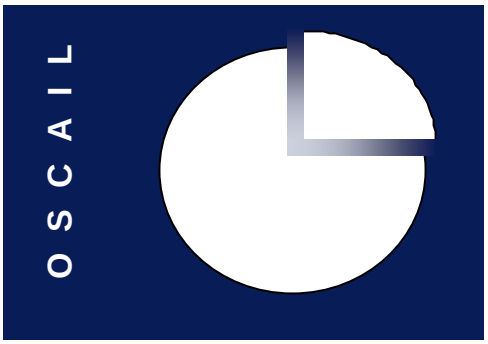


Perceptions of ICT Use in Remote Education

Student Perceptions of the Use of ICTs in European Education: Report of a Survey

Kay Mac Keogh

Acknowledgements

The author would like to thank the many people who assisted in producing this report, in particular the partners in the PICTURE project, Gerry Mulhern and Judith Wylie, Queen's University Belfast; Joergen Bang, Danish Association of Open Universities, Seamus Fox and Iveta Orbanova, Oscail – the National Distance Education Centre in Ireland. Special thanks go the reviewers who commented on the questionnaire, including John Coolahan, Aidan Mulkeen and Proinnsias Breathnach of NUI Maynooth and Ronnie Saunders from Oscail, as well as the students who piloted the first version. Thanks must also go to the 751 students who took the time to fill in the questionnaire and without whose cooperation there would be no report. Deirdre Brady input the data very efficiently and her support is appreciated. Finally the author would like to state that the opinions expressed in this report do not necessarily reflect the opinions of the European Commission which partially funded this report under the Minerva Action contract no 88048-CP-I-2000-IE-ODL.

First Published: 2003
Published by: Oscail – National Distance Education Centre Dublin City University, Dublin 9, Ireland

www.oscail.ie/picture.htm

Executive Summary

1. A total of 751 students taking ODL and on-campus programmes in Ireland and the UK responded to a postal questionnaire survey issued by the PICTURE project team.

2. The main objective of the questionnaire was to find out how EU policies on ICTs in education resonate with students.

3. Respondents could be classified into three broad categories:

   - ODL technical, comprising largely male students, aged between 23 and 40, in employment, taking IT courses to improve their qualifications.
   - ODL non-technical, comprising mostly female students, aged between 30 and 50, taking humanities courses largely for personal interest, or nursing courses to improve their qualifications
   - On-campus non-technical, comprising mostly female students, aged less than 23 years, taking a psychology degree, motivated by career objectives.

4. Respondents report relatively high access to PCs and the Internet compared with the general population. Over half (53.4%) have extensive (i.e. home/work/university) access to PCs and 39.1% have extensive access to the Internet. Some 39.8% had restricted access (i.e. home and university only) to PCs and 45.1% had restricted access to the Internet. Just 6.8% had minimal access (at university only) to PCs and 15.8% had access to the Internet.

5. The level of access to technology varies by programme and mode of study. BA respondents were most likely to have restricted access to PCs and Internet (46.5% have extensive access compared with 78.7% of IT respondents).

6. Women have more restricted access to technology than men. Almost two thirds (64.9%) of men compared with less than half (45.5%) of women have extensive access to PCs. Just under half (49.3%) of men compared with less than one third (31.8%) of women have extensive access to the Internet.

7. Access to technology varied by age, prior educational level and economic status. Access to technology declines among older age groups, among those with second level education only, and among those who are out of the paid workforce.

8. Just 17.2% of on-campus students reported that they had no problems in accessing PCs at the university. Of those who experienced problems, 41.4% referred to restricted opening hours, while a further 41.4% referred to restricted opening hours and not enough PCs to go around.

9. The survey uncovered a less than supportive environment in the workplace with regard to using work-based PCs for educational purposes. Less than half of BA respondents can access work-based computers for educational purposes, compared

with almost three quarters (74.6%) of IT respondents. Of those respondents permitted to use PCs at work, only 32.0% were not restricted with regard to timing and almost two thirds (62.9%) were restricted to using PCs outside working hours.

