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

Institution	Country	Type
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 over-estimate 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).[1]

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*

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*

1. See the website of the UK Higher Education Academy for details *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*

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.