books, and only three did not see this area as a strategic priority.

#### 4.10. Conclusion

This chapter rounded up a range of activities that support or complement e-learning in tertiary education. Among OECD/CERI case studies, most gave the impression that IT networks and bandwidth were more than keeping pace with e-learning demands, although the broader sample captured by the Observatory survey revealed widespread plans for urgent upgrades. Expanding network access/reliability, rather than first and foremost developing the network itself, were common strategies.

Portal development and systems integration generally are key trends to attempt to rationalise and consolidate disparate academic and administrative systems and information. At most institutions, such developments are very much “in-progress”, with the role of in-house versus commercial applications and adoption of emerging open standards still being unclear variables. The portal may subsume the LMS, or the other way round; and this area has yet to see the vendor dominance characteristic of the LMS in tertiary education.

Data on student/computer ratios suggests a growing role for the student-owned computers, with some institutions strategically reducing their holdings. Few institutions cited plans to mandate student ownership (even at programme level), and one of these pointed towards student access to government funds as a key enabler. Electronic journal adoption was ubiquitous, although issues remained at long-term title availability online and license restrictions. E-books were less common, although a number of respondents were involved in major national/international digitisation initiatives.

Nevertheless LMS adoption is clearly one of the most prominent features of e-learning development in tertiary education worldwide. Both the OECD/CERI and Observatory surveys found widespread adoption, with trends towards institution-wide implementation and consolidation in favour of the two leading commercial vendors, Blackboard and webCT. Notably

among dedicated virtual and mixed mode/distance institutions, use of in-house/open source alternatives was more common.

Does in-house development signify valuable institutional autonomy over processes that are increasingly at the heart of instruction, or wasteful duplication of effort? Are leading proprietary systems pedagogically restrictive (as the backers of open source rivals such as Sakai and LAMS claim), or is informed use of increasingly vendor-neutral tools the key factor? Alongside widespread LMS adoption at institutional level, both surveys revealed only limited impact in the classroom. One study concluded that relatively limited usage of an LMS should not be dismissed as evidence of lack of innovation. Basic functions such as distribution of required readings or posting of assessment results “could signal an adaptation to a more fundamental change in how students prefer to get access to course materials, which could have dramatic implications on the geography of access, such as where students study and the global audience that could be reached by a single instructor” (Dutton *et al.*, 2004, p. 146). It is important to emphasise the relative novelty of the LMS as a mainstream product, and allow innovation to emerge in stages over time. Institutions still face key questions concerning how LMS-centric content development and administration is undertaken, notably the balance between local autonomy and institutional quality/consistency. Hopefully answers will emerge over time.

## *References*

- Carmean, C. and J. Haefner. (2002), “Mind over Matter – Transforming Course Management Systems into Effective Learning Environments”, *EDUCAUSE Review*, November/December.
- Cornford, J. and N. Pollock (2003), “Putting the University Online: Information Technology and Organisational Change”, Society for Research into Higher Education/Open University Press.
- Duncan, J. (2004), “Convergence of Libraries, Digital Repositories and Management of Web Content”, report from the EDUCAUSE Evolving Technologies Committee, Boulder, EDUCAUSE.

- Dutton, W., P. Cheong and A. Park (2004), “An Ecology of Constraints on E-learning in Higher Education: The Case of a Virtual Learning Environment”, *Prometheus*, Vol. 22, No. 2, pp. 131-149.
- Garrett, R. (2004), “The Real Story Behind the Failure of the UK eUniversity”, *EDUCAUSE Quarterly*, Vol. 27, No. 4.
- Green, K. (2003), “Campus Computing 2003: the 14<sup>th</sup> National Survey of Computing and Information Technology in American Higher Education, Encino”, CA, The Campus Computing Project.
- Kvavik, R., J. Caruso and G. Morgan (2004), “ECAR Study of Students and Information Technology, 2004: Convenience, Connection and Control”, Research Study from the EDUCAUSE Centre for Applied Research, Boulder, Colorado.
- Paulsen, M.F. (2003), “Online Education and Learning Management Systems: Global E-learning in a Scandinavian Perspective”, Oslo, NKI Forlaget.
- PS RAMBOLL Management (2004), “Virtual Models of Universities – Final Report”, report commissioned by the European Commission.





## Chapter 5

### Partnership and networking

Partnership has burgeoned in tertiary education over the last decades, and is a key characteristic of contemporary e-learning arrangements. The rationales for joining forces include achieving benefits such as advanced technology, quality curricula, enhanced market presence, and lower costs. This chapter documents institutional involvement in e-learning consortia of various kinds, arrangements to make an institution's e-learning materials available to third parties, for example through a fee-based or free repository, and cases where an institution outsources aspects of e-learning to third parties.

Partnership has burgeoned in tertiary education over the last decades, and is a key characteristic of contemporary e-learning arrangements (OECD, 2001, 2004). The rationales for joining forces include achieving benefits such as advanced technology, quality curricula, enhanced market presence, and lower costs. What kinds of partnerships are being formed? What kinds of activities are taken up by partnerships? This chapter documents institutional involvement in e-learning consortia of various kinds (5.1), arrangements to make an institution's e-learning materials available to third parties, for example through a fee-based or free repository (5.2), and cases where an institution outsources aspects of e-learning to third parties (5.3). The chapter also presents concrete activities reported by the OECD/CERI case studies institutions, and casts light on their diversity in terms of shared materials, joint technology development, "virtual university" networks, joint programmes, joint research, joint marketing, joint development funds and joint technology training, etc. Consortia ranged from sub-national, to national, to regional, to international. Sharing materials and outsourcing key aspects of e-learning activity was rare and not always given much strategic attention.

#### 5.1. E-learning and other consortia

As higher education worldwide has become more internationalised, ICT-dependent, commercialised and mass-scale, the resources of individual

institutions may be seen alone as inadequate for the tasks at hand (Teather, 2004). As both cause and effect of these changes, it is not surprising that partnerships of various kinds have been a distinguishing feature of e-learning development in higher education in recent years.

The most prominent alliances have been between universities and the private sector (*e.g.* U21 Global – a commercial online provider – combining a number of research universities worldwide and the Thomson Corporation, see Box 5.1), and at national level (*e.g.* the formation of various national virtual universities – such as the Finnish Virtual University and the Dutch Digital University). There are also attempts to create regional universities *e.g.* University of Arctic, Mediterranean Virtual University and the proposed “European Networked University” involving universities from a number of European countries.<sup>1</sup> Non-delivery partnerships focus on such things as learning object repositories (*e.g.* the Multimedia Educational Resource for Learning and Online Teaching – MERLOT), IT procurement and good practice.

The underlying rationale across all these examples is that by joining forces, institutions are able to achieve benefits including more dynamic and relevant curricula, superior technology, enhanced market presence and lower costs. Of course, conceptual, structural or other weaknesses of a partnership can inhibit such aspirations. One study in Europe found a strong connection between “front-runner” universities in the development of e-learning and the extent of related partnerships with other organisations (PS RAMBOLL Management, 2004, p. 34). This finding was generally supported by the OECD/CERI sample, but with some important exceptions.

#### **Box 5.1. U21 Global**

U21 Global was established in 1999 to offer online courses in accountancy, business and IT, backed by 16 members of the international university consortium Universitas 21 and Thomson Learning (a subsidiary of Canadian publishing house Thomson Corporation). Universitas 21 (U21) brings together 16 research-intensive universities from around the world, including University of Edinburgh from the United Kingdom, University of Virginia from the United States, Fudan University from China and Lund University from Sweden. Following the launch of its first course (an MBA) in 2003, U21 Global is now branded as the “world’s premiere” online graduate business school.

1. See the MENU website: <http://ans.hsh.no/lu/inf/menu/>

**Box 5.1. U21 Global (continued)**

In the partnership, Thomson is responsible for supplying U21 Global with technological and administrative support, as well as contracting faculty to create and teach the courses. The universities have given their names to the venture (and some member faculty may develop/teach on some courses), and participate in U21pedagogica, a course approval body that is a branch of U21 independent from Thomson. Both U21 and Thomson each contributed US\$25 million to the project. The decision to create a new awarding body – in effect, U21 Global itself – rather than rely on awards of member institutions, marks U21 Global out from current and former competitors such as the Global University Alliance and UK eUniversities Worldwide. Students get a degree from U21 Global featuring the crests of all 16 member universities, which are committed to ensuring that programmes are of the same standing as those provided by their own universities.

In 2004, U21 was reported to have approximately 400 students from 25 countries enrolled in its MBA programme, and in October 2004 more than 1 400 applications were waiting to be processed. Just over a year after its launch, these figures might be judged a success. However, against the targets and projections for the operation, 400 enrolments seem far from optimal. U21 initially predicted that 1 000 students would be enrolled by 2003, 5 000 in 2004 and 27 000 students by 2005. The U21 Global MBA programme is evidence that fully online degree courses can be very time consuming to develop. Five years since its inception, U21 has only one core programme in operation (students may take individual courses within the MBA, as opposed to the entire degree). U21 Global is one of the survivors of the dot-com boom, when so many ill-conceived online higher education initiatives were launched, only to crash months or years later. However, it is difficult to assess long-term prospects. There is no published information on when U21 Global might break even, and no independent account of the student experience or retention/attainment rates. In late 2004, the company announced an interesting diversification to its business – to provide the online elements of a mixed mode programme offered by the Loyola Institute of Business Administration (LIBA). By selling already developed course material and support services, U21 Global might generate a new revenue stream, allowing enrolments on its core product, the MBA, to build slowly.

The project website can be found at: <http://u21global.com>

Respondents reported institutional involvement in a wide range of consortia and partnerships, encompassing shared materials, joint technology development “virtual university” networks, joint programmes, joint research, joint marketing, best practice, joint development funds, joint technology training, connectivity, specific applications, IT procurement and generic institutional associations. Consortia ranged from sub-national, to national, regional, and international. Respondents interpreted the question in different ways. For example, some mentioned membership of generic

institutional associations (*e.g.* regional associations of distance learning institutions), as well as more specific e-learning partnerships. Respondents from three institutions (UK Open University, Virtual University Tec de Monterrey and University of Sao Paulo) said that their institution was not a member of any relevant consortia. Some respondents included one-to-one institutional collaborations as well as larger groupings. Using the above categories, the reported partnerships are outlined as follows.

### ***Generic distance learning/IT associations***

Examples included the Inter-University Distance Learning Federation (University of Paris Nanterre – a longstanding network of distance/e-learning universities in France), the European Association of Distance Teaching Universities (FernUniversität Hagen, Open University Catalunya), International Council for Open and Distance Learning (FernUniversität Hagen, Open University Catalunya), European Distance and e-learning Network (Open University Catalunya) and EDUCAUSE/EDUCAUSE Centre for Applied Science (ECAR) and the Western Co-operative for Educational Technology in the United States (Carnegie Mellon University, University of British Columbia). More selective examples included institution's membership of the "Common Solutions Group". This is a collective of US-based research universities that share experiences and good practice in the broad area of information technology (including considerable recent attention to e-learning, *e.g.* repositories, platforms and technical standards).

### ***Shared materials/joint technology development***

Examples included the Asia Pacific Initiative (Asian Institute of Technology). The Asian Pacific Initiative, led by the Tokyo-based United Nations University, was designed to establish institutional co-operation on the creation of e-learning materials concerned with human development and environmental sustainability. The Asian Institute of Technology was attempting to establish an "Asia Europe Meeting e-Education Hub" to facilitate the exchange of e-learning content and expertise between Asia and Europe, and to offer access to resources to less connected parts of both regions. The University of British Columbia was a member of edusource, Canada's network of object repositories, and was working with Western Washington University in the United States to explore teaching and learning applications that might enable online access to "major scientific instruments" (*e.g.* supercomputers). The University of British Columbia was a founding member of uPortal, an international consortium of universities and corporations established to develop an open source portal application.

### ***“Virtual university” networks***

Examples included the Asian Institute of Technology’s membership of the Greater Mekong Sub-Region Virtual University, an attempt to network the resources of a number of distance and open universities in the region; and Kyoto University’s membership of “University Consortium Kyoto”, a federation of universities in Kyoto to co-develop e-learning. Multimedia Kontor Hamburg itself was a “virtual university” consortium of six Hamburg universities. The University of British Columbia was a member of the longstanding “Open University Consortium”, pooling the distance learning provision of a number of universities and other institutions in the province. The University of South Australia and Monash University were members of the similar (national – involving 32 providers) “Open Universities Australia”. Universitas 21, of which the University of British Columbia is a member, has an e-learning delivery arm, U21 Global (run in co-operation with Thomson Learning, see Box 5.1), and a collective quality assurance function (that approves both U21 programmes and offers its services to third parties). The University of South Australia is a member of a similar initiative (bringing together six teaching/employability-driven universities from Australia, New Zealand, UK and USA), the Global University Alliance. Zurich University was part of the “Swiss Virtual Campus”, a federal scheme to co-ordinate e-learning development nationwide (see Box 8.1).

### ***Joint programmes***

Examples included Aoyama Gakuin University’s FAST (Financial Analysis and Security Trading) Programme – a financial trading simulation – run in co-operation with a small number of foreign universities, with Carnegie Mellon University’s Graduate School of Industrial Administration as the main partner. Using video-conferencing, students at Aoyama Gakuin University and elsewhere used the simulation to analyse data and develop practical skills, as well as exchange national perspectives. Institutional participants hold an annual conference. The Tertiary Accord of New Zealand (TANZ) has jointly developed a “Graduate Certificate in Applied e-learning” aimed at instructors from all education sectors. In a related development, the new “BCCampus” initiative (a collaboration between higher education institutions in British Columbia, including the University of British Columbia) aims to establish a “collaborative framework for course development”, as well as offering a provincial portal to e-learning provision.

### ***Joint research/other co-operation***

Examples included the Open Polytechnic New Zealand's membership of the "Tertiary Accord of New Zealand" (TANZ), an association of five New Zealand polytechnics. The aim of TANZ is to promote open sharing of developments and experiences, reduce duplication of effort, and to work towards good practice. The accord has a wide remit, including collaborative research into e-learning. FernUniversität Hagen is a member of EUROPACE, a network of universities, companies and agencies formed to co-operate on the development of ICT in European higher education.

### ***Joint marketing***

The Open Polytechnic New Zealand is part of the Wellington Education Cluster, a co-operative with two other local higher education institutions. One project is joint marketing of online courses. As already noted, the University of British Columbia is part of the new "BCCampus" portal initiative to offer a single online portal marketing higher education provision across the province. A more ambitious project is HEAL – Higher Education E-learning Courses Assessment and Labelling – funded by the European Commission. The aim of HEAL is to develop a European portal for quality-assured (making use of the European credit transfer system – ECTS) e-learning programmes, and to offer student support services. The University of Paris Nanterre is a participant (see Box 1.1).

### ***Best practice***

Examples included the "Roadmap to Redesign" project run by the Centre for Academic Transformation at Rensselaer Polytechnic Institute in New York State (Carnegie Mellon University is a core partner). The "Roadmap to Redesign" initiative builds on the "Pew Grant Programme in Course Redesign", a US\$8.8 million project designed to develop and trial methodologies to use forms of e-learning to reduce programme delivery costs and raise student attainment. The new venture is an attempt to streamline and disseminate to a wider audience those methodologies found to be most successful. Carnegie Mellon University was one of thirty institutions funded under the original programme. The University of British Columbia is a member of Universitas 21, an international network of research-intensive universities with a broad remit, including sharing best practice in teaching and co-operation concerning the development of learning technologies. The institution is also a member of the "New Media Consortium", an organisation that brings together "learning organisations" (e.g. higher education institutions, museums, libraries) and high-tech companies to collaborate in a non-competitive environment. The University

of Maryland University College is part of Sloan-C, a learning technology best practice network funded by the US Sloan Foundation.

### ***Joint development fund***

Examples included the “Melbourne-Monash Grant Schemes” funding innovative teaching and joint programme development, a joint initiative between Monash University and the University of Melbourne in Australia. The only reported example was training materials on webCT’s VISTA platform developed collaboratively by Monash University and Deakin University, Australia.

### ***Connectivity***

Examples included the Asian Institute of Technology’s involvement in the “Asian Internet Interconnection Initiative”, providing broadband connectivity to the region; and the University of British Columbia’s membership of BCNet, a non-profit society supporting advanced IT networks for the province’s research and education communities.

### ***Specific applications***

Examples included the Asian Institute of Technology’s work with the Japanese Space Exploration Agency and Malaysia’s Multimedia University on e-learning provision based on multi-point video-conferencing; and Kyoto University’s membership of the “Space Collaboration Consortium” (SCC), an initiative funded by the Japanese government. The aim of the SCC was to co-develop satellite-based delivery, and involved around 50 Japanese universities and research institutes. The University of British Columbia is a webCT Institute, one of a network of higher education institutions identified by webCT that demonstrate exemplary practice with respect to the use of webCT applications in support of university teaching and learning goals and support.

### ***IT procurement***

Examples included national purchasing agreements (covering particular hardware and software) encompassing all universities/higher education institutions (*e.g.* Australia, UK). The Open Polytechnic New Zealand is a member of New Zealand’s “Tertiary IT Procurement Group”. UCLA Extension mentioned institution-wide (across the multi-campus University of California) and state-wide procurement.



## 5.2. Third party access arrangements (Question 6.8)

Very few respondents cited cases of e-learning provision being sold to third parties. The only examples were the UK Open University's commercial arm Open University Worldwide, established specifically to sell the institution's programmes internationally and to the corporate sector, and instances where the Open University Catalunya has sold provision to other institutions. A similar arrangement is in place at the Open Polytechnic New Zealand.

All other activities cited concerned examples of, or interest in, making materials available for free. Perhaps the most developed example was Carnegie Mellon University's "Open Learning Initiative", a foundation-funded scheme to roll-out evidence-based e-learning programmes for free access by individuals (see Box 3.2). A number of other institutions pointed to recent changes of policy. Zurich University stated that the current version of its e-learning strategy gave a commitment to provide online guest access to all e-learning courses by Summer 2005; while at Kyoto University a specific position on intellectual property and dissemination has been adopted, making some materials available free and other for a fee.

Multimedia Kontor Hamburg indicated that it had yet to formulate a clear policy in this area, but expected to discriminate by user (*e.g.* free for use in undergraduate programmes offered by third parties, and fee-based if delivered to postgraduates or for continuing professional development purposes). The University of Sao Paulo respondent pointed to a tradition of mission based development and dissemination of materials and other resources to and for third parties, while the Aoyama Gakuin University respondent noted that some videoed lectures and associated notes were already freely available on its website. More generally, a few institutions said that where faculty members owned materials, some chose to post it online for public access. The Carnegie Mellon University respondent was of the opinion that one reason why some faculty are reluctant to do this was because of the general lack of fine-grained access controls in mainstream learning platforms (*e.g.* to restrict access to student grades).

The Asian Institute of Technology, UCLA Extension and the University of South Australia reported early discussions about third party access to materials (no further details given), while Monash University, the Open Polytechnic New Zealand and the Virtual University of Tec de Monterrey said no new third party access arrangements were currently on the agenda.

### 5.3. Outsourcing (Question 1.10)

Is outsourcing a significant reason for institution to engage in partnerships? An example of significant outsourcing is the University of Utrecht in the Netherlands which outsourced its computing centre to Cap Gemini/Ernst and Young (PS RAMBOLL Management, 2004, p. 114). Question 1.10 asked whether institutions outsourced any aspects of infrastructure, maintenance or operations associated with e-learning. Most institutions in the OECD/CERI sample reported no significant activity of this kind, and seven none at all (Asian Institute of Technology, Aoyama Gakuin University, Carnegie Mellon University, FernUniversität Hagen, Kyoto University, University of Paris Nanterre, University of Sao Paulo).

The key exceptions were the Open Polytechnic New Zealand, UCLA Extension and the Open University Catalunya. In order to enter the fully online delivery market more quickly, the Open Polytechnic New Zealand contracted with NextEd, an e-learning brokerage, development and support firm, originally in Hong Kong, China, and now based in Australia. Using fully online courses developed by the institution in-house, NextEd provided a customised learning management system (a version of Blackboard), hosting, 18/7 technical support and copy editing. The rationale for this arrangement was that “the Open Polytechnic had a good materials development system, but very little experience with real-time customer support and electronic delivery”. Now the Open Polytechnic New Zealand has shifted to Moodle (replacing both the in-house “Online Campus” learning management system (LMS) and NextEd’s adapted version of Blackboard), the overall level of outsourcing has increased. Hosting and support has been contracted out to a local private firm (Catalyst, based in Wellington).

In the case of UCLA Extension, all initial e-learning efforts were undertaken in partnership with an outside company – OnlineLearning.net, now owned by the US firm Laureate Education. Course development was pursued jointly, and technical maintenance, student support and marketing were outsourced. The rationale was to engage in unfamiliar activities at a predictable cost by utilising specialist expertise. The Open University Catalunya indicated that a wide range of activities (*e.g.* authoring and production of e-learning materials, tutors, helpdesk, 24x7 technical maintenance and materials distribution) were outsourced, but offered no further details. Through its membership of the Global University Alliance, the University of South Australia contracts some aspects of hosting and technical support to NextEd.

The only other examples of outsourcing were small scale, ad hoc contracting of third party specialists (*e.g.* instructional designers, graphic

design, Web design). For example, prior to its demise, the UK eUniversity offered an Open University programme. The rationale for the UK Open University was to compare the production/presentation/marketing arrangements of a third party with in-house structures. By definition, university members of Multimedia Kontor Hamburg “outsource” aspects of e-learning development to the consortium (*e.g.* Multimedia Kontor Hamburg’s joint audio-visual studio and multimedia production lab). Of course, many sample institutions “buy-in” key elements of e-learning functionality (*e.g.* learning management systems and other applications) that sometimes include external hosting. The University of Maryland University College cited only “some assistance” with the operation of a call centre.

The Open Polytechnic New Zealand respondent offered some thoughts on the balance between in-house and outsourced arrangements. An attempt from the institution to outsource (as above) some elements of course development and marketing was said to have not always worked well, and it was implied that outsourced copy editing did not always offer the institution sufficient flexibility to make changes. (More generally, the outsourcing company was reported to be both reliable and cost-effective). The decision by the Open Polytechnic New Zealand to adopt Moodle (offering faculty more control over online course development and maintenance), building on the larger decentralisation agenda, and the outsourcing of hosting and technical support, is noteworthy. It suggests a model where the institution retains and devolves responsibility for the (core) activities of programme development, but outsources the (non-core) activity of hosting and technical support.

The UK Open University respondent commented that “our experience to date is that an external organisation was unable to better anything we could achieve through our own (cheaper) internal processes and systems”. The UCLA Extension reported that their arrangement provided a healthy challenge to conventional ways of working, but equally was seen to constrain some forms of experimentation when particular directions did not “align with the strategic goals of our partner”. The University of British Columbia respondent commented that vendor hosting was generally looked upon as a short-term solution – as a means of trialling a particular application (before hosting in-house) and building local capacity. This matched the perspective of UCLA Extension, if on a longer development cycle. The institution has now built up internal capacity across all previously outsourced functions. The contract with the company expired in the Summer of 2004, when all activity was taken in-house. The decision to shift the entire operation in-house was based on a long-term vision of e-learning as central to advancing UCLA Extension’s overall commitment to student learning. Zurich University cited short-term external contracting of some

aspects of technical/student support, software engineering and multimedia production, but stated that the aim had always been to learn from others in order to build internal capacity, and that most such outsourcing had already been discontinued.

Overall, it was striking that all sample institutions saw only minimal or short-term value in outsourcing key aspects of e-learning activity. This suggests a view of e-learning as core business, and a higher education setting as the best long-term development environment. This was supported by findings from the Observatory survey (specifically a question on outsourcing of general IT). No institution reported significant outsourcing of IT functions currently in place, and only one said such an arrangement was planned during the next year. Only a further eight (7%) cited plans on even a five-year horizon. Eighty-two per cent said that outsourcing in this area was currently not a strategic priority. The United States Campus Computing Survey for 2003 reported similarly high figures (Green, 2003, p. 20).

## 5.4. Conclusion

Partnership is another key characteristic of contemporary e-learning, and as already mentioned, partnerships may extend to a wide of range of activities. Many of the partnerships cited in this chapter are recent, or even not fully formed, so an assessment of impact or value is often not possible. Moreover, it was notable that some institutions very active in e-learning (*e.g.* UK Open University, University of Maryland University College, Virtual University of Tec de Monterrey) claimed to have few if any relevant partnerships. This may reflect a narrow notion of partnership, but serves as a reminder that “standing apart” may be viewed as robust a strategy as “pooling resources”.

Aside from limited commercial activity at the UK Open University and the Open University Catalunya, and the “Open Learning Initiatives” at Carnegie Mellon University, few respondents had given much strategic attention to making e-learning materials available to a wider audience (whether free or for a fee). Across all respondents, significant outsourcing of e-learning activities/support was rare and often temporary. Overall, it was striking that all sample institutions saw minimal or short-term value in outsourcing key aspects of e-learning activity. This suggests a view of e-learning (in the broadest sense – content development, delivery, technology, support etc) as core business, and a higher education setting as the best long-term development environment. Whether this view over-extends the notion of the “core”, and may foster long-term inefficiencies, is open to discussion.

## *References*

- OECD (2001), *E-learning: The Partnership Challenge*, OECD, Paris.
- OECD (2004), *Internationalisation and Trade in Higher Education – Opportunities and Challenges*, OECD, Paris.
- PS RAMBOLL Management (2004), “Virtual Models of Universities – Final Report”, report commissioned by the European Commission.
- Teather, D. (2004), “The Changing Context of Higher Education: Massification, Globalisation and Internationalisation”, *Consortia – International Networking Alliances of Universities*, Melbourne University Press.

## Chapter 6

### Staff development and organisational change

The chapter first gives an overview of how the case study institutions view the main forms of organisational change and barriers related to e-learning, before focusing on staff development. All sample universities are in the midst of thinking through and negotiating the potential contribution of e-learning in its various forms to organisational futures. The chapter illustrates the diversity of methods for developing institutional human resources. Just as there is no one “best model” or trajectory for e-learning development for institutions, nor is there a “one-size-fits-all” staff development training programme for e-learning.

E-learning is arguably in modern times the first teaching and learning “delivery” medium to challenge all forms of tertiary education. The organisational impact of other types of distance learning (print, radio, and video) was first to generate new kinds of institution (single mode distance learning specialists) and second to encourage dual mode institutions (offering both face-to-face and distance provision). The majority of traditional face-to-face institutions remained largely untouched, offering forms of distance provision at the margins, if at all, and admitting few distance learning innovations to penetrate the face-to-face classroom. Building on decades of development in computer-assisted learning, the e-learning boom, by presenting tools for both the face-to-face and distance setting, could have (and in some cases has had) a much wider impact. What kind of organisational changes are induced by e-learning? What kind of changes do institutions perceive as necessary to advance e-learning, and what are the current barriers to change?

The chapter first gives an overview of how the case study institutions view the main forms of organisational change and barriers related to e-learning (6.1-6.3). It then focuses on staff development (6.4-6.5). Indeed, when asked about major barriers to further online learning development at their institutions, 11 out of the 19 case study institutions cited a lack of human resources as one of the major barriers: lack of technical or specialist manpower, lack of time, awareness and skills on the part of academics. The issue of human resources is one of the most critical for institutions wishing to advance in e-learning. The chapter illustrates the diversity of methods for developing institutional human resources capacities for e-learning.

## 6.1. Context of organisational change (Question 8.1)

While many aspects of the OECD/CERI survey indirectly concerned organisational change connected with e-learning, the matter was specifically addressed in Question 8.1. Given that many sample institutions were in the relatively early stages of e-learning development, related organisational change and perceptions of change were necessarily iterative. Institutional “consciousness” of change was similarly in an emergent state. Moreover, the sample was organisationally diverse. Some institutions have created special “e-learning units” as the core focus of activity, others are rolling out e-learning across the institution as a whole, some are historically distance learning organisations adapting to e-learning, a number are distinct e-learning institutions in their own right, and some represent consortia. Thus the form and extent of organisational change varied.

Inevitably, change has an unpredictable element. “ICT innovation cannot be viewed as being on a pre-determined, technology-driven path that will produce predictable results ... Outcomes are shaped unpredictably by the negotiations and interplay between actors” (Dutton *et al.*, 2004, p. 133). Of course, e-learning specific organisational change overlaps with organisational change more generally (*e.g.* in response to changes in funding, student demographics, regulation and internationalisation, etc.).

Organisational change concerned with e-learning may be divided into examples and associated mechanisms of change accomplished, and mechanisms conceived/put in place to achieve desired future change. Many respondents described “organisational change” in terms of provision of new equipment/programmes or reaching new clients, rather than reflecting on how the institution might develop to enable such acquisitions/strategies to flourish. Given the early stages of e-learning development in many institutions, this is perhaps inevitable. However, this diverse interpretation of the question may mean that the full extent of forms of, and reflection on, organisational change at some institutions were not fleshed out in responses. Some institutions included or made available background documents, some of which touched on aspects of organisational change. However, many documents were 3-4 years old, making it difficult to assess practice against strategy and policy. This overview is thus necessarily limited.

Respondents used a number of key words to encapsulate aspects of organisational change. These included: integration, mainstreaming, devolution, centralisation, standardisation, flexibility and learner-centred. Some respondents (*e.g.* Monash University) described the drivers of change as urgent and change as increasingly fundamental and rapid, while others described careful, incremental change once assured of student benefit and market acceptance (*e.g.* Open University Catalunya). Not surprisingly, the position of an institution vis-

a-vis e-learning (*e.g.* campus-based versus dedicated virtual university) coloured perceptions of the drivers, nature and speed of change.

There were few cited examples of use of third party performance measurement tools to assess developments against strategy. One institution cited use (since 2003) of a generic strategic management tool – Balanced Scorecard – to assess form and progress on organisational change. This methodology, developed in the United States, connects institutional strategy, operational data and performance metrics, and is an attempt to develop non-financial (as well as financial) performance indicators. The Open University Catalunya respondent cited external review (*e.g.* at programme level through the European Foundation for Management Development, and at institutional level through the European University Association) as a catalyst for change.

## 6.2. Forms of organisational change

Table 6.1 lists major forms of organisational change mentioned by sample institutions, and offers an indication of citation frequency. It does not distinguish between achievement, progress and aspiration.

**Table 6.1. Form of organisational change**

Theme/form of organisational change	Citation frequency
Staff/organisational integration – including systems integration	High
Recruitment of new kinds of staff/staff status	High
Flexible delivery for on- or off-campus students	High
New conception of teaching and learning – active, student-centred, automation, asynchronous, etc.	High
Rationalisation of parallel delivery methods	Medium
Shift to new/standardised materials development processes and media	Medium
Mainstreaming ( <i>e.g.</i> removal of special funds, devolved authority)	Medium
External collaboration	Medium
Changing domestic student profile/expectations	Low
Reform of development/approval/evaluation processes; debate between centralised and devolved authority	Low
Reduction of classroom time	Low
Commercialisation	Low
Internationalisation	Low

*Note:* High = more than 50% of respondents; medium = between one quarter and one half of respondents; low = less than one quarter.

*Source:* OECD.