10. Just over one quarter of respondents actually owned a home based PC. However, of the 67.4% who shared a home based PC, just 5.5% reported that they had problems in using the PC when they wanted it.

11. The majority of respondents were confident in their ability to use unaided word-processing (87.7%), email (88.1%), and Internet browsers (93.7%). However respondents were less confident in their skills in using spreadsheets (68.3%), bibliographic databases 62.8%), or presentation manager software (53.5%). Just over one fifth (22.7%) could use computer conferencing unaided.

12. Two fifths of respondents (41.9%) had no formal training in IT, while 15.5% had taken the ECDL and a further 42.6% had received some form of training course.

13. Almost two thirds of respondents had used the Internet at least once per week in the previous three months to access educational material and prepare assignments.

14. On-campus students reported greater use of email to contact fellow students and tutors than ODL students. They were also more inclined to use technology for accessing educational materials and preparing assignments than ODL students.

15. ODL IT students and on-campus students reported higher levels of involvement in online educational activities than ODL BA or Nursing respondents.

16. Factor analysis identified three main factors relating to respondents' attitudes to technology: computer confidence; valuing of ICTs in society in general; concerns with negative impact of technology on learning and pedagogy.

17. ODL IT respondents scored higher on the computer confidence score than either ODL BA or Nursing or on-campus students. Some 90.5% of ODL IT respondents scored in the high confidence category, compared with 52.4% of BA and 43.1% of on-campus respondents. Over three quarters of men (75.4%) were in the high computer confidence category compared with just 55.6% of women.

18. Over half (52.3%) of respondents placed a high value on ICTs in general, with ODL IT, MIT, and Nursing respondents more positive than ODL BA and on-campus students.

19. While just 17.2% of respondents considered that ICTs would have a negative impact on learning and pedagogy, only one quarter (25.2%) felt that ICTs would actually improve learning. The remaining 57.6% felt that at best ICTs would have a neutral effect. Again, ODL BA respondents were most negative about the impact of ICTs (26.1% of ODL BA respondents considered that ICTs would have a negative impact compared with 9.1% of ODL IT and 11.0% of on-campus students).

20. Respondents judged the potential of ICTs to extend access to those in remote regions and to disadvantaged students as most important (almost three quarters (74.9%) of all

respondents rated access from remote regions to higher education as important or very important). However there was less support for using technologies to change learning approaches in education. Just over one third (35.4%) felt that development of autonomous learner centred approaches in higher education was important; 29.2% agreed that collaboration between students in other countries was important and only 14.9% thought that a more collaborative and less individual approach to learning was important.

21. While there was substantial support for using ICTs to *enhance* existing modes of learning, there was considerable resistance to *replacing* existing modes with technology. Thus ODL respondents were inclined to select ODL enhanced with online support as their first preference while on-campus respondents tended to select on-campus education enhanced with online support as their first preference. Over two thirds (69.2%) of respondents opted for technology enhanced forms of education as their first preference, however, only 11.6% of all respondents ranked eLearning (defined as a mix of written course materials, online materials, online tutorial support and interaction with other students and tutors) as their first preference for mode of study. Almost one fifth (19.2%) ranked traditional forms of learning without any technological involvement as their first preference. There was resistance to removing face-to-face and personal contact from the learning experience even among those who were supportive of technological enhancement.

22. With regard to preparedness to pay for PCs in courses requiring access to computers, over one fifth (21.6%) of respondents either indicated that they would be unable to afford anything (13.2%), or wouldn't want (8.4%) to take a course requiring a computer. One quarter (25.9%) of respondents felt that students should fund access to technology or contribute to the costs (14.4%). However, 59.6% felt that the cost should be covered by others (the university, government or employers).

