CHAPTER 7
Towards Bridging Learning’s Digital Divide
Synthesis by the OECD Secretariat

INTRODUCTION

As in Chapter 4, this chapter summarises the relevant Roundtable discussion and documentation other than the major presentations. It does so through a focus on relationships and strategies relevant to the digital divide in education and learning, the earlier synthesis concentrating on the divide itself. It examines general policy dilemmas, the relationships involved in marrying the aims of quality and equity as the use of ICT for learning extends more widely, and the roles of stakeholders in the process. In conclusion there is discussion of issues relating to the value of the international exchange of experiences and evaluation. As with the earlier synthesis, the chapter’s sources mean that it is selective rather than comprehensive.

TENSIONS AND DILEMMAS

It would be convenient if the policy issues related to the digital divide could be understood as a set of recipes for improvement, which countries could implement to a greater or lesser degree. It is clear, however, that the reality is more complex and dynamic than any simple model allows. Dilemmas abound. They arise in relation to the very aims and outcomes of learning, linked as they are with economic and social well-being, for while the inter-connections are
frequently characterised positively in terms of the *knowledge society*, they have a powerful negative side. The consequences for individuals, organisations or communities of falling behind in learning become the more profound, and can be dire. The process of creating *winners* often creates *losers*.

Dilemmas arise in relation to extending opportunities for lifelong learning, especially individualised forms of learning that exploit ICT in different ways. There is a growing complexity of learning provision and decision-making, involving formal or non-formal settings and public, private or mixed arrangements. The complexity can heighten the barriers to participation of those not well equipped for the knowledge society. Seen in this light, lifelong learning can be regarded not only as part of the *solution* but as an integral part of the *problem*. Account should be taken, therefore, of the negative consequences for the most disadvantaged, as the general levels of ICT expertise and learning complexity continue to rise.

Parallel dilemmas occur in relation to the specific goal of improving ICT competence, and the high priority this now receives among educational objectives. On the one hand, the importance of technologies in today’s knowledge-based societies justifies such a high priority (Chapters 8 and 9 give illustrations of how prominent technology goals have become in national educational policy strategies). On the other hand, this very prominence makes the exclusion faced by those who still miss out the more acute. Policy strategies are needed to extend ICT access for learning and competence as widely as possible, with particular attention to those whose disadvantages are most acute.

**Equity and Quality – Approaches and Stakeholders**

Focusing on the digital divide is first and foremost to highlight considerations of *equity* in terms of opportunity and access. These considerations are easily overlooked, in the enthusiasm to open new horizons in learning and teaching via technology to those most ready to embrace them – students, teachers, institutions and communities – who are often, but not always, already relatively advantaged. At the same time, a great deal of Roundtable attention focused on issues relating to *quality*, in relation to ICT materials and learning environments. Some have supposed the pursuit of quality and the pursuit of equity to be in conflict, as though more of one can only be achieved at the expense of the other. As the Roundtable discussion underlined, however, these issues are inextricably intertwined and both are integral to addressing the digital divide.

Problems relating to the quality of ICT learning materials were highlighted by several Roundtable participants. There is the need for educational software production
to be seen as a priority rather than as an “add-on” to the hardware, and for contents to be of the highest quality. Too often ICT learning materials are of poor quality – whether on-line or not – which is especially problematic for those whose needs are greatest. Nevertheless, several participants expressed a caution about ICT tools, since attempts to market versions specific to education had not succeeded. In any case, educational ICT applications – such as word processing – should wherever possible be based on the non-education-specific software that learners will meet in other contexts, such as the office or the home.