### ***New conception of teaching and greater flexibility of delivery***

Most institutions pointed to some form of commitment to a “new” conception of teaching and learning (*e.g.* teacher as facilitator, learner centred, some use of automation) and to greater flexibility of delivery. The latter took a number of forms, such as dual mode provision, modularity of content, conversion of print-based to online, remote access for students and improved access for out-of-country students. The UCLA Extension respondent specifically referred to pressure to revise the standard instructor-led, synchronous, limited cohort model in order to expand access and lower costs – but sustain quality. Systems integration was widely referred to. In practice, this meant achieving interoperability between the full range of IT systems (*e.g.* learning management systems [LMS], finance, admissions, library, desktop, etc.). Such integration was widely viewed as crucial administrative support for greater use of e-learning. As noted in Chapter 4, only a handful of respondents might be said to have substantially achieved this level of integration.

### ***Staff roles and development***

The other two “high” frequency items related to staff roles and recruitment. E-learning could indeed lead to new staffing requirements and to changes in the development of courses and programmes.

All institutions acknowledged the need to recruit a broader range of staff (*e.g.* instructional designers, cognitive/learning scientists, technologists, and marketing professionals) to move e-learning developments forward and to complement academic employees. For example, the UK Open University appointed a “Media Account Manager” for each faculty, based in the central “Learning and Teaching Solutions Unit” (LTSU), to provide dedicated advice to faculty and ensure consistency across the institution and within the LTSU. This respondent stated that the institution’s traditional team-based approach to course development stood it in good stead in the shift to e-learning.

More generally among respondents, there was also a trend towards enabling academic staff to develop and refine their own e-learning materials, with relatively little input from central specialists. Some institutions pointed to either in-house or third party “wizards”, allowing academics to cut-and-paste materials from standard applications into relatively standardised online templates. The emphasis was on ease-of-use rather than provision of technical skills. One institution indicated that a tradition of standard templates for production of offline distance learning materials facilitated mass transfer online. This devolution has impacted on staff development in some institutions, allowing sessions to focus on pedagogy rather than

technical matters. The Open University Catalunya operated a not dissimilar model. Founded as an inter-disciplinary institution without faculties/departments, this approach was designed to improve sharing between programmes and ensure a broadly common pedagogic as well as student-centred/personalised and technological schema.

At the Open Polytechnic New Zealand, the decision was taken to move away from a very centralised programme development and approval process (rooted in historical distance learning production) to a more devolved structure. This was undertaken to reduce administrative bottlenecks, increase academic staff skills and ownership, and position online development closer to academic departments and individuals. That said, a (reduced) central oversight function has been maintained in the interests of consistency of approach and quality; and a central “innovation” unit offers ad hoc advice and support. Academic input was also encouraged in the form of research into pedagogic good practice and student evaluation, etc. One institution constrained local development by making central support only available for programmes agreed by a department/the centre to be a strategic priority. At one institution, programme approval was expanded (beyond conventional notions of intellectual coherence) to encompass “resources, delivery mechanisms and costs, mechanisms to support student learning, and whether the programme was provided as flexibly as possible”.

### ***Delivery methods***

As noted elsewhere in this book, some institutions portrayed organisational change in terms of gradually eliminating parallel delivery methods in favour of a broadly common e-learning model (*e.g.* UK Open University), while others saw ongoing competitive advantage in offering parallel modalities (*e.g.* University of Maryland University College). There was thus no common vision of organisational change towards a unique mode of delivery. In line with the relatively low level of current and predicted activity under “mixed mode” online presence (see Chapter 1), few institutions made specific reference to reduction of classroom-based provision in favour of online. Indeed, some respondents (*e.g.* Multimedia Kontor Hamburg) firmly stated that wholly online provision was not contemplated. Some respondents were keen to avoid the reductionist realisation of the “virtual university”, reducing the university to information flows, and ignoring the roles of place and social interaction (Cornford and Pollock, 2003). Among distance learning institutions, the replacement of non-online modalities seemed less sensitive. The Carnegie Mellon University respondent questioned whether faculty/students at a traditionally campus-based, high tuition university will in the long-term accept delivery substantially by means of mixed mode/fully online programmes. The “Open

Learning Initiative” (and the faculty-based initiatives at Carnegie Mellon University on which it builds) was positioned as an attempt to generate top quality e-learning provision commensurate with Carnegie Mellon University’s status and price tag.

An example of a perceived new market accessible through e-learning was the large number of high school graduates who apply to the University (University of Sao Paulo) but cannot be admitted. The University of Sao Paulo aims to develop fully online programmes to accommodate demand. The “Open Learning Initiative” (see Box 3.2) is an attempt to refine course production to the point where high quality provision is available free or at low cost to interested individuals worldwide.

### ***Mainstreaming***

Monash University portrayed a distinctive mainstreaming strategy. This involved likely removal of special development funds, a shift in relative IT funding from equipment to pedagogic support, and offering permanent contracts to LMS support staff. Others referred to the continuing existence of special funds.

Other aspects of mainstreaming included the adoption of an overarching teaching and learning strategy (with e-learning as a key component), rather than a distinct e-learning strategy. One respondent pointed to a management tradition of experimentation and risk-taking, plus a demanding student population and a mandate to offer flexible delivery, as critical to its relatively “effortless” transition of e-learning from experiment to mainstream. The respondent commented that “for better or worse, this does not bode well for converting traditional institutions”. The University of British Columbia appeared to be the only campus-based institution subject to external (provincial government) targets for recruitment to online programmes.

### ***External collaboration***

Despite the plethora of alliances outlined in Chapter 5, inter-institutional collaboration was not widely described as a major feature of organisational change associated with e-learning. One exception was UCLA Extension, where closer co-operation with the parent institution (UCLA) was predicted. This institution was said to be developing a role in improving the experience of resident students, using e-learning. At UCLA, funding pressures, ways to teach more students with fewer resources and the need to raise additional income were seen as catalysts of growing interest in e-learning, and resort to UCLA Extension in terms of expertise. Some institutions looked elsewhere for supporting technologies and content, while many (positioned as leaders

in the field) lauded the virtues of significant in-house development and self-sufficiency.

### ***Commercialisation and internationalisation***

Other less common features included commercialisation and internationalisation. Few institutions mentioned specific strategies to commercialise online provision/materials or associated technologies, or to market online provision abroad. Exceptions included the Open University Catalunya and the Virtual University of Tec de Monterrey which both saw the international Hispanic market as attractive; and the Virtual University of Tec de Monterrey and UCLA Extension predicted interest in low-cost, high quality e-learning from the private sector. The University of Maryland University College respondent cited the challenge of integrating the institutions' US, Europe and Asia operations. In some cases, semi-commercialisation is envisaged whereby a specialist arm of an institution plans to make its expertise available more systematically to the parent body. As above, the UCLA Extension respondent described an arrangement whereby the bulk of online development was contracted out to a private firm (partly to minimise institutional risk). Some years later, the institution began to gradually pull all major functions in-house, and aims to be completely independent by mid-2004. One institution (Asian Institute of Technology) envisaged enhanced contact and expansion of remote sites in other countries.

## **6.3. Barriers to development of e-learning (Question 8.3)**

Case study institutions were asked to identify major barriers to development of e-learning. Overall, many of the cited barriers were unsurprising, and many apply to innovation and development in higher education more generally. Commonly perceived barriers are listed below.

### ***Absence of good practice and protocols***

- *The absence of widely agreed and disseminated “good practice” in terms of different forms/options concerning online pedagogy.* The University of British Columbia respondent specifically mentioned “lack of understanding of the changes needed in methods of working to reap the benefits of e-learning” (e.g. replacing some classroom time with time online, working in teams with other professionals such as instructional designers and Web programmers).
- *The absence of widely agreed and disseminated “good practice” on financial planning and sustainability relating to e-learning.* This applied

between institutions, and within institutions. The Multimedia Kontor Hamburg respondent complained of project-based funding for e-learning too often resulting in “white elephants” – *i.e.* notable in themselves but of little practical value to the wider institution.

- *The absence of widely agreed and internationally adopted e-learning technical protocols and infrastructure*, seen as prerequisites for the development and sharing of e-learning materials.

### ***Staff issues***

- *Faculty/staff resistance to change* – particularly in terms of conceptual ties to “an older paradigm of teaching and learning that is classroom based and content-centred”, or traditional distance learning course production. Related to this was concern about faculty (and to a lesser extent student) ICT literacy (and general pedagogical literacy), and shortage of appropriate staff development opportunities.
- *Lack of senior management engagement*. In highly decentralised institutions, there was seen to be a need for improved understanding at Head of Faculty and senior administrator level of the nature and success factors of e-learning. These “levels” were seen as critical to resource allocation and human resource management (University of British Columbia). Failure to utilise e-learning strategically – “too often efforts are piecemeal and scattered, dependent upon the initiatives of individual faculty”. This was seen to increase costs and reduce impact (University of British Columbia).
- *Sustained perception that research brings high status and greater reward than teaching*, and that poor teaching was not necessarily treated very seriously. These factors were seen to undermine efforts to advance high quality e-learning, particularly in research-intensive institutions (University of British Columbia).
- *Lack of faculty/staff time*.
- *Difficulty recruiting adequate numbers of appropriately skilled specialist staff* (e.g. Web designers, instructional designers).

### ***Lack of materials/resources***

- *Lack of appropriate, efficient processes* to develop high quality e-learning materials.
- *Lack of funding/resources*. Some respondents cited the perceived high cost of developing high quality e-learning as a barrier.

### *Other issues specific to individual institutions*

- *Lack of a regional e-learning development framework and of an adequate regional ICT infrastructure* (Asian Institute of Technology).
- *Absence of tuition fees*, and thus the absence of a mature market for higher education, and marketing capacity in institutions. Related to this, a concern was the perceived lack of business development experience to make “academic e-learning profitable” (Multimedia Kontor Hamburg). A recent decision by the German Constitutional Court, over-turning a 2002 federal ban on tuition fees, suggests movement here.
- *Lack of “inter-campus competence”* (Virtual University of Tec de Monterrey) – *i.e.* lack of consistency of interest and experience of e-learning from various campuses of the parent university.
- *A desire to ensure that e-learning is as good as (in pedagogic terms) the “very best of traditional learning done at the university”*. This was seen as a barrier in the sense that it meant slow, incremental progress, and often required significant investment. This approach required a long-term view of the value proposition of e-learning (Carnegie Mellon University).
- *Lack of authorisation from parent institutions to offer degrees in its own right* (UCLA Extension). Degrees were seen by the respondent as a significant market for online education, alongside the short course, adult market in which UCLA Extension currently has competitive advantage.
- *The need to better define institutional performance measures related to e-learning development; and student learning*. The shortcomings of current online student support, seen as partly responsible for unacceptably high failure rates (University of Maryland University College).
- *Distance learning still not widely accepted by society* as a valid means of education (University of Sao Paulo).
- *Stakeholder scepticism* concerning the long-term impact of ICT in higher education and the economy more generally (Zurich University).

## **6.4. Developing human resource capacities (Questions 6.1-6.4)**

The OECD/CERI survey focused specifically on the changes implied by e-learning for staff. Questions inquired about staff development provisions. Two major strategies have been identified for developing human resource capacities. One is to provide staff development and the other is to change the

organisational/human infrastructure, both of which were briefly discussed above. The two are related and, in fact, may develop hand in hand. The development of e-learning may change the human infrastructure; the lack of staff development provision may necessitate changes in staffing roles/appointments, etc. A new division of labour may determine what kinds of staff development are needed. Conversely, with the provision of the staff development, human resource capacities may evolve in a new direction where restructuring of staffing or redefining of staffing roles may be made possible.

Few respondents reported a clear institutional position (most encouraging both faculty up-skilling and provision of specialist support). The University of South Australia respondent was unusual in advancing a faculty development target – that all faculty should be able to “convert their teaching approach to incorporate online techniques and be able to “publish” learning materials to a course home-page”.

### ***Staff involved***

Institutions were asked how the adoption of e-learning has affected the staffing complement (question 6.3). The majority of institutions (15 out of 19) answered that either they were in the process of changing or had already changed the staffing complement. The most cited change was the creation of new posts such as LMS managers, course managers, Web designers, instructional/pedagogic designers, cognitive scientists, assessment specialists, technological assistants, media/Web specialists, student support specialists, etc. (many hired as full-time or part-time consultants, not permanent staff). The UK Open University respondent reported a shift from recruitment of media specialists (*e.g.* designers, editors, video producers) to a desire for individuals able to work across a range of media and to take an integrated approach. There were also cases of additional requirements for newly recruited faculty (*e.g.* to have certain media competence and experience). There were references to greater use of graduate teaching assistants (*e.g.* to moderate online discussions and take on other relatively routine/administrative aspects of e-learning); and to giving faculty administrative assistants overall responsibility for LMS posting/administration. Those respondents reporting no change were either non-significant adopters of e-learning to date, dedicated virtual institutions, or subject to specific national staffing regulations that did not lend themselves to the appointment of non-traditional staff (*e.g.* University of Paris Nanterre).

Almost all cited that staff development was geared towards faculty, and did not encompass administrative support or technical staff. Three exceptions were reported. The Virtual University of Tec de Monterey, the

University of Maryland University College, and Carnegie Mellon University regard success as “achieving an integral development of the whole community” and “integration of all aspects of e-learning development” and providing training to administrative support staff and technical staff. For instance, Carnegie Mellon University provided introductory LMS training to faculty administrative assistants with an aim of turning course management administration over to them. At the University of Maryland University College, senior administrators were required to take the LMS course, and faculty were “encouraged” to take the student library course (to aid their role as student counsellors).

### *Skills developed*

The content of reported staff development ranged from general technological know-how (*e.g.* the use of software such as Dreamweaver, FrontPage, XHTML, e-Portfolio, etc., and the use of an LMS), to pedagogical skills (*e.g.* “best pedagogical practices”, “facilitating online discussion”, “didactic design of content for the Internet”, “evaluation”, etc.) There was a trend to shift focus from content to process. In other words, once faculty acquired basic technological skills, staff development concentrated more on the pedagogical aspects than on the use of specific technologies. Carnegie Mellon University reported that it had stopped offering a workshop on the use of a specific LMS and instead concentrated on pedagogical practice using the LMS.

### *Types of staff development*

The responses also showed a great variety of staff development types, including mandatory and voluntary participation, and support by request. In addition, staff development may be faculty-led or specialised centre/special project-led. Of those institutions that did not cite formal staff development connected to e-learning, three mentioned the provision of informal “support” at the faculty level, and the remaining institution commented that faculty development itself was not yet offered, nor was support provided specifically for the use of e-learning (see Table 6.2).

Four out of 15 institutions reported that faculty must take mandatory sessions before starting a course. It should be noted that such sessions focused on LMS use only, e-learning/distance learning pedagogy only, or both. Institutions with mandatory arrangement were all either distance-based or mixed mode institutions, some with a majority of adjunct faculty without tenure and hired first and foremost to teach. Of the remaining 11 institutions with primarily voluntary models, five reported low attendance rates (*i.e.* proportion of faculty that have participated to date): 1%, 5%, 10-15%, 20%, and 33%. This reflected the general observation that many “traditional” academic staff in campus-based



institutions lack the time for and/or interest in attending voluntary development. One institution remarked that some faculty view e-learning as “an additional and unwelcome task that they approach with a lack of enthusiasm and commitment”. The institution with the attendance rate of 20% for voluntary participation, allowed faculty-led initiatives in addition to its central initiative. As a result, one faculty at Monash University started to run its own training (on use of webCT) and made it mandatory for faculty before opening a webCT account. By contrast, at the University of British Columbia only 10% of faculty who use the software were said to have participated in introductory/advanced development sessions offered by the University’s “webCT Institute” and the “Office of Learning Technology”. The University of Maryland University College respondent stated that the intention was to require faculty to undergo regular pedagogic development, as well as the mandatory LMS training. An exception to the “lack of faculty enthusiasm” position was the University of Paris Nanterre, where the respondent cited lack of sufficient resource to provide dedicated staff development for e-learning; and said that for the most part faculty had no option but to experiment in their own time.

**Table 6.2. Typology of staff development for e-learning**

	<b>Voluntary support</b>	<b>Voluntary staff development</b>	<b>Mandatory staff development</b>
<b>Faculty-led initiatives</b>	Aoyama Gakuin University University of Paris-Nanterre University of Sao Paulo	University of British Columbia	Monash University (Business and Economics Faculty)
<b>Specialised centre-led initiatives and Project-led initiatives</b>		Asian Institute of Technology Carnegie Mellon University FernUniversität Hagen Monash University Multimedia Kontor Hamburg Open Polytechnic New Zealand University of British Columbia University of California, Irvine University of South Australia Virtual University of Tec de Monterrey Zurich University	Open University Catalunya UK Open University UCLA Extension University of Maryland University College

Source: OECD.

Some institutions shared the lessons learnt in promoting voluntary attendance by faculty:

- Increase alignment of the development between rationales/provision and strategic planning at the institutional or faculty level, and tie it in with the overall goals of the institution.
- Encourage a paradigm shift in the way academics think of university teaching, *e.g.* a shift away from “scepticism about the use of technologies in education” and “teacher-centred culture” towards a “role as a facilitator of [the] learning process”, “team-worker”, and “learner-centred” culture. Without this shift, there is often a “conceptual gap” between mainstream faculty and e-learning development.
- Better align development with academic schedules and workloads as well as with pressing practical needs, *e.g.* what faculty learn through development provision should be of immediate use to their teaching.
- Increase inter-faculty communication (*e.g.* sharing innovative/successful examples of e-learning), to avoid the perception of non-faculty imposing themselves on faculty. This was seen as key to getting across the pedagogic/administrative potential of e-learning.
- Increase opportunities to practice what is learnt, ideally replicating a “real world” situation and scenario. One computer per participant is critical.
- Ensure that the technical presentation/resources can be used flawlessly – to avoid any charge that provision is second-rate or a “waste of time”.
- Provide staggered welcome emails 7-10 and 3-4 days before an event, to encourage participation and to offer an opportunity to clarify any issues/misunderstandings/concerns.
- The Carnegie Mellon University respondent reported greater faculty interest (in development tied to the “Open Learning Initiative”) due to a sense of belonging to a larger, research-led project.

More generally, many respondents found it critical to reengineer faculty reward structures to give them more incentives to engage in e-learning. If institutional/career advancement and peer respect stem first and foremost from research, then it is not surprising that many faculty feel unable or unwilling to commit significant time to e-learning and related staff development. For example, senior management within a faculty or across an entire institution might attempt to publicly set out career paths for faculty dedicating significant time to e-learning development and innovation, and how time thus spent was equivalent in value to time spent on research.

Ultimately, senior management must come to a view on the rationale for engagement in e-learning at their institution, and thus whether and how the complex task of reward realignment (actual and perceived) might be attempted.

In contrast to the challenges of voluntary participation cited thus far, Multimedia Kontor Hamburg pointed to a growing interest in training among faculty members and reported that there were more applicants than seats available. The institution reported that it outsourced its training to the Interdisciplinary Centre for Higher Education (IZHD), an external institution that specialises in ICT in education and offers courses leading to a master's degree. This may have raised both the perceived quality and credibility of development provision.

## 6.5. Models of staff development

Various methods of training were reported: *e.g.* short training programmes, one-on-one sessions, seminars, workshops, presentations by peers, online self-training/resources, and refresher sessions. Of the 15 institutions that provide staff development, 14 mentioned that a key focus was a specialist in staff development/support centre (*e.g.* the E-learning Center at Zurich University, the Office of Technology for Education at Carnegie Mellon University, the Centre for Learning and Teaching Support at Monash University, etc.).

Interestingly, what was noted as good practice by some institutions was viewed as problematic by others. For instance, one institution cited one-on-one meetings as the most productive form of training, said to take into account the diverse skills and interests of individuals. Another questioned the productivity of this method, said to be time consuming and to have a limited outreach effect. One institution said that “faculty talking to faculty about their experiences draws more audience than staff talking to faculty about best practices” and another confirmed that academics had more “credibility” with their peers. However, the Open Polytechnic New Zealand institution faced the challenge of a failing “peer-trainer” model. Only by targeting specific individuals (e-learning enthusiasts) did the “trickle down” staff development model begin to work. It is critical to keep in mind that what works for one institution may not always work for another; and that “how” an approach is implemented is critical to success.

Some institutions highlighted the importance of the sustainability of staff development, as opposed to offering training on a once only basis. The experience of some institutions pointed to the following as necessary conditions for sustainable staff development:

- Providing ongoing and recurring workshops and/or “at-elbow” help support.
- Building a community for e-learning “adopters” within and across institutions.
- Doing research on how best to engage faculty members in training, and refining provision over time.
- Making clear to the individuals what central/local support is available to consolidate their development.

The Open Polytechnic New Zealand respondent mentioned that staff development training started at first as a project (“Open Mind Online project”), without a dedicated centre. The project aimed to facilitate peer-training among faculty members, but the lack of ownership of the project was a challenge. The idea was to the “train-the-trainer”, whereby one individual from an academic unit would undertake staff development, and then train others in the unit. In practice, this model was not successful. Insufficient numbers of faculty received training, and of those, many did not pass on their knowledge in the desired manner. This resulted in confusion as to where individuals should turn for development assistance. Responsibility was then taken over by the IT helpdesk, then by the E-learning office and then by the general staff development unit, none of which experienced much success.

A successful example of a strategic model was reported at the University of British Columbia. Training provision was both top-down and faculty-led. There are several centres offering staff development at the institution: *e.g.* the Center for Teaching and Academic Growth giving face-to-face seminars on the use of technologies, the webCT Institute and the Office of Learning Technology giving face-to-face seminars on webCT related topic, the Faculty Alliance for Technology in Education and Committee for Information Technology offering courses focusing on innovative use of technologies, faculty-led University of British Columbia Learning Centres offering face-to-face seminars on the use of various technologies, the Office of Distance Education and Technology providing face-to-face workshops on online teaching. Such a variety of initiatives may seem redundant. Yet, the respondent reported that this multi-player situation is not chaotic. The key factor was cited as collaboration (among all the players) coordinated through a centrally positioned facilitation office, keeping in mind the overall organisational capacities for e-learning for the entire institution.

Question 6.4 asked about particular strategies to facilitate collaboration between faculty and other staff (technical, instructional designers, library

staff) in the development of e-learning. As noted above, the numbers of such staff are increasing significantly in many institutions. At the University of British Columbia, the projection is 100 such staff by 2008 (from 35 in 2003). At Zurich University in 1999, fifty full-time jobs were created to provide selected faculty with dedicated e-learning support (*e.g.* instructional design, Web development etc). This model was designed to kick-start a number of projects, and has since been revised whereby specialists are now housed within central units and are available to all faculty. To enhance collaboration, some institutions cited regular feedback meetings (both within and across work function) where different actors were able to share experiences to try to improve processes; and others faculty-linked deployment of media specialists. For example, the UK Open University has appointed “Media Account Managers” for each faculty, based in the central “Learning and Teaching Solutions” unit. This both provides dedicated faculty links, and ensures central consistency of broad approach. This respondent noted that the Open University had pioneered course production using multi-disciplinary teams, and argued that this approach was well-suited to e-learning: “Other institutions where course delivery was very much down to individual lecturers have found it harder to adapt”. This team approach was apparent at dedicated virtual institutions (*e.g.* Open University Catalunya, Virtual University of Tec de Monterrey), where such a model was necessarily in place from the outset. Early involvement of key services (*e.g.* library) was reported as key to successful long-term collaboration.

Another trend in the provision of staff development is that expertise is exchanged or bought/sold across institutions. UCLA Extension and Carnegie Mellon University reported that some of their staff development activities were extended to other institutions. UCLA Extension’s Instructor Development Programme has assisted “more than 100 North American universities” to develop similar in-house functionality. Within the framework of the Open Learning Initiative (OLI) Project (see Box 3.2), Carnegie Mellon University offers training support to the faculty at its partner institutions to enable the effective use of the OLI courses. For instance, the Open Learning Initiative project offered 2-3 day summer workshops to faculty at over thirty institutions to show them “the underlying theory of the content area, how to use the online materials, how to participate in the ongoing research into effective web-based learning environments, etc.” Both the University of British Columbia and Zurich University pointed to the exchange of staff developers within and outside the university.

Private foundations can also play a role in taking initiatives beyond the institutional level. For example, the Bertelsmann Foundation in Germany has created an “e-teaching” portal ([www.e-teaching.org](http://www.e-teaching.org)) for staff

development, geared towards a heterogeneous audience, offering access to a range of resources, and seeking to create faculty dialogue, and dialogue with senior managers and policy makers. In the UK, in an attempt to enhance professional status and career structure, pilot work has been done with a view towards “certified member” status (of the UK Association of Learning Technology) for learning technologists.

## 6.6. Conclusion

All sample universities are in the midst of thinking through and negotiating the potential contribution of e-learning in its various forms to organisational futures. For some institutions, and in some countries, key barriers remain, such as stakeholder scepticism about pedagogic value, funding and infrastructure. More commonly, institutions are grappling with mainstreaming adoption, mainstreaming funding and beginning to contemplate restructuring in terms of staffing, staff development, instructional design, student support, etc. In contrast to dot-com rhetoric, commercialisation and internationalisation were infrequently cited as aspects of organisational change. Dedicated virtual institutions aside, reported organisational change in sample institutions is best characterised as iterative. The general concept of “staff development” is widely cited as key to mainstreamed and sustainable e-learning in tertiary education. Institutions are grappling with the balance between faculty and “new” staff roles, and the division of labour between the two. At this juncture it is unclear which aspects of e-learning development and delivery will become routine and which will remain specialist.

Distance/mixed institutions in the sample tended to operate part-mandatory development (concerning platform use and/or pedagogy), while campus-based institutions exhibited a primarily voluntary approach. Campus-based institutions favoured faculty-led development on the grounds that it better engaged faculty. At distance/mixed institutions, division of labour/team development was stronger, and “traditional”/tenured/permanent faculty were less common, circumscribing faculty roles and strengthening central administration. In most cases, voluntary development was said to be characterised by low take-up. Reported means to address this included devolving responsibility to faculties, enhancing the role of faculty in development and trying to better align development with pressing faculty needs. There was a general trend away from technical “how to use this platform” development, and towards pedagogy-led development; and testing of the right balance between central and faculty-located development/assistance.

The provision of staff development shows great diversity. Just as there is no one “best model” or trajectory for e-learning development for institutions, nor is there a “one-size-fits-all” staff development training programme for e-learning. To advance e-learning in staff development, institutions must undertake critical needs assessment, strategic planning tied with the overall institutional mission, careful planning of implementation, and assessment and research to fit their own institution and evaluate impact. It is also important to avoid formal “staff development” where day-to-day practice-based development would be more efficient and effective. To ensure faculty respond to staff development drives, it is critical to re-engineer career reward structures.

### *References*

- Cornford, J. and N. Pollock (2003), “Putting the University Online: Information Technology and Organisational Change”, Society for Research into Higher Education/Open University Press.
- Dutton, W., P. Cheong and A. Park (2004), “An Ecology of Constraints on E-learning in Higher Education: The Case of a Virtual Learning Environment”, *Prometheus*, Vol. 22, No. 2, pp. 131-149.

## **Part III**

### **Cost efficiency and funding**





## Chapter 7

### Funding, costing and pricing

This chapter shows where the funding of e-learning has come from at an institutional level and examines some of its associated challenges. It then reports how institutions perceive the cost of e-learning and how it has been priced so far.

During the dot-com boom, the promise of lower programme development and delivery costs (compared to conventional campus-based provision) was one of the most frequently cited advantages of e-learning in tertiary education and beyond. It was argued that lower costs would result from increased automation of development and delivery processes, reduced marginal costs, and the removal/reduction of travel and accommodation costs. The rationalised approach of the industrial era could at last be applied to education, with rationalised materials development, reduced number of full-time faculty, higher staff/student ratios, etc. To what extent have predictions about reduced costs been realised? In practice, as evidenced by responses to the OECD/CERI survey, the major impact of e-learning has been on-campus as a supplement to classroom activities. This has factored out most direct travel/accommodation savings. Lower development/delivery costs have also been challenged by the high cost of software development and, in many instances, demand for face-to-face tutorial support for remote online activities. Although e-learning appeared as a promising new market for commercial provision, no clear sustainable business model has emerged yet. Much of the activity has actually been funded by governments and other non-commercial agencies aiming at helping a novel activity. This chapter shows where the funding of e-learning has come from at institutional level and examines some of its associated challenges, especially sustainability (7.1). It then reports how institutions perceive the cost of e-learning and how it has been priced so far (7.2). Interestingly, few institutions were able to offer direct evidence of the cost impact of e-learning.

#### 7.1. Funding (Questions 7.1-7.4)

The vast majority of institutions in the OECD/CERI sample are significantly dependent upon government funding in some form, and many governments have assumed (either directly or indirectly through an agency)

a policy steering role for tertiary education. Many national and other governments, as well as supra-national agencies and a range of non-governmental organisations have and continue to view e-learning as a source of educational innovation, widened access and economic development. Given these factors, plus the fact that in the case of a novel area of development, such as e-learning, where cost/benefit analysis is under-developed and costing and efficiency structures in their infancy, it is unsurprising that much early e-learning activity in tertiary education has been funded by governments and other non-commercial agencies.

### ***Internal and external funding***

Few respondents offered precise figures on funding, whether internal or external, but it was clear that in many cases internal funding (in the general sense of mainstream funding allocation for teaching) exceeded external. For example, the Zurich University respondent said that the university has invested USD 19 million in e-learning between 1999 and 2003, compared to USD 4 million from government sources. Indeed, aside from “special” internal funds, it is often impossible to distinguish the contribution of mainstream institutional funding to e-learning development. That said, the frequency of external funding across the sample, and the range of sources, presented a picture of e-learning as beyond the means of most institutions to undertake alone and/or sufficiently novel to warrant special funding. Few claimed that e-learning was in any sense self-funding (*i.e.* through tuition payments), although the UK Open University and the University of Maryland University College cited almost sole use of internal resources (partly drawing on public funding) in support of e-learning development. As described below, UCLA Extension reported the imminent prospect of e-learning provision self-funded through tuition fees.

Most institutions reported some form of special internal fund available to departments/individuals in support of e-learning. In many cases, this took the shape of a generic teaching and learning or innovation fund that encompassed e-learning among other things. In others, it related to a specific centre within the institution (*e.g.* the Office of Technology for Education at Carnegie Mellon University), or a specific e-learning fund (*e.g.* “Global Online Learning and Development” at Monash University). In a few cases, funding was widespread and medium-term. For example, at Zurich University internal funds for e-learning were allocated across faculties (5 out of 7 in 2004), totalling USD 388 000 each. The same level of funding would also be available in 2005, then doubling in 2006 and 2007, and increasing again from 2008.

External funding included support for:

- The creation and ongoing development of e-learning institutions/consortia (Open University Catalunya, FernUniversität Hagen, Multimedia Kontor Hamburg).
- Application development (webCT at the University of British Columbia, and open source development at the Open Polytechnic New Zealand).
- Learning object/materials development (*e.g.* Edusource funding at the University of British Columbia, and the “Open Learning Initiative” at Carnegie Mellon University).

A number of respondents declined to offer full details of external funding, saying that the information was not held in a single, accessible location. Some noted that department/individual-led externally funded activity was not tracked centrally. Only Kyoto University, perhaps the least involved in e-learning to-date in the sample, reported no external funding for e-learning.