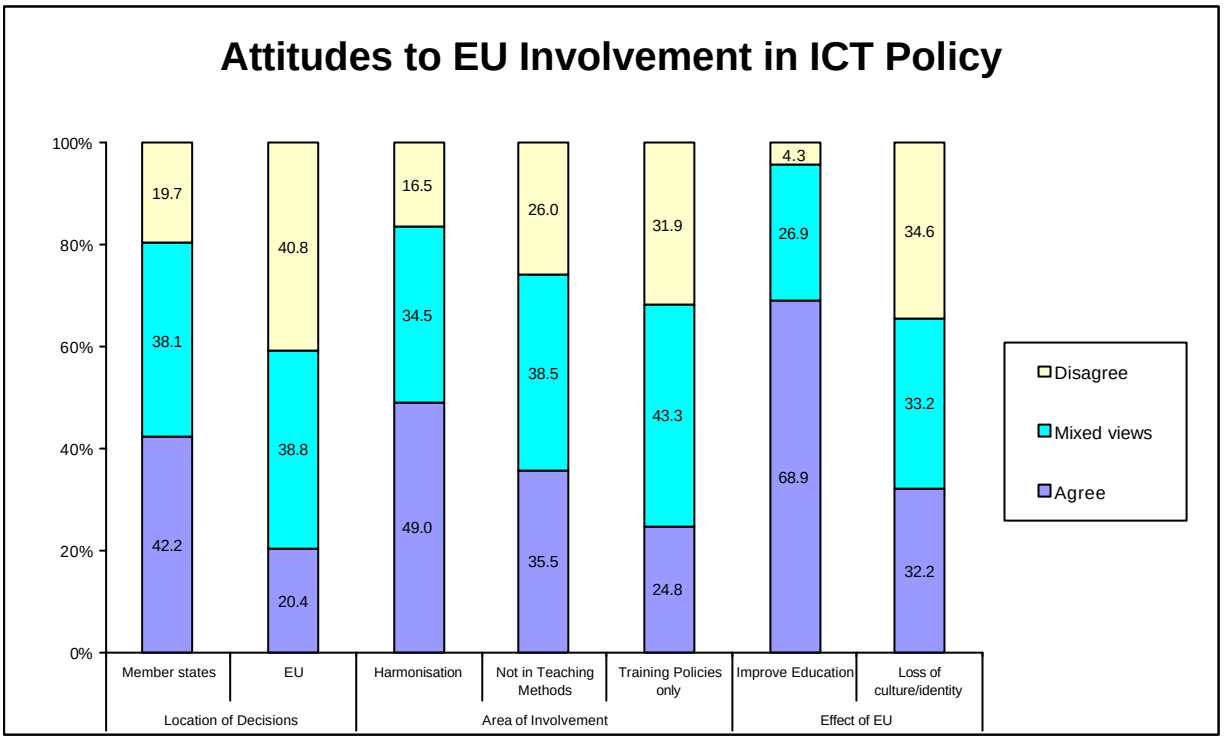
23. Irish respondents tended to be more favourable about the EU and its impact than were UK respondents. For example over three quarters (79.4%) of Irish respondents compared with less than half (47.8%) of UK respondents held a positive image of the EU.

24. Respondents were less resistant to the EU having a role in educational policy making with regard to funding (11.5%), student mobility (5.8%) and recognition of qualifications (5.4%). Respondents were more resistant to EU involvement in deciding teaching (30.0%) and curriculum policy (24.3%).

25. On the question of location of decision making in educational policy, over two fifths (42.2%) agreed that only member states should decide on policies on eLearning in their education and training institutions while just 20.4% agreed that decisions on introducing ICTs in education should be made at EU level.

26. With respect to the areas in which the EU could be involved, almost half (49.0%) were supportive of the EU taking a role in making education systems in the member states more alike (e.g. harmonisation), however over one third (35.5%) agreed that the EU should not try to influence institutions about how they teach their courses. Just less than one quarter (24.8%) would agree that the EU should restrict its involvement to policies for training.

