

Although it may not be immediately obvious why the Western Isles should be a leading exponent of distributed learning, a logical analysis shows a clear development history. The term ‘distributed education’ is used to describe a form of educational provision that is a) delivered across a wide geographical area, perhaps to multi-campus institutions and/or local learning centres, and b) a form of blended learning in which the teaching and learning resources are distributed across a range of media types and communication styles. The intention of the term is to describe the process rather than a particular theory of learning, and the implication is usually that it refers to a form of educational delivery that is distributed in both contexts. In relation to the location of students, distributed learning implies that both the campus-based students and those who are at sites remote from the tutor are able to access the same modules and courses, perhaps as part of the same ‘class’ and certainly over the same time duration. In practice these learners may be scattered across a number of learning centres, partner colleges, or in some cases individual homes or workplaces. There is no rule to differentiate whether they are distributed over three separate sites or three hundred. The Course Tutors may also be located at different sites around the network. Similarly, the concept of ‘distributed resources’ conveys an explicit understanding that a wide variety of courseware, learning styles, resources, communication tools, and types of assessment will be employed in the delivery of educational provision

From this perspective it is more readily apparent why the Western Isles have enthusiastically adopted distributed learning techniques. It is appropriate for the scattered, sparse population, and in the absence of a major university library on the doorstep, or fast-speed broadband connections, it has been appropriate to use a wide diversity of learning resources. In the early 1980’s the Arkleton Trust, a charity pioneering new approaches to rural education and development, introduced Rurtel to Scotland, and almost immediately there were several regular Western Isles users. Rurtel (rural telecommunications) was an early computer conferencing system, based on the CoSy software from the University of Guelph in Canada where it had been used for agricultural

education with the widely scattered farmers on the Great Prairies. It was a dial-up conferencing system, effectively sending email messages to online conferences on themed topics of discussion. In each theme there were a number of threaded discussions to which participants could contribute their comments. Though the speed of communication was so slow that you could sometimes actually see the letters appearing individually on the computer screen when the user was online, it was a pioneering breakthrough that allowed grassroots development practitioners, academics, and agency officials to communicate between each other much more quickly and intimately than any other comparable technology that was available. Suddenly places such as the Western Isles could be electronically networked with other parts of the world that were not just large urban centres, and there was a feeling that a revolution was in the making. By 1992 the small circle of Rurtel users had expanded beyond the original group of enthusiasts and was being used by community co-operatives, voluntary organizations, and numerous individual fellow travelers throughout the Highlands and Islands. Since 1984 Western Isles secondary schools had also been linked to a pioneering locally devised interactive database system for education called Bruetel, designed to network aspects of teaching and educational administration in the islands¹.

In the mid 1990's Lews Castle College piloted a Higher National Certificate course on 'Heritage and environmental interpretation in tourism' using Rurtel, delivering it to every Local Authority in the Highlands and Islands in collaboration with ACEHI (The Association of Community Enterprises in the Highlands and Islands). Although these early attempts at elearning would now be considered rather crude, they represented a substantial shift in the mind-set that higher education would always continue to flow out of the urban areas and into the rural. At the same time as Rurtel was being tested as a tool to facilitate education on demand for remote learners, Lews Castle College was engaging in some early experimentation with the use of the World Wide Web for formal education. The web had really only been available to 'the public' for a matter of months when the Rural Development Studies degree programme, the first of the networked courses of the UHI (University of Highlands and Islands project) began encouraging students at Lews Castle College to access web-based information as a structured component of their

courseⁱⁱ. Very quickly after this, a substantial part of the course learning materials was re-written for the online format, initially straight onto linked web pages, then subsequently on more sophisticated learning platforms such as FirstClass, Blackboard, WebCT, and latterly a customized Open Source learning environment called CLAN, (Collaborative Learning Academic Network) developed by the UHI and its academic partners. As I write in June 2005, the Western Isles are on the verge of the deployment of not one, but two broadband networks, a wireless link and a land link, and as a result of some targeted researchⁱⁱⁱ we believe that there is considerable potential for significant added value in education and small business development. Although these changes will be immediate for some users, it is likely that a substantial number of remote learners will not have access to broadband for some considerable time yet, so caution needs to be taken in the introduction of new (broadband-enabled) elearning applications so as not to disenfranchise narrowband learners from participation in the online class^{iv}. This is another reason why we require to focus on the pedagogical changes that new technologies make available, rather than be led by the nose to follow the new technologies and then seek problems to fit the solutions we have created^{v and vi}.