Sources of external funding included national governments and associated bodies (*e.g.* the University of South Australia secured competitive funding to develop e-learning from “Open Universities Australia”, the national distance learning organisation for tertiary education), state governments (*e.g.* basic infrastructure support for FernUniversität Hagen from the government of North Rhine-Westphalia), regional governments (*e.g.* European Union support for Multimedia Kontor Hamburg), international NGOs (*e.g.* UNESCO funding for the Greater Mekong Sub-Region Virtual University, in which the Asian Institute of Technology is involved) and private foundations (*e.g.* Carnegie Mellon University’s “Open Learning Initiative” is funded by the William and Flora Hewlett Foundation). Much government funding was available through competitive tender. New Zealand’s “e-learning Collaborative Development Fund”, administered by the Tertiary Education Commission, is a good example. The Open Polytechnic New Zealand secured funds under this initiative in support of the “Open Source Virtual Learning Environment Consortium” project (see Box 7.1). In the case of the Open University Catalunya, ongoing state government funding is tied to performance criteria (*e.g.* enrolments and negotiated new programmes/research projects). The UK Open University respondent described how public, non-competitive generic teaching and learning funding had been used to support e-learning. Similarly, the University of British Columbia used generic “innovation” funding from the provincial government to develop e-learning. Some funding is in the form of donations in kind (*e.g.* equipment, satellite time, expertise). The Asian Institute of Technology’s unique mission makes its

funding structure original. The total revenue for 2004 was about USD 33 million, which came from various partnering governments and development agencies.

### **Box 7.1. The New Zealand Open Source Virtual Learning Environment Consortium**

In 2003, the New Zealand Government established the eLearning Collaboration Development Fund (eCDF) to be administered by the Tertiary Education Commission in an attempt to support e-learning capability development initiatives. The Open Polytechnic of New Zealand saw the government's interest in infrastructure development, spreading of costs and benefits across the tertiary sector, and collaboration, as an opportunity to introduce a fee-free virtual learning environment to New Zealand under an open source model. The New Zealand Open Source Virtual Learning Environment (NZOSVLE) project was funded by the eCDF alongside a consortium of 8 partner institutions that support inter-related open source initiatives designed to significantly reduce the financial, organisational, and technological barriers that many education providers encounter while starting and maintaining an e-learning programme.

The project started with the establishment of Eduforge to support and encourage collaboration across the project team and to support other eCDF projects. Eduforge is built on open source technology and is an open access resource allowing anyone with an interest in the exploration of teaching and learning to join the community. Eduforge encourages cross-institutional collaboration among individuals within an independent environment outside the normal boundaries of organisational infrastructure and resources. Eduforge has been used to support the development of requirements, publish reports and decision documents, and facilitate decision-making. Through a consultative process, core open source technologies were selected, and the project developers became involved in the communities. The core learning management infrastructure is Moodle, to which the NZOSVLE project has contributed over 500 code changes that have been accepted into the core application.

Since the middle of 2004 the New Zealand Open Source virtual Learning Environment (NZOSLVE) project has also managed the deployment of learning platforms at 6 schools that previously had no virtual learning environment, with dozens more deployments planned during 2005. The NZOSVLE project consortium has grown to 20 tertiary education providers, with high interest coming from the school sector, and additional funding to specifically enhance learner support tools in the platform. Along with continued development of technological architecture, the consortium is now turning its attention to collaborative models that economically provide high quality hosting, support, and end user support to partner institutions.

The NZOSVLE project homepage is available at [www.ose.org.nz](http://www.ose.org.nz)

### ***Private funding***

A study of funding of “ICT integration and e-learning development” at over 200 universities in Europe concluded that most institutions “only have limited or sporadic experience concerning private funding and sponsorships” in this area (PS RAMBOLL Management, 2004, p. 40). Private sector funding was unusual at the OECD/CERI sample institutions. As discussed further below, UCLA Extension funded its e-learning efforts through a contractual arrangement with a private company, OnlineLearning.net. The company met all development, application testing and marketing costs, and covered the institution’s staff salaries and overheads associated with the work. In return, the institution revised enrolment, registration and other systems to accommodate e-learning. The respondent asserted that this private investment enabled e-learning provision to benefit both from marketing spend well beyond the capacity of the institution (said to have raised the profile of the institution as a whole), and to sustain the provision past initial low enrolments. Indeed, UCLA Extension said that if the provision had been funded by the institution alone, much would have been forced to close early one. So while the university reduced income from tuition (a proportion going to the private company), its risk exposure was greatly reduced. Now that the university has taken the infrastructure/provision co-created with OnlineLearning.net in-house, the view taken is that the arrangement – as was planned – enables the institution to sustain its e-learning effort long-term. UCLA Extension’s e-learning provision is now solely dependent on tuition income. A smaller-scale example of private sector funding came from the University of Maryland University College/Verizon Virtual Resource Site for Teaching with Technology ([www.University of Maryland University College.edu/virtualteaching/vt\\_home.htm](http://www.University of Maryland University College.edu/virtualteaching/vt_home.htm)). This award-winning public domain resource was partly funded by Verizon, a US telecommunications firm.

### ***Sustainable funding***

A great deal of e-learning has been supported by various kinds of “special” funding, and to date there appears to be relatively few “success stories” demonstrating cost-recovery through user fees. This is supported by other studies (Paulsen, 2003). That said, much of the activity currently described as e-learning is still relatively novel and experimental, making “special” funding appropriate.

All respondents with a major interest in e-learning viewed sustainability as an important issue, although some interpreted sustainability as mainstreaming (*i.e.* moving from special to mainstream public/institutional funding) and others as cost recovery. Sample institutions with more developed e-learning operations tended to report active efforts to shift the burden onto other funding sources – at least for established provision. Even at institutions such as Zurich University, where widespread internal funding

has been committed over a number of years, the long-term aim is for e-learning to be sustained through “normal” internal/public funding. Largely due to lack of experience, some respondents expressed uncertainty about the funding implications of e-learning – that is whether cost-recovery through user fees was realistic. One respondent explicitly stated that there were no cost-covering e-learning programmes at their institution to date. Another respondent described sustainability as a “major issue, as maintenance of sites and further development work are time-consuming and expensive” but did not offer any emerging solutions.

By contrast, some other respondents put forward experiments or more advanced sustainability efforts. For example, a number of respondents positioned long-term sustainability as a condition of special funding. The University of British Columbia cited the valuable role of the university’s “Office of Industry Liaison” as a source of guidance on long-term commercialisation (as happened in the case of webCT). To seed fund development at this institution, faculty/central units may borrow from central reserves and then re-pay (with interest) from fee income. Multimedia Kontor Hamburg is currently in receipt of government funds on the understanding that the “most promising projects” are eventually integrated into mainstream programmes. This presents a view of sustainability as mainstreaming rather than cost recovery, and reflects the German tertiary education context where tuition fees are generally absent or insignificant. Attainment of mainstream institutional funding for forms of e-learning support centres is another example of sustainability as mainstreaming. Of course, in many institutions, provision might be part subsidised and part supported by tuition fees, with the balance varying by programme. This was the implied situation at the Open Polytechnic New Zealand. This respondent stated that both the “Open Mind Online” and “Online Campus” initiatives are “funded internally on an ongoing sustainable basis”, suggesting support from both internal funds and student fees. At the University of South Australia, it was emphasised that a “core budget allocation” is now made to fund “hardware, resources and support staff”, and that this directly benefited e-learning activities. Similarly at the Open University Catalunya and the UK Open University: “e-learning developments are not dependent upon special funding. They are part of the core activity of the institution”. The Open University Catalunya respondent listed a number of programmes, and described some as “full cost recovery” and others as “government funded”. The UK Open University respondent reported a reduction in competitive funds administered through its “Learning Technologies and Teaching Committee” in line with attempts to mainstream e-learning.

Some respondents (*e.g.* University of Sao Paulo, University of California, Irvine) indicated that while mainstream provision was at least

part-subsidised, continuing education programmes were required to be entirely self-supporting. The University of California, Irvine respondent stressed that “we strive to self-supporting in all our business operations”, and emphasised that the institution’s “Distance Learning Centre” (run jointly with UCLA Extension) was dependent upon tuition income and received no core support. The UCLA Extension and the University of Maryland University College respondents – two institutions where “mainstream” and “continuing” provision are blurred – made essentially the same point.

The Carnegie Mellon University respondent described two initiatives designed to commercialise particular e-learning efforts. Two firms – Carnegie Learning and iCarnegie – were established to market the e-learning products of the Carnegie Mellon University faculty: an intelligent tutoring system, known as “Cognitive Tutors”, and mixed mode online courses in computer programming respectively. Although financial information is not in the public domain, each firm appears to be very successful. Both reinvest part of their profits in related Carnegie Mellon University-based research. In addition, the intention behind the University’s “Open Learning Initiative” is to fund free individual access to materials through fee-based institutional access. The vision is that institutions would receive learning management system (LMS) functionality alongside materials, while individuals in a non-institutional context would get materials only. Other funding options being explored include selling selected Open Learning Initiative materials as textbook supplements, and selling discrete “learning objects” through a reseller.

The Multimedia Kontor Hamburg respondent claimed sustainability advantage insofar as the institution was launched after the burst of the dot-com bubble and after many other German *Landers* have developed similar initiatives. This permitted Multimedia Kontor Hamburg to benefit from lessons learned elsewhere, not least concerning funding. For example, the institution was conceived as a cooperative between existing universities, designed to pool resources (specifically to create a jointly-managed media production facility) rather than develop a separate infrastructure. Also, the decision was taken to use open source software, to save on upfront licensing costs, to allow applications to be unpacked and revised, and to enable materials to be used by third parties. In terms of internal funding, departments/individuals may bid to a central Multimedia Kontor Hamburg fund, rather than to separate institutional funds

In conclusion, while private funding remains marginal at most institutions, special funding, be it external or internal, is very common. Most institutions in the OECD/CERI sample are dependent upon government funding. Given the novelty of e-learning, this type of funding is appropriate,



but it raises a problem of sustainability, whether through recovery or through mainstreaming these special funds.

## 7.2. Costing and pricing (Question 1.6)

During the e-education boom of 1997-2000 (Ryan, 2002), the promise of lower programme development and delivery costs (compared to conventional campus-based provision), was one of the most frequently cited “advantages” of e-learning in tertiary education and beyond. Lower costs would result, it was argued, from increased automation of development and delivery processes, reduced marginal costs, and the removal/reduction of travel and accommodation costs. One might characterise this as an attempt to apply the “industrial” production approach of large-scale distance learning (rationalised materials development, reduced number of full-time faculty, higher staff/student ratios, etc) to mainstream provision (Rumble and Latchman, 2004). Of course, e-learning is distinguished by a number of post-industrial twists, such as more personalised materials production/update, notions of “mass customisation” or “mass personalisation”, and more flexible pedagogy. To what extent have predictions about reduced costs been realised?

### *Cost appreciation through the OECD/CERI survey*

In the above reasoning, the underlying vision of e-learning centred on remote delivery. In practice, as evidenced by responses to the OECD/CERI survey, the major impact has been on-campus as a supplement to classroom activities. This has factored out most direct travel/accommodation savings. Of course, for some of the institutions in the sample, distance learning was of major significance. Lower development/delivery costs have been challenged in terms of the high cost of software development and, in many instances, demand for face-to-face tutorial support for remote online activities. Lower marginal costs have been undermined by claims of a negative correlation between higher enrolments and the quality of the student experience (University of Illinois Faculty Seminar, 1999). As detailed below, practice at UCLA Extension stems from this perceived correlation.

Question 4.6 asked respondents about the cost impact of greater use of e-learning at their institution. It is important to remember that all but two of the sample institutions were recipients of public funds, complicating appreciation of actual costs and sustainability.

To provide an overview of responses, institutions were divided into four categories:

- Insufficient experience of e-learning to make a judgement on relative cost.

- Considerable experience, but no firm evidence on relative cost.
- Experience to date suggests e-learning is fundamentally more expensive than face-to-face delivery, but this is offset by other benefits (*e.g.* increased access, enhanced pedagogy).
- Experience to date suggests that initial development and delivery costs were often more expensive than in the case of face-to-face delivery, but other factors (*e.g.* experience, cost control, division of labour, use of third party software/resources, efficiencies, re-use and economies of scale) have shown or suggest that e-learning will prove less expensive across the product cycle.

There were cases where an institution fell into one category in terms of experience, and another in terms of expectation. This is indicated in Table 7.1.

Table 7.1 suggests a strong correlation between those institutions with a more developed online presence and a view of costs that holds that after perhaps an expensive development phase (*e.g.* infrastructure, creating many course materials from scratch, experimentation, staff inexperience, new kinds of staff/units, immature technology), it is possible to achieve overall cost savings compared to face-to-face provision. A strong advocate of this view is Carol Twigg at the National Centre for Academic Transformation in the United States. As noted in Chapter 3, she maintains that higher education programmes (particularly large-scale introductory undergraduate provision) can achieve student learning gains, increase student numbers and reduce costs through specific redesign principles partly facilitated through the use of ICT. The Twigg rationale is to move beyond current uncertainty about the cost, access and pedagogic impact of greater use of ICT in higher education, and to address concerns about rising costs, access pressures and teaching innovation. A recent quote from Twigg neatly encapsulates this perspective on funding/costing/pricing in higher education: “The solution is not to throw money at the problem. The solution is to work together to re-think the ways we teach and the ways students learn”. In the same article, Twigg claims that if all two- and four-year higher education institutions in the United States redesigned their 25 highest enrolment courses (using the methods described in Chapter 3), this would result in an overall 16% annual reduction in the cost of instruction – easing funding pressures and opening the way to price stability/reduction (Twigg, 2005).

**Table 7.1. Cost implications of e-learning**

Institution	Type	Category
Kyoto University	Campus	1
Asian Institute of Technology	Campus	1/3
University of Sao Paulo	Campus	2
University of California, Irvine	Campus	2
University of Paris Nanterre	Campus	2
University of South Australia	Mixed	2
UK Open University	Distance	2/4
Aoyama Gakuin University	Campus	3
Monash University	Campus	3
Zurich University	Campus	3
Carnegie Mellon University	Campus	3/4
FernUniversität Hagen	Distance	3/4
Multimedia Kontor Hamburg	Campus	4
University of British Columbia	Campus	4
UCLA Extension	Distance	4
Open Polytechnic New Zealand	Distance	4
Virtual University of Tec de Monterrey	Distance	4
Open University Catalunya	Distance	4
University of Maryland University College	Mixed	4

Categories:

1. Insufficient experience of e-learning to make a judgement on relative cost.
2. Considerable experience, but no firm evidence on relative cost.
3. Experience to date suggests e-learning is fundamentally more expensive than face-to-face delivery, but this is offset by other benefits.
4. Experience to date suggests that initial development and delivery costs were often more expensive than in the case of face-to-face delivery, but other factors have shown or suggest that e-learning will prove less expensive across the product cycle.

x/y (e.g. 2/4) means that the institution falls into category x in terms of experience and category y in terms of expectations.

Source: OECD.

While few respondents were able to report unambiguously that a stable, less expensive model (compared to conventional on/off-campus) had been achieved, all the institutions in the OECD/CERI sample under category 4 were at least reasonably confident that this was possible. Contributing factors included substituting some on-campus for online provision (rather than duplication), drawing on the open standards/learning objects model to increase material re-use/sharing, and greater standardisation of materials production. It was widely acknowledged that an answer to the question “what does e-learning cost?” is dependent upon a wide range of variables (*e.g.* media used, extent of software development/adaptation, staffing models, scale of enrolments, etc.). It was striking that the majority of respondents, even if they were positioned in categories 3 or 4, were not able to point to systematic data on costs (although some cited overall figures or figures for specific projects).

The two wholly virtual institutions (one a virtual arm of a campus-based institution) – the Open University Catalunya and the Virtual University of Tec de Monterrey – stated or implied that developing online learning from scratch, and not “building onto” a physical campus, was a cost advantage. Fixed capital costs were said to be lower, it was easier to align staffing structures to e-learning processes and better economies of scale could be achieved. The UK Open University reported per student costs one third of the average for comparable on-campus programmes in the country. The same institution was keen to point out that this would not be possible without government subsidy of the university as a whole – problematising unambiguous appreciation of relative costs. The Virtual University of Tec de Monterrey explicitly stated that the recent shift from satellite to online delivery had substantially reduced costs and lowered prices (see below).

One of only two entirely self-financing institutions explained its costing approach in some detail. As mentioned above, in 1996, UCLA Extension outsourced key aspects of e-learning development and delivery to a private company (OnlineLearning.net). The aim was to reduce the institution’s central expenditure, time commitment and risk. In line with its policy more generally, the institution made a commitment to invest in e-learning on a three-year cost recovery cycle. UCLA Extension claims to have almost achieved this (*i.e.* recovered all development and delivery costs from student fees). Over time, once confident that the model was sustainable, the institution has gradually pulled the majority of outsourced functions in-house, and became fully independent mid-2004. Interestingly, the pedagogical model employed requires instructor-led cohorts over a finite period, with capped enrolments by subject area (often lower than the equivalent face-to-face programme). While costs were said to be marginally higher online, overall savings were achieved through non-use of

facilities/classrooms. The institution expected savings from e-learning relative to on-campus to continue improving on comparable enrolments (as a result of experience, efficiencies, etc.), but equally acknowledged that more significant improvements will only be possible if other factors (e.g. class sizes) can be changed, and if these changes can be justified on pedagogic grounds.

Aoyama Gakuin University saw an indirect cost saving in that delivery of a programme online from another country saved the (theoretical) cost of the students travelling to that country and paying for accommodation. The Asian Institute of Technology predicted that future development of online programmes might mean reduced travel to the institution's sister campus in a neighbouring country. The Aoyama Gakuin University respondent stated (without offering supporting evidence) that video-based distance learning was less expensive than e-learning (not defined), and thus would remain a core delivery medium. The Kyoto University respondent simply described investment in e-learning as "too huge", and indicated that conventional teaching and learning was sufficiently unproblematic that such investment was not justified.

Zurich University argued that for non-profit institutions, a strict return on investment calculation was beside the point. The main rationale for e-learning, it was argued, should be an enhanced student experience, not cost savings. Similarly, one institution reported added-value (rather than reduced cost): "This is not to say that the university believes that moving to online teaching and learning will lead to cost savings. Rather, it is understood that greater quality and added value is likely for a similar outlay of resources and that, strategically employed, online approaches have the capacity to foster a significantly improved customer focus in programme delivery. In short, rather than believing online teaching and learning enables us to do more with less, we believe that, strategically applied, we can do better with present resource levels." The same institution mentioned a policy decision to fund early development of e-learning from IT/library staff reductions – at least implying that e-learning may lead to administrative savings over time.

### ***Cost appreciation through the Observatory survey***

The Observatory survey asked respondents to state whether in their experience "some forms of online provision are demonstrably less costly (to the institution – in financial terms) than the equivalent provision conducted through conventional face-to-face teaching". Only 26% of all respondents "Agreed" or "Strongly Agreed" that at least some forms of online provision at their institution were demonstrably less costly, slightly up from 24% in 2002. Forty-three per cent were unable to answer the question due to

uncertainty, while 31% gave a negative response – figures almost identical to those in 2002. Analysis of returning respondents supported the overall trend. Low income/low-middle income and South Africa respondents reported the highest rates of optimism vis-à-vis online learning as a potential means of cost reduction, with 37% and 40% respectively providing a positive response and not a single respondent opposing this claim. Australia/Asia-Pacific demonstrated the most scepticism, with 42% and 43% respectively disagreeing or strongly disagreeing with the claim. This could suggest a context where low-middle income and South Africa respondents have succeeded in the past in reducing costs through other forms of distance and non-traditional learning. Moreover, universities in poorer countries – compared to their richer peers – may be under more pressure to realise a financial return on their investment, and may have less expenditure options. Conversely, among survey respondents, given that the Australia/Asia-Pacific respondents are arguably most developed in the field, their scepticism could point to a more experienced and knowledgeable viewpoint from which to assess the cost-reduction claim.

While a greater number of Observatory respondents (in 2004 compared to 2002) cited “cutting teaching costs long-term” as a key rationale in their online learning strategy (see Chapter 2), the cost-reduction question suggests that the majority remain unsure or sceptical vis-à-vis the potential of online delivery to reduce total expenditure relative to conventional teaching in the short or long-term. Indeed, only seven institutions (8%) cited “cutting teaching costs long-term” as a top priority. Most institutions appear either to have not addressed the cost implications/possibilities of online delivery in its various forms, or to have found such delivery to be at least as costly as or more costly than conventional methods. Given the significant and ongoing infrastructure costs associated with online learning, the widespread lack of explicit attempts to redesign provision to reduce overall teaching costs (alongside sustained or improved quality) is a worrying trend. The OECD/CERI sample exhibits the same mix of optimism (generally not supported by significant evidence), pessimism, and overwhelming uncertainty.

### ***Pricing***

Did the OECD/CERI sample institutions price e-learning programmes differently compared to conventional provision? Aside from one wholly virtual branch of an institution (Virtual University of Tec de Monterrey), no respondent reported reduced student fees for online programmes (compared to face-to-face equivalents). This branch offered programmes at 40% cheaper fees than the face-to-face programmes at its parent campus. In the case of the one wholly virtual institution (Open University Catalunya),

despite costs per student being said to be one third of the average at regional universities, prices were the same (it was implied that this was due to regional/national regulation on price). No respondent mentioned increased fees for e-learning compared to conventional provision. One should bear in mind that in many sample countries, student fees are not generally charged at all, or institutions have limited control over fees for some categories of student. The pricing of e-learning therefore provides little evidence on its cost compared to face-to-face education.

### 7.3. Conclusion

“Special” internal or external funding remains a prominent feature of e-learning development in tertiary education. This stems from a perception of e-learning (in its recent manifestation) as a novel activity that merits experimentation and research. It was clear from responses that many institutions are attempting to move towards “normal” funding, typically through a combination of mainstream internal funds and student fees (balance depending on the type of programme and the country concerned), especially as external funding raises the problem of sustainability of funding.

While a number of respondents expressed positive expectations about the cost reduction potential of forms of e-learning, few were able to offer direct evidence. Factors such as class size and course design norms were cited as major barriers. A strong theme was a call to evaluate e-learning in pedagogic as well as cost terms: e-learning could indeed prove to be more cost effective than face-to-face education (rather than cost-efficient).

There was only one clear example of e-learning that was priced lower than comparable face-to-face programmes, but in many countries direct student fees are either absent for many types of students, or institutions have only limited control over fee levels.

Given the relative novelty of contemporary forms of e-learning, one might expect cost efficiencies (and perhaps resultant price reductions) – matters dependent upon cultural change, institutional experience as much as infrastructure and policy development – to emerge over the coming decade.

## References

- Paulsen, M.F. (2003), “Online Education and Learning Management Systems: Global E-learning in a Scandinavian Perspective”, NKI Forlaget, Oslo.
- PS RAMBOLL Management (2004), “Virtual Models of Universities – Final Report”, report commissioned by the European Commission.
- Rumble, G. and C. Latchman (2004), “Organisational Models for Open and Distance Learning”, in H. Perraton and H. Lentell (ed.), *Policy for Open and Distance Learning*, The Commonwealth of Learning and Routledge Falmer.
- Ryan, R. (2002), “Emerging Indicators of Success and Failure in Borderless Higher Education”, Observatory on Borderless Higher Education, available at: <http://obhe.ac.uk>
- Twigg, C. (2005), “A Billion Here, a Billion There”, The CAT Viewpoint, *The Learning MarketSpace*, January, available at: [www.center.rpi.edu/NewsHome.html](http://www.center.rpi.edu/NewsHome.html)
- University of Illinois Faculty Seminar (1999), “Teaching at an Internet Distance: the Pedagogy of Online Teaching and Learning”, available at: [www.vpaa.uillinois.edu/reports\\_retreats/tid\\_final-12-5.pdf](http://www.vpaa.uillinois.edu/reports_retreats/tid_final-12-5.pdf)





## Chapter 8

### Current government roles: funding and beyond

This chapter shows how institutions view current governmental activities in e-learning, and what they expect from them in terms of funding and other policies.

In all the countries where sample institutions are based, the state/national governments play a significant role in the strategic direction and funding of higher education in general, and e-learning in particular. Even in countries where institutions have significant autonomy and governments are not expected to play a direct part in institutional management, governments play an important role in influencing the behaviour of institutions by means of strategic funding/policy. This chapter demonstrates how institutions view current governmental activities in e-learning (8.1), and what they expect from them in terms of funding (8.2) and other policies (8.3).

#### 8.1. Current roles of governments (Questions 7.5-7.6)

Sample institutions were asked about state/national government roles/strategies in supporting higher education institutions in e-learning development. They were not asked for a detailed description of government activities as such (although aspects of this emerged in responses), but rather respondents' views about government activity, and how the value of government involvement might be enhanced and improved. It needs to be highlighted that the institutional inputs on these questions only give a partial view – although an important one – concerning governments' role in the funding and support of e-learning in tertiary education. Institutions would, for example, not necessarily take into account the students' interests. Governments need both a supply and demand perspective when developing e-learning in tertiary education. The survey did not directly address funding and strategic efforts related to e-learning from supra-national governments and non-governmental agencies, such as UNESCO, World Bank and the European Union. However, many of the issues raised would apply. To bridge the information gap between the institutional perceptions of the government initiatives and the actual existing initiatives, the major

government policies, programmes/projects and portals concerning e-learning are listed in Annex 4.

The following were identified by institutions as the roles that governments currently played or were expected to play in relation to e-learning:

- Strategic development and provider of special funding for e-learning projects/research.
- Deregulation/regulatory reform to optimise the broader higher education context and its suitability for e-learning.
- Advocate for “non-traditional” learning.
- Broker and funder of partnerships/collaboration and creator of a new e-learning entity.
- Investor in technology infrastructure and regulator of telecommunication services.
- Initiator and funder of faculty development for e-learning.

The role of state/national governments in tertiary education and training differs from country to country and even from state to state within federal systems. Therefore, some of the roles listed above may not be appropriate in some countries: “E-learning” involves a wide range of actors within the government sector (*e.g.* department of education, department of information and communications, department of science and technologies, department of commerce and industry, etc.). It is therefore important to understand that these roles should not stand alone but should be strategically planned and managed across government departments.

## 8.2. Government and its funding role

Many institutions were very positive about government involvement, most consistently in terms of large-scale cash injection for project funding and research, infrastructure development, and profile-raising. The creation of dedicated agencies (*e.g.* the Joint Information Services Committee in the UK) and new entities (*e.g.* Swiss Virtual Campus – see Box 8.1) was also seen as important by some. The Catalan government was said to have been critical to the development of the Open University Catalunya, not least given the novel status of a virtual university at the outset (1994). By contrast, another respondent (representing a distance learning institution) was broadly positive about the context fostered by national government e-learning/higher education strategy and policy, but considered that specific e-learning funding had made no significant difference to the university’s development in this area. Stronger drivers were said to be student demand, employer needs and competition. This

partly reflected the distinctive nature of the institution (large-scale, national distance learning provider). The response from a campus-based university in the same country might have been different.

### **Box 8.1. Swiss Virtual Campus**

The Swiss Virtual Campus initiative (SVC) started in 1999 when the Swiss Parliament granted 30 million Swiss Francs (about US\$ 22 million) to the project for the period 2000-2003. The main aims of the SVC is to improve the quality of the student experience, to facilitate collaboration between institutions and to generate high quality online materials. The goal is not to create a separate virtual institution, but rather to ensure the genuine integration of online materials and delivery into mainstream undergraduate teaching. SVC funding criteria have particularly welcomed proposals that seek to develop online alternatives to the conventional lecture, especially in cases where provision is over-subscribed, and have insisted on collaboration between universities. Collaboration is with a view to work with institutions that teach similar content working on jointly developed online alternatives to share between them. The criteria for new projects require at least three institutions to be involved (foreign universities may participate but are not eligible for funding). To date, about 50 courses have been created across a wide range of disciplines, and another 32 are under development. To aid the sharing process, the SVC is working on a national credit structure and is encouraging modularisation. According to Gerhard M. Schuwey, Director of the Federal Office for Education and Science, the Swiss Rector's Conference (the representative body for Swiss universities) intends that about 10% of "all courses should be offered in electronic form" by 2007.

From 2004, the initiative entered its second phase, the Consolidation Period, which will run until 2007. The aim is to offer additional funding in support of the integration of online provision into mainstream undergraduate teaching. Central to this process is the establishment in every public institution of "centres of competence, service and production", that is, centres of local expertise in all aspects of online development. Funds are also been made available for new projects. Institutions wanting to develop a course are required to make a substantial financial contribution – typically 50% of development costs. SVC-funded provision must be multi-lingual, typically French, German and English.

The SVC is viewed as a vehicle for pedagogical and culture change in Swiss higher education. Indeed, the initiative fits neatly with the country's commitment to the Bologna Process. The SVC is attempting to overcome many of the problems that have curtailed its counterpart "national virtual universities" elsewhere – lack of ownership by higher education institutions, poor connection with mainstream provision, lack of sustainability. The requirement that institutions pay half the development cost might be particularly important in ensuring commitment and longevity. As a relatively small and wealthy country, with a primarily public higher education sector, Switzerland is well-placed to initiate this kind of sector-wide reform. Nonetheless, the emphasis on linking ICT development with mainstream provision and trying to address the limitations of conventional delivery are certainly worthwhile goals for any national strategy. It is fair to say, in conception at least, that the Swiss Virtual Campus can lay claim to the accolade of one of the most integrated, reform-minded and radical national virtual universities initiatives in the world.

For further information see: [www.swissvirtualcampus.ch/](http://www.swissvirtualcampus.ch/)

Sample institutions made a number of suggestions on what governments might fund, and how funding might best be organised. Key general issues included:

- Raising the amount of funds available (predicated on persuading governments to give a higher strategic priority to e-learning), not least to improve the underlying telecommunications infrastructure. This was mainly an issue for institutions in the developing world – specifically the Asian Institute of Technology, University of Sao Paulo and the Virtual University of Tec de Monterrey.
- Shifting the emphasis from the theoretical to the practical – funding for infrastructure, applications and staff development, rather than “research” into e-learning (Kyoto University, Multimedia Kontor Hamburg)
- Governments often only invest in physical facilities and equipment as targets of a *capital* investment in e-learning facilities. It was argued that it is equally important to invest in the human infrastructure. As mentioned in Chapter 6, many institutions expressed a strong need for staff/faculty development. One institution proposed that governments fund such activity, and another mentioned staff development as a way to increase the impact of government strategy.
- Improved coordination between government departments and other agencies, both nationally and internationally. For example, the Asian Institute of Technology was keen to see the formation of a genuinely regional approach to IT development.
- Funding to encourage disciplinary breadth in e-learning. This implied a role for public funding to support less marketable provision.
- Funding to encourage the internationalisation of institutions through e-learning cooperation.
- One respondent called for government intervention to secure cheaper e-journal pricing.
- Funding to encourage the formation of disciplinary clearing houses for e-learning materials. The Monash University respondent argued that initiatives of this sort started during the 1990s had failed because of insufficient funding and lack of clarity on copyright. It was suggested that an intellectual property regime that allowed authors to receive some recompense when material was used by others would introduce a more sustainable (if only partial) cost-recovery mechanism. The University of British Columbia respondent also emphasised the importance of

dedicated funding for the production of high quality materials, and staff development to support this.