27. With regard to the effect of EU involvement, over two thirds (68.9%) agreed that EU support for eLearning could result in an improvement in education and training in the member states. On the other hand, approximately one third (32.2%) feared that a common EU approach to ICTs in education could lead to a loss of national culture and identity.



Part 1: Introduction

"The most important views on the relevance of social Europe are the views of European citizens themselves." P. Flynn, Former EU Commissioner (Flynn 1999: 318)

We must be careful not to further increase the disparity in the accessibility of all levels of education through ICT. ICT has the potential to further disadvantage lower educated socio economic groups. Perhaps the EU can force national governments to wise up to this. Male BA Student

The interaction of students in a classroom environment enhances learning. Internet connection in Ireland is too slow and too costly to promote web-based learning. The EU might not always be committed to retaining the national identity of a country when implementing education policy. Male MIT Student

According to Commissioner Viviane Reding 'In working towards the goal of lifelong training we must encourage dialogue with all players in vocational training. This European level dialogue must be intensified in order to ensure the necessary cooperation between the state, authorities at various levels, firms, social partners and training bodies' (Reding 2000: 4). Interestingly, one group of key players in education is omitted from this list – students. Laffan notes that the EU has developed a series of top-down policies designed to foster support for integration, however, she concludes that it is not clear how the top-down strategies will resonate with the people of Europe (Laffan 1998). This Report poses the question 'How do EU policies on ICTs in education resonate with students?'. Since the early 1970s, the EU has kept track of public opinion through its regular Eurobarometer surveys[1]. Citizens have been asked to express opinions on a broad range of policies, however, the first survey of attitudes to education and training was carried out in 1995 (Eurobarometer 1997). This showed that 81% of those questioned believed that the new technologies would change education, and 76% believed that technology would improve the quality of education. Subsequent studies have surveyed the general population on attitudes to the Information Society. However, these surveys cover a cross-section of European citizens in general and do not focus on the views of students. While there is considerable research on attitudes of students to the use of various forms of technology in education, little attempt has been made to link these findings with views on the EU policy-making process.

Since the early 1990s, the EU has enthusiastically promoted the increasing use of ICTs in education as one of the key drivers in delivering the knowledge society. In parallel, the realisation has grown that while the supply of PCs in schools and educational institutions has expanded, the demand side, particularly from students, has not kept pace. In its guidelines for the Minerva Action in 1999, the EU Commission outlined a number of key questions to be tackled by projects to be funded under the action. Under the heading '*Understanding innovation*' the

[1] Accessible at http://europa.eu.int/comm/public_opinion/

Commission sought proposals with the aim of an 'improved understanding of the impact of ICT and/or ODL models on the organisation of learning/teaching and/or on the learning process as such' (CEC 1999). Among the areas for research suggested were analysis of learners' attitudes and profiles, including gender differences. Three projects involving surveys of students were funded. The author was successful in bidding for funding for a two-year project entitled PICTURE (Perceptions of ICT Use in Remote Education)[2]. This project involved three elements: a survey on attitudes to ICTs in European Education; an analysis of the digital divide in Europe; and development and evaluation of pedagogical techniques to develop higher order thinking skills using virtual learning environments in distance learning programmes (Fox and Mac Keogh 2001). The project team comprised partners from Oscail – the National Distance Education Centre in Ireland, the Department of Psychology in Queen's University Belfast, and the Danish Association of Open Universities.

This Report discusses the outcomes of the survey of students. The report is divided into 9 Sections. Section 2 discusses the methodology utilised in collecting the data. Section 3 provides a profile of the characteristics of respondents. Section 4 reports on the findings with regard to access to technology. The next section focuses on analysis of respondents' expertise in using the technologies. Section 6 examines respondents' experience of using ICTs in education. Section 7 outlines the main findings on respondents' attitudes to ICTs in education. In the next Section, respondents' attitudes to the EU's involvement in educational policy making will be discussed. The report finishes with a summary and discussion of the findings.