With the shift towards providing more specific information for students in the form of web resources, there were three significant changes in the pedagogical structure of the course;

- 1) There was a radical shift away from lecture type delivery to a more varied and distributed menu of learning resources. As a result of an initial pilot, all students, whether campus-based or remote, are now connected to the online learning environment as their primary source of learning resources and communications with tutors.
- 2) The location of learners shifted from solely campus based to one in which a substantial and growing number of learners are based at other locations that are 'remote' from the main campus. An increasing number of learners are now located outwith the Western Isles region, either remote students of the college, or

students on networked courses based at other UHI academic partners. This has allowed both the build up of specialist skills (and jobs) at the main campus in Lewis, as well as being able to offer a wider academic provision throughout the Western Isles than would be possible without the wider UHI network support. A number of local learning centres have grown throughout the region to provide learners with a local study centre, access to specialist technology, and local academic mentoring staff. There are now purpose-built learning centres on Benbecula and Barra, as well as smaller learning centres in other parts of the islands.

- 3) The increased flexibility enabled by these changes has allowed a more student-centred focus that has laid an emphasis on problem solving, ‘search and select’ skills, and understanding the context, rather than simply the contents, of learning. This has been accompanied by a rise in the number of part-time learners, and also adult learners, in response to the greater flexibility provided by the new style of learning opportunities.

The student experience is not entirely on-line, although the online component is critical in both the geographical and the learning resources distribution. Courses normally start with a short induction programme during which the students are registered, and have time to get to know each other, which greatly helps in subsequent online interactions. Learners practice how to use the Virtual Learning Environment (VLE), on which all modules are hosted, and also use search software to access online journals, ebooks, and online libraries^{vii}. The modules are delivered using a variety of technologies. The online learning environment is password-protected and provides a continuously available, consistently structured site that offers familiarity for the learner. Easily identifiable signposts indicate learning resources labeled to ‘Course Information’ ‘Course Documents’ ‘Discussion Board’ etc. and are consistent for modules across the programme of study. The VLE can host documents (with internal and external links), graphics, photographs (still and moving - including full webcasts) as well as discussion ‘threads’ for computer conferencing, and a space for course announcements. In addition,

as staff expertise and confidence has grown, a greater range of distributed resources have been added to the variety available for learners, including,

- Adopted academic textbooks
- A well-developed electronic library system, which can be used to access resources 24 hours a day, seven days a week^{viii}
- email
- Discussion board dialogue (able to be archived)
- Videoconference tutorials (able to be recorded and subsequently webcast)
- Telephone tuition (one-to-one or teleconference calls)
- Instant Messaging software to enable short, focused discussions
- Netmeeting tutorials using video, text, file exchange, and desktop sharing between computers
- Video clips of some lectures on CD using Microsoft Producer™, which allows Powerpoint™ slides to be spliced together with a video of the lecturer.
- Key references are frequently digitized to be provided on the VLE and, sometimes, on CD.

There has also been a significant shift in the quantity and structure of text based resources. The earlier years of developing new courses were typically very content heavy (as is often the case with new academic courses) whereas more recent learning resources have emphasized context rather than content. Ideally this has been structured to include 1) a short introductory piece of writing on the background to the session topic, the main issues, key questions, and different perspectives; 2) a short piece giving further sources of reading materials, either a chapter in an adopted textbook, an authoritative web site, a link to an article online (e.g. in a web-based journal) and/or a link to a specialist paper, copyright-cleared and digitized to be read in electronic format. This latter resource is especially useful as it can include papers from obscure journals or chapters from books no longer readily available but still useful from the learners perspective. 3) A short, formative learning activity is included to enable learners to interact with the learning

resources and to self-test their understanding of the session topic. The key feature of this structure to the online learning resources is that it allows for great flexibility.

- It allows the learning materials to be ‘layered’ so that students can choose whether or not to pursue a topic in greater depth by selecting additional resources that give a greater depth and detail. This also allows faster learners to explore at their own pace without being ‘held back’ by the classmates, and slower learners to use the online resources to revise and study materials that they have not been able to pursue in ‘class time’.
- It allows learning resources to be distributed across a range of different formats and types of learning materials to allow learners to select the type of resources that they are most comfortable with. For example, the following quote illustrates the benefit of presenting learning resources in different ways;

“When I was at school- or even now – I’m not one for reading books. If I read something I get impatient. I start to read a book and I want to look at the end to see what the ending is and it doesn’t seem to sink in. I forget things easy. But on a computer, because of the things you’ve learnt, I suppose it’s like watching the television. If you watch a programme, the next day you can tell a friend exactly what, everything that happened on that programme. But if you’ve read it in a book, you forget...”^{ix}
- It facilitates both synchronous and asynchronous learning opportunities, including combinations, e.g. a videoconference by a specialist may be delivered live on the first occasion, recorded, and offered on the VLE or CD for learners in subsequent years.