For the implementation of educational ICT strategies to bridge different divides, the position of the teacher is seen to be pivotal. By the same token, poorly prepared or unmotivated teachers can exercise a strong negative influence and thereby reinforce divides. One participant expressed the challenge with urgency: “we have no choice but to get teachers up to speed”. Teacher education and professional development considerations should thus be to the fore in ICT learning initiatives, with a dual emphasis required. First, professional development is needed to build teachers’ ICT confidence and competence, including their knowledge of educational applications. Second, there is need to change teaching styles, moving away from didactic methods and towards tutoring and supported learning. There is value in focusing on networks of teachers, to get beyond the isolated endeavours of individual enthusiasts, and to foster the likelihood of change becoming firmly embedded in the ethos and practice of the different educational institutions involved. However, although major teacher training programmes have been initiated, and information resources created for teachers and students, the scale of provision is as yet not matched to the need:

“The neglect of teacher ICT training, which tends to lag behind physical investment, is often considered a major obstacle… In the United States, it is remarkable that expenditure on technology training for instructional staff increased only slightly from 4% of the technology budget in 1994-95 to 5% in 1998-99, given the high political priority of the use of ICT in education and the fact that many teachers lack ICT skills. Several studies have shown that an important barrier to technology use in schools is simply lack of teacher time to attend training and workshops, and to plan lessons using new materials or methods. Another important factor is the lack of learning technology plans, which engage the whole of a school’s teaching staff. Many of the innovation in using learning technologies still rely on individual teachers (…)”

OECD/CERI (1999), p. 58
There is also the need to explore within the learning environment the potential role of a range of professionals other than teachers, whether coming from inside or outside education. New approaches to learning may, beyond the needful revitalisation of teachers themselves, require partnerships with new types of professional having diverse profiles and backgrounds. There may be strategic policy choices to be made between investing principally in the professional development of existing teachers – on the grounds that no serious changes can take place without their close involvement – and in creating new professional roles. For one participant, the issue was one of fairness and effectiveness: how fair is it always to expect teachers to bear the brunt of educational change, including the widespread introduction of ICT? The introduction of a new body of ICT specialists would support the effective adoption of ICT and simultaneously encourage the development of teachers’ skills in this area.

There was general agreement on the importance of intermediaries, such as brokers or facilitators, in building bridges between the supply and demand for learning. One participant expressed this in terms of having access to persons, including peer-group members, to “help you to learn”, which is, in part, to emphasise a community involvement. Several speakers stressed the value of enhancing the role of different community participants, among whom might appear local community “champions”, to promote the success of initiatives. Such initiatives could include close attention matched to disadvantaged community groups, including those centred on linguistic and ethnic features. The rapid growth in equipping schools with computers and Internet connectivity has made school access more even, so that digital divide issues related to home access become the more crucial. One way of addressing this concern would be for the enhanced school facilities to be used for extended purposes, such as making special provision for particular community groups.

Linguistic issues are of major policy importance in many countries, given the dominance of the English language in software and the Internet. The desire to promote cultural diversity is one reason behind interest in linguistic issues, but so is the avoidance of social exclusion among non-English-speaking populations. Hence, these matters are critical to various aspects of learning’s digital divide. How can they best be addressed? One Roundtable example came from New Zealand, where language – especially Maori – is a prominent feature of political, cultural and educational life. The New Zealand Web portal for teachers is bi-lingual, with the Maori contents presented before the English version. As far as provision for early childhood learning is concerned, there is a Maori ICT network across different
centres, characterised by a strong focus on family and inter-generational learning. It would be useful to compile similar examples from other communities and countries.

Further examples might usefully be gathered, concerning initiatives that adopt ICT to address the needs of children and adults with learning difficulties and poor basic skills. As regards literacy education, ICT can prove an effective way of overcoming some of the diffidence and embarrassment experienced by those with basic skills problems (see, in particular, Chapter 6). A project targeted at the Romany community in Hungary has successfully introduced young people to the Internet as a vehicle for communication. It would be interesting to know of other such initiatives, though few would pretend that learning through ICT represents a panacea for those facing the greatest levels of hardship and isolation.

Over and above the discrete elements that contribute to improvement, quality in education is a function of the culture of institutions and whole societies. Schools were criticised by one participant for not acting sufficiently as service institutions, while another saw the higher education sector as reluctant to change, more so than primary and secondary schools. Some saw the need for ICT to be used strategically, to help open up new forms of teaching and learning and not just to supplement existing organisational models, since it is only through radical change that the real potential of ICT to enhance learning will be realised. Still more demanding will be the development of new learning models specifically for those who experience different forms of disadvantage – the under-served, the hard and the very hard to reach.