[2] See http://www.oscail.ie/Picture.htm

Part 2: Methodology

2.1 The Target Group

Following consideration of a number of options, it was decided to select participants for the survey from students in the institutions involved in the Minerva funded PICTURE project. The primary reason for selecting this 'opportunity' sample was the logistical difficulty of selecting and accessing students in other institutions and other countries (Foster and Parker 1995). This of course raises the issue of the representativeness of the responses received since it cannot be claimed that they represent the body of students in Europe. This report can only claim that the students selected are representative of the groups from which they are drawn. Nevertheless, the survey provided an opportunity to develop an instrument for testing attitudes which may be applied to other groups for comparative purposes[3]. The target groups were drawn from five programmes of study, utilising two modes of study. The on-campus group comprised 119 first year students of Psychology in Queen's University, Belfast (referred to in this report as the 'on-campus group'). It was hoped to include a comparative group of on-campus students in the University of Aarhus, in Denmark, however, due to technical difficulties in administering the questionnaire, this group was eliminated from the analysis. The second group of students were open distance learning (ODL) students with Oscail, the National Distance Education Centre, based in Dublin City University. These students were enrolled in four programmes: 870 on the Bachelor of Arts (BA) programme (taking a combination of modules in History, Literature, Philosophy, Psychology, Sociology); 869 students taking the BSc in Information Technology (IT); 200 students taking the Bachelor of Nursing Studies (Nursing) – a programme aimed at topping up the qualifications of registered nurses to degree level; and 115 on the Master of Science (MIT) programme (with specialisms in Information Technology, Management of Operations, or Internet Systems). This combination of groups allowed the possibility of gauging attitudes to ICTs in European education of students from a number of perspectives: subject domain (Non-technical, Technical); mode of study (Distance, on-Campus); culture (Irish, UK), as well as the relationship between these attitudes and the characteristics of respondents (including gender, age, economic status, access to technology and expertise).

2.2 The Questionnaire

2.2.1 Objectives of the Questionnaire

It was decided that the most effective method of collecting data among the student groups was by means of a questionnaire. The primary objective of the questionnaire was to find out how students respond to the EU's policy of encouraging the increasing use of ICTs in all levels of education. In order to build up a profile of students' attitudes, it was considered necessary to obtain data on different elements which might contribute to or explain the patterns of response. These elements might include barriers to the use of ICTs arising from the 'Digital Divide' or the 'Knowledge and

[3] A copy of the questionnaire is included as appendix 1 to this report.

expertise gap'; attitudes to computers in general as part of the modernisation process; knowledge of and attitudes to the EU role in society in general as well in education. Previous research on student attitudes to ICTs has shown that feelings of self-efficacy or confidence are key determinants in developing favourable attitudes to technology in education (McMahon 1997; Eastin and LaRose 2000; Joo, Bong et al. 2000). It proved more difficult to find research on student attitudes to aspects of EU education policy.

2.2.2 Questionnaire structure and content

The questionnaire was divided into five sections, preceded by a short note outlining the purpose of the survey and seeking support from students in helping to improve the type of education provided with a view to benefiting students throughout Europe. The note was signed by the author in the case of Oscail students and by the local coordinators in Belfast and Aarhus, as it was considered that the name of a local sponsor would improve the response rate. Some questions were derived from previous surveys, while it was necessary to construct new questions where a search of the literature had failed to produce suitable models.

Section 1 comprised 42 questions concerning access to technologies. Questions 1 to 9 listed a number of technologies (based on Eurobarometer lists) and asked respondents to indicate where or if they could access these. Further questions probed the quality of access. Questions 12 to 26 probed the use which respondents had made of the Internet in the previous three months, including the location of access. Willingness and ability to pay for technologies, as well as who should be responsible for paying were probed in Questions 27 and 28.