Advantages of “distributed learning”

There are many benefits of a “technologically enhanced learning environment” to increase the pedagogical effectiveness in the tuition of course contents at a distance^x. There are at least seven clearly identifiable advantages to this sort of “blended learning” format of educational experience:

- 1) **Support is not dependent on a single medium** – reliance upon any single form of subject ‘delivery’ is liable to be susceptible to system breakdown, whether human or technological. A mixed format spreads the risks and benefits of synchronous and asynchronous support between a wide range of ‘high’ and ‘low’ technologies and provides a backup.
- 2) **The format gives time and distance flexibility** – which is a particular attraction for students who are part-time, have family and/or work obligations, are based in locations remote from the tutor, and/or are spread across a wide (global?) geographical area.
- 3) **A consistency of learning resources** - is provided for all students, regardless of whether they are located on the main campus, have easy access to a university library on site, or are working in some degree of isolation from a campus.
- 4) **The mixed format is subject and student sensitive** – with no requirement to operate according to a blueprint. It allows an opportunity to customize student support, to a limited extent, by using tuition styles and technologies with which the students is most comfortable.

- 5) **This enables the tutorial resources to be used in an appropriate context** – for example, adjusting the use of the tuition medium used to the lowest level of complexity. There may be no need to use slow resolution, expensive videoconference technology if the same result can be achieved with web-based resources backed by a telephone tutorial.

- 6) **The mixed format develops extra skills in students** – both ‘standard’ written or verbal communications skills, together with competence in a variety of ICT applications of differing complexity. In distributed courses the diversity of skills is extended due to the multi-disciplinary nature, necessitating familiarity with widely different concepts, contexts, and methodologies of investigation.

- 7) **More power is invested in the students** – through the ability to select their own style and pace of working, as well as, in some cases, both the context/application of the study module, and increasingly the choice of module preferred by the student from a pool of modules at the appropriate academic level.

Furthermore, the mixed format increases opportunities for “using non-linear strategies for problem-solving, representation, and the storage and retrieval of information.”^{xi}

The priorities for the adoption of new technology to provide distributed education were emphasized in a recent report to government on the "opportunities and barriers to the use of broadband in education" that highlighted five main areas of added value^{xii}. These are:

- 1) Transforming the learning experience

- 2) Improving inter-institutional collaboration
- 3) Achieving new potentialities
- 4) Improving efficiencies in existing provision
- 5) Widening access to education

These main areas have been expanded upon elsewhere^{xiii}.

Disadvantages of distributed learning

It would be wrong to paint a uniformly positive picture that elearning is the panacea for all our difficulties learning and teaching in remote areas. It is for this reason that I have stressed that *distributed learning* is a much more complex approach, with elearning only being one element in this approach, albeit a major new, and exciting element. A shift towards distributed learning is one that moves away from *instructing* the learner how to learn in favour of *facilitating* the learner to learn how to learn. While this should benefit the learner in the long run, it does mean that the tutor needs to be more organized and prepared than for 'traditional' style classes. It also means that, while elearning is not a cheap option. Well designed it should cost no more than conventional models, but there is normally a heavier up-front investment in the design and preparation stages. This is offset by the fact that delivery costs can show a good return due to the small marginal costs of adding extra learners to the system. Advantages to Lews Castle College (and the UHI as a whole) include an enhanced ability to offer a wider academic choice to learners, improved administrative efficiencies, the expansion and retention of specialist staff in rural areas, and a potential recruitment area for learners far beyond the limited local geographical constraints.

Access to information is no longer the real issue but the ability to distinguish the useful data from the misleading and to know how to analyze, select and summarize it may lead to information overload for both learner and tutor, so expectations and course aims need to be realistically monitored. Once a robust access to the network has been established, there are new difficulties in the identification and selection of appropriately reliable

learning resources, as the entertaining “postmodernism generator” of random nonsensical papers clearly demonstrates^{xiv}. Learners therefore need to acquire a new literacy to ‘read’ the level of legitimacy of information sources on the web in a similar manner to that done over the generations by academics studying print based materials. Students need to develop the facility to study from the screen, to work in learning communities with people they have only ‘met’ online, and generally to think digitally. Elearning can be a very isolating experience when students are unfamiliar with the environment and learners need a lot of self-motivation in order to persist. As a result, the elements of distributed learning such as real-time contact, fast responses from tutors and fellow students, and visual stimuli through videoconferences or netmeetings can help to provide a sociability that supports students in their learning activities. For the learners (and staff) who adapt easily to the online environment there is the danger of over-dependence on the technology, and the corresponding frustration when connections fail. Once again the careful design of the ‘blend’ of the distributed resources avoids putting ‘all our eggs in one basket’ and provides a safeguard if any one communication medium should temporarily fail.