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The model of education that was developed for the industrial age cannot effectively achieve educational empowerment in the information age. With the tools of ICT, we should be able to evolve the conventional model into a new model, moving:

\[\text{from:} \quad \text{to:}\]

\[
\begin{align*}
\text{a building} & \quad \text{a knowledge infrastructure (print, audio, video, digital)} \\
\text{a student} & \quad \text{a learner} \\
\text{a teacher (as provider of knowledge)} & \quad \text{a teacher (as a tutor and facilitator)}
\end{align*}
\]

It is in this model that the digital divide becomes an educational divide, and bridging it becomes a human need, an educational necessity, and a global urgency (…). We should aggressively explore and innovate; we should cautiously apply; we should fight the shift from education to technology.

\[\text{Wadi D. Haddad}\]
Although participants stressed repeatedly that the digital divide must be understood in much broader terms than the purely technical, the technological issues should not be ignored. The Roundtable heard of the Swedish goal of giving broad bandwidth access to all and a Canadian initiative to ensure universal connectivity, examples both of policies aimed at widening the access to learning. Reference was also made to the Korean Edutopia initiative, which brings together consortia of institutions to provide for lifelong learning on-line. The emerging wireless technologies and digital television have great potential, but the appropriate technology for extending learning across the digital divide will often not be state-of-the-art, and indeed in many circumstances should not be. Imaginative combinations of different media should be examined and evaluated, including traditional television and radio. The Mexican Telesecundaria programme (see Chapter 2) is one such example. Despite the appearance of ever-cheaper technologies, several participants underlined that the cost issue is and will remain critical, especially for poor countries and communities.

DIFFERENT PUBLIC AND PRIVATE SECTOR CONTRIBUTIONS

An important focus for Roundtable discussion was the different roles of government, education systems, communities, and the market. With wide variation in political cultures and traditions, it is impossible to generalise about ideal roles, but it is possible to clarify the questions and issues that need to be addressed, as illustrated by one participant:

“In a fast moving and complex picture, where the pace of commercial developments constantly extends both the spectrum of knowledge and the scale of possibility, current pressures are to widen rather than to narrow the ICT ‘access gap’. Cost issues, especially as between commercial and public service users, will also continue to be difficult. Absolute cost reductions in the market are regularly offset by increases in technological potential. Among the pressing issues needing to be kept under debate are therefore:

- What is the best model for combining central and local initiative in addressing the needs of particular user communities, and at what level or levels should the initiative be taken (local “ownership” versus area consistency)?
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- How far do national and local conditions encourage and facilitate the work of voluntary organisations and agencies in addressing this major agenda, and how are the appropriate operational areas defined?"
- How far should business and commerce go in helping to address socially important but essentially non-commercial goals, and how far can such support be systematised to improve the yield from individually valuable initiatives?
- What are the most appropriate funding models within individual countries, or provinces of large countries, and within less developed economies with many urgent and pressing educational priorities, perhaps at the most basic level?
- What role can international organisations play in addressing access and usage problems that are essentially sub-national and locally determined?
- Can a basic core of networking facilities and capability be identified that can act as a common denominator across education systems in countries at differing economic states of development, such that inter-communication and content exchange can usefully take place?"

Robin Ritzema, U.K. Representative

Within the multiplicity of these relationships, certain participants stressed the need for a powerful lead from government, while others perceived a more detached role in terms of regulating the market. The perceived impact of market forces also varies, one view being that markets always widen inequalities, another that they can be an effective way of identifying new demand. Similarly, there were diverse views concerning the responsibilities of the private sector in relation to the digital divide. Some saw the major commercial interests as accepting a major responsibility, and looking for guidance on how to exercise it, but others were less sanguine. Such viewpoints are not necessarily unresolvable. If the commercial ICT players have hitherto made little impact in poor communities, for instance, there may be scope for a larger role, given an appropriately supportive framework within which this can be achieved. Making this happen, however, is another matter.

New relationships are developing in markets, with changing boundaries. One viewpoint was that the traditional educational publishing industry is entering into terminal decline, as Web-based materials take over. It was suggested that learning provision delivered via the Internet and e-commerce, along with private
sector certification of competence, will threaten established practices in education systems, especially at the tertiary level. On the other hand, it was observed that the resilience of existing institutions and arrangements has often been underestimated, and the long-heralded end of schools and textbooks has yet to arrive.