Funding for sustainability was a major issue. The Carnegie Mellon University respondent praised the work of two of the main US federal funders of e-learning development (the National Science Foundation and the Education Department's "Fund for the Improvement of Tertiary Education"), but cited lack of dissemination. Many worthwhile department/institution-led initiatives had been supported, but "dissemination of these projects beyond their home institutions is rare". Faculty were said to have a poor record on successful commercialisation of e-learning activity, and the private sector was said to typically have an inadequate understanding of how to market the most promising academic developments. Government funds to "study the problem of sustainability and dissemination of quality e-learning programmes are badly needed". Certain US foundations (such as the Mellon and Hewlett foundations) were said to be supportive of this agenda.

Similar comments were made by another respondent. "With the exception of their investment in national and institutional infrastructure, which has been helpful, government strategy has been dominated by the 'easy solution' of grant schemes which are focused on short term 'products' which fail to be mainstreamed because there are no ongoing funds for maintenance and further development."

The Multimedia Kontor Hamburg respondent noted that the main disadvantage of large-scale government funding was that it acted as a disincentive for institutions to think through their own strategic positioning, and to develop long-term sustainable funding for e-learning. "It is a paradox that some universities who did not avail themselves of the opportunity of public funding and instead found their own approach and financing are now much more advanced in e-learning than others who have benefited from public funding". The respondent called on government to promote self-sustaining initiatives by funding institutional strategy development. The Virtual University of Tec de Monterrey respondent characterised the problem as the need for cultural change, requiring institutional ownership of the development process and long-term planning.

A number of recent government funding initiatives (*e.g.* the "e-learning Collaborative Development Fund" in New Zealand) have attempted to overcome some of these concerns. For example, institutional cooperation is a pre-requisite, and project outcomes (*e.g.* e-learning materials) must be made available to the tertiary sector as a whole. New Zealand's "Tertiary Education Commission" has also funded a national e-learning portal to facilitate the sharing of information, and to promote materials and

programmes. Several institutions mentioned advantages of government involvement in promoting and funding collaborations/partnerships. Advantages were identified as: 1) the sharing of limited funding, 2) the transfer of knowledge and expertise across institutions, 3) the reduction of unnecessary duplication of effort, 4) the stimulation of best practices, and 5) the avoidance of conflicting objectives. However, one respondent complained that government commitment to cooperation sometimes verged on the ideological – *e.g.* stipulating a minimum number of partners – and was not always appropriate.

One respondent argued that government funding should move away from competitive tendering for a fixed amount, to purely merit-based funding. “This may require a boost in funding in some years but with the assurance that extra investment is based on the strength of business cases rather than an arbitrary figure and perceived relative merits of competitive bids for a slice of the pie.” A non-contestable merit-based system would also “avoid the perception, warranted or not, of the ‘politicisation’ of the process... – that funding is allocated to some degree with considerations such as spread across institutions and geographical regions”.

Another comment concerned inconsistency between successive governments. For example, state-level e-learning strategy was said to be much stronger under one administration, and then weaker under the next. There was also seen to be inconsistency between state governments within a nation, said to undermine any notion of national strategy. A proposed solution was for the federal government to fund state governments to develop e-learning strategies within a specified period, and to share thinking and practice.

### 8.3. Non-funding roles of governments

Some respondents raised a number of non-direct funding issues relating to governments:

- **Higher education regulatory reform.** One respondent pointed to future federal agreement to tuition fees as a potentially significant enabler of sustainable e-learning. Fees would provide institutions with a cost recovery mechanism. The same respondent also called for reform to enhance the legal framework for academic employment (*e.g.* the balance between individual and institutional authority and ownership). The low status of distance learning was addressed by some respondents. For example, the Virtual University of Tec de Monterrey respondent attributed the relative lack of state government commitment to e-learning in Mexico partly to concerns about the quality and standards of non-traditional delivery.

- **National strategy on open standards.** One respondent argued that governments can play an important role in the adoption of open standards – facilitating the economies of scale to leverage the advantages of open standards at sector level.
- **Forging connections between dedicated virtual/distance institutions and campus-based operations.** This was seen as vital to avoid the perception that e-learning was somehow separate from conventional higher education. On the other hand, another respondent complained that governments over-emphasised the role of campus-based institutions as vehicles for e-learning. This was said to be due to enduring scepticism (“fuelled by traditional academics”) about the value and quality of e-learning, and an “out-of-date view” that “traditional” campus delivery was still the experience of the majority of students. The respondent cited the so-called “50 per cent rule” in the United States (currently under review) that bars access to federal student aid to institutions that offer more than half their provision outside the traditional classroom.
- **Telecommunications regulation** – on privacy, security, intellectual property and negotiating special rates for educational institutions. Stable electricity, reliable technology infrastructure and networks, as well as moderately priced Internet access, are necessary conditions for the development of e-learning. This area, typically outside the remit of the Ministry of Education (or equivalent), emphasises the need to orchestrate collaboration across different government departments.

Other government roles/strategies that were not stressed by the institutions can also be mentioned. Bates (2001, p. 29) distinguishes six roles for governments to consider in promoting e-learning in tertiary education:

- Deregulator and streamliner of planning and oversight processes.
- Stimulator of “best practices” and “choice”.
- Enabler, funder and broker of partnerships.
- Creator of “utilities” or technology networks.
- Informer and protector of consumers.
- Strategic investor on behalf of the state and its under-served “customers”.

The first four roles have been addressed, to a large extent, in the institutional responses. The last two roles were, however, not frequently



mentioned by institutions. In terms of the “under-served customers” issue, only one out of the 19 institutions pointed to government policy on inclusion of under-represented groups, specifically “people with disabilities”, through use of ICT. For example, the French PAGSI 2000 Report (Action Governmental Programme for the Information Society) was produced by the Prime Minister and the Interministerial Committee for the Information Society includes a policy objective to “bridge the digital divide for the visually impaired”. However this is not constrained to tertiary education/training. Another example is the German government’s action programme “Information Society Germany 2006” that includes a target area in education: “to further increase of percentage of women in IT training and university studies of information technology to 40%”.

Some aspects of consumer information are addressed by government-backed national e-learning portals, and quasi-government agencies that have begun to integrate e-learning into mainstream quality assurance arrangements. A recent study speculated that accreditation agencies in the United States “will take a greater interest in technology and establish technology criteria as a factor for accreditation” (Kvavik *et al.*, 2004, p. 81-82). Protecting consumers from unscrupulous and low-quality e-learning provision remains a vexed question in many countries. The very reach of online delivery constrains the capacity of national governments to regulate what is available to their citizens. Initiatives such as the planned UNESOC/OECD international database on approved providers (covering conventional as well as online delivery) may constitute a valuable global resource in this respect. Some examples of governments’ work in the area include: the Canadian Recommended E-learning Guidelines and the Consumers Guide to E-learning (Canada), the UK Quality Assurance Agency’s Code of Practice (addressing e-learning) (UK), the Ministry of Education’s proposal on the Standard Criteria for Establishing Internet-Based Program of Studies by Thai Universities (Thailand), etc. (see Annex 4 for details).

## 8.4. Conclusion

The diversity of both institutions and countries in the sample meant a diverse take on the role of governments in relation to e-learning development. In some countries, notably those with emerging economies, government interest in e-learning, and basic infrastructure funding/regulation were perceived as inadequate. In the developed world, government investment in infrastructure was widely praised. Critique focused on project-based funding models seen to be weak on dissemination beyond the funded unit/institution concern, and the general absence of a transformative framework to shift e-learning to the mainstream and

maximise its impact. A number of respondents saw a tension between government strategy/funding in e-learning and institutional innovation and autonomy. The task for governments was to create an enabling environment and not attempt to micro-manage change.

## *References*

- Bates, T. (2001), “National Strategies for E-learning in Post-secondary Education and Training”, UNESCO.
- Kvavik, R., J. Caruso and G. Morgan (2004), “ECAR Study of Students and Information Technology, 2004: Convenience, Connection and Control”, Research Study from the EDUCAUSE Centre for Applied Research, Boulder, Colorado.



## Conclusion

E-learning is becoming increasingly prominent in tertiary education. All available evidence points toward growing enrolments and provision albeit from a low starting point. However, after the hype of the new economy, growing disenchantment with e-learning has replaced over-enthusiasm. Failures of e-learning operations have, at least temporarily, overshadowed the prospects of widened and flexible access to tertiary education, pedagogic innovation, and decreased cost that was once embodied by e-learning. So where do we stand after the end of the hype of the new economy? What are the next steps to move e-learning forward in tertiary education and to reap its potential benefits?

### Activities and strategies

What do we know about e-learning adoption and enrolments as well as the institutional strategies of tertiary education institutions?

First, although student take-up is growing, enrolments are relatively low at most campus-based institutions and represent a small share of total enrolments. On the available quantitative evidence, provision with “high” online presence (that is with at least “web dependent” online presence) accounted for well under 5% of total enrolments at most OECD/CERI sample institutions. However, it should be noted that enrolments are currently difficult to track, not least because e-learning enrolments were often located at credit rather than degree level: in some institutions, the number of students enrolled in at least one course with high online presence would typically be much higher, and sometimes from 30 to 50% of total enrolments.

Second, e-learning activities across tertiary education institutions are very diverse, with programmes located at different points of the e-learning spectrum ranging from none or trivial online presence to fully online provision. The diversity found within the case study institutions matched the diversity found on a larger scale by the Observatory survey. In most campus-based institutions, the growth of e-learning to date has not challenged the centrality of the face-to-face classroom setting. Contrary to

the predictions of the dot-com boom, distance online learning in general and cross-border e-learning in particular (*i.e.* programmes taken by students in a country other than where the institution's central campus is located) have generally failed to emerge as significant activities or markets to date. A small number of OECD/CERI respondents reported significant general cross-border enrolments, and the Observatory data reinforced the view that in most institutions this form of activity is small-scale, peripheral and poorly tracked centrally. The complex possibilities of remote international delivery were typically left to small-scale, department-led experiments.

Third, modules (or courses) accounted for the majority of e-learning activity, reflecting the dominance of e-learning as supplementary to on-campus delivery at undergraduate level. Whole award programmes with relevant online presence were more common at postgraduate level. This is in line with the view that e-learning favours the experienced learner wanting to combine work/family and study. The intensity of online learning also varies significantly across disciplines: IT and business/management emerged as the most commonly cited disciplines that make significant use of some form of e-learning (notably the mixed mode and fully online categories).

How should this relatively low level of online learning be interpreted? It should certainly not be interpreted as the result of a lack of institutional interest in online learning. Almost all OECD/CERI sample institutions reported some form of central strategy for e-learning or were in the process of developing one. More representatively, only 9% of the 2004 Observatory survey respondents indicated neither any form of institution-wide online learning strategy nor any initiative under development – a decline from 18% in 2002. Should the discrepancy between institution-wide strategy and institution-wide use be interpreted as a sign of the immaturity of e-learning that will be overcome over time? Only partially. Current institutional strategies do not back the assumption that tertiary institutions will gradually move their provision towards fully online delivery. The OECD/CERI and Observatory surveys clearly demonstrate that fully online provision at campus-based institutions will remain very much a minority in the short to medium term. Consistent with their current activities, institutions' dominant rationales for e-learning strategies at campus-based institutions centred on on-campus enhancement through increased flexibility of delivery and enhanced pedagogy. Both the OECD and Observatory surveys found relatively little interest in international and new markets and in cost reduction. Virtual and distance-learning only institutions pointed to the greatest extent in this direction (but not all to the same extent). Distance learning declined significantly as a cited rationale between 2002 and 2004 in the Observatory survey.

## Pedagogic, organisational and technological challenges

One of the strongest arguments for promoting e-learning lies in its potential to improve and even revolutionise teaching and learning. The overwhelming view of respondents of the OECD/CERI survey was that e-learning has had a broadly positive pedagogic impact. However, few were able to offer detailed internal research evidence to this effect. Indirect evidence, including student satisfaction surveys and retention/attainment data, were widespread but these data may not be compelling enough to convince the bulk of sceptical students and academics of the pedagogic value of online learning.

One reason for the scepticism probably lies in the fact that e-learning has not really revolutionised learning and teaching as promised. Far-reaching, novel ways of teaching and learning, facilitated by ICT, remain nascent or still to be invented. The “learning object” model is perhaps the most prominent “revolutionary” approach to date. A learning object can be described as an electronic tool/resource that can be used, re-used and re-designed in different contexts, for different purposes and by different academics/actors. Redesign – for example through the use of pre-existing software, third party materials, peer/automated feedback, etc. – appears to be crucial for e-learning to reap the key pedagogic benefits (and cost efficiencies). Sample institutions expressed considerable interest in this model but were also faced with a range of primarily cultural and pedagogical challenges hindering widespread adoption. These included tensions between the decontextualised object and the contextualised learning encounter/programme, faculty unwillingness to use third party materials and object access as well as re-use and copyright concerns. Although the OECD/CERI survey reveals that institutions pay a lot of attention to learning objects, they still consider them as immature tools. At present, it appears that e-learning is continuing to grow in scale and significance in the absence of an explicit learning object economy. This partly reflects the influence of a “conventional” course development paradigm, but is also indicative of infancy (and thus poor utility) of any such economy – a situation that may change over time.

The limited impact of ICT in the classroom setting to date cannot be imputed to a limited usage of ICT in the tertiary education sector, as was often the case in the early 1990s. The adoption of learning management systems (LMS) – that is software designed to provide a range of administrative and pedagogic services related to formal education settings (*e.g.* enrolment data, access to electronic course materials, faculty/student interaction, assessment, etc.) – appears to be one of the prominent features of e-learning development in tertiary education worldwide. This is clearly

illustrated by both OECD/CERI and Observatory findings. The current immaturity of online learning is demonstrated by low adoption of content management systems – that is software where electronic content is split into learning objects that can be manipulated and recombined for multiple pedagogic purposes: only 6.6% of the Observatory respondents reported institution-wide adoption in 2004. ICT has penetrated tertiary education, but has had more impact on administrative services (*e.g.* admissions, registration, fee payment, purchasing) than on the pedagogic fundamentals of the classroom.

All sample institutions reported significant and ongoing investment in IT networks to support on-campus activity and/or distance learning, and many reported adequate functionality. But the Observatory data show a widespread need for urgent technology upgrades. At the sample institutions where functionality was largely appropriate, development plans relating to IT infrastructure concentrated on extension of services (*e.g.* wireless) operation-wide, bandwidth management (to both offer sufficient capacity to accommodate greater use of audio and video, but also to manage student use) and overall quality/range of service (online journals and e-books; student portals; etc.). The limited impact of IT in the classroom seen to date should not be dismissed as a lack of innovation or change in tertiary education as a whole: even if IT does not induce any change in the classroom, it is changing the learning experience of students by relaxing time and space constraints as well as providing easier access to information and greater flexibility of participation.

While the two leading commercial vendors of LMS software have attained significant market share, development of in-house software and use of open source software are noteworthy trends at tertiary institutions, typically among dedicated virtual, mixed mode and distance institutions. Several sample institutions reported an ongoing search for an alternative platform to the one they currently use, and were attracted to in-house and open source models. The appeal of in-house and open source sometimes lies in perceived inadequate functionality or pedagogic limitations of commercial offerings, despite platform functionality becoming increasingly customisable. The study demonstrates a willingness to maintain institutional autonomy over processes that are increasingly at the heart of instruction, especially as they can represent valuable intellectual property. Although the multiplication of platforms typically shows the novelty and relative immaturity of LMS, it might also represent a wasteful duplication of effort. Furthermore, it might also correspond to an over-emphasis on the technological infrastructure when the real challenge could lie in the innovative and effective use of the functionalities offered to faculty and

students. The pedagogic impact and institutional take-up of new and prominent open source platforms (*e.g.* Sakai and LAMS) remain unclear.

All sample universities are in the midst of thinking through and negotiating the potential contribution of e-learning in its various forms to their organisational future. For some institutions, and in some countries, key barriers remain. Infrastructure and funding are among the important ones, but stakeholder scepticism about the pedagogic value of e-learning and staff development are probably the most challenging. Institutions are commonly grappling with mainstreaming adoption, mainstreaming funding and are beginning to contemplate restructuring in terms of staffing, staff development, instructional design and student support. All institutions acknowledged the need to recruit a broader range of staff to complement academic staff, such as technologists, instructional designers, learning scientists, etc. Another challenge, however, lies in engaging current faculty to use and develop e-learning. The general concept of “staff development” is widely seen as key to mainstreamed and sustainable e-learning in tertiary education. Institutions are struggling with the balance between faculty and “new” staff roles, and the division of labour between the two. Interestingly, commercialisation and internationalisation were infrequently cited as aspects of organisational change.

While faculty resistance can partially be imputed to (at least perceived) pedagogic limitations of e-learning and insufficient maturity of the tools, it can also be explained by a lack of time (or motivation) to carry out what is foremost an additional task, by insufficient ICT literacy, or insufficient pedagogical literacy related to e-learning. E-learning development, with its standardisation aspects, might also conflict to some extent with the professional culture of academics, based on autonomy and a reward system often based on research. Concerns about intellectual property rights (and shared rights between faculty, institutions and technologists) may also be seen as a barrier for e-learning development. The sample institutions illustrate a diversity of methods for developing institutional human resources. Building a community of e-learning adopters within and across institutions and, more generally, knowledge management processes related to e-learning, are clearly crucial for further e-learning developments. The development of faculty-led initiatives appeared to be an important ingredient for success at many sample institutions. However, the scaling up of successful experiments and the sharing and mainstreaming of good practices remain the real challenges. Just as there is no one “best model” or trajectory for e-learning development for institutions, nor is there a “one-size-fits-all” staff development model for mainstreaming e-learning.

Partnerships are certainly a key characteristic of contemporary e-learning that could help institutions to share knowledge, good practices,



and achieve benefits such as advanced technology and quality curricula and pedagogy, in addition to enhanced market presence and lower costs. At the sample institutions, partnerships encompassed activities such as building the infrastructure; developing learning management systems and applications; creating e-learning materials; developing joint programmes; joint-marketing; collaborating for research; sharing best practices; and sharing costs of hardware and software. But partnerships also raise potential issues. One is the arrangement under which e-learning materials should be made available to third parties (free or fee-based use?). Another is the attitude towards outsourcing of non-core e-learning activities. The OECD/CERI survey found that the tertiary education institutions saw minimal or short-term value in outsourcing activity and that making learning materials to third parties was rarely given much strategic attention. Partnerships could still be used more effectively to enhance sectoral organisational learning.

## **Cost and funding**

During the dot-com boom, the promise of lower programme development and delivery costs (compared to conventional campus-based provision) was one of the most frequently cited advantages of e-learning in tertiary education and beyond. It was argued that lower costs would result from increased automation of development and delivery processes, reduced marginal costs, and the removal/reduction of travel and accommodation costs. The approach of the industrial era could at last be applied to education, with rationalised materials development, reduced number of full-time faculty, higher staff/student ratios, etc. Given that the major impact of e-learning has been on-campus where it acts as a supplement to classroom activities, most direct travel/accommodation savings have been factored out. Even online applications for administrative purposes seem to typically complement rather than substitute for traditional procedures – also undermining significant cost reductions. Lower development/delivery costs have also been challenged by the high cost of software development and, in many instances, demand for face-to-face tutorial support for remote online activities. Finally, it has become clear that online learning will induce ongoing and significant infrastructure costs. This implies that many conditions that could lead to a higher cost-efficiency of e-learning compared to conventional learning are not met. In this context, reducing overall teaching costs appears as a crucial component of the equation.

While a number of respondents expressed positive expectations about the cost reduction potential of differing forms of e-learning, few were able to offer direct evidence of this impact. However, in many instances, institutions would have as much difficulty evaluating the cost of traditional education. The conditions under which e-learning could become a less

expensive model compared to conventional face-to-face or distance education may come from a number of different sources: substituting some online provision for on-campus (rather than duplicating it), facilitating increased peer/automated learning, use of standard/pre-existing software, drawing on the open standards and learning objects model to increase material re-use and sharing, avoidance of duplication of effort, and greater course standardisation. In any case, re-organisation should involve a decrease in course development costs, a decrease in the student/staff ratio or savings due to less facility use (*e.g.* classrooms). Norms on class size and course design still appear as major barriers.

A strong theme was a call to evaluate e-learning in pedagogic as well as cost terms: e-learning could indeed prove to be more cost effective than face-to-face education (rather than more cost-efficient). The overall enhancement of the student experience due to online presence supports the argument, but pleading cost effectiveness would be pleading a different case – although one that should not necessarily be dismissed.

Internal resources currently represent the biggest source of funding for e-learning at most sample institutions, but much of its development has benefited from governmental and other non-commercial agency funding (rather than from tuition fees). No clear sustainable business model has yet emerged for commercial provision of e-learning, and failures have been more numerous than successes to date. “Special” internal or external funding remains a prominent feature of e-learning development in tertiary education. This stems from a perception of e-learning as a novel activity that merits experimentation and research. Many institutions are now clearly attempting to move to “normal” funding, typically through a combination of mainstream internal funds and student fees (balance depending on the type of programme and the country concerned), especially as external funding raises the problem of sustainability.

## Policy challenges

In all OECD countries (and in all countries where institutions are based), state/national governments play a significant role in the strategic direction and funding of higher education in general, and e-learning in particular. Even in countries where institutions have significant autonomy and governments are not expected to play a direct part in institutional management, governments play an important role in influencing the behaviour of institutions by means of strategic funding/policy. What can governments and related agencies do to create an enabling environment for e-learning development and to reap all its benefits?

In some countries, notably those in emerging economies, the basic infrastructure still needs further development and governments need to focus

on this structural investment, directly or indirectly. In the developed world, government investment in infrastructure was widely praised. However, rather than lacking the technological infrastructures necessary to fully embrace the advantages of e-learning, countries now need development and changes within the “softer” social, organisational and legal contexts in order to foster the further development of e-learning. This is where governmental policies should now focus.

Building a framework that would help shift e-learning to the mainstream and maximise its impact in the classroom is the current priority. Practical and experimental knowledge of e-learning is too often scattered within and across institutions, so that even successful practices and interesting experiences have limited impact and visibility.

Given that e-learning is still a novel and immature activity and that it has already improved the overall student experience (first and foremost through administrative rather than pedagogic changes), there is a case for continued government funding. However, governments and institutions need to have a clearer understanding of the costs and benefits of e-learning. For example, while e-learning could incur both cost reduction and enhanced quality, the two underlying agendas might not be similar.

In brief, a better knowledge management has become crucial for the advancement of e-learning. Governments could thus:

- Encourage the dissemination of good (and lessons from bad) practices to stimulate innovation, avoid wasteful duplication of efforts, and scale up successful experiments.
- Encourage appropriate staff development, collective as well as individual, in order to ensure progress at institutional level.
- Support research and development on learning objects and other promising pedagogic innovations.
- Against the background of uncertainty about best practices, explore the issues surrounding intellectual property in e-learning.
- Promote a dialogue between IT providers and institutions, and support public-private partnerships, in order to keep costs at a reasonable level.

In designing their policies, governments should take into account the importance of academic autonomy and diversity and avoid micro-managing change. Most importantly, they should adopt a suitable timeframe for development: patience is a key condition to any capacity building policy. E-learning could then be well-placed to transform tertiary education for better in the long run.

## Annex 1. Institutional information on the OECD/CERI case studies respondents

Name of institution	Mode of delivery Status Types	Size	Other characteristics
Aoyama Gakuin University (Japan)	Campus Private not for profit Business school (graduate school)	Students: about 150  Academic staff: about 70	<ul style="list-style-type: none"> <li>– Specialised in international management and finance</li> <li>– Most of the students have working experience and basic IT skills</li> <li>– Active in partnerships/consortium</li> </ul>
Asian Institute of Technology	Campus Public (intergovernmental) Technical institution (graduate school)	Students: 1 703  Academic staff: 176	<ul style="list-style-type: none"> <li>– Offers only graduate-level degrees as well as lifelong learning programmes</li> <li>– Does not have tenured faculty</li> <li>– Funded by several countries and development agencies</li> <li>– Targeted for “professionals who will play a leading role in the sustainable development of the region”</li> <li>– Capacity building in the region</li> <li>– Active in partnerships</li> <li>– Provide off-shore face-to-face provision</li> </ul>
Carnegie Mellon University (USA)	Campus Private not for profit Research and teaching	Students: about 8 500  Academic staff: about 1 400	<ul style="list-style-type: none"> <li>– Offers diverse disciplines</li> <li>– Of 8 500 students, around 5 200 are undergraduates</li> <li>– It has branch campus (Carnegie Mellon West near San Francisco and Athens Institute of Technology Campus in Greece)</li> <li>– Is actively involved in partnerships with overseas institutions</li> </ul>
Kyoto University (Japan)	Campus Public (changing from national institute to independent governmental agency) Research and teaching	Students: about 22 000  Academic staff: about 2 800	<ul style="list-style-type: none"> <li>– Is in an early stage of e-learning development</li> <li>– It has numerous international exchange agreements with overseas universities, but is not really engaged in off-shore face-to-face provision nor off-shore online provision</li> </ul>

Name of institution	Mode of delivery Status Types	Size	Other characteristics
Monash University (Australia)	Campus Public Teaching and research	Students: about 49 500  Academic staff: about 2 500	– It has 6 campuses in Australia, 1 campus in Malaysia, 1 campus in South Africa, 1 center in London, UK, and 1 center in Prato, Italy. And, it has numerous partnerships and franchises with overseas providers – It weighs on “strategic alliances” and “self-reliance” in its management
Multimedia Kontor Hamburg (Germany)	Campus Joint venture servicing the e-learning development of 6 publicly funded universities in Hamburg A service and coordinating consortium	The total number of the 6 participating institutions: Students: 62 545  Academic staff: 4 996	– It has started only since 2001 and it is still a “project” stage
University of British Columbia (Canada)	Campus Public Research and teaching	Students: about 34 329 (FTE or per head) (900 FTE full-time, of which, 309 FTE entirely online)  Academic staff: about 4 600 (FTE or per head)	– It has a comprehensive e-strategy (including e-learning) – It has about 100 (or 10 FTE) off-shore students studying in their home country (mainly Canadians working abroad) – It is involved in international activities; partnerships/joint master’s programmes, etc.
University of California, Irvine (USA)	Campus Public Research and teaching	Students: about 45 000 (of which 22 000 are continuing education students)  Academic staff: about 1 700	– It has a number of international students on campus, but does not deliver any to offshore students.
University of Paris-Nanterre (France)	Campus Public Research and teaching	Students: about 31 000  Academic staff: about 1 500	– It provides undergraduate/graduate education, continuing education, and distance education (about 6% of the students) – 1 000 international students on campus
University of Sao Paulo (Brazil)	Campus Public Teaching and research	Students: about 72 867  Academic staff: about 5 700	– It has 3 campuses in Sao Paulo and 5 campuses in other Brazilian cities

Name of institution	Mode of delivery Status Types	Size	Other characteristics
Zurich University (Switzerland)	Campus Public Teaching and research	Students: about 22 400  Academic staff: about 2 000	– About 10% international students on campus. It offers, very few, off-shore online programmes. – It participates in the national Swiss e-learning initiative “Swiss Virtual Campus”
University of Maryland University College (USA)	Mixed Public Teaching	Students: about 87 200 (The majority of the students are working adult, part-time learners)  Academic staff: about 2 500	– It focuses on entrepreneurship in its management – It is committed to teaching working adults – It has 23 locations throughout Maryland and the Washington, D.C. region, and 150 US military installations throughout Europe, the Middle East, East Asia, and the Pacific – More than half of its students are outside the US
University of South Australia (Australia)	Mixed Public Teaching (flexible, international, and industry-focused), and research	Students: 21 383 (EFTSU)  Academic staff: 1 311 (EFTSU)	– About 20% of its students are off-shore students – Roughly about 40% of the students are adult learners – Roughly about 20 % are part-time students – It is active in several partnerships
Fern-Universität (Germany)	Distance Public Distance education, and specialised research in ICT and media	Students: About 56 000 (60% – part-time)  Academic staff: about 980	– In 2002, 60% of the students were part-time students, of which 80% were working – It is in the transitional period to systematically convert the university into a Virtual University since 1999 – It is open to students outside Germany (having branch campuses in Austria, Switzerland, Latvia, Russia, and Hungary)
Open Polytechnic of New Zealand (New Zealand)	Distance Public Mainly teaching (especially to meet the needs of lifelong learning and vocational needs) and research in open and distance learning	Students: about 30 000 (mostly part-time)  Academic staff: about 480	– It aims to offer “learner-centred”, “personalised”, “blended” learning experiences – Majority of the students are people in the workforce and, thus, they have a high percentage of students being adult learners and part-time learners

Name of institution	Mode of delivery Status Types	Size	Other characteristics
Open University Catalunya (Spain)	Distance Private not for profit (public initiative, but private structure to be flexible) Mainly teaching, with some research	Students: about 31 360  Academic staff: 1 668 (majority of them – 1 438 – are adjunct or contract faculty)	– Distance education with the full integration of ICT is the educational model of Open University Catalunya. – It aims to meet the diversity of educational needs and learning styles – Is engaged in several partnerships.
Open University UK (UK)	Distance Public with large autonomy Mainly teaching, but do research in a number of disciplines	Students: 73 000 FTEs plus 800 (per head) doctoral students  Academic staff: about FTE 1 860	– Students are all part-time except 285 PhD students – One of the aims is to widen participation (esp. of those who are disadvantaged) – It has 15% off-shore students studying in their home country
University of California, LA, Extension (USA)	Distance Public (self-supporting division within a public research university) Teaching for lifelong learning	Students: 56 256 (total headcount) 100 143 (total enrolment: majority are for professional credits)  Academic staff: about 2 000	– It specialises in continuing education – As for academic staff, the faculty staff from UCLA counts only 5% while 58% are practitioners in the field in which they teach – As for students, 94% are domestic; 6% international
Virtual University Tec de Monterrey (Mexico)	Distance For-profit arm of a not-for-profit private university Teaching and some research	Students: 12 483 plus 67 778 (continuing and special programme students)  Academic staff: 258	– It has 33 campuses, 18 mini campuses, and 19 receiving sites in Mexico, as well as sites in Central and South America, the U.S., and Europe – “The Virtual University” is present in all facilities in the university, and delivers only distance learning including fully on-line delivery for graduated and extension programmes, and on-line combined with satellite broadcasting for some undergraduate and postgraduate courses

## Annex 2. OECD/CERI case study questionnaire

### Introduction

Thank you for agreeing to participate in the OECD study of international trends and good practice in e-learning in post-secondary education and training. The institutions selected for analysis come from a wide range of countries, and represent a diversity of institutional types and approaches to e-learning. The generic findings will be shared among participants and more widely, and are designed to inform institutional practice in post-secondary education worldwide.

An important aspect of the study is an institutional survey. The survey is an attempt to elicit quantitative and qualitative information from participating institutions, and covers a range of issues under eight headings:

- Institutional strategy and different forms of e-learning
- Platforms and infrastructure
- Students' access to e-learning
- Teaching and learning
- Students and markets
- Staff and materials
- Funding and government
- Organisational change, scenarios and barriers

The survey was designed to combine ease of completion with facilitation of high quality and detailed returns. It was a challenge to design a survey tool that addressed such a wide range of institutions (*e.g.* traditional campus-based institutions, dual mode, and distance-only institutions). It is appreciated that some of the questions do not apply equally to all participating institutions. As you complete the survey, please indicate where this is the case.

It is also appreciated that institutions themselves are diverse. Individual faculties/departments/individuals may be leading important e-learning initiatives with little input from the centre. Please respond in terms of faculties/departments/individuals where appropriate, as well as the institution as a whole. The most important thing is that you provide a balanced overview of your institution's e-learning activities. For institutions that are geographically dispersed, please indicate whether you are commenting in terms of the whole or part of the institution (*e.g.* in terms of institution-wide policy that affects all campuses).

