Appendix 1: Barriers to the development of the relevant markets

1 There is a vicious circle at play. The lack of adequate ICT facilities and equipment in schools partly restricts teacher's ability to develop their ICT skills, leading to an overall lack of confidence in using ICT in schools. This indirectly constrains the demand for ICT products and services, which in turn constrains the roll-out of ICT facilities. This appendix therefore outlines the following barriers to the development of the relevant markets:

- limitations in technology;
- the slow rollout of broadband; and
- the level of teacher training and confidence in ICT.

Limitations in technology

2 Commercial opportunities for suppliers will be severely limited without the technology to support educational software resources. A commonly cited reason for the apparent delay in the full rollout of educational online resources is the inadequacy of the hardware, software and network facilities in schools and homes.

3 There has been a mixed introduction of ICT equipment in schools. In its response to the Government's Curriculum Online consultation paper, the General Teaching Council (GTC) noted that despite considerable progress to date in integrating advanced technologies into schools:

"there is more to do and the potential for the transformation of teaching and learning remains barely explored".

4 This view was backed up by the National Union of Teachers (NUT) in its response to the Government's Curriculum Online consultation paper, which noted that:

"the main barrier to effective content development has been the range and insufficiency of levels of technical equipment in the 58 pilot schools."

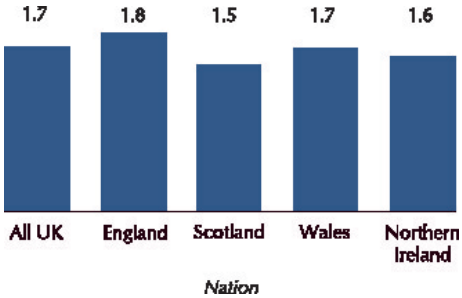
5 The restrictions imposed by the current level of technology in schools can be categorised as follows:

- shortfalls in the necessary quantity and quality of PCs and related hardware; and
- lack of high speed internet connections and inadequate local area networks (LANs).

Shortfalls in the necessary quantity and quality of PCs and related hardware

6 On the back of increased public funding, the number of computers in schools has increased in recent years. A recent survey by MORI[1] found that the mean computer to pupil ratio was approximately 1:13 in UK primary schools and 1:7 in UK secondary schools. The picture across the nations is fairly consistent. The current ratio of computers to secondary school pupils for the UK and each nation is shown in Figure A1a.

Figure A1a: Mean computer to pupil ratio in UK secondary schools in 2001



Source: "The Use of ICT in Schools — A Qualitative and Quantitative Survey of Teachers, Pupils, LEAs and Parents", Research Study Conducted for BBC Children's Education, MORI Social Research, June 2001.

1 These results were broadly consistent with a DfES survey in October 2001, which reported ratios of 1:12 in primary schools and 1:7 in secondary schools.

7 LEAs that receive NGfL grants have committed to achieving access to ICT for teaching and learning purposes equivalent to a computer to pupil ratio of at least 1:11 in each primary school and 1:7 in each secondary school by 2002[2]. In light of the MORI findings in June 2001, it is likely that the target pupil to computer ratios laid down by the NGfL will be exceeded[3].

8 It is important to bear in mind that these averages conceal much variation in the position across schools and in the quality of PCs being used. Furthermore, this trend is probably not sustainable as upgrade and maintenance costs rise.

9 The initial results from the NGfL's ImpaCT2 study suggest that the degree to which ICT is embedded in both schools and individual courses vary considerably. The report also found that the age and incompatibility of different brands of computer is limiting the scope for networking them and running new software[4].

10 Many schools are still using outdated PCs although multimedia computers are becoming more commonplace. The DfES[5] reported that approximately 59% of computers in schools in 1998 were more than 3 years old, but by 2001, the figure had decreased to 37%. The DfES also noted that in 2001, less than 70% of computers in schools had multi-media facilities.

11 The usage of different types of ICT equipment such as digital television and mobile phones for connecting to the internet is clearly lagging behind PC internet usage. The recent MORI survey also noted that just one in fifty primary schools have one or more televisions connected to digital educational services, with the figure nearer one in five for secondary schools. Furthermore as can be seen from Table A1a below, the penetration of interactive whiteboards and data projectors in the UK is quite varied across the nations.

Table A1a: Percentage of secondary schools in the UK with interactive whiteboards and data projectors

Type of Equipment	**Nation**			
	England	Scotland	Wales	N.Ireland
Interactive whiteboards	44%	19%	16%	14%
Data projectors	83%	84%	60%	93%

Source: "The Use of ICT in Schools, A Qualitative and Quantitative Survey of Teachers, Pupils, LEAs and Parents", Research Study Conducted for BBC Children's Education, MORI Social Research, June 2001.

Lack of high speed internet connections and adequate local area networks

12 Nearly all secondary schools in the UK are connected to the internet, although the majority only have a narrowband connection. Primary schools have made particularly strong progress, increasing connections from just 17% of schools in 1997 to 96% by October 2001[6].

13 The level of internet access for primary schools in the UK varies between regions and nations, with Northern Ireland a noticeable laggard in terms of school internet connectivity. On average only 24% of computers in primary schools in Northern Ireland[7] had access to the internet. The estimates for each nation are shown in Figure A1b.

2 See: http://www.dfes.gov.uk/standardsfund/bgflbase.html.

3 According to the LEAs, the mean computer to pupil ratio will have fallen to 1:8 in primary schools and 1:5 in secondary schools by 2004.

4 The adoption of the NGfL's 'Managed Service' scheme has gone someway to alleviating these problems.

5 "Statistics of Education: Survey of Information and Communications Technology in Schools in 2001", DfES, October 2001.

6 "Survey of Information and Communications Technology in Schools", October 2001.

7 "The Use of ICT in Schools — A Qualitative and Quantitative Survey of Teachers, Pupils, LEAs and Parents", Research Study Conducted for BBC Children's Education, MORI Social Research, June 2001.