The online world also has its own etiquette which some learners resist, and although broadband offers a much richer learning environment – voice, moving image, learning by doing, learners need to be adaptable and willing to learn in new ways. It is necessary to instruct learners at an early stage in their studies about techniques to maximize their ‘search and select’ skills as well as how to communicate effectively with colleagues in new media. In this respect, early induction training for distributed courses has proved beneficial for both learners and staff.

Even if Scotland achieved universal *availability* broadband access soon, it will still be a long time before it will be universally *adopted* as a standard educational tool. Whatever the technology, there are always the have-nots, and the limitations of being unable to guarantee all learners a consistency of high quality connection to Internet facilitated resources will restrict the speed of adoption of new applications and techniques by elearning course designers in formal education. The equivalence of student experience

will emerge as an issue of contention. Foremost among the concerns of e-aficionados are 1) achieving the 'culture-shift' among their colleagues to view the incorporation of technology as a potential solution to enhance learning rather than a technological irrelevance to be avoided or resisted (and this applies to educational administration as well as teaching roles); and 2) ensuring the adoption of a new etiquette for electronic communications and Internet use that is consistent across the institution and beyond. This consistency would include a relevance to staff workload, student aspirations, means of staff-student interaction, and recognition of realistic costing methods for learning resources. In many instances that expectations of students are already well in advance of establishment recognition of their needs^{xv}. To accomplish this technology-supported culture-shift in distributed learning opportunities will result in potentially huge economic and social benefits for small, flexible learning institutions such as regional colleges and campuses.

Notes

ⁱ Bryden, J. M. and Fuller, A. M., (1986) *New technology and rural development*. Report of the Arkleton Trust Seminar held in October 1986. Pub. The Arkleton Trust URL: <http://www.enstoneuk.demon.co.uk/arkleton/trust.html> (Accessed 29 June 2005)

ⁱⁱ Rennie, F. (2003) The use of flexible learning resources for geographically distributed rural students. *Journal of Distance Education* 24 (1).

ⁱⁱⁱ Rennie, F. and Mason, R., (2005a) The Use and Social Impact of Computer Networks for Community and Business Development.

^{iv} Mason, R, and Rennie, F. (2004) Broadband: A Solution for rural e-learning? *International Review of Research in Open and Distance Learning* 5 (1). URL: http://www.irrodl.org/content/v5.1/mason_rennie.html (Accessed 29 June 2005)

^v Bryden, J., Fuller, T. and Rennie, F. (1996) Implications of the Information Highway for rural development and education. Report of the Arkleton Trust Seminar held in February 1996. Pub. The Arkleton Trust URL: <http://www.enstoneuk.demon.co.uk/arkleton/trust.html> (Accessed 29 June 2005)

^{vi} Rennie, F. and Mason, R. (2004) *The Connecticon: Learning for the Connected Generation*. Information Age Publishing: Greenwich, Connecticut, USA

^{vii} McAlister, M. K., Rivera, J. C., & Hallam, S. F. (2001). Twelve important questions to answer before you offer a web based curriculum, *Online Journal of Distance Learning*

Administration. 4(2). URL:

<http://www.westga.edu/~distance/ojdla/summer42/mcalister42.html> (Accessed November 08, 2001)

^{viii} Mackay, M. (2001). Collaboration and liaison: the importance of developing working partnerships in the provision of networked hybrid services to lifelong learners in rural areas, *Library Management*, 22(8/9), 411-5.

^{ix} Selwyn, N., and Gorard, S., (2004) Exploring the role of ICT in facilitating Adult Informal Learning. *Education, Communication and Information* 4 (2/3, July/Nov) p 306

^x Miller, M. D. & Padgett, T. C. (1998). Redesigning the Learning Environment for Distance Education: An Integrative Model of Technologically Supported Learning Environments, *Online journal of Distance Learning Administration* 1(1) URL: <http://www.westga.edu/~distance/miller11.html> (Accessed November 11, 2001)

^{xi} Wheeler, S. (2001) Information and Communication Technologies and the Changing Role of the Teacher. *Journal of Educational Media* 26 (1) pp 7-18.

^{xiii} Broadband Stakeholders Group, (BSG) (2003) Opportunities and barriers to the use of broadband in education
http://www.broadbanduk.org/reports/BSG_%20Education_%20Report_03.pdf
(Accessed 17 June 2005)

^{xiii} Rennie, F. and Mason, R., (2005b) Bits or Baubles: [The opportunities for broadband to add value to education and learning](#). *Scottish Affairs* 53. pp 31-47

^{xiv} Postmodernism Generator of randomised spoof academic publications
<http://www.elsewhere.org/cgi-bin/postmodern> (Accessed 28 June 2005)

^{xv} Weyers, J., Adamson, M., and Murie, D. (2004) Student E-learning Survey Report – May 2004. University of Dundee. URL: http://www.dundee.ac.uk/learning/dol/ELS_final_report.pdf (Accessed 28 June 2005)