We acknowledge that to complete the survey properly will take some time, and require input from a number of individuals at your institution. There is no fixed "word length" for each question – the response will depend on the circumstances at your institution. 200-300 words per question are



a rough guide. In some questions we ask for specific numbers. If this information is not available, please give an informed estimate.

In general, we would be very interested to receive copies of supporting documentation. Please provide hard copies or an online location.

In addition to your responses in written, there will be an opportunity to discuss the answers of all the institutions involved in the study at a two-day meeting planned for April 2004 in Paris at the OECD.

Your responses will be kept confidential. No individual institutional answer will be identified without permission of the institution.

## Definitions

1) **Online learning.** For the purpose of this survey, the following categories are used to define different types of online learning:

- Web supplemented *e.g.* course outline and lecture notes online, use of email, links to external online resource).
- Web dependent. Students are required to use the Internet for key “active” elements of the programme – *e.g.* online discussions, assessment, online project/collaborative work-but without significant reduction in classroom time.
- Mixed mode. Students are required to participate in online activities, *e.g.* online discussions, assessment, online project/collaborative work, as part of the course work, which replace part of face-to-face teaching/learning. However, students are required some physical presence in addition to the online activities.
- Fully online

The terms “online learning” and “e-learning” are used synonymously throughout the survey.

2) **Courses/programmes.** Different institutions organise provision in different ways and use different terminology. “Courses/programmes” is used throughout the survey as a generic term. It is our expectation that, in most institutions, the course will be the most appropriate unit of analysis, revealing differences in the extent of online learning between different courses that make up larger programmes (*e.g.* courses within a bachelors degree). However, please respond in the way that makes most sense for your institution (making clear what you are referring to).

## General information

*Name of institution* .....

*Country of main campus* .....

*Name and position of respondent(s)* .....

To provide additional contextual information, please attach your institution's mission statement (or equivalent) and a concise account of your institution, including details of:

*(If any of these categories are inappropriate for your institution, please respond using alternatives.)*

- Status: public, private not-for-profit, private for-profit
- Mode of delivery: balance between on-campus, distance learning (TV, video, radio, paper, CD), remote online learning, other
- Details of any branch campuses/overview of any franchised provision
- Qualifications offered, *e.g.* associate degrees, bachelors degrees, masters degrees, postgraduate certificates/diplomas, executive programmes, non-credit programmes, other
- Major disciplines offered (*e.g.* humanities, medicine, social sciences, natural sciences, etc.)
- Number of students (full-time equivalent for 2002/03) divided into the following (Please attach the breakdowns of full time/part time, age profile and gender balance separately if the information is available):
  - Doctoral
  - Masters
  - Other postgraduate
  - Bachelors
  - Other undergraduate
  - Other

and

- Majority classroom-based
- Majority distance (any type of distance learning)

and

- Domestic students
- International students studying in the country of your main campus
- Off-shore students studying in their home country
- Number of academic staff (full-time equivalent for 20002/03) divided into:
  - tenure and tenure track faculty
  - post-doctoral fellows
  - adjunct or contract faculty
  - teaching/graduate assistants

*(If this categorisation is not appropriate for your institution, please give academic staff numbers in another form.)*

- Annual tuition fee (2002/03) in US dollars – for home, bachelor degree students. (If tuition fees vary by discipline, please give details.)
- Revenue 2002/2003 (or most recent annual figure) in US dollars by source:
  - National government
  - State government
  - Tuition fees
  - Other sales and services
  - Non-government grants/donations
  - Endowments
  - Other

*(If this categorisation is not appropriate for your institution, please give an alternative breakdown of revenue sources.)*

## 1 Strategy

### 1.1 Does your institution have a formal, written online learning strategy?

YES  NO  Under development

**YES, but** some faculties/departments also have their own e-learning strategies

**No distinct strategy, but** e-learning is central to other institutional strategy documents  
(e.g. teaching and learning)

**There is no central strategy, but** some faculties/departments have their own e-learning strategies

**PLEASE ENCLOSE A COPY OF YOUR E-LEARNING STRATEGY** (or other relevant strategies where appropriate).

*For the following few questions, please answer in terms of your central e-learning strategy (or equivalent), if you have one. If there is no central strategy, but some e-learning strategies exist at faculty department level, please answer in terms of one or more of these (making clear what you are referring to).*

**1.2 Please describe how the strategy was first written (e.g. when it was written, who was involved, and who was consulted).** (If your institution does not have a single e-learning strategy, but has positioned e-learning at the heart of other strategies, please comment accordingly.)

**1.3 Please set out the main rationales for producing your institution's e-learning strategy (e.g. relating to students, staff, competitive advantage). Please focus on the rationales employed when your strategy was FIRST written.** (Please describe any important strategic differences between the centre and faculties/departments particularly involved in e-learning.)

**1.4 Has your strategy been substantially revised since it was first written?** If so, please describe the reasons for change, what has changed, and how the process of revision was undertaken (e.g. who was involved, who was consulted). What mechanisms do you have for decision-making in this area (e.g. committees, line management, etc.)?

**1.5 How does your institution's e-learning strategy or equivalent relate to your institution's mission or general strategic plan?**

**1.6 What estimated proportion (%) of current programmes/courses offered by your institution have the following kinds of online component?** Please also provide a rough estimate of the situation three years ago, and predict the situation three years from now. For example, the proportion could be calculated based on the full time equivalence of the students enrolled in courses with online components.

3 years ago	Now	3 years time
-------------	-----	--------------

**None or trivial** online presence

_____ %	_____ %	_____ %
---------	---------	---------

**Web supplemented** (*e.g.* course outline and lecture notes online, use of email, links to external online resources)

_____ %	_____ %	_____ %
---------	---------	---------

**Web dependent.** Students are required to use the Internet for key “ active” elements of the programme – *e.g.* online discussions, assessment, online project/collaborative work – but without significant reduction in classroom time

_____ %	_____ %	_____ %
---------	---------	---------

**Mixed mode.** Students are required to participate in online activities, *e.g.* online discussions, assessment, online project/collaborative work, as part of the course work, which replace part of face-to-face teaching/learning. However, students are required some physical presence in addition to the online activities.

_____ %	_____ %	_____ %
---------	---------	---------

**Fully online**

_____ %	_____ %	_____ %
---------	---------	---------

**1.7 Are there significant differences in the balance of different types of e-learning at your institution (*i.e.* Web supplemented, Web dependent, mixed mode and fully online) in different disciplines and at different levels (*e.g.* undergraduate versus postgraduate, introductory versus advanced classes, credit versus non-credit)?**

**1.8 Please outline any plans to develop this balance over time.** How has growth of any mixed mode provision affected conventional face-to-face teaching and facilities?

**1.9 Is your institution part of an “online learning consortium” or other significant partnership in this area?** This might include collaboration on hardware/software procurement, maintenance and operations, or marketing/branding. Please outline the nature of any relevant consortia/partnership, and state which other organisations are involved.

**1.10 Perhaps related to the previous question, is your institution involved in any outsourcing of infrastructure/maintenance/operations associated with e-learning provision?** If so, please outline the arrangements and the rationale for pursuing them, and comment on your experience of outsourcing to date.

## 2 Platforms and infrastructure

**2.1 Do you have a plan for campus networking for learning purposes?** In particular, what is the principal networking technology currently available for student learning on campus, if applicable (*e.g.* Ethernet, wireless, fibre optic connections)? Roughly what proportion of

the campus is connected to each of the different network technologies? How do you see this changing over the next three years? What is driving these changes? Is lack of network infrastructure a major barrier at your institution to the development of online learning?

**2.2 Does your institution deploy an online “learning management system” (e.g. Blackboard or WebCT)?**

*2.2.1 Some faculties departments use:*

Blackboard   
 Lotus Learning Space   
 WebCT

Open source system   
 Please name \_\_\_\_\_

Other   
 Please name \_\_\_\_\_

In-house system   
 Please name \_\_\_\_\_  
 Under consideration

*2.2.2 We have implemented an institution-wide system*

Blackboard   
 Lotus Learning Space   
 WebCT

Open source system   
 Please name \_\_\_\_\_

Other   
 Please name \_\_\_\_\_

In-house system   
 Please name \_\_\_\_\_  
 Under consideration

**2.3 Please comment on your choice and use of learning management systems (LMS). Is this stable or set to change? To what extent are LMSs central to e-learning at your institution? Approximately, what proportion of FTE academic staff regularly use an LMS? (If you do not use such a system and organise online provision in other ways, please give details.)**

IF YOUR INSTITUTION DOES NOT MAKE SIGNIFICANT USE OF AN LMS, PLEASE IGNORE THE FOLLOWING LMS-RELATED QUESTIONS (2.4-2.6). *If you would like to comment in terms of an equivalent tool platform, please do so.*

**2.4 Please comment on the functionality of your institution’s LMS(s). Do the platform(s) offer sufficient customisation to accommodate diverse teaching and learning styles?**

**2.5 To what extent is the LMS(s) integrated with other applications in your institution (e.g. student records, finance, enrolment)? What issues have arisen as a result of any integration process?**

**2.6 How is LMS activity at your institution organised? What is the balance between central, faculty/department and individual control over tool selection, content creation, posting and maintenance? What are the advantages/disadvantages of this balance? Are there any plans to alter the balance in the future?**

- 2.7 Do you have a student portal system?** How extensive is this, in terms of function and reach? How is this likely to change over the next three years? What is driving these changes?
- 2.8 Please comment on any other tools/platforms that are widely used at your institution in support of e-learning (e.g. instant messaging, handheld computers, other).** Why were they adopted and how are they used?
- 2.9 To what extent have you moved administrative systems such as admissions, registration, fee payments, student and faculty purchasing, online?** What can students and faculty now do in these areas entirely online? How is this likely to change over the next three years? What is driving these changes?
- 2.10 To what extent have you been able to integrate academic and administrative systems?** In other words, do you have a comprehensive “e-strategy” for both academic and administrative systems? Has your institution pursued integration by investment in a third party ERP system? If so, please give details. What have been the benefits and drawbacks to any attempt at systems integration?

### 3 Students’ access to e-learning

- 3.1 What is your institution’s policy on computer/network access for students/staff? Does your institution have a policy mandating computer ownership for all students? Please give details of any policies, the thinking behind them, and impact to date. Do some faculties/departments have their own policies in this area?**
- 3.2 What is your best estimate of the current personal computer/student ratio at your institution? For example, the ratio might be 1 computer for every 10 students. (This question concerns only personal computers paid for or facilitated by the institution, NOT computers purchased by students independently.) Please also indicate the situation three years ago, and predict the situation three years from now. If this information is available by faculty or school, please attach the break down separately.**

3 years ago		Now		3 years time	
1+:1	<input type="checkbox"/>	1+:1	<input type="checkbox"/>	1+:1	<input type="checkbox"/>
1:1	<input type="checkbox"/>	1:1	<input type="checkbox"/>	1:1	<input type="checkbox"/>
1:2	<input type="checkbox"/>	1:2	<input type="checkbox"/>	1:2	<input type="checkbox"/>
1:3-5	<input type="checkbox"/>	1:3-5	<input type="checkbox"/>	1:3-5	<input type="checkbox"/>
1:6-10	<input type="checkbox"/>	1:6-10	<input type="checkbox"/>	1:6-10	<input type="checkbox"/>
1:11-15	<input type="checkbox"/>	1:11-15	<input type="checkbox"/>	1:11-15	<input type="checkbox"/>
1:16-20	<input type="checkbox"/>	1:16-20	<input type="checkbox"/>	1:16-20	<input type="checkbox"/>
1:21-50	<input type="checkbox"/>	1:21-50	<input type="checkbox"/>	1:21-50	<input type="checkbox"/>
1:51+	<input type="checkbox"/>	1: 1:51+	<input type="checkbox"/>	1: 1:51+	<input type="checkbox"/> 1: ____

- 3.3 Now please estimate the current personal computer/student ratio if you INCLUDE computers purchased by students independently.** If this information is available by faculty or school, please attach the break down separately. *(Please again indicate the situation three years ago, and predict the situation in three years time.)*

3 years ago		Now		3 years time	
1+:1	<input type="checkbox"/>	1+:1	<input type="checkbox"/>	1+:1	<input type="checkbox"/>
1:1	<input type="checkbox"/>	1:1	<input type="checkbox"/>	1:1	<input type="checkbox"/>
1:2	<input type="checkbox"/>	1:2	<input type="checkbox"/>	1:2	<input type="checkbox"/>
1:3-5	<input type="checkbox"/>	1:3-5	<input type="checkbox"/>	1:3-5	<input type="checkbox"/>
1:6-10	<input type="checkbox"/>	1:6-10	<input type="checkbox"/>	1:6-10	<input type="checkbox"/>
1:11-15	<input type="checkbox"/>	1:11-15	<input type="checkbox"/>	1:11-15	<input type="checkbox"/>
1:16-20	<input type="checkbox"/>	1:16-20	<input type="checkbox"/>	1:16-20	<input type="checkbox"/>
1:21-50	<input type="checkbox"/>	1:21-50	<input type="checkbox"/>	1:21-50	<input type="checkbox"/>
1:51+	<input type="checkbox"/>	1: 1:51+	<input type="checkbox"/>	1: 1:51+	<input type="checkbox"/> 1: ____

- 3.4 Please describe the current balance at your institution between computer labs, portable computers paid for or facilitated by the institution, and computers purchased by students independently.** How has greater use of e-learning affected this balance, and what do you see as the long-term strategic implications? If this information is available by faculty or school, please attach the break down separately.
- 3.5 What network facilities can students access for connecting from off-campus?** Is the network service for off-campus students centralised or decentralised? How are these arrangements likely to change over the next three years? What is driving these changes?

## 4 Teaching and learning

- 4.1 What has been the “teaching and learning” impact of greater use of e-learning at your institution?** Specifically, what has been the impact on student satisfaction, teaching and learning approaches, student retention/attainment? Please give details of any evidence.
- 4.2 In your experience, which subject areas, types/levels of programme, and learning activities are best suited to e-learning?** Please distinguish between different kinds of e-learning (*e.g.* Web supplemented, Web dependent, mixed mode, fully Online as above) as appropriate.
- 4.3 Who decides how e-learning is delivered?** To what extent does your institution have a “centralised” approach to e-learning pedagogy, as opposed to faculty/department led initiatives and the preferences of individual faculty? Please describe the current “balance of power”.
- 4.4 Does your institution offer students any special assistance/guidance about learning online** (*e.g.* as part of a more general IT literacy programme)? If YES, please give details. If NO, please give your impression of how students acclimatise to greater use of e-learning.

- 4.5 Does your institution, or part of your institution, formally evaluate the impact of greater use of e-learning in teaching and learning?** If YES, please give details of the methodology and attach a copy of any important reports.
- 4.6 What has been the cost impact of greater use of e-learning at your institution?** Has greater use of e-learning generally increased course development and delivery costs, or have ways been found to offset higher development costs over time, or to redesign provision to save costs from the outset? Please give an overview of current policy and practice at your institution.
- 4.7 Has the increased/decreased/other cost impact of greater use of e-learning had any impact on tuition fees at your institution?**
- 4.8 Do you have an institutional strategy to support the development of learning objects LO (if so, please describe)?** If you have a repository of re-usable learning objects, please provide the url(s). What are the challenges you are facing with respect to developing learning objects? What is driving your LO strategy? Are you working with international interoperability standards (*e.g.* IMS, SCORM)?
- 4.9 What is your strategy with respect to access to online journals and e-books?** How is this affecting your strategy with regard to print-based journals and book acquisitions? How is this likely to change over the next three years? What is driving these changes?

## 5 Students and markets

- 5.1 What is your *best estimate* of the total number (full-time equivalent) of current students on online modules/programmes that would fit under the “Web dependent”, “mixed mode” and “fully online” categories given above?** (If over 1 000 students, please give an approximate figure.)

The term “module” refers to individual courses/units within a larger programme. For example, a single module within a degree programme might be “Web dependent” but the rest largely face-to-face. The “short award” and “degree” categories refer to instances where a programme *as a whole* is either “Web dependent”, “mixed mode” or “fully online”.

**UG = undergraduate  
(including non-credit)**

**PG = postgraduate  
(including non-credit)**

UG modules		UG short awards		UG degrees ( <i>e.g.</i> certificates/diplomas)	
0	<input type="checkbox"/>	0	<input type="checkbox"/>	0	<input type="checkbox"/>
1-10	<input type="checkbox"/>	1-10	<input type="checkbox"/>	1-10	<input type="checkbox"/>
11-20	<input type="checkbox"/>	11-20	<input type="checkbox"/>	11-20	<input type="checkbox"/>
21-49	<input type="checkbox"/>	21-49	<input type="checkbox"/>	21-49	<input type="checkbox"/>
50-99	<input type="checkbox"/>	50-99	<input type="checkbox"/>	50-99	<input type="checkbox"/>
100-199	<input type="checkbox"/>	100-199	<input type="checkbox"/>	100-199	<input type="checkbox"/>
200-299	<input type="checkbox"/>	200-299	<input type="checkbox"/>	200-299	<input type="checkbox"/>
300-499	<input type="checkbox"/>	300-499	<input type="checkbox"/>	300-499	<input type="checkbox"/>
500-999	<input type="checkbox"/>	500-999	<input type="checkbox"/>	500-999	<input type="checkbox"/>
1 000+	<input type="checkbox"/>	1 000+	<input type="checkbox"/>	1 000+	<input type="checkbox"/>



PG modules		PG short awards		PG degrees ( <i>e.g.</i> certificates/diplomas)	
0	<input type="checkbox"/>	0	<input type="checkbox"/>	0	<input type="checkbox"/>
1-10	<input type="checkbox"/>	1-10	<input type="checkbox"/>	1-10	<input type="checkbox"/>
11-20	<input type="checkbox"/>	11-20	<input type="checkbox"/>	11-20	<input type="checkbox"/>
21-49	<input type="checkbox"/>	21-49	<input type="checkbox"/>	21-49	<input type="checkbox"/>
50-99	<input type="checkbox"/>	50-99	<input type="checkbox"/>	50-99	<input type="checkbox"/>
100-199	<input type="checkbox"/>	100-199	<input type="checkbox"/>	100-199	<input type="checkbox"/>
200-299	<input type="checkbox"/>	200-299	<input type="checkbox"/>	200-299	<input type="checkbox"/>
300-499	<input type="checkbox"/>	300-499	<input type="checkbox"/>	300-499	<input type="checkbox"/>
500-999	<input type="checkbox"/>	500-999	<input type="checkbox"/>	500-999	<input type="checkbox"/>
1 000+	<input type="checkbox"/>	1 000+	<input type="checkbox"/>	1 000+	<input type="checkbox"/>

- 5.2 Please comment on the balance of interest in online provision at your institution between undergraduate and postgraduate students, short and long programmes, and credit/non-credit provision.** Is e-learning more popular among some postgraduates than undergraduates, for example?
- 5.3 Is use of e-learning spread evenly across your institution or is it concentrated in particular faculties/departments/courses?** Please give details.
- 5.4 Do you have any evidence that “traditional” or “non-traditional” students respond more or less well to greater use of e-learning at your institution?** Please comment. (“Non-traditional” students refers to those less academically-prepared. The next question asks about other kinds of students.)
- 5.5 Do you have any evidence that students of a particular gender, ethnicity or age respond more or less well to greater use of e-learning at your institution?** Please comment.
- 5.6 What effect has greater use of e-learning at your institution had on the balance between full-time and part-time students?** Similarly, how has greater use of e-learning affected the role of the physical campus (if applicable) in the typical student experience?
- 5.7 Taking your best estimate (if no figures are available), what proportion of students taking “Web dependent/mixed mode/fully online” modules/programmes at your institution are international (*i.e.* taking the provision at a distance in their home country)?** Are these international students more prevalent in particular disciplines or at particular levels (*e.g.* postgraduate rather than undergraduate)?  
If your institution offers offshore face-to-face provision, supplemented with online content, please describe this also.
- 5.8 If your institution does offer online provision to students outside the country, how is student support organised?** For example, is all support conducted remotely, or are local face-to-face options also available?

- 5.9** If your institution does offer online provision to students outside the country, what are the key “lessons learned” (e.g. in terms of marketing, localisation, local regulation, quality assurance, student support)?
- 5.10** If your institution does offer online provision to students outside the country, which are the major markets (i.e. list by country)?
- 5.11** Taking both domestic and international students, do you have any evidence that investment in e-learning has afforded your institution competitive advantage (e.g. in terms of student recruitment, calibre of students on entry). Please comment.

## **6 Staff and materials**

- 6.1** Please describe any staff development provision offered by your institution concerned with helping faculty utilise e-learning. What is the content, who provides instruction and what proportion of faculty attend?
- 6.2** Please outline key “lessons learned” from any such staff development activities at your institution. For example, how best to engage faculty, what content to include, how to follow-up once the development activities are over.
- 6.3** Has greater adoption of e-learning at your institution affected the staffing complement? Has it been necessary to employ different kinds of staff (e.g. instructional designers, Web specialists)? Has there been any change in the division of labour between faculty and graduate assistants? Please comment.
- 6.4** Has your institution devised particular strategies to facilitate co-operation between faculty and other staff (technical, instructional designers, library) in the development of e-learning? If YES, please give details.
- 6.5** Is your institution a member of a collaborative group for the production of e-learning materials, e.g. MERLOT, eduSplash? If so, which one(s)? Is this proving a useful strategy? If not, why not?
- 6.6** Have you established any internal mechanisms to ensure collaboration and sharing of e-learning materials within your own institution?
- 6.7** To what extent are faculty using off-the-shelf course packs such as WebCT/Blackboard e-packs?
- 6.8** Do you have a policy for making online materials created at your institution available to other users outside the institution? Please give details. What materials, if any, are available for free?
- 6.9** How has your institution handled the issue of intellectual property and ownership of materials with instructors/faculty?

## 7 Funding and government

- 7.1 Please describe any special funding your institution has received to undertake e-learning development (e.g. from government, foundations, companies). What was the amount of funding, over what time period, and for what purpose?**
- 7.2 Does your institution have a “special fund” to which departments/individuals can bid for support for e-learning development. If YES, please give details.**
- 7.3 More generally, to what extent are e-learning developments at your institution dependent upon special funding – whether internal or external? Does your institution have a strategy to ensure that promising e-learning developments can be funded sustainably on an ongoing basis without special funding? Please comment.**
- 7.4 Are there examples of cross-subsidy at your institution between full-cost recovery online programmes (e.g. executive development) and other provision? If YES, please describe how these arrangements fit into your wider funding policy for online learning.**
- 7.5 Please give your views on the role of state/national governments in your country in supporting higher education institutions in e-learning development in recent years. Has government strategy/funding been helpful?**
- 7.6 Please give your views on ways in which state/national governments in your country might improve their strategy/funding for e-learning.**

## 8 Organisational change, scenarios and barriers

*Many of the questions above touch on matters of organisational change, future scenarios and barriers to development. This final section is an opportunity to reflect more broadly on these issues, and to pick up any other aspects of change you consider important.*

- 8.1 Please give an overview of the major elements of organisational change at your institution related to greater use of e-learning. This might be change accomplished, in progress or on the horizon. What mechanisms has your institution put in place to rise to these challenges?**
- 8.2 Please give an overview of possible future scenarios for your institution in terms of development of online learning. Your answer might take account of existing strategy and other factors that might alter your current direction (e.g. changes in government policy/funding, changing student profile, technology developments).**
- 8.3 What are viewed as major barriers to further online learning development at your institution?**

## Annex 3. OBHE survey, 2004

### Section A: Cover Sheet

*Name of institution and country* .....

*Position/title of respondent(s)* .....

*Number of full-time equivalent students* (academic year 2002/03) .....

*Number of full-time equivalent academic staff* (academic year 2002/03) .....

*Annual budget* (academic year 2002/03)  
(please convert to US dollars) .....

### Section B: Strategy and Policy for Online Learning

1. From your *personal* perspective (or the consensus of those completing the survey), please indicate your opinion on the following statements by circling the appropriate number:

**KEY:**    ❶ Strongly agree                      ❷ Agree                      ❸ Unsure/it depends  
              ❹ Disagree                                  ❺ Strongly disagree

a) Off-campus online learning (distance learning) will play a major role at my institution over the next five years

❶                      ❷                      ❸                      ❹                      ❺

b) Other forms of distance learning (*e.g.* print, video) will be important at my institution in the future

❶                      ❷                      ❸                      ❹                      ❺

c) At my institution, there is strong student demand for online learning as an alternative to campus attendance

❶                      ❷                      ❸                      ❹                      ❺

d) At my institution, there is strong student demand for online learning to enhance campus attendance

❶                      ❷                      ❸                      ❹                      ❺

e) Online learning will greatly enhance on-campus learning at my institution over the next five years

①                      ②                      ③                      ④                      ⑤

f) Faculty at my institution are generally enthusiastic about online learning

①                      ②                      ③                      ④                      ⑤

g) Faculty at my institution are generally well-prepared to teach online

①                      ②                      ③                      ④                      ⑤

h) In general, the design principles employed by my institution mean that at least some forms of online provision are demonstrably less costly (to the institution – in financial terms) than the equivalent provision conducted through our conventional face-to-face teaching

①                      ②                      ③                      ④                      ⑤

**2. From your perspective, please indicate the importance your institution attaches to the following information technology issues over the next three years. Mark each issue out of five where “5” is very high importance, “4” is high importance, “3” is mid-range importance, “2” is low importance, and “1” is very low importance.**

- Developing online provision for distance learning \_\_\_\_\_
- Developing online provision as a supplement for campus-based students \_\_\_\_\_
- Improving IT development and support for faculty \_\_\_\_\_
- Recruiting and retaining technical staff \_\_\_\_\_
- Recruiting and retaining instructional designers \_\_\_\_\_
- Upgrading campus technology infrastructure \_\_\_\_\_
- Upgrading personal computers and software \_\_\_\_\_
- Better integration of academic and administrative IT services/systems \_\_\_\_\_
- Outsourcing a greater proportion of IT infrastructure \_\_\_\_\_

**3. Does your institution have an institution-wide “Online Learning Strategy” or equivalent?**

- YES       NO       Under development
- Some faculties/departments have their own online learning strategies
- YES, but we have various strategy documents on related aspects of online learning, rather than a single overarching document
- YES, but aspects of online learning are integrated into other strategies (e.g. teaching and learning, human resources etc) rather than presented as a single overarching document

*Unless you have answered “YES” or “YES, BUT” to this question, please go to Question 5.*

4. If you answered YES or “YES BUT” to Question 3, please indicate the priority your institution gives to the following rationales for undertaking online learning where “5” is very high priority, “4” is high priority, “3” is medium priority, “2” is low priority, and “1” is very low priority.

Enhancement of distance learning	___
Supporting local businesses and economic development	___
Entry into new international student markets	___
Safeguarding existing international student markets	___
Pursuit of new corporate clients	___
Safeguarding existing corporate clients	___
Widening access to local under-represented groups	___
Access for disabled users	___
Quality enhancement of teaching and learning on-campus	___
Improved flexibility of delivery for on-campus students	___
Cutting teaching costs long-term	___
Facilitating collaboration with other institutions	___
Keeping up with the competition	___

If other please give details

---



---

*Please now go to Question 6*

5. If you answered “NO” to Question 3 (*i.e.* your institution does not have an institution-wide strategy document – or equivalent strategy in other documents – on online learning), which of the following apply:

There is little perceived demand for online learning among our staff and students/potential students	<input type="checkbox"/>
Online learning is currently not relevant in the main disciplines at my institution	<input type="checkbox"/>
A “bottom-up” or department-driven approach is being taken	<input type="checkbox"/>
The infrastructure to deploy online learning successfully is beyond the means of my institution at present	<input type="checkbox"/>
Online learning is unproven as a technology and learning medium	<input type="checkbox"/>
Other issues are currently more pressing (please give examples)	<input type="checkbox"/>

Other (please explain)

---



---

**6. At your institution, which of the following are:**

- (a) **in place institution-wide**
- (b) **to be implemented institution-wide in the next 12 months**
- (c) **to be implemented institution-wide in the next 5 years**
- (d) **in place in one or more sub-sections of the institution**
- (e) **currently not a strategic priority.**

**Write a, b, c, d or e as appropriate.**

- a) Integration of major online elements into the majority of the curriculum \_\_\_\_\_
- b) Use of online learning for distance education \_\_\_\_\_
- c) Implementation of a learning management platform (*e.g.* Blackboard/webCT) \_\_\_\_\_
- d) Implementation of a portal system \_\_\_\_\_
- e) Shift to majority use of open source applications (*e.g.* Linux) \_\_\_\_\_
- f) Compliance with international interoperability standards (*e.g.* IMS, SCORM) \_\_\_\_\_
- g) Implementation of a Content Management System  
(*i.e.* a repository of reusable learning objects) \_\_\_\_\_
- h) Integration of disparate academic and administrative IT systems  
(*i.e.* purchase of new system and/or integration of legacy systems) \_\_\_\_\_
- i) Shift to significant outsourcing of IT functions \_\_\_\_\_
- j) Shared IT procurement/support with one or more other institutions \_\_\_\_\_
- k) Substantial investment in campus library access to online journals and e-books \_\_\_\_\_
- l) E-commerce facilities (*e.g.* student/faculty purchasing and payment online) \_\_\_\_\_

**7. Does your institution:**

- a) Have a formal policy mandating computer ownership by all students  
(whether equipment is paid for by the institution or the student)  
 YES       NO       UD\*
- b) Offer subsidies to students for computer purchase  
 YES       NO       UD
- c) Operate a minimum standard of student IT literacy  
 YES       NO       UD
- d) Offer formal incentives for faculty to develop online teaching and learning  
 YES       NO       UD
- e) Offer faculty formal training in online tools and techniques  
 YES       NO       UD
- f) Have a central unit/local units that focus on instructional technology  
 YES       NO       UD

g) Conduct formal evaluations of the impact of online learning on the student/faculty experience

YES       NO       UD

h) Have a formal policy on intellectual property rights associated with online learning materials and resources

YES       NO       UD

(\* UD = under development)

### Section C: Infrastructure for Online Learning

This section is concerned only with the main campus or campuses of your institution. Please exclude details of any international campuses or branches.