The issue has to be faced as to how public policy can come to terms with market forces. Without an adequate return on investment for producers, high costs will lead to market failure. This could imply that without explicit government interventions to lower costs to the individual, many will not be brought into learning. Similar arguments were advanced during the Roundtable concerning poor countries, and the difficulties they have to invest in expensive equipment and infrastructure. Costs are important, but clearly not the only factor for bringing the hard-to-reach into learning. Public-private partnerships are one way to take, as in Germany where an initiative aimed at increasing the use of the Internet by women and older people involves Deutsche Telekom and Brigitte magazine. Again, however, the question arises of the extent to which such initiatives are successful in getting to those who are the really hard to reach.

In Hungary, the Soros Foundation has produced a number of school-level ICT programmes co-ordinated with government policy. Particular emphasis has been given by the Foundation to supporting school activities: developing ICT curricula and teaching materials; building the capacity of school libraries and supporting the further training of teacher-librarians; generally providing support and advice for schools. One of its initiatives, described in the extract below, is aimed squarely at aspects of the digital divide that public policy might otherwise miss. As described in the extract, having developed and implemented this programme, the Foundation then seeks to enter into partnership with the public authorities so that it can be continued and sustained elsewhere.

*Soros Foundation Small Region Information Technology Programme*

“As early as 1997, the Ministry of Education launched Sulinet, the School Network Programme to connect all high schools and the larger elementary schools to the Internet (...). At the same time, elementary schools in small villages were left out of the central development and were threatened by an increasing gap between the level of facilities they offer [and those in] institutions already included in the School Net Programme.

This moved the Foundation into launching an ICT educational experiment for small regions, offering four schools rotating use of equipment (...). Under the scheme, the Foundation sought areas of small villages whose schools were poorly supplied with educational information technology facilities, and were prepared and able to cooperate with each other. The groups selected, consisting of four villages, had to make agreements concerning joint computer education. The Foundation provided support for each group in the form of a local area network consisting of 15 multimedia computers to be held in each village for two months at a time. One teacher travels along with the hardware to the four locations, so that one well-qualified information technology teacher is sufficient to teach the students in the four schools. After the first two-month intensive course, when the computers and the teacher leave, a well-equipped computer with Internet access is installed in the school library for the permanent use of the pupils and teachers. This rotating scheme provides the four villages with full, permanent computer education.

In order to get the programme off to a good start, the Foundation centrally arranged and financed the installation of the computers in 12 sites, and provided a training course for every affected school. In 1998, 17 applications were received, of which 6 were awarded grants (65 000 USD). In 1999, 3 new small regions associations joined the programme. Once the programme is accomplished, the Foundation will offer the model (method, know-how and experience) to the Ministry of Education, local authorities and the International Network of Soros Foundations. It is our intention to develop at least one co-operative model in each county in 2000.”

Judit Ronai, Soros Foundation

CONCLUSION – EXCHANGE AND EVALUATION

It is desirable to gain a balanced view of the strengths and weaknesses of the various initiatives, for possible application and development in different circumstances. What are the contributory features within the infrastructure, the organisation, the community? What criteria should be to the fore in evaluating programmes aimed at bridging the digital divide? How can such evaluation best be organised, especially in relation to the non-formal and informal settings of
home and community that are far removed from policy reach? There is in fact a general neglect of evaluation in policy implementation. It is also in the nature of high-profile initiatives such as the adoption of ICT to be politically driven, and therefore implemented no matter what evaluation might show. A further constraint regarding ICT in education is the speed of change, which means that decisions are often taken before careful evaluation can be achieved. There is nevertheless a valuable role for research and evaluation, in indicating how the committed resources can best be deployed, and in providing useful pointers for future policy.

A great deal is to be learned from the international exchange of practices that are especially promising or effective in bridging the different dimensions of learning’s digital divide. Roundtable participants endorsed the importance of such exchange for highlighting exemplary practice. Even in the absence of in-depth evaluation, there is value in compiling evidence of promising initiatives that use ICT to bring learning to the otherwise disadvantaged. More profound analysis is then needed, however, to establish what exactly is best practice and why it works well.