Section 2 examined respondents' expertise in using ICTs. Questions 30-36 listed a series of activities (e.g. word processing etc) derived from a questionnaire developed for the SPOTPlus project.[4] A question on levels of computer training was included since it was considered that this could also be a contributory factor towards explaining computer efficacy. Respondents were also asked to indicate their involvement in a number of technology supported learning activities (the items were also derived from the SPOTPLUS questionnaire).

Section 3 comprised 40 Likert statements probing attitudes to ICTs in education. These statements included twelve statements drawn from the SPOTPLUS questionnaire which related mainly to learning preferences for either traditional or technology based approaches. A further ten statements were drawn from McMahon's questionnaire which probed levels of confidence in utilising computers and attitudes to the value of ICTs (McMahon 1997). Of the remaining statements, sixteen had been used in previous surveys to capture attitudes of ODL students to societal and pedagogical aspects of ICTs (Mac Keogh 2001). A further two statements were added to capture views on the role of ICTs in the information society, as well as the use of ICTs in a European context. A further nine statements, drawn from the SPOTPLUS questionnaire probed the importance attached by respondents to a list of opportunities in education which might be enhanced by ICTs. Respondents were then asked to rank in order of preference their most preferred mode of study.

[4] This project was funded by the EU Minerva project during the same period as the PICTURE project and was also aimed at examining perceptions of students (SPOTPLUS 2002).

Attitudes to and knowledge of the EU were probed in Section 4. A series of questions drawn from Eurobarometer surveys were used to assess levels of knowledge of various aspects of the EU as well as attitudes to the European project (integration, European currency). In view of the dearth of research on student attitudes to EU policy in education, further questions were specially designed to probe attitudes to EU involvement in the harmonisation of educational systems, teaching methods, curriculum, and funding.

The final section of the questionnaire comprised questions eliciting personal information including gender, nationality, economic status, location of residence and motivations for study

2.2.3 Testing and Piloting of the questionnaire

The questionnaire was circulated to twelve experts who were asked to review the questions for content validity, clarity and appropriateness. Five students were also asked to complete the questionnaire on a pilot basis and were asked to provide feedback. Following this process, a number of changes were made to clarify statements and to remove redundant material.

2.2.4 Administration of the questionnaire

Questionnaires were sent by post to all ODL students in October/November 2002. The questionnaire was accompanied by a letter in which respondents were asked to return the form using the enclosed reply paid envelope. While it would have been convenient to email the questionnaire to all ODL students, it was considered that the postal survey was the most appropriate as not all students access their email accounts, and the responses could be biased towards those who are more technically literate. This impression was validated by the problems encountered with the distribution of the questionnaire in the Danish university. The lecturer posted the questionnaire on the Web and asked students to download the questionnaire and respond directly to the author by email. Unfortunately, the questionnaire was posted just before the Christmas break and the few students who accessed the site were unable to save the document as a word document. Two students emailed the author to alert her to this problem. On the other hand, the questionnaire was administered to the UK on-campus group in November 2002 during a scheduled class, when twenty minutes were set aside for completion. Questionnaires were collected by the lecturer at the end of the session and delivered to the author by hand thus achieving a more satisfactory completion rate.

2.3 Response Rates

Due to the different methods of questionnaire distribution, the response rates varied between ODL and on-campus students. All 119 on-campus student completed the questionnaire (100% response rate), whereas of the ODL students who received the questionnaire by post, some 299 (34.4%) BA students, 39 (33.9%) MIT students, 59 (29.5%) Nursing students and 235 (27.0%) of IT students responded. Just two responses were received from Danish students. Postal surveys, while having a number of advantages, also pose the problem of low response rates (Baruch 1999). It is rare to achieve a 100% response rate and non-responses may be due to a number of factors including non-delivery, timing, level of relevance of the topic to the respondent or

even survey weariness on the part of over-surveyed respondents. Baruch notes that response rates have declined over a twenty year period, with the average response rate reported in a number of academic journals in 1995 being 48.4% (Standard Deviation 22.5) compared with 64.4% in 1975 (Standard Deviation 16.8%) (Baruch 1999: 430). Normally, evaluation questionnaires mailed to Oscail students achieve response rates of between 40-60%. An earlier survey of attitudes to technology carried out in Spring 2000 achieved a response rate of 58.5% (Mac Keogh 2001).