**8. Does your institution deploy an online “learning management system” (e.g. Blackboard or webCT)? This question concerns use by individual faculties/departments.**

Some faculties/departments use (please tick all that apply):

Blackboard	<input type="checkbox"/>
Lotus Learning Space	<input type="checkbox"/>
webCT	<input type="checkbox"/>
Open source system (please name below)	<input type="checkbox"/>
Other (please name below)	<input type="checkbox"/>
In-house system (please name below)	<input type="checkbox"/>
Under consideration	<input type="checkbox"/>
No online learning management system is employed at my institution	<input type="checkbox"/>
If other, please give details	

---

**9. Has your institution implemented an online “learning management system” (e.g. Blackboard or webCT)? This question concerns institution-wide use.**

We have implemented an institution-wide system: (please tick all that apply):

Blackboard	<input type="checkbox"/>
Lotus Learning Space	<input type="checkbox"/>
webCT	<input type="checkbox"/>
Open source system (please name below)	<input type="checkbox"/>
Other (please name below)	<input type="checkbox"/>
In-house system (please name below)	<input type="checkbox"/>
Under consideration	<input type="checkbox"/>
No online learning management system is employed at my institution	<input type="checkbox"/>
If other, please give details	

---



**10. According to your best estimate, what proportion (%) of current programmes/courses offered by your institution have the following kinds of online component?**

- a) None or trivial online presence \_\_\_\_\_ %
- b) Modest online presence  
(e.g. course outline, lecture notes, links to external resources, email) \_\_\_\_\_ %
- c) Significant online presence  
(e.g. key “active” elements of the programme are online, such as online discussions, assessment tools and collaborative project work, BUT there is no significant reduction in face-to-face classroom time) \_\_\_\_\_ %
- d) Web dependent (e.g. key “active” elements of the programme are online, such as online discussions, assessment tools and collaborative project work, AND these activities mean that face-to-face classroom time is significantly reduced) \_\_\_\_\_ %
- e) Wholly or very largely conducted online \_\_\_\_\_ %
- TOTAL 100 %

**11. What is your best estimate of the current personal computer/student ratio at your institution?**

For example, the ratio might be 1 computer for every 10 students. (This question concerns only personal computers supplied by the institution, NOT computers owned by students – unless student-owned computers are part of a formal institutional ownership scheme. A “personal computer” would include a sophisticated handheld computer designed to help students with their studies).

- |        |                          |         |                          |
|--------|--------------------------|---------|--------------------------|
| 1+:1   | <input type="checkbox"/> | 1:11-15 | <input type="checkbox"/> |
| 1:1    | <input type="checkbox"/> | 1:16-20 | <input type="checkbox"/> |
| 1:2    | <input type="checkbox"/> | 1:21-50 | <input type="checkbox"/> |
| 1:3-5  | <input type="checkbox"/> | 1:51+   | <input type="checkbox"/> |
| 1:6-10 | <input type="checkbox"/> |         |                          |

**12. Now please give the computer/student ratio at your institution if you INCLUDE computers owned by students independently.**

- |        |                          |         |                          |
|--------|--------------------------|---------|--------------------------|
| 1+:1   | <input type="checkbox"/> | 1:11-15 | <input type="checkbox"/> |
| 1:1    | <input type="checkbox"/> | 1:16-20 | <input type="checkbox"/> |
| 1:2    | <input type="checkbox"/> | 1:21-50 | <input type="checkbox"/> |
| 1:3-5  | <input type="checkbox"/> | 1:51+   | <input type="checkbox"/> |
| 1:6-10 | <input type="checkbox"/> |         |                          |

**13. Does your institution run a wireless network?**

- Yes – Institution-wide       Yes – Part(s) of the institution  
 No       Under consideration

**14. Does your institution employ satellite technology to reach students in remote areas?**

- YES       NO       Under development

**15. If your institution is connected to the Internet, what is the top speed of your backbone connection (in bits per second)? (For example, your connection might be 1Gbps or 64Kbps)**

If yours is a multi-campus institution, please give the fastest backbone connection available. In the box below please give details of how the backbone connection speed contrasts with the connection speeds available on your campus(es) more generally

Top speed: \_\_\_\_\_ bits per second

- My institution is not connected to the Internet

**Section D: Programmes and Initiatives – Distance e-Learning**

In this section, “online modules/programmes” refers to programmes of study that fall under the “Web dependent” or “wholly online” categories used in question 10. These are:

- Web dependent (*e.g.* key “active” elements of the programme are online, such as discussions, assessment tools and collaborative project work, AND these activities mean that face-to-face classroom time is significantly reduced).
- Wholly or very largely conducted online.

Please do not include details of other programmes. “Modules” refers to individual courses within larger programmes where one or two courses are either “Web dependent” or “wholly online” and the other courses have little or no online components. The “short awards” and “bachelors/masters degrees” categories refer only to whole awards/degrees that are either “Web dependent” or “wholly online”.

**16. Referring to the definitions in the introduction to this section what is your best estimate of the total number of online modules/programmes currently offered by your institution?**

Undergraduate Modules		Short Undergraduate		Bachelor Degrees Awards (e.g. certificates/diplomas)	
0	<input type="checkbox"/>	0	<input type="checkbox"/>	0	<input type="checkbox"/>
1-3	<input type="checkbox"/>	1-3	<input type="checkbox"/>	1-3	<input type="checkbox"/>
4-7	<input type="checkbox"/>	4-7	<input type="checkbox"/>	4-7	<input type="checkbox"/>
8-12	<input type="checkbox"/>	8-12	<input type="checkbox"/>	8-12	<input type="checkbox"/>
13-20	<input type="checkbox"/>	13-20	<input type="checkbox"/>	13-20	<input type="checkbox"/>
21-49	<input type="checkbox"/>	21-49	<input type="checkbox"/>	21-49	<input type="checkbox"/>
50-100	<input type="checkbox"/>	50-100	<input type="checkbox"/>	50-100	<input type="checkbox"/>
101-200	<input type="checkbox"/>	101-200	<input type="checkbox"/>	101-200	<input type="checkbox"/>
200+	<input type="checkbox"/>	200+	<input type="checkbox"/>	200+	<input type="checkbox"/>

Postgraduate Modules		Short Postgraduate		Masters Degrees Awards (e.g. certificates/diplomas)	
0	<input type="checkbox"/>	0	<input type="checkbox"/>	0	<input type="checkbox"/>
1-3	<input type="checkbox"/>	1-3	<input type="checkbox"/>	1-3	<input type="checkbox"/>
4-7	<input type="checkbox"/>	4-7	<input type="checkbox"/>	4-7	<input type="checkbox"/>
8-12	<input type="checkbox"/>	8-12	<input type="checkbox"/>	8-12	<input type="checkbox"/>
13-20	<input type="checkbox"/>	13-20	<input type="checkbox"/>	13-20	<input type="checkbox"/>
21-49	<input type="checkbox"/>	21-49	<input type="checkbox"/>	21-49	<input type="checkbox"/>
50-100	<input type="checkbox"/>	50-100	<input type="checkbox"/>	50-100	<input type="checkbox"/>
101-200	<input type="checkbox"/>	101-200	<input type="checkbox"/>	101-200	<input type="checkbox"/>
200+	<input type="checkbox"/>	200+	<input type="checkbox"/>	200+	<input type="checkbox"/>

**17. Referring to the definitions in the introduction to this section, what is your best estimate of the total number (full-time equivalent) of current students on such online modules/programmes? (If you know the exact figure please give it)**

Undergraduate Modules		Short Undergraduate		Bachelor Degrees Awards (e.g. certificates/diplomas)	
0	<input type="checkbox"/>	0	<input type="checkbox"/>	0	<input type="checkbox"/>
1-10	<input type="checkbox"/>	1-10	<input type="checkbox"/>	1-10	<input type="checkbox"/>
11-20	<input type="checkbox"/>	11-20	<input type="checkbox"/>	11-20	<input type="checkbox"/>
21-49	<input type="checkbox"/>	21-49	<input type="checkbox"/>	21-49	<input type="checkbox"/>
50-99	<input type="checkbox"/>	50-99	<input type="checkbox"/>	50-99	<input type="checkbox"/>
100-199	<input type="checkbox"/>	100-199	<input type="checkbox"/>	100-199	<input type="checkbox"/>
200-299	<input type="checkbox"/>	200-299	<input type="checkbox"/>	200-299	<input type="checkbox"/>
300-499	<input type="checkbox"/>	300-499	<input type="checkbox"/>	300-499	<input type="checkbox"/>
500-999	<input type="checkbox"/>	500-999	<input type="checkbox"/>	500-999	<input type="checkbox"/>
1 000+	<input type="checkbox"/>	1 000+	<input type="checkbox"/>	1 000+	<input type="checkbox"/>

Postgraduate Modules		Short Postgraduate		Masters Degrees Awards (e.g. certificates/diplomas)	
0	<input type="checkbox"/>	0	<input type="checkbox"/>	0	<input type="checkbox"/>
1-10	<input type="checkbox"/>	1-10	<input type="checkbox"/>	1-10	<input type="checkbox"/>
11-20	<input type="checkbox"/>	11-20	<input type="checkbox"/>	11-20	<input type="checkbox"/>
21-49	<input type="checkbox"/>	21-49	<input type="checkbox"/>	21-49	<input type="checkbox"/>
50-99	<input type="checkbox"/>	50-99	<input type="checkbox"/>	50-99	<input type="checkbox"/>
100-199	<input type="checkbox"/>	100-199	<input type="checkbox"/>	100-199	<input type="checkbox"/>
200-299	<input type="checkbox"/>	200-299	<input type="checkbox"/>	200-299	<input type="checkbox"/>
300-499	<input type="checkbox"/>	300-499	<input type="checkbox"/>	300-499	<input type="checkbox"/>
500-999	<input type="checkbox"/>	500-999	<input type="checkbox"/>	500-999	<input type="checkbox"/>
1 000+	<input type="checkbox"/>	1 000+	<input type="checkbox"/>	1 000+	<input type="checkbox"/>

**18. Referring to the definitions in the introduction to this section, in which disciplinary areas are such online modules/programmes offered in your institution?**

Code: 1 = Major area of activity (*i.e.* much online provision)  
 2 = Medium area of activity  
 3 = Minor area of activity  
 4 = No activity

	1	2	3	4
Business/management	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Information technology/computer science	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Education	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Law	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Nursing/health-related (not medicine)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Medicine	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Physical sciences (including engineering)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Natural sciences	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Social sciences	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Humanities	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Performing arts	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Other (please name)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

We offer no online programmes of this kind

**19. Referring to the definitions in the introduction to this section, what approximate proportion (%) of current students on such online modules/programmes are resident in the home country (HC) of your institution's main campus?**

Undergraduate Modules		Short Undergraduate		Bachelor Degrees Awards (e.g. certificates/diplomas)	
HC = 100%	<input type="checkbox"/>	HC = 100%	<input type="checkbox"/>	HC = 100%	<input type="checkbox"/>
HC = 75%-99%	<input type="checkbox"/>	HC = 75%-99%	<input type="checkbox"/>	HC = 75%-99%	<input type="checkbox"/>
HC = 51-74%	<input type="checkbox"/>	HC = 51-74%	<input type="checkbox"/>	HC = 51-74%	<input type="checkbox"/>
HC = 25-50%	<input type="checkbox"/>	HC = 25-50%	<input type="checkbox"/>	HC = 25-50%	<input type="checkbox"/>
HC = 10-24%	<input type="checkbox"/>	HC = 10-24%	<input type="checkbox"/>	HC = 10-24%	<input type="checkbox"/>
HC = 1-9%	<input type="checkbox"/>	HC = 1-9%	<input type="checkbox"/>	HC = 1-9%	<input type="checkbox"/>
HC = 0%	<input type="checkbox"/>	HC = 0%	<input type="checkbox"/>	HC = 0%	<input type="checkbox"/>

Postgraduate Modules		Short Postgraduate		Masters Degrees Awards (e.g. certificates/diplomas)	
HC = 100%	<input type="checkbox"/>	HC = 100%	<input type="checkbox"/>	HC = 100%	<input type="checkbox"/>
HC = 75%-99%	<input type="checkbox"/>	HC = 75%-99%	<input type="checkbox"/>	HC = 75%-99%	<input type="checkbox"/>
HC = 51-74%	<input type="checkbox"/>	HC = 51-74%	<input type="checkbox"/>	HC = 51-74%	<input type="checkbox"/>
HC = 25-50%	<input type="checkbox"/>	HC = 25-50%	<input type="checkbox"/>	HC = 25-50%	<input type="checkbox"/>
HC = 10-24%	<input type="checkbox"/>	HC = 10-24%	<input type="checkbox"/>	HC = 10-24%	<input type="checkbox"/>
HC = 1-9%	<input type="checkbox"/>	HC = 1-9%	<input type="checkbox"/>	HC = 1-9%	<input type="checkbox"/>
HC = 0%	<input type="checkbox"/>	HC = 0%	<input type="checkbox"/>	HC = 0%	<input type="checkbox"/>

**20. If your institution recruits any international students to online modules/programmes (i.e. international students not resident in the country where your institution’s main campus is situated), which are the main markets? (Do not include international students on other programmes.)**

- |                           |                          |                     |
|---------------------------|--------------------------|---------------------|
| Africa                    | <input type="checkbox"/> | Key countries ..... |
| Asia (including Russia)   | <input type="checkbox"/> | Key countries ..... |
| Australia/Pacific         | <input type="checkbox"/> | Key countries ..... |
| Central America/Caribbean | <input type="checkbox"/> | Key countries ..... |
| Europe                    | <input type="checkbox"/> | Key countries ..... |
| Middle East               | <input type="checkbox"/> | Key countries ..... |
| North America             | <input type="checkbox"/> | Key countries ..... |
| South America             | <input type="checkbox"/> | Key countries ..... |
| Data not collected        | <input type="checkbox"/> |                     |
| Not applicable            | <input type="checkbox"/> |                     |

**21. Is your institution part of any national or international network(s) of universities/other organisations dedicated to online learning? (This might include consortia concerned with campus-based online provision, as well as provision offered at a distance.)**

- YES       NO       Under development/consideration

If YES, please name the consortia:

---

**Section E: Final Comments**

Any other comments

**37. Additional comments**

Please add anything further you wish to mention about online developments at your institution, or your reasons for not pursuing online developments at this time.

**38. Email address**

If you wish to provide your email address (for future contact purposes) you may do so here.

## Annex 4. Overview of government-led initiatives to promote e-learning

This annex is intended to provide an overview on the existing government-led initiatives to promote e-learning policies and practices. It attempts to map major existing:

- Policies, strategies, and other official documents.
- Practices: programmes/projects.
- Portals/database which are relevant to e-learning at tertiary education.

It is worth noting that due to the cross-sectoral nature of e-learning, the tables do not limit themselves just to e-learning at tertiary education. In general e-learning policies are often part of or planned alongside:

- Generic ICT policies focusing on knowledge economies/societies *e.g.* Brazil, Canada, France, Germany, Japan, Mexico, New Zealand, Switzerland, Thailand.
- Generic education policies targeted towards the information society *e.g.* Australia, England, Germany and the United States.
- Higher education strategies *e.g.* England, Mexico, New Zealand, Switzerland.
- Distance learning policies *e.g.* Brazil, Japan, Mexico, the United States.
- Labour policies *e.g.* Germany; except some cases where it addresses distinct e-learning policies at tertiary education *e.g.* Canada, New Zealand.

The cross-sectoral nature of e-learning complicates the process of mapping government-led initiatives. In alignment with generic ICT policies (often produced cross-sectorarily), e-learning initiatives are implemented simultaneously by different ministries such as Ministry of Education, Ministry of Telecommunications and Information, Ministry of Industries, Ministry of Labour, etc. Therefore this list is not exhaustive.

Similarly, information relevant to post-secondary e-learning is often part of the portals/database designed for:

- Generic to education (*e.g.* “EdNA Australia”, “US GEM”).
- Generic to ICT and education at all levels (*e.g.* “France Educe Net”, “Spain CNICE”, “Switzerland Educa”).
- Specific to flexible learning or open and distance education (*e.g.* “Australia Flexible Learning Framework”, “France Formasup”).
- Specific to e-learning at all levels of education (*e.g.* “UK E-learning strategy”, “E-learning Brazil”, “Germany “Manual eLearning”, “Japan NICER”).
- Specific to tertiary e-learning (*e.g.* “UK FERL”, “New Zealand eLearn portal”, “US MERLOT”, US “EduTools”, “US Educause”).
- Specific to teacher education/training (*e.g.* “France Educasup”, “Germany e-teaching”).
- Specific to learning and career development (*e.g.* “Canada CanLearn”).

In addition, what complicates the mapping exercise is the different jurisdiction over higher education or education in general. In some countries, the central government is responsible for major national policies (*e.g.* France, Japan, New Zealand, Thailand). In others, the national or federal government has little input or none in the decision-making process while provincial/state government has a strong influence on the formulation of policies and programme planning (*e.g.* Australia, Brazil, Canada, Germany, Mexico, Spain, Switzerland, the United Kingdom, the United States, etc.). In such decentralised countries, government-led initiatives are often fragmented and not always visible to the other regions nor communicated to the public.

Moreover, regional initiatives are growing such as eLearning programme of the European Commission<sup>1</sup> and the Asia E-learning Network;<sup>2</sup> future work should aim to index these regional developments.

Although the list does not include all the existing policies and programmes, the secretariat attempted to include the most relevant and salient initiatives by circulating data among experts from the participating institutions and, then, among countries.

### 1. Major policies, strategies and official documents concerning ICT in education and/or e-learning

Country	Who?	Policies/strategies/documents	Year	Policy goals, concerns and areas/strategies/objectives
Australia	Australian Government Department of Education, Science and Training plays a leadership role through the Ministerial Council on Education, Employment, Training and Youth Affairs (MCEETYA) which comprises the national and state/territory education ministers.	MCEETYA Joint Statement on Education and Training in the Information Economy	2005  earlier statement in 2000	All education ministers agree to pursue the following principles: 1) Creating an innovative society 2) Ensuring that all learners achieve their potential; 3) Improving quality and raising standards 4) Achieving efficiency through sharing of e-learning resources 5) Capitalising on the internationalisation of education

1. [europa.eu.int/comm/education/programmes/elearning/programme\\_en.html](http://europa.eu.int/comm/education/programmes/elearning/programme_en.html);  
[www.elearningeuropa.info/](http://www.elearningeuropa.info/)

2. [www.asia-elearning.net/](http://www.asia-elearning.net/)

Country	Who?	Policies/strategies/documents	Year	Policy goals, concerns and areas/strategies/objectives
Australia	As above	Learning for the Knowledge Society: An education and training action plan for the information economy	2000	The Plan covers key education sectors: schools, vocational education and training, and higher education. It identifies outcomes needed if education is to support Australia's transition to the information society. Action areas for developing and implementing strategies include: <ol style="list-style-type: none"> <li>1) People</li> <li>2) Infrastructure</li> <li>3) Online content, applications and services</li> <li>4) Policy and organisational framework</li> <li>5) Regulatory framework.</li> </ol> This action plan is being updated in preparation for MCEETYA approval in 2005.
	Department of Education, Science and Training in consultation with the Schools sector	Learning in an Online World 2003-06 – a series of policy, strategy, framework and action plan documents	2003-06	<ol style="list-style-type: none"> <li>1) Content (including The Le@rning Federation)</li> <li>2) Learning architecture and learning space</li> <li>3) Bandwidth and connectivity</li> <li>4) ICT research</li> <li>5) ICT and pedagogy</li> <li>6) Professional learning/leadership</li> <li>7) Monitoring and reporting</li> </ol>
	Department of Education, Science and Training in consultation with the VET sector	Australian Flexible Learning Framework for the National Vocational Education and Training System 2005	2005	To increase the sustainable uptake of e-learning in VET through a range of projects that: <ul style="list-style-type: none"> <li>• Develop industry-based resources, such as Toolboxes, which contain learning strategies and online learning support materials</li> <li>• Engage industry peak bodies and organisations and Indigenous groups in e-learning</li> <li>• Enhance infrastructure and interoperability.</li> </ul>
	The Higher Education Bandwidth Advisory Committee (HEBAC) Department of Education, Science and Training	A Framework for an Australian Research and Education Network	2002	The report assesses the availability and affordability of bandwidth for the higher education sector and frames a collaborative strategy to address the sector's needs both currently and for the longer term. It recommends the development of a national high bandwidth backbone.



Country	Who?	Policies/strategies/documents	Year	Policy goals, concerns and areas/strategies/objectives
<b>Australia</b>	Australian ICT in Education Committee (AICTEC) which is the national forum for policy advice on educational uses of ICT and reports to MCEETYA.	AICTEC Business Plan	2004-05	AICTEC is a cross-sectoral, national committee responsible for providing advice to all Australian Ministers of Education and Training on the economic and effective utilisation of online technologies in Australian education and training. AICTEC has representation from the schools, vocational education and training, and higher education sectors; and includes both public and private education and training sector interests. <a href="http://www.aictec.edu.au">www.aictec.edu.au</a>
<b>Brazil</b>	Ministry of Education	Ministry of Education Law (Decreto) 2494	1998	To enable online courses to legally provide degrees
	Ministry of Education	Ministry of Education Law (Portaria) 2253	2001	To enable universities to substitute up to 20% of campus-based course activities by distance-learning activities
	Chamber of Commerce	E-Brazil: Information Technology for Development	2003	1) Society (access and participation) 2) Education 3) Private sector and environment 4) Government
<b>Canada</b>	The Advisory Committee for Online Learning (created by the Council of Ministers of Education Canada, CMEC, and Industry Canada)	The e-learning evolution in colleges and universities: a pan-Canadian challenge	2001	To accelerate the use of e-learning in post-secondary education and lifelong learning 1) Accessibility 2) Flexibility 3) Quality 4) Pan-Canadian synergy 5) Critical mass
	Ministry of Human Resources Development	Knowledge Matters: Skills and Learning for Canadians	2002	1) Lifelong learning 2) Accessibility and excellence in post-secondary education, for which e-learning is expected to play a crucial role 3) Quality workforce 4) Immigrants potentials
<b>England</b>	Department for Education and Skills	White Paper: The Future Of Higher Education	2003	1) Inclusion 2) Excellence 3) Flexibility 4) Collaboration To meet this end, e-learning is expected to be embedded in a full and sustainable manner

Country	Who?	Policies/strategies/documents	Year	Policy goals, concerns and areas/strategies/objectives
England	Department for Education and Skills	Harnessing Technology: Transforming Learning and Children's Services	2005	The strategy has six overarching priority actions: 1) An Integrated online information service for all citizens 2) Integrated online personal support for children and learners 3) A collaborative approach to personalised learning and activities 4) A good quality ICT training and support package for practitioners 5) A leaderships and development package for organisational capability and ICT 6) A common digital infrastructure to support transformation and reform
	Higher Education Funding Council for England (HEFCE)	Hefce e-learning strategy	2005	To embed e-learning in a full and sustainable way within 10 years: 1) Pedagogy, curriculum design and development 2) Learning resources and networked learning 3) Student support, progression and collaboration 4) Strategic management human resources and capacity development 5) Quality 6) Research and evaluation 7) Infrastructure and technical standards
	Learning and Skills Council (Distributed and Electronic Learning Group – DELG)	The report of the DELG	2002	To deliver quality e-learning: 1) Content and learning systems 2) Learner support 3) Quality 4) Sustainability
France	The Prime Minister, the Interministerial Committee for the Information Society	The Governmental Action Programme for the Information Society (PAGSI – Programme d'action gouvernemental pour la société de l'information), the Ministerial Action Programme for the Information Society (PAMSI – Programme d'Action Ministérielle pour la Société de l'Information)	1988	To concretise the PAGSI, PAMSI focuses on: 1) Education 2) Culture and arts 3) Modernisation of public services 4) Business and e-commerce 5) Research and innovation 6) Regulation

Country	Who?	Policies/strategies/documents	Year	Policy goals, concerns and areas/strategies/objectives
France	The Prime Minister, the Interministerial Committee for the Information Society	PAGSI 2000 Report	2000	To bridge the digital divide: 1) Training in the HEd sector 2) Equal access 3) Network and Infrastructure 4) Research 5) North-South digital divide 6) The visually impaired
Germany	The Ministry of Economics and Labour (BMWA) and the Ministry of Education and Research (BMBF)	Action programme, Information Society Germany 2006	2003	To advance Germany into information society: 1) Digital economy 2) Advancement of research and technology 3) Education 4) eGovernment 5) eCard Initiative 6) e-Health 7) IT security
	The Ministry of Economics and Labour (BMWA)	An action programme, Innovation and Jobs in the Information Society of the 21 <sup>st</sup> Century	1999	1) Equal access 2) ICT literacy 3) Innovation and skills of employees
	The Ministry of Education and Research (BMBF)	A Concept paper, Online-Offline-IT in Education	2000	To realise the scheme of the BMWA's Action Programme (1999) Under the vocational education and training pillar: 1) Infrastructure 2) Educational software development Under the higher education pillar: 1) Research network 2) Virtual libraries
	The Ministry of Education and Research (BMBF)	A concept paper, Connection Instead of Exclusion – Information Technology in Education	2001	To realise the scheme of the BMWA's Action Programme (1999)
	The Ministry of Education and Research (BMBF)	Manual for e-learning	2004	A synoptic documentation of all the elearning projects funded in the federal programme <i>Neue Medien in der Bildung</i> ("New Media in Education") with a listing of short description of the projects purpose, contents, materials or courses developed, royalty regulations (if applicable) and project partners

Country	Who?	Policies/strategies/documents	Year	Policy goals, concerns and areas/strategies/objectives
Japan	The IT Strategic	e-Japan Strategy II	2003	1) Medical services 2) Food 3) Lifestyle 4) Small and medium enterprises financing 5) Knowledge 6) Employment and labour 7) Public services E-learning is crucially concerned with: 5) Knowledge 6) Employment and labour
	The IT Strategic Headquarters	e-Japan Priority Policy Programs (2001, 2002, 2003) e-Japan 2002 Program		To materialise e-Japan Strategy (2001) and e-Japan Strategy (2003) 1) Network 2) Human resource development and promotion of education and learning 3) E-commerce 4) Digitalised public administration 5) Security and Reliability of ICT network E-learning is concerned with 2) Human resource development and promotion of education and learning
	Ministry of Education, Culture, Sports, Science and Technology (MEXT)	The reformed Standards for the Establishment of Universities 25	2001	Campus-based institutions are able to give up to 60 credits towards completion of a degree
Mexico		e-Mexico		1) e-Education (“e-Aprendizaje”) 2) e-Health (“e-Salud”) 3) e-Economy (“e-Economía”) 4) e-Government (“e-Gobierno”) The e-learning component gathers all the available information on the Internet about education; it includes the distance learning offers of public and private institutions at all levels
	ANUIES (The National Association of Universities and Institutions of Higher Education)	A Master Plan on Open and Distance Learning (Plan Maestro de Educación Superior Abierta y a Distancia)	2000	It includes e-learning in open and distance education developments and lays out strategies to achieve the developments with a vision towards 2020

Country	Who?	Policies/strategies/documents	Year	Policy goals, concerns and areas/strategies/objectives
Mexico	COMEPO (The Mexican Council of Graduate Studies) approved in October	Development Plan for National Graduate Programmes (“Plan de Desarrollo del Posgrado Nacional”)	2003	The plan includes the role of ICT in open and distance education
New Zealand	The Ministry of Economic Development (in collaboration with Department of Labour, Ministry of Education, New Zealand National Library, New Zealand Trade and Enterprise, Ministry of Research, Science and Technology, Te Puni Kokiri, Ministry of Health, State Services Commission, and Local government New Zealand)	A consultation paper, the New Zealand Digital Strategy	2004	To encourage the smarter use and uptake of ICT by individuals, communities, business and government: 1) Infrastructure (bandwidth) 2) ICT literacy 3) Content developments (for learning and for business) One of the ways to address change and challenge in different areas is to develop life-long e-learning opportunities within the wider community
	The Ministry of Education	An interim report, Tertiary e-learning Framework (2004-07)	2004	1) Staff development 2) Electronic rights management 3) Interoperability standards for e-learning systems 4) Qualifications to recognise flexible learning pathways 5) Sharing e-learning information and experiences 6) Research 7) Inclusion of the marginalised learners
	The Ministry of Education	The Tertiary Education Strategy 2002-07	2002	1) Economic transformation 2) Social development 3) Maori development 4) Environmental sustainability 5) Infrastructural development 6) Innovation E-learning is included as a way to work towards these goals
	The E-learning Advisory Group (the Associate Minister of Education, Tertiary Education)	Highways and Pathways: Exploring New Zealand’s E-learning Opportunities	2002	To shift paradigm of e-learning from “distance education” to a wider potential: 1) To improve quality 2) To increase participation 3) To change cost structures 4) To change distribution/delivery methods

Country	Who?	Policies/strategies/documents	Year	Policy goals, concerns and areas/strategies/objectives
Switzerland	The Federal Council (coordinated by the Interdepartmental Information Society Committee, IISC, in the Office of Federal Communications)	The 6 <sup>th</sup> Report of the Information Society Coordination Group (ISCG) to the Federal Council	2004	1) Education 2) e-Government 3) e-Democracy 4) the Law 5) Data protection 6) Security and availability of information 7) Culture E-learning is mentioned in 1) Education; under the Swiss Virtual Campus, “Sustainability” is cited as a major political concern
		The 1999 Swiss Federal Law on University Development	1999	The law entitles the Swiss Virtual Campus as a programme to support new information and communication technology in higher education
Thailand	Ministry of Education	National Education Act		To promote quality of education and lifelong learning
	The Secretariat of the National Information Technology Committee (NITC)	The National IT Policy Framework for the years 2001-10 (IT 2010)		To move Thailand into the knowledge-based economy/society 1) e-industry 2) e-commerce 3) e-education 4) e-society 5) e-government E-learning is concerned under 3) e-education in relation to: 1) developing human resources 2) lifelong learning 3) computer literacy 4) virtual education
	The National Electronics and Computer Technology Center (NECTEC) and the Office of the National Economic and Social Development Board (NESDB) (joint)	The National ICT Master Plan (2002-06)		To acknowledge both the IT 2010 and the Ninth National Economic and Social Development Plan (2002-06) 1) Regional leader for ICT industries 2) The utilisation of ICT to enhance the quality of life and society 3) Research and development 4) Social capacity for future competition 5) Entrepreneurs capacity for the expansion of international markets 6) Small and Medium Enterprises 7) Government administration and services E-learning is concerned with 2) the utilisation of ICT

Country	Who?	Policies/strategies/documents	Year	Policy goals, concerns and areas/strategies/objectives
United States	The web-based Education Commission to the President and the Congress of the United States	The Power of the Internet for Learning: Moving from Promise to Practice 1) The Power of the Internet for Learning 2) Seizing the Opportunity 3) Moving from Promise to Practice: A Call to Action		To promote e-learning at all levels of education 1) Student-centeredness 2) Needs of individual learners 3) Lifelong learning 4) Broadband access 5) Professional development 6) Research and development 7) Quality of content 8) Regulations 9) Privacy and protection 10) Funding
	The U.S. Department of Commerce	Visions 2020: Transforming Education and Training through Advanced Technologies		The report is a compilation of visions prepared by leaders in industry, academia and government on how new technologies might change the education and training landscape
	The U.S. Department of Commerce and the U.S. Department of Education	The Advanced Education Technology Initiative		1) Innovation in education and training 2) Workforce (develop skills and abilities) 3) Competitiveness (in the knowledge-based economy) As part of the strategies, an Interagency Working Group on Advanced Technologies for Education and Training (under the aegis of the President's National Science and Technology Council) was set up. The aims are to: 1) Raise awareness of the opportunities and barriers 2) Explore where government may be able to remove barriers inhibiting market development 3) Examine effective allocation of Federal investments to foster the development, application, and deployment of advanced technologies in education and training
	The Office of Post-secondary Education, U.S. Department of Education	The Distance Education Demonstration Programme (two reports in 2001 and 2003) to Congress		1) Access 2) Flexibility 3) Financial assistance
	The National Center for Education Statistics, the U.S. Department of Education	Distance Education at Degree-Granting Post-secondary Institutions: 2000-01		The report presents data on distance education at post-secondary institution, one of whose chapter is dedicated to the use of educational technologies

## 2. Major programmes/projects concerning ICT in education and/or e-learning

Summary table of e-learning development by country

Country	Australia	Brazil	Canada	England	France	Germany	Japan	Mexico	New Zealand	Spain	Switzerland	Thailand	United States
Infrastructure/networking	X	X	X	X	X	X	X	X			X	X	X
Course materials/courseware development/learning objects repository	X	X	X	X	X	X	X		X		X	X	X
Fostering collaboration (consortium, cooperation, partnerships, etc.)	X	X	X		X	X			X	X	X		
Quality enhancement by innovation in teaching/learning (e.g. personalisation, flexibility, easier access, etc.)	X	X	X	X	X	X					X		X
Human resource development (e.g. university staff development, IT professional development, etc.)	X	X		X			X		X			X	X
Innovation and research	X		X		X	X	X		X	X			X
Development and/or provision of e-learning products (platform, software, applications, etc.) and services		X	X			X			X	X			X
Establishment of centres specific for online learning (e.g. offering courses, providing information, etc.)				X	X	X					X	X	
Quality assurance/consumer protection			X	X		X	X		X			X	
Promoting lifelong learning via e-learning			X	X			X			X			
Standards and specifications			X						X				X
International cooperation/aids projects for developing countries (e.g. development of hardware and software, teacher training, capacity transfer, promoting inter-operability, etc.)			X		X		X						
Establishment of a virtual university/campus/school						X				X	X		
Special funding for e-learning	X	X	X	X									
Promoting e-learning within the framework of distance learning			X			X							X
Capturing new markets for e-learning (home country and abroad); coping with the international competition			X			X							
Fostering of transparent e-learning markets						X							
Ensuring access by minority	X			X					X				



## Details: country notes

### Australia

In Australia, the government's responsibility for higher education is shared by the commonwealth and state governments, with the Federal government providing operational funding. The Commonwealth Department of Education, Science and Training (DEST), previously the Department of Education, Training and Youth Affairs (DETYA), is responsible for national education, training and science policy. DEST is also responsible for higher education funding, policies in the area of international/overseas students, and Indigenous education policy. There are different State-based initiatives in e-learning in tertiary education. It is not possible to highlight all state-based initiatives; however, we have selected two states where the participating institutions in our case studies are located: *i.e.* Victoria (Monash University) and South Australia (University of South Australia).

- *Fostering collaboration:*

The Framework for Open Learning Programme (FOLP) aims to support a range of projects relevant to the whole of the education and training sector. Funding is provided for EdNA Online (see the portal/database section) which makes online collaboration tools available, including chat groups, community sharespaces, newsletters and discussion lists in education and training. FOLP also provides funding support to community groups such as an Indigenous Science and Technology Online project and the University of the Third Age which promotes collaboration across every state and territory to promote lifelong learning for older members in the Australian society.

- *Network infrastructure*

Australia has made significant investments in systemic infrastructure for key elements of e-research infrastructure: a robust high bandwidth communication network; distributed high performance computing capacity; accessible data and information repositories; accessible research facilities and instruments; and agreed standards and specifications to maximise interoperability. These include the Australian Research and Education Network (AREN), the Advanced Network Programme (ANP), Australian Partnership for Advanced Computing (APAC) and Australian Research Information Infrastructure Committee (ARIIC) initiatives. AREN serves higher education and research institutions and their associated vocational education providers, supporting education and research, including e-learning and a greater capacity for research training. The AREN is being established as a collaborative venture between the Australian Government, State and Territory Governments and higher education and research institutions. "The Australian Government is exploring ways to leverage its significant investment in bandwidth for the higher education and research sector to the benefit of other education sectors including schools." APAC provides high performance computing facilities, while ANP strengthens Australia's research networks. ARIIC oversees projects dealing with middleware issues, interoperable repositories and issues associated with the regulatory framework for accessibility of data and published information. Together these initiatives enhance the utilisation of electronic media and thus provide a platform that benefits the delivery of education through electronic media.

- *Flexible learning in the vocational education and training sector.*

The Australian Flexible Learning Framework is funded by the Australian Government through the Australian National Training Authority (ANTA) to create and share knowledge about flexible learning (especially e-learning) and to support its take-up in vocational

education and training. As well as the development of innovative online products and services, projects under the Framework cover professional development opportunities to assist accelerating the implementation of a flexible learning approach to training.<sup>1</sup>

- *ICT skills for work*  
All education ministers (national, state and territory governments) agree that the eight employability skills groupings, which comprise ICT skills, are skills that young people require for successful transition from school, work and to a range of other destinations. They also note that work on building employability skills into schools and VET sectors is progressing. Jurisdictions are continuing to embed employability skills within existing secondary schools curricular and the National Training and Quality Council has requested that the Industry Skills Councils (ISCs) incorporate employability skills into Training Packages, which provide the qualification frameworks for VET.
- *ICT and Teachers*  
The Partnership in ICT Learning project focuses on the technology-related needs and challenges for different groups of Australian teachers, including those working with Indigenous students, disadvantaged students, isolated students and those in schools with low bandwidth connectivity.
- *The Le@rning Federation*  
A collaborative initiative of the Federal, state and territory governments, aims at producing a pool of high quality online content for all Australian and New Zealand schools. The online curriculum content is available to schools across the country.

### **State government's initiatives**

#### *South Australia*

- The Department of Further Education, Employment, Science and Technology (DFEEST)'s statement "New Times, New Ways and New Skills" outlines a ten-point action plan to strengthen the state's economic and social future until 2010 (from Technical and Further Education – TAFE – perspectives). E-learning is considered as a potential way to foster innovation to ensure that TAFE institutions deliver higher quality learning experiences.

#### *Victoria*

- The Victorian Government initiated a portal service, TAFE Virtual Campus, for any resident of Victoria to access fully accredited TAFE programmes through online enrolment via a registered training organisation. The portal contains a range of information and links related to e-learning and vocational education and training ([www.tafevc.com.au/default.asp](http://www.tafevc.com.au/default.asp)).
- The Victorian Government through the Office of Training and Tertiary Education (OTTE) collaborates with training providers on a programme: Frontiers – Building Capacity for Flexible Learning Innovation ([www.tafefrontiers.com.au/](http://www.tafefrontiers.com.au/)). The priority areas include learning materials, professional development, information and research, and networks.

---

1. See [www.flexiblelearning.net.au/projects/](http://www.flexiblelearning.net.au/projects/)

## Brazil

The responsibility of higher education, by definition, lies in the Ministry of Education (the Federal Government). However, some initiatives can be taken by the state – or city – government for the state – or city – universities. Research in higher education is supported by two foundations: CAPES (Coordenação de Aperfeiçoamento de Pessoal de Nível Superior) under the Ministry of Education and CNPQ (Conselho Nacional de Desenvolvimento Científico e Tecnológico) under the Ministry of Science and Technology. There are local initiatives for e-learning at the state and municipal levels. For this study, we have only included Sao Paulo State/City – initiatives where our participating institution (University of Sao Paulo) is located.

- *Infrastructure/networking/collaboration*  
The federal government supported FUNTEVE (originally started as the PRONTEL) to connect all federal universities to TV EXECUTIVO (teleconference service) to develop a network/system of collaboration and learning modules.
- *Special funding for e-learning developments*  
Government agencies at federal and state levels supplemented university budgets to promote e-learning initiatives.
- *Learning objects repositories, development of applications*  
The Ministry of Telecommunication ([www.mc.gov.br](http://www.mc.gov.br)) sponsors the SBTVD Project (2003-06) which is to develop the Brazilian system for digital interactive TV. E-learning is highly integrated to advance developments of: learning objects repository for training support, interfacing for tele-education, applications with a user-centred approach.

### Local initiatives

#### *The State of São Paulo*

- The State of Sao Paulo Research Foundation launched a cooperative project between government, industries and research communities called the TIDIA project. It promotes advanced communications in infrastructure/networking and applications of e-learning, becoming a virtual incubator of Internet content.

#### *The City of Sao Paulo*

- The city government of Sao Paulo supports professional training in collaboration with universities.

## Canada

Post secondary education as well as education in general is the responsibility of ten provinces and three territories in Canada and each has a different policy. Therefore, it is not possible to highlight all the provincial/territorial initiatives on e-learning in tertiary education. For this study, we have included British Columbia, where the participating institution (University of British Columbia) is located.

- *Infrastructure/Connectivity*  
The Federal Government supports CANARIE to accelerate Canada's advanced Internet development by facilitating the widespread adoption of faster and more efficient networks.

- *Learning objects repositories*  
Industry Canada, under the CANARIE Learning Program, launched the edusource project as a pan-Canadian collaborative project to create a testbed of linked and interoperable learning object repositories.
- *Infrastructure/learning resources/collaboration/standards and specifications*  
The Multimedia Learning Group (MLG), part of Canada's SchoolNet at Industry Canada's Information Highway Application Branch, works with educational institutions to increase access to and integration of ICT into learning environments. In order to increase e-learning resources in national and international markets, one must develop an ICT-skilled population, capable of participating in the knowledge economy, by collaborating with post-secondary institutions in their take-up of online learning. MLG launched the EduSpecs project ([www.eduspecs.ca/index.htm](http://www.eduspecs.ca/index.htm)) to support the development of e-learning by promoting and facilitating the adoption of interoperable, international e-learning standards through inclusiveness, knowledge-sharing, collaboration, sustainability, innovation and research.
- *Consortia for online courses/learning materials*  
Industry Canada, part of SchoolNet programmes, launched an Internet portal Canada's Campus Connection ([www.campusconnection.net/index.html](http://www.campusconnection.net/index.html)) that connects learners to Canadian on-line university and college courses as a resource for skills development and personal growth to promote lifelong learning. It aims at helping Canada's post-secondary institutions expand their on-line presence both at home and abroad, reaching new markets with on-line courses and learning materials.
- *Lifelong Learning and ICT*  
The Office of Learning Technology was established by the federal government in 1996 with an aim to build a culture of lifelong learning through the use of technology. Projects include: Community Learning Networks Initiative (CLN) to enable lifelong learning and community capacity-building through the use of network technologies; New Practices in Learning Technologies Initiative (NPLT) to raise awareness of innovative practices in technologies for adult learners within the educational sector, including universities, colleges, educational associations and/or organisations; Learning Technologies for the Workplace Initiative (LTW) to help workers take advantage of technology and to efficiently adapt to the rapidly changing global marketplace and the new economy; and Research in e-learning Initiative (ReL) to promote research in e-learning practices and implements projects in collaboration with provinces.<sup>2</sup>
- *Quality/consumer protection*  
The Office of Learning Technologies (OLT) of Human Resources Development Canada (HRDC) in collaboration with the Canadian Association of Community Education (CACE) prepared the Consumers Guide to E-learning, a tool for learners to help evaluate programmes before purchasing online courses. It also prepared the Canadian Recommended E-learning Guidelines, a tool for service/product providers to design and deliver e-learning that meets consumer's expectations.
- *International collaboration/increasing visibility*  
Industry Canada supports the Connecting Canadians as the federal government's vision and plans to make Canada be seen as a world leader in the development and use of advanced information and communications technologies. As part of the plan, Industry Canada supports the NetCorps Canada International, which offers volunteer internships in developing

2. [www.hrsdc.gc.ca/asp/gateway.asp?hr=/en/hip/lld/olt/Projects\\_at\\_a\\_glance/projects\\_funded\\_by\\_year/summary\\_2003-2004.shtml&hs=txt#126920](http://www.hrsdc.gc.ca/asp/gateway.asp?hr=/en/hip/lld/olt/Projects_at_a_glance/projects_funded_by_year/summary_2003-2004.shtml&hs=txt#126920)

countries for students with appropriate skills in ICT. Some of the programmes that interns work on include the developments of hardware (*e.g.* infrastructure with satellites) and software (*e.g.* e-learning for lifelong learning).

### Local (provincial/territorial) initiatives

#### *British Columbia*

- BCcampus, a British Columbia government post-secondary education initiative, has been established to provide learners with a single point of contact for a number of services, including:
  - Access to information on all distance education courses and programmes available throughout the British Columbia public post-secondary system.
  - Access to student support services tasks on-line, including applying for admission, selecting and registering for courses on-line and tracking personal academic history as well as extended hour (24 hours, 6 days a week) helpdesk services for on-line students.
  - The ability to transfer course credits achieved easily from one institution to another.
  - Enhanced individual choice by giving learners access to a broad range of programs, courses, schedules and delivery formats. Students are able to choose learning that fits their individual needs.
  - The option of completing their programmes of study entirely on-line and receiving their credentials on-line.
  - Access to interactive student resource and “chat” areas to enhance networking, information sharing and peer support.
- Over the past two years, the BCcampus On-line Programme Development Fund (OPDF) has approved 100 projects involving 26 British Columbia public post-secondary institutions. The \$3 million OPDF is funding the development of over 120 online courses, well over 100 learning objects, 2 virtual labs and several tools for supporting online course development. A third round of proposals for a further \$1.5 million will be adjudicated in Spring 2005.
- The BCNET Optical Regional Advanced Network (ORAN) was created in 2001 as a jointly funded initiative between the Province of British Columbia and the federal government through the CANARIE project. All of British Columbia’s universities, as well as many government and non-government research organisations in British Columbia are connected to each other and to CA\*net4 via the ultra high-speed data network.
- The British Columbia Ministries of Education and Advanced Education operate a joint initiative, the Provincial Learning Network (PLNet), which connects all communities in the province with a school or a college site to a broadband data network that also provides access to the Internet.

### England

- *Networking, infrastructure, etc.*  
The Joint Information Systems Committee (JISC), through the United Kingdom Education and Research Networking Association (UKERNA), has set up the Joint Academic Network, SuperJANET, connecting higher education institutions, further education colleges and research council sites. [www.ukerna.ac.uk](http://www.ukerna.ac.uk)

The JISC has established Regional Support Centres to advise the learning providers on e-learning development in infrastructure, collaborative networking, staff development and management of change. [www.jisc.ac.uk/index.cfm?name=about\\_rsc](http://www.jisc.ac.uk/index.cfm?name=about_rsc). The JISC also funds a number of services to support UK further and higher education. For further information see [www.jisc.ac.uk/index.cfm?name=about\\_services](http://www.jisc.ac.uk/index.cfm?name=about_services)

ACL Connectivity Mapping takes a “snapshot” of connectivity, broadband and Internet access in post-secondary adult and community education.

- *Course materials development/implementation*

The National Learning Network (NLN) formed a NLN Materials Team based at BECTA to procure and manage the development of high-quality electronic learning materials across a wide range of subjects. They worked in partnership with experts in further education colleges and with commercial developers ([www.nln.ac.uk/materials/](http://www.nln.ac.uk/materials/)).

BECTA are developing a content strategy for the post 16 sector which takes into account wider issues such as licensing arrangements; tools for local materials development; access to materials; and developing the market

The Teaching and Learning Technology Programme (TLTP) was launched to foster collaboration among the higher education sector to explore how new technologies could help to improve the quality of teaching and learning. Phase one and phase two focused on developing computer-based teaching and learning course materials. Phase three focused on how to embed the use of new technologies and how to evaluate its effectiveness.

JISC had funded the development of the JORUM, a repository service for all Further and Higher Education Institutions in the United Kingdom, providing access to materials and encouraging the sharing, re-use and re-purposing of them between teaching staff. See [www.jorum.ac.uk/](http://www.jorum.ac.uk/) and RELOAD an editor and SCORM tool designed to facilitate the creation, sharing and reuse of learning objects and services. See [www.reload.ac.uk/background.html](http://www.reload.ac.uk/background.html). These tools were created under the JISC Exchange for Learning development programme. For further information and other tools developed under this programme see [www.jisc.ac.uk/index.cfm?name=programme\\_x4](http://www.jisc.ac.uk/index.cfm?name=programme_x4)

- *Staff development*

See [www.ccm.ac.uk/ltech//staffdev/default.asp](http://www.ccm.ac.uk/ltech//staffdev/default.asp)

The QUILT (Quality in Information and Learning Technology) Project was a five-year undertaking which raised standards in further education by providing staff development in the use of ICT (1997-2002).

- The Joint Information Systems Committee (JISC) manages a range of staff development projects, such as the Recognition of ICT Skills of Staff (tRISSt), and gives advice and guidance on the topic of “Training and Staff Development” ([www.jisc.ac.uk/index.cfm?name=topic\\_training](http://www.jisc.ac.uk/index.cfm?name=topic_training));
- BECTA also manages, through the National Learning Network, a range of transformational staff development projects and provide arrange of resources and events for practitioners through its website. [www.nln.ac.uk/lstda/nln\\_events/resources](http://www.nln.ac.uk/lstda/nln_events/resources).
- The Learning and Teaching Support Network Generic Centre (now part of the Higher Education Academy) launched a project, E-learning ([www.ltsn.ac.uk/genericcentre/index.asp?id=17104](http://www.ltsn.ac.uk/genericcentre/index.asp?id=17104)), where interactive online workshops for academics were implemented;
- BECTA, in partnership with the JISC Regional Support Centres as well as the National Learning Network (NLN), manages the Ferl Practitioners’ Programme (FPP) (<http://ferl.becta.org.uk/display.cfm?page=403>; [www.nln.ac.uk/viewproject.asp](http://www.nln.ac.uk/viewproject.asp)). This programme aims for comprehensive staff development in further education across England, Wales, Scotland and Northern Ireland.

The Joint Information Systems Committee (JISC) has an e-learning development programme which aims to identify how e-learning approaches can facilitate learning and advise on effective implementation. Projects are funded as case studies in e-learning practices, they question the effectiveness of resources, designing learning systems, develop e-learning tools within a framework to facilitate interoperability and consider innovative approaches to e-learning, etc. JISC encourages collaboration between institutions and sectors and is helping to develop communities of practice. JISC is also working in the areas of e-Assessment and e-Portfolios within the EU Diploma Supplement initiative. JISC is developing the international e-learning framework with colleagues in Australia and others and supports e-learning tool development, see <http://elframework.org/>

- *Leadership*

The Centre for Excellence in Leadership (CEL) was established in late 2003 as a “leadership college” for the Post 16 learning and skills sector. One of its key aims is to improve leadership understanding and skills to utilise the transformative potential of e-learning

- *New working practices/forces.*

The Association for Learning Technology (ALT), with funding from the Joint Information Systems Committee (JISC), has initiated development of a UK-wide structure to accredit individuals as learning technologists, in collaboration with higher education, further education, and industry bodies. See [www.ccm.ac.uk/tech/benchmarking/intro.asp](http://www.ccm.ac.uk/tech/benchmarking/intro.asp)

- *Quality Assurance, Inspection, Raising standards, etc.*

The new Quality Assurance Agency (QAA)’s Code of Practice specifically addresses e-learning.

- LSDA manages projects to evaluate the impact of technology on teaching and learning (for example as part of the NLN programme).
- The Raising Standards Steering Group, co-ordinated by the BECTA, initiated a discussion forum between inspectorates and key sector bodies such as college practitioners and inspectorate representatives (e.g. Ofsted, Adult Learning Inspectorate, Quality Assurance Agency for Higher Education, and the Education and Training Inspectorate, Northern Ireland, University for Industry (Ufi), the Learning and Skills Council (LSC) and the DfES).
- Demonstrating Transformation is a programme which offers guidance on inspection and e-learning in post-secondary education by providing information on a free CD-ROM.

- *Learning Centres/services for lifelong learners*

DfES started UK online centres with an aim to provide computer access to people in the community and help them to acquire new skills in technologies. They may be located in libraries, community centers, schools and church.

Ufi, Limited represents the government’s vision of a “university for industry”. Forming a unique partnership between government and private and public sectors, the industry aims to strengthen people’s employability by creating online learning services called Learndirect centers. These centers provide over eighty per cent of their courses online, and account for being the largest publicly-funded online service in the UK.

- *Standards and specifications*

JISC works with international standards bodies through CETIS (Centre for Educational Technology Interoperability Standards) see [www.cetis.ac.uk](http://www.cetis.ac.uk) and UKOLN see [www.ukoln.ac.uk/](http://www.ukoln.ac.uk/)

- *Accessibility and inclusion*  
JISC funds TechDis ([www.techdis.ac.uk](http://www.techdis.ac.uk)) to support staff and students with disabilities through the use of technology.
- *Digital Inclusion.*  
The objective of MyGuide is “to assist in decreasing the digital divide by facilitating access to the Internet and to learning opportunities for those who currently do not, or cannot, use the Internet because of a lack of skills or confidence or because of physical or cognitive disabilities”. The projects owned by the DfES and Project Managed by Ufi Limited aims to use innovative technology to develop and market a search and interaction facility that will help people over the barriers they face in using online services, due to physical or cognitive disability, lack of confidence, skills or motivation. The project fits in with the Government’s aim to make Britain a society that is inclusive: creating opportunities and removing barriers to ensure that everyone can fulfil their potential. It is also consistent with the Department’s Skills Strategy and the objectives of encouraging and enabling adults to learn, improve skills and enrich their lives. A pilot service is due to be launched in December 2005; with full service available 2006/07.

## France

- *Under generic framework*  
Within the framework of Four-Year Contracts (for institutions of higher education set out by the Ministry of Education), numerous projects are being put into practice. Any educational establishment, including post-secondary education institutions, can receive funding for projects concerning quality teaching. For instance, as for ICT developments, institutions may receive funding to develop its infrastructure for pedagogy and research; to improve its access of educational resources and services; to implement the use of new applications of learning management; to modernise documentation practices, etc. This can be done by contracting with the Ministry of Education.
- *Digitalisation of campus*  
The Ministry of Education launched a project called “Campus numérique” (Digital Campus) with an aim for higher education institutions to offer open distance post-secondary training via new technologies. They aim for education of higher quality carried out in a flexible and personalised way, incorporating diverse teaching methods and adopting formative assessments.
- *Educational resources*  
The Ministry of Education carried out a two-year research project, the Manum project, on existing digital resources. The research identified a need to establish an industry standard for production that meets professional norms. It also uncovered needs to find better ways to disperse materials and suggested the development of digital libraries of teaching materials ([www.educnet.education.fr/chrgrt/SDTIC-sup-BS.pps](http://www.educnet.education.fr/chrgrt/SDTIC-sup-BS.pps)).  
The creation of an Electronic Knowledge Base,<sup>3</sup> coordinated by the Technology Directorate (Ministry of Education), is currently in an initial development stage. Its aim is to better supply contents and services in a coherent, widespread and sustainable way.  
The Ministry of Education is supporting a “web-TV” project for higher education called “Canal U” ([www.canal-u.education.fr/](http://www.canal-u.education.fr/)). It emits streaming videos of numerous filmed

---

3. It was formerly the “Espace numérique d’éducation européen” (ENEE) project.



lectures and lessons with an aim to enhance visibility of French higher education and research via Internet.

The Ministry of Education supports the Fédération Interuniversitaire d'Enseignement à Distance (FIED) on their radio service project, Audiosup, where users can listen to programmes produced by universities belonging to Inter-university Distance Learning Federation and their partner institutions.

The Ministry of Education supports a digital version of the television series, "Channel Five Lecture Hall", "Les Amphis de France 5" ([www.amphis.education.fr](http://www.amphis.education.fr)). The site provides users with access to a wide range of university training programmes.

- *Consortium*

The Ministry of Education supports establishments of consortium: e.g. the Campus Numérique en Économie et Gestion (CANEGE), the Campus Virtuel des Technologies de l'information et de la Communication (CVTIC), the Université Médicale Virtuelle Francophone (UMVF), CampuSciences, the IUTenligne.

- *Public-private partnerships*

To achieve the aims of the PAGSI, numerous public-private partnerships were formed. Some of them relate to post-secondary education and training: e.g. the RIAM (Recherche et Innovation en Audiovisuel et Multimédia) project, managed by the Secretariat of three Ministries (industry, research and technologies, and culture and communication); the Société Digitale for assisting the trainers who educate people with new technologies; the Société Hewlett-Packard France for the provision of distance education and training programmes; etc.

- *Tripartite partnerships*

The Ministry of Education encourages tripartite contracts between the Ministry of Education, higher education institutions and local authorities for the Regional Digital Universities (UNR) project. Its aim is to offer online services (students' services and teacher support services) on a regional basis.

- *Establishment of a centre*

The Ministry of Education supports the European Residence for Educational Technologies – the Villa Media – project. The centre was established to focus exclusively on new teaching and learning methods with the use of multimedia. It intends to create a place for people to share ideas, conduct research, network and create innovations.

- *Internationalisation ([www.educnet.education.fr/eng/inter/offrefor.htm#acteurs](http://www.educnet.education.fr/eng/inter/offrefor.htm#acteurs))*

The "Campus Numérique" project of the Ministry of Education is now beginning to consider the expectations of France's partners abroad by forming an international consortium with foreign institutions ([www.educnet.education.fr/superieur/campusouvert.htm](http://www.educnet.education.fr/superieur/campusouvert.htm)).

The HEAL (Higher Education E-learning Courses Assessment and Labelling) project ([www.heal-campus.org](http://www.heal-campus.org)) is an experimental European Commission programme. It was created to offer on-line education to European students (through programme mobility), within the framework of the ECTS (European Credit Transfer System). The current participating countries are Germany, Finland, France, Italy, and Portugal. The evaluation report is to be published in October 2004.

- *International cooperation*

Within the framework of the ICT Education (La Formation aux Nouvelles Technologies) ([www.diplomatie.gouv.fr/mediasociete/ntic/formation/index.html](http://www.diplomatie.gouv.fr/mediasociete/ntic/formation/index.html)), the Ministry of Foreign Affairs supports aid projects for Africa such as teacher training, vocational training, capacity transfer of ICT in education, etc.

The Ministry of Foreign Affairs finances the Regional Management Education Programme Synergy, to support management education programmes in Cambodia, Lao PDR, Thailand and Viet Nam. The programme includes an e-learning component such as video-lectures, both in the between centres in the region and between Europe and the region, as well as the sharing of collections of online content. It aims at sharing of platform, technology, and content (especially for the tourism component).

## Germany

In Germany, responsibility for higher education is shared by the federal government and the state governments with a strong tradition of sovereignty in the *Länder* (States). It is a trend that universities have high autonomy, depending on contexts.<sup>4</sup> By definition, the federal government provides financial assistance, governs degree programmes, manages human resources, and concerns itself with teaching and research, etc.<sup>5</sup> Regarding ICT in education, the federal authorities share responsibility with the *Länder* in such areas as property rights, rights relating to the use of the Internet, distance education and quality

- *Infrastructure/networking/accessibility*  
The Wireless Campus Networks (WLAN) project, introduced in the BMBF's Online-Offline-IT in Education, was launched with an aim to promote easy access to learning and teaching materials on campus for students, faculty, administration and to encourage new forms of teaching and learning and to study the feasibility of wireless networks for e-learning. The BMBF supports the development and expansion of a country-wide gigabit DFN-Verein network for higher education and research institutions. The Lernet Project, sponsored by the Federal Ministry for Economics and Technology was launched to develop educational software to improve e-learning accessibility to small to medium-sized enterprises (SMEs) and to public administration.
- *Infrastructure/teaching and learning*  
The Notebook University programme (2001-03) was financed by the BMBF with an aim to provide selected universities (all universities in Germany were eligible to apply) to allow students to benefit from the full and flexible use of modern ICT (*e.g.* notebooks, WLAN, etc.). Thus, the focus was on infrastructural support for campus universities rather than the development of online courses. However, a precondition for application proposals was that universities would prepare a strategy for web-based multi-media learning and teaching.
- *Quality of teaching and learning/new online programmes/international market*  
Under a "Neue Medien in der Bildung" (New Media in Education) programme (2000-04), the BMBF funds projects which promote the use of new media and ICT in education. The overall goals of the programme are to realise added value to teaching/learning; to help to foster a structural change in the education sector; to foster a market for learning software; and to retain an independent national learning culture. The programme covers schools, vocational training and higher education. Goals specific to the higher education are to improve the quality of teaching and learning, to create new distance-learning programmes, to keep up with the international competition, to foster e-learning markets for lifelong learning on a global scale, etc.

---

4. This is protected by the *Grundgesetz* (Basic Law of the Federal Republic).

5. The framework is provided by the national *Hochschulrahmengesetz* (Higher Education Framework Law).

- *Development of online teaching/learning courses/content sharing*  
The Virtual Universities Project, introduced in the BMBF's Online-Offline-IT in Education, is an alliance of projects to experiment with tele-learning/teaching and to develop multimedia teaching and learning units.  
The BMBF supports a virtual professional school project that would offer a master's degree, and be aimed at developing online courses of high quality to be recognised internationally.  
The BMWA supports the Content Sharing Project, which aims at new co-operation forms for the commercial change of learning contents between producers among themselves and with educational institutions.
- *Public-private-partnership*  
To transform Germany into an information society, a public-private-partnership project, Initiative D21, was launched by some *Landers*, the business sector and the social community. One of the Task Forces is the creation of "Education, Qualification and Equality of Chances". The four objectives are to ensure ICT competencies for all; to enhance the quality of education in schools and universities; to overcome the gender inequality in jobs in the ICT sector; to enhance further education and to strengthen the regional economy.
- *Evaluation/research*  
The BMBF commissioned evaluation/research projects, such as positioning of virtual universities in an education market; concepts of virtual universities; markets and business models for provision of e-learning products by higher education institutions; gender mainstreaming, etc.  
The evaluation report of the Notebook University programme, results and experiences of a successful initiative was issued in July 2004 ([www.medien-bildung.net/notebook/notebook\\_3.php](http://www.medien-bildung.net/notebook/notebook_3.php)).
- *Interdisciplinary project for documentation*  
The Dissertation Online project (1998-2000) was funded by the national German Research Foundation ([www.dfg.de](http://www.dfg.de)) (DFG – *Deutsche Forschungsgemeinschaft*). It was an interdisciplinary project to present dissertations online, involving five universities<sup>6</sup> and five academic fields.<sup>7</sup> This initiative was made into a national initiative with the German National Library, who established a centre for coordination amongst librarians and researchers.
- *Coordination between the central government and federal states.*  
The Bund-Länder-Commission for Educational Planning and Research Promotion (BLK), a body for coordination between the central government and the federal states, carries out pilot projects and promotes programmes to promote the use of technology in education, e.g. "Systematic integration of media, information and communication technologies in teaching and learning processes (SEMIK)"; "Cultural education in the media age (KuBIM)"; "Distance learning", etc. The tendency is to stress capacity building and organisational development rather than the development of content.
- *E-learning services*  
The BMBF funding programme on E-learning services in higher education ([www.e-teaching.org/news/ausschreibungen/foerderprogramme/](http://www.e-teaching.org/news/ausschreibungen/foerderprogramme/)).
- *E-learning market*  
The BMWA supports the Quality Initiative eLearning in Germany (Q.E.D.), which aims at developing a new harmonised quality model for more transparent eLearning market.

---

6. Berlin, Duisburg, Erlangen, Karlsruhe, and Oldenburg.

7. Chemistry, education, informatics, mathematics and physics.

### Lander-initiatives

- The Bund-Länder-Commission for Educational Planning and Research Promotion (BLK) carries out pilot projects and promotes programmes to promote the use of technology in education; e.g. “Systematic integration of media, information and communication technologies in teaching and learning processes (SEMIK)”; “Cultural education in the media age (KuBIM)”; “Distance learning”, etc.
- Each *Länder* has founded its own centre for e-learning in higher education: among them ELAN in Lower Saxony and, ELCH in Hambourg, UVM – now CeC, VHB, Virtuelle Hochschule Baden-Württemberg, etc. They are separate from the federal endeavours, though. They have also administered funding programmes, carried out research, offered courses, coordinated activities between different universities, etc.
- The Hamburg State Government (*Hamburger Landesregierung*) issued a document “eGovernment Fahrplan 2004” (eGovernment Schedule 2004). It comprises a huge range of issues associated with eGovernment, digital signature, eHealth, and eLearning in schools and higher education.