A reminder was sent by email to all ODL students however, since questionnaires were not linked with respondents it was not possible to target non-respondents. From comments on the questionnaires it appears that the timing of the questionnaire (while students were preparing for examinations) allied with the length of the questionnaire might have proved a disincentive. Some comments from students included: *'Sorry not much time at the moment. Preparing for my final exams.'* Female BA Student. *'The questionnaire is too long'* Male IT & BA students. *'Timing of this survey was ridiculous - middle of exams!'* Male IT student. One Danish student sent the following message by email: *'I would have liked to participate, but I find this questionnaire rather hard to get a general view over. It is not very user friendly in my opinion. It could for some reason not readily be saved as a word document. My impression from looking down over the pages was: "My God, this is a massive block of text, it will take me hours to complete. No thanks, I don't have time for that."*

According to Baruch, there is no agreed norm as to what constitutes an acceptable response rate (Baruch 1999: 422). Researchers normally compare the demographic characteristics of respondents with that of the population and where these do not vary, they claim that the findings are likely to hold true for the total population. Since the gender and age breakdown of ODL respondents reflects that of the total population the response can be considered to be reasonably representative of the ODL student body in Oscail. Because of the problems outlined above with regard to administering the Danish questionnaire, just two responses were received and these were eliminated from the analysis. In total some 751 usable responses were received.

2.4 Analysis

With the exception of a small number of open-ended questions, the responses were precoded for ease of data entry. The data, including comments, were first entered on to an Excel spreadsheet. Following checking and correction, the data were then uploaded onto SPSS, Version 11.0 for statistical analysis (chi square, factor analysis, and ANOVA).

Part 3: Profile of Respondents

3.1 Gender

The main characteristics of the respondents are summarised in Table 1, broken down by programme. The gender distribution varies substantially between programmes. Women predominate in non-technical programmes (both on-campus and ODL), comprising 98.3% of nursing respondents, 70.1% of BA respondents and 84.0% of on-campus respondents. In contrast, some 71.7% of IT and 69.2% of MIT respondents are male.

3.2 Age

The age profile of respondents also varies between programmes. BA respondents tend to be older than any of the other groups, with almost one quarter (23.3%) aged over 50 years and just 12.0% aged less than 30 years. In contrast, just 5.2% of IT respondents are aged over 50 years, and some 28.9% are aged less than 30 years. The nursing group cluster into the 30-50 age group (84.4%) with no one over 50 years. One third (33.3%) of MIT respondents are aged less than 30 years. The on-campus group are, not unexpectedly in respect of full-time students, concentrated into the 18-22 age group, with just 13.4% aged over 23 years.

3.3 Marital Status

Over half (53.6%) of all respondents are married, and over one third (36%) are single. However, this varies by programme, with just 5% of on-campus students being married compared with in the region of two thirds of BA, IT and Nursing students.

3.4 Nationality

Respondents were asked to indicate their nationality. As would be expected almost all (94.2%) of ODL respondents gave their nationality as Irish, with 3.9% from the UK. The response from the on-campus students, located in Northern Ireland is interesting in that respondents are split between UK (52.8%) and Irish (47.2%) perhaps reflecting their cultural, religious and/or political affiliations, although it is not possible to deduce from responses how many respondents were from outside Northern Ireland, and how many were indigenous residents.

3.5 Motivation for studying

Respondents were asked to indicate their primary motivation for studying. Four options were given: ‘personal interest’; ‘to prepare for a career’; ‘to change current career’; and to upgrade qualifications. The responses related to career were combined into one category