### Private foundations

- Bertelsmann Stiftung/Heinz Nixdorf Stiftung (*Bildungswege in der Informationsgesellschaft*) Foundation supports e-learning projects. While the previous focus was on content and software development ([www.big-Internet.de](http://www.big-Internet.de)), the current focus shifted to capacity building for educators ([www.e-teaching.org](http://www.e-teaching.org)).
- Stifterverband der Wissenschaft ([www.stifterverband.de](http://www.stifterverband.de)) develops innovative, creative and futuristic programmes/projects between science and economics, politics, education, etc. As for e-learning, it supports the VCRP (Virtual Campus Rhineland-Palatinate) programmes, which have launched numerous e-learning projects: e.g. evaluation of a learning management system (webCT) with different learning scenarios; the establishment of qualifications of university e-teaching; the development of an online database and lecture rooms, etc.

## Japan

### Programmes/projects

- *Infrastructure/connectivity/materials/consortium*  
The National Institute of Multimedia Education (NIME) operates a project “IT Support for Higher Education”. To encourage the use of IT in higher education, it aims to promote a consortium, develop educational networks, supply multimedia instructional materials and resources, and foster the implementation of multimedia at institutes of higher education. One example of these subprojects is the “xGate” (eXtended GATE of the University of Tomorrow) project, a research project at the University of Tokyo. It intends to establish a system/platform to build a virtual university. A new subproject includes developing software for a cellular phone (i-mode) to enhance access to virtual university courses in the country, creating a streaming of video lectures on virtual university and evaluation of learning outcomes, etc.

- *Infrastructure/connectivity*

The National Institute of Informatics (NII) has set up the networks SINET and Super SINET, connecting higher education institutions and research institutions. The Super SINET is designed to transfer heavy data (via 10Gbps) and give priority to basic research and information technology. It currently focuses on connecting institutions to five specific areas of advanced science and technology.

- *Quality assurance*

The MEXT set up a research project on quality assurance of higher education with an aim to respond to cross-border education. One of the research themes includes quality assurance of e-learning in higher education.

- *E-learning materials and courses*

The Japan Science and Technology Agency (JST) developed open educational resources (learning materials and courses), namely Web Learning Plaza, on science and technology to support the continuing professional development of engineers – the aim was to contribute to the advancement of Japan’s technological manpower.

The MEXT launched an open learning programme via E-Net ([www.opencol.gr.jp/](http://www.opencol.gr.jp/)) to promote lifelong learning. Courses can be taken free of charge at community centres and libraries.

The Ministry of Internal Affairs and Communications (MIC) launched the Information and Communications Human Resources Training Project to promote IT literacy to the larger population. The training takes place at existing schools, community centres, libraries, museums, universities, etc. MIC raises the needs to further develop the project in areas such as using the existing facilities as support centres, developing human resources as “instructors-to-be” and creating relevant contents, etc.

METI set up a working group to launch a project to promote e-learning at the grass-root level. The project aims to develop human resources to strengthen Japan’s industrial competitiveness as well as to ensure social security by creating employment for the youth. It intends to collaborate with MEXT and MHLW.

- *International collaboration*

Asia e-learning Network (AEN) has been established by the Japanese government’s initiatives to promote economic development and human resources training in the Asian region through e-learning. The proposal was approved at the ASEAN+3 Economic Ministers Meeting. The objectives are to share information on latest e-learning trends and technologies, to promote interoperability and resource sharing of e-learning systems and contents and to promote the spread of knowledge on the effective use of e-learning in the region.

School on Internet (SOI)-Asia Project is an inter-spectral project between industries and academics, supported by METI and MIC. It aims at assisting capacity building of neighbouring Asian countries by delivering quality higher education from Japan. It utilises satellite-based Internet to allow universities located in the regions to access the project where Internet environments are insufficiently equipped.

The Asia Broadband Programme was set forth by MIC in collaboration with other relevant ministries to realise a globally-balanced IT society for Asia. One of the basic concepts is to strengthen cooperation among Asian economies and provide support for developing countries in such areas as introduction of broadband platforms, distribution of digital contents, and promotion of compatibility with a multilingual environment which enables information to freely flow within the Asian region.

## Mexico

- *Infrastructure*

The Government of Mexico has launched the Distance Learning Conference System (DLCS), video-conferencing platform and software. It aims to enable universities throughout the country to engage in “one-to-many” distance learning programmes in an affordable, reliable and flexible manner.

## New Zealand

- *Standardisation*

The Ministry of Education launched a project to provide a set of recommendations for e-learning standards. It prepared a draft document, *e-learning Standards Overview* ([www.steo.govt.nz/download/Draft%20Standards%20Overview.pdf](http://www.steo.govt.nz/download/Draft%20Standards%20Overview.pdf)), for consultation, which provides an overview of existing and emerging e-learning standards.

- *Numerous themes are covered by government projects under two funding schemes*

Funding for collaboration. The Ministry of Education makes available funding, the e-learning Collaborative Development Fund (eCDF) (2003-07) to improve the capability of e-learning delivery with the aim to facilitate collaborative and strategic implementation of e-learning among tertiary education institutions. Under the first round (2003), project applications received funding were: *e.g.* to develop improved Maori access to, and participation in, e-learning; to develop a set of guidelines and standards to ensure the quality of e-learning; to develop and implement a unique NZ open source courseware tailored to NZ’s population (particularly Maori and Pacific peoples); to support staff development; to establish an e-learning diploma, New Zealand e-learning quality standards, framework guidelines, etc. ([www.tec.govt.nz/about\\_tec/mediareleases/release22.htm](http://www.tec.govt.nz/about_tec/mediareleases/release22.htm)).

Funding for research. The Ministry of Education funds five projects for research on the current context and future impact of e-learning on tertiary learners and providers in the New Zealand context.

## Spain

Since 2001, a new act on higher education in Spain was promulgated by the government called *la Ley Organica de Universidades (LOU)*. It decentralised authority from the central government to seventeen regional governments (*comunidad autónoma*). For this study, we have included the Autonomous Government of Catalonia (the *Generalitat de Catalunya*), where a participating institution called the Open University Catalunya is located.

- *Research*

Under the programme to promote technical research, the Ministry of Science and Technology provides subsidies to promote production of educational software and development of ICT in education.

- *Inter-university collaboration*

An initiative was taken to create a single, virtual point of encounter, *the Grupo9 Universidades*<sup>8</sup> (at [www.uni-g9.net/](http://www.uni-g9.net/)). Grupo9 is composed of nine Spanish public universities which, among other projects, have a joint offering of subjects that are taught via e-learning.

---

8. This Group includes the universities of the Balearic Islands, Saragossa, La Rioja, Navarre, the Basque Country, Cantabria, Oviedo, Extremadura and Castilla-La Mancha.

## Regional

The instigation of the *Generalitat de Catalunya* (Autonomous Government of Catalonia).

- The Educampus project was launched by the *Generalitat de Catalunya* with an aim to create an innovative platform of educative, interactive and collaborative work for and between professors and students.
- The edu365.com portal was constructed by the Department of Education of the *Generalitat de Catalunya* to provide lifelong learning and professional training to students and families from non-university educational systems ([www.edu365.com/](http://www.edu365.com/)). The portal is closely related to the ARGO project,<sup>9</sup> which is conducted by the Department of Education in collaboration with the Secretariat of Telecommunications and Information Society of the Department of Universities, Research and Information Society.

## Switzerland

In Switzerland, responsibility for higher education is shared between regional governments (cantons) and the central government (Confederation). In general, universities have high autonomy. This autonomy varies, however, by the type of institution and its level of studies. The Confederation has responsibility for advanced vocational training<sup>10</sup> and for universities of applied sciences. In addition, the Confederation has jurisdiction over two Federal Institutes of Technology and promotes research and provides financial grants for cantonal universities.<sup>11</sup> For this study (in addition to the Confederation's initiatives) we have included institutional initiatives in the Zurich canton, where the participating institution is located.

- *Funding for ICT in education through collaboration*  
The Swiss Virtual Campus programme<sup>12</sup> was launched to encourage an advancement of the use of technology in higher education institutions: e.g. developing e-learning courses, setting up a special centre to promote e-learning on campus, etc. Its aim was to identify institutions that have developed their teaching and research independently of each other and coordinate them with other institutions. In effect, the government called for more collaboration by setting funding conditions that a proposal must involve a minimum of three institutions.
- *Infrastructure/connectivity/networking*  
The Confederation (and eight university cantons) established the SWITCH Foundation to promote modern methods of data transmission and to set up an academic and research network, *SWITCH* ([www.switch.ch](http://www.switch.ch)), in the country.  
The two Federal Institutes of Technology joined the Telepoly project, which aimed at providing high-tech synchronous distance teaching.

---

9. The Argo Project is a joint initiative with an aim of fostering the full integration of information technology in primary, secondary and vocational education.

10. This has been enacted under the new Constitution (1999).

11. Swiss National Report for the OECD Review of Swiss Tertiary Education Policy (2002), the Confederation and the Cantons, Bern.

12. The first phase was 1999-2003; the second, 2004-07 ([www.virtualcampus.ch](http://www.virtualcampus.ch)).

A research and development project, Classroom 2000, was launched to develop modular courses (from infrastructure to technologies to pedagogies) for engineers and technicians. This project was initiated and realised collaboratively by the Federal Institute of Technology, NDIT/FPIT,<sup>13</sup> a consortium of Swiss universities, universities of applied sciences and private corporations.

- *Technical and pedagogical consulting services*

The Network for Educational Technology (NET) was established to promote integration of ICT in teaching. It was first started as an initiative from the Centre for Continuing Education and the Centre for Teaching and Learning (*Didaktikzentrum*) at the Federal Institute of Technology in Zurich. It has now become a permanent centre at the institute and provides information, consulting and support to instructors on learning platforms, software and pedagogies.

The E-learning Centre at Zurich University, part of the Vice-President's Office for Teaching, provides consulting for e-learning developers, training for university teachers, funds for projects on e-learning innovations.

The Swiss Centre for Innovations in Learning (SCIL) is being established ([www.scil.ch/about/index-en.html](http://www.scil.ch/about/index-en.html)).

- *Creation of a virtual community space*

The Federal Institute of Technology Zurich launched a project called the "ETH world" to create a virtual campus with a communication and cooperation platform and to support activities of people working or studying at the institute. A number of sub-projects are being implemented under "ETH world": e.g. developing e-learning, research tools, information management, infrastructure, building communities for e-learning, etc.

## Thailand

- *Establishment of a centre*

The establishment of the National E-learning Centre was authorised by the *Council of Ministers*, and was established by the Ministry of Education (MOE), the Ministry of University Affairs (now incorporated into MOE) and the National Economic and Social Development Board (NESDB). The centre provides e-learning and e-training services with an aim to establish Thai society as a knowledge society, enhancing the quality of education through the practice of e-learning, etc.

- *Infrastructure/connectivity/courseware development/digital library/teacher training*

To be part of a large National Education Network (EdNet), a higher education network, Interuniversity Network Project – UNINET ([www.uni.net.th/en/About/members.htm](http://www.uni.net.th/en/About/members.htm)), was administered by the Ministry of University (now part of MOE), and the Office of Information Technology Administration for Educational Development. It aims to support all universities and institutions of higher education in Thailand by networking, researching, developing its materials and training.

- *Quality assurance*

For online learning programmes, the Ministry of Education is proposing a set of regulations (Standard Criteria for Establishing Internet-Based Programme of Studies by Thai

---

13. NDIT/FPIT is a virtual university for postgraduate studies in ICT in Switzerland and works as an education and research coordinator between universities, universities of applied sciences, and technology-related industries ([www.ndit.ch](http://www.ndit.ch)).



Universities: Ministry of Education’s Proposed Regulations) for setting up Internet-based programmes in universities.

- *Providing e-learning courses/solutions*

The National Science and Technology Development Agency (NSTDA) launched a project, LearnOnline ([www.learnin.th/](http://www.learnin.th/)) in cooperation with Thailand Graduate Institute of Science and Technology (TGIST). It provides web-based courses to customers – a majority of which are graduate school students and working adults.

The National Science and Technology Development Agency (NSTDA) also launched a project, Online Learning Project (NOLP), to provide e-learning services to educational organisations and companies.

- *Localisation*

The National Electronics and Computer Technology Centre (NECTEC), in cooperation with ITEC Inc., Japan, conducted an e-learning course to prepare people for an IT professional examination. Possibilities and challenges were examined in operating a multilingual e-learning course in a Thai environment.

## **The United States**

In the United States, education is primarily a State and local responsibility. It is States and communities, as well as public and private organisations of all kinds, that establish schools and colleges, develop curricula, and determine requirements for enrollment and graduation. Therefore, there are more initiatives based on private and community initiatives than government-led ones. However, the Department of Education at the federal level is set up with a mission to operate programmes in order to ensure equal access to education and to promote educational excellence throughout the nation. To examine the State initiatives for this study, we have included State of California (University of California, Irvine and University of California, Los Angeles Extension), State of Maryland (University of Maryland University College), and Commonwealth of Pennsylvania (Carnegie Mellon University), where the participating institutions are located.

- *Infrastructure*

The National Information Infrastructure (NII) was launched to meet the information needs of its citizens. It aimed to enhance national economic competitiveness and improve quality of life. The first report by its Advisory Council (1995) set out five sets of principles. One of the principles was Education for Lifelong Learning where the NII aimed to enhance the quality of education by making information and learning resources available in schools, colleges, universities, libraries, and other related institutions for all ages of population.

- *Distance education*

The U.S. Department of Education’s Office of Educational Technology supports a federal grant programme “Learning Anytime Anywhere Partnerships” to support online asynchronous distance education through partnerships among post-secondary institutions, technology companies, employers, associations, and any other relevant organisations.

- *Technology innovation*

The U.S. Department of Education’s Office of Educational Technology supports Technology Innovation Challenge Grants to promote innovative uses of educational technology by awarding grants to school districts, universities, businesses, libraries, software designers, and others.

- *Technical assistance*  
The U.S. Department of Education’s Office of Educational Technology supports Regional Technology in Education Consortia to provide professional development, technical assistance and information about the use of technologies to improve teaching and learning to states, school districts, adult training programmes and other educational institutions.
- *Specifications/standardisation*  
IMS Global Learning Consortium came into existence under the EDUCAUSE National Learning Infrastructure Initiative.<sup>14</sup> The Consortium develops specifications to support distributed learning utilising technologies such as the Internet. It defines and distributes open architecture interoperability specifications for e-learning products.  
Advanced Distributed Learning Initiative (ADL) is a standardisation organisation, launched by the Office of the Secretary of Defense (OSD) and the White House Office of Science and Technology Policy, which works collaboratively with government, industry and academia. It aims to establish learning technology which permits the interoperability<sup>15</sup> of learning tools, course contents, and repository of educational resources on a global scale in the field of e-learning.
- *Educational materials*  
There are growing online Open Educational Resources (OER) initiatives at the institutional level: *e.g.* MIT’s OpenCourseWare, Carnegie Mellon’s Open Learning Initiative, Rice University’s Connexions, Utah State University’s Open Learning Support to be specialised in Biological and Irrigation Engineering, Eastern Oregon University’s EduResources Portal, and community colleges’ Sharing of Free Intellectual Assets (SOFIA) scheduled to begin in 2005, which are supported by private foundations such as the William and Flora Hewlett Foundation and the Western Cooperative for Educational Telecommunications (WCET). The William and Flora Hewlett Foundation also supports a non-profit group, the Monterey Institute for Technology and Education, to create the National Repository of Online Courses, which will allow courses to be shared among institutions. The Sloan Foundation supports the League for Innovation in the Community College’s project, the Specialty Asynchronous Industry Learning (SAIL), which helps institutions to exchange courses.
- *Software development*  
A collaborative initiative at the inter-institutional level is growing: *e.g.* the Sakai Project among the University of Michigan, Indiana University, MIT, Stanford, the uPortal Consortium, and the Open Knowledge Initiative (OKI) with the Andrew W. Mellon Foundation. The project aims to integrate and synchronise their considerable educational software into a pre-integrated collection of open source tools. The Sakai Educational Partners’ Programme extends this community to other academic institutions around the world, and is supported by the William and Flora Hewlett Foundation.

---

14. The initiative aims to help higher education redesign the use of technology in order to improve the learning outcomes of academic programmes, increase the delivery flexibility of academic programmes and support services, and increase the return on investment, or value of investment in higher education.

15. The Sharable Content Object Reference Model (SCORM). The SCORM is a reference model that defines the interoperability of course components, data models and protocols in order for learning content objects to be shared across systems that conform to the same model. The newly announced was the Content Object Repository Discovery and Resolution Architecture (CORDRA).

### **California**

- The Department of Personnel Administration launched The Virtual Classroom to make available some of the courses taught at the State Training Centre to the public via the Internet. The courses are taught by instructors from California State University, Sacramento ([www.dpa.ca.gov/tcid/stc/virtual/virtual1.shtm#CEUs](http://www.dpa.ca.gov/tcid/stc/virtual/virtual1.shtm#CEUs)).

### **Pennsylvania**

- Penn State University's World Campus offers more than 30 online degree and certificate programmes. Penn State is also the home of the American Centre for the Study of Distance Education, which was founded in 1986 to study and disseminate information about distance education.

### **Maryland**

- As a participant in the Department of Education's Distance Education Demonstration Programme, University of Maryland University College has been granted waivers of some of the laws that limit the amount of distance education an institution can provide and retain eligibility to participate in federal financial assistance programmes.
- MarylandOnline is a statewide inter-segmental consortium of Maryland colleges and universities. MarylandOnline facilitates students' access to articulated courses, certificates, and degree programmes offered via distance education and provides faculty with training and resources to support excellence in web-based learning. Maryland has established minimum standards for programmes offered in whole or in part through distance education by private careers.

### 3. Major portals/database concerning ICT in education and/or e-learning

Country	What?	By who?	What information?	Portal/database address
<b>Australia</b>	Education Network Australia (EdNA) Online	Education.au limited, a national company owned by Australian Ministers of Education and Training, and States and Territories of Australia	Set up to develop a national digital database of information at all levels of education in Australia. In the database, e-learning information and resources for higher education are made available	<a href="http://www.edna.edu.au/edna/page2409.html">www.edna.edu.au/edna/page2409.html</a>
	Australia Flexible Learning Framework	The Australian National Training Authority through the Australian Government	Contains extensive information and links to all framework projects and activities. There is a comprehensive resource database, which enables discovery and access to quality assured flexible learning resources that have been generated by the Australian Flexible Learning Framework's projects over the past four years. Information can be found on teaching and learning resources as well as flexible learning research, case studies and guidelines	<a href="http://resources.flexiblelearning.net.au/">http://resources.flexiblelearning.net.au/</a>
<b>Brazil</b>	Universidade Virtual Pública Do Brasil (Brazil's Public Virtual University)	Consortium of 70 public Brazilian tertiary institutions receive support from Ministry of Education and Ministry of Science and Technology (MCT)	Used to secure access to the quality of education by offering courses at levels of undergraduate, graduate, extension and continuing education	<a href="http://www.unirede.br">www.unirede.br</a>
	e-learning Brazil	The portal appears to be run by a private company called "MicroPower", a company which develops its business in the area of technology in education	A portal, <i>E-learning Brazil</i> , serves as a source of information for e-learning courses, research, congress, and workshops.	<a href="http://www.elearningbrasil.com.br/">www.elearningbrasil.com.br/</a>

Country	What?	By who?	What information?	Portal/database address
Canada	International Gateway to Education in Canada	Information resource sponsored by the Council of Ministers of Education, Canada (CMEC), the secretariat for the provincial and territorial ministries/ departments responsible for education	Launched to showcase Canadian education to the international community. This Web portal is designed to direct potential students, teachers, and professionals to information on provincial and territorial educational systems and institutions and to national learning organisations. It offers information on distance education in Canada, for which ICT plays a crucial role	<a href="http://educationcanada.cmec.ca/">http://educationcanada.cmec.ca/</a>
	Canlearn Interactive Canada	CanLearn is an initiative of the department of Human Resources and Skills Development Canada	It provides information on products and services to support Canadians in pursuit of learning and career goals. With the participation of provincial and territorial governments and over twenty-five learning and career development organisations, it includes a database of courses/programmes at higher education institutions in Canada, and it specifically has a search engine for <i>online courses</i> . <sup>16</sup>	<a href="http://www.canlearn.ca">www.canlearn.ca</a>
	Campus Canada	Partnership between government and post-secondary educational institutions.	Industry Canada supports <i>Campus Canada</i> , which is to introduce courses and programmes that are offered online or by distance, aiming at providing learners greater accessibility to university and college credentials through online learning.	<a href="http://www.campuscanada.ca">www.campuscanada.ca</a>
	Edusource Canada	CANARIE within the framework of its Learning Programme with support from Industry Canada	It aims to promote interoperable learning object repositories across Canada. It provides information regarding the tools, systems, protocols and practices.	<a href="http://www.edusource.ca/">www.edusource.ca/</a>

16. [http://canlearn.campusconnection.ca/course\\_search.jsp?type=simple&language=eng](http://canlearn.campusconnection.ca/course_search.jsp?type=simple&language=eng)

Country	What?	By who?	What information?	Portal/database address
Canada	The Pan-Canadian On-Line Learning Portal (PCOLP)	CMEC	A single point of access available in both French and English to authorised users (currently, Ministers, Deputy Ministers, Ministry staff and CMEC Secretariat staff only). A directory and search mechanism enables users to locate content from database according to key categories and descriptors (e.g., type of resource, subject area, educational level, jurisdiction, etc.). Future plans include adding more content and expanding the audience to include learners, learning providers, teachers/faculty, parents, researchers, learning stakeholders and public audiences	<a href="http://cmecportal.learning.gov.ab.ca">http://cmecportal.learning.gov.ab.ca</a>
England	e-learning strategy	Department for Education and Skills	The Department for Education and Skills maintains a portal for sharing its e-learning strategy	<a href="http://www.dfes.gov.uk/elearningstrategy/index.cfm">www.dfes.gov.uk/elearningstrategy/index.cfm</a>
	Further Education Resources for Learning (FERL)	Further education by the Learning and Skills Council (LSC) and managed by British Educational Communications and Technology Agency (BECTA)	It is an information service for all staff working in the post-compulsory education sector, "in meeting the needs of our audience we expanded our scope to include management, technology and teaching approaches as well as the use of online resources". FERL maintains a portal to share information on the effective use of ICT teaching and learning	<a href="http://ferl.ngfl.gov.uk/">http://ferl.ngfl.gov.uk/</a>

Country	What?	By who?	What information?	Portal/database address
England	The National Grid For Learning	Funded by the Department for Education and Skills and managed by the British Educational Communications and Technology Agency (Becta)	It is the gateway to educational resources on the Internet. It provides a network of selected links to websites that offer high quality content and information. The NGfL portal was launched in November 1998 as part of the Government's National Grid for Learning Strategy to help learners and educators in the UK benefit from ICT	<a href="http://www.ngfl.gov.uk/">www.ngfl.gov.uk/</a>
	National Learning Network	The network is made up of partners including Becta, DfES, JISC, ISC, LSDA, NIACE, NILTA, and UKERNA	Implementation of the National Learning Network has encompassed a wide range of activities in developing infrastructure, resources and support in order to embed e-learning within post-16 education	<a href="http://www.nln.ac.uk">www.nln.ac.uk</a>
	National Learning Network	As above	The National Learning Network has commissioned e-learning materials for the UK post-secondary sector	<a href="http://nln.mimas.ac.uk/login.jsp">http://nln.mimas.ac.uk/login.jsp</a>
France	Educe Net	Ministry of Education, Higher Education and Research – Technology directorate	It aims to make resources available to the public, as well as to disseminate teaching practices for the use of ICT in education at all levels. The site includes a portal for higher education	<a href="http://www.educnet.education.fr/superieur/default.htm">www.educnet.education.fr/superieur/default.htm</a>
	Educasource	Centre National de Documentation Pédagogique (CNDP)	The purpose is to offer teachers and teacher trainers' basic on-line and off-line resources	<a href="http://www.educasource.education.fr/">www.educasource.education.fr/</a>
	Educasup	Centre de Ressources et d'Informations sur les Multimédias pour l'Enseignement Supérieur (CERIMES)	It identifies available multimedia teaching resources in specific disciplines for higher education with reviews and comments from researchers/teachers	<a href="http://www.educasup.education.fr/">www.educasup.education.fr/</a>
France	<i>Formasup</i>	Ministry of Education	It contains all available information (news, studies, analyses, etc.) on open and distance training in French higher education, including e-learning	<a href="http://www.formasup.education.fr">www.formasup.education.fr</a>

Country	What?	By who?	What information?	Portal/database address
Germany			A national portal for information on e-learning and e-teaching in higher education is available. It has been sponsored by the Bertelsmann Foundation and the Heinz Nixdorf Foundation and will the BMBF until 2007	<a href="http://www.e-teaching.org">www.e-teaching.org</a>
			A network portal to link the projects on e-learning was created as part of the BMBF's <i>New Media in Education</i> programme:	<a href="http://www.medien-bildung.net/">www.medien-bildung.net/</a>
	Within the German Education Server (Eduserver)	The federal government and the <i>Landers</i>	A portal developed for information on study courses for multimedia and virtual universities	<a href="http://www.bildungsserver.de/zeigen_e.html?seite=1159">www.bildungsserver.de/zeigen_e.html?seite=1159</a>
	Manual eLearning 2004		Lists all the e-learning projects funded in the federal programme "Neue Medien in der Bildung" (New Media in Education), with short descriptions of the project's purpose, contents, materials or courses developed, royalty regulations (if applicable) and project partners	<a href="http://www.medien-bildung.net/">www.medien-bildung.net/</a>
Japan	The National Information Centre for Educational Resources (NICER)	Launched by the National Institute for Educational Policy Research in 2001, mandated in the <i>e-Japan Priority Policy Programme</i> . The plan was developed by three ministries in collaboration: MEXT, METI, and MIC.	A central website/data providing information on educational resources in Japan. They are organised by five categories: Kids, Teens, Teachers, Higher Education and Lifelong Learning. It has a database of open educational resources	<a href="http://www.nicer.go.jp/">www.nicer.go.jp/</a>
Japan	Portal Site of Multimedia Education (NIME Educational Information for Higher Education)	The National Institute of Multimedia Education (NIME)	A portal site for educational resources such as contents, tools, syllabus, etc., to be shared among higher education institutions. It is planned to be coordinated with the NICER site	<a href="http://www.ps.nime.ac.jp/">www.ps.nime.ac.jp/</a> <a href="http://www.ps.nime.ac.jp/english/index.html">www.ps.nime.ac.jp/english/index.html</a>



Country	What?	By who?	What information?	Portal/database address
New Zealand	<i>eLearn portal</i>	Government of New Zealand, Ministry of Education, Career Services, e-Government Unit (State Services Commission), Inland Revenue, Department of Labour, New Zealand Qualifications Authority, Ministry of Social Development (StudyLink), and Tertiary Education Commission collaboratively contribute to the portal, the resources of information and services available on e-learning	Designed to facilitate the sharing of e-learning information in tertiary education in New Zealand among students, tertiary education organisations, and education staff, as well as to encourage activities among different sectors: <i>i.e.</i> public administration, educational community, and industries. The next step in the eLearn portal development is the integration of collaborative community development environment, which is being sourced through Eduforge.org	<a href="http://www.elearn.govt.nz/index.jsp">www.elearn.govt.nz/index.jsp</a>
	Ted (New Zealand's Tertiary Education portal)	A number of government and non-government agencies and organisations	A portal which focuses on learner needs. Aims to provide both learners/students and Tertiary Education Organisational staff with access to comprehensive information and services relevant to tertiary education in New Zealand	<a href="http://www.ted.govt.nz/ted/ted.portal">www.ted.govt.nz/ted/ted.portal</a>
Spain	The CNICE (Centro Nacional de Información y Comunicación Educativa)	The Ministry of Education	It aims for smooth development and uniform distribution of ICT in education in all autonomous communities	<a href="http://www.cnice.mecd.es/">www.cnice.mecd.es/</a>
Switzerland	<i>Educa</i>	A collaborative project between the Federation and the Cantons	Launched to share information on ICT activities in the country to raise awareness to the Swiss population of challenges of an information society	<a href="http://www.educa.ch/dyn/1818.htm">www.educa.ch/dyn/1818.htm</a>

Country	What?	By who?	What information?	Portal/database address
United States	The Gateway to the Educational Materials (GEM)	Sponsored by the US Department of Education	A website (databank) for teachers, parents, and administrators. It contains educational materials, including lesson plans, activities, and projects at all levers of education, including post-secondary education	<a href="http://www.thegateway.org/welcome.html">www.thegateway.org/welcome.html</a>
<i>Specific to higher education</i>	The Multimedia Educational Resource for Learning and Online Teaching (MERLOT)	It is partially supported by the National Science Foundation	An open resource designed primarily for higher education. The materials come with annotations such as peer reviews and member comments	<a href="http://www.merlot.org/Home.po">www.merlot.org/Home.po</a>
<i>Specific to decision-makers in education</i>	EduTools	Developed by the Western Cooperative for Educational Telecommunications (WCET) and supported by the William and Flora Hewlett Foundation	A portal that aims to provide an objective source of information to decision-makers such as comparisons, reviews, analyses, and decision-making tools in course management systems; student services; and e-learning policies	<a href="http://www.edutools.info/">www.edutools.info/</a>
<i>Specific to higher education e-learning</i>	Educause		A portal contains information such as professional development activities, research, policies, teaching and learning initiatives, collaboration opportunities, and publications in the domain.	<a href="http://www.educause.edu/">www.educause.edu/</a>



## Also available in the CERI collection

***Formative Assessment – Improving Learning in Secondary Classrooms***

280 pages • February 2005 • ISBN: 92-64-00739-3 • 43 euros

***Internationalisation and Trade in Higher Education – Opportunities and Challenges***

250 pages • June 2004 • ISBN: 92-64-01504-3 • 50 euros

***Innovation in the Knowledge Economy – Implications for Education and Learning***

Knowledge Management series

96 pages • May 2004 • ISBN: 92-64-10560-3 • 21 euros

***Equity in Education – Students with Disabilities, Learning Difficulties and Disadvantages***

165 pages • May 2004 • ISBN: 92-64-10368-6 • 40 euros

***Disability in Higher Education***

168 pages • December 2003 • ISBN: 92-64-10505-0 • 24 euros

***Measuring Knowledge Management in the Business Sector: First Steps***

Knowledge Management series

219 pages • December 2003 • ISBN: 92-64-10026-1 • 40 euros

***New Challenges for Educational Research***

Knowledge Management series

146 pages • August 2003 • ISBN: 92-64-10030-X • 21 euros

***Networks of Innovation – Towards New Models for Managing Schools and Systems***

Schooling for Tomorrow series

182 pages • June 2003 • ISBN: 92-64-10034-2 • 25 euros

***Understanding the Brain – Towards a New Learning Science***

115 pages • July 2002 • ISBN: 92-64-19734-6 • 23 euros

OECD PUBLICATIONS, 2, rue André-Pascal, 75775 PARIS CEDEX 16  
PRINTED IN FRANCE  
(96 2005 04 1 P) ISBN 92-64-00920-5 – No. 53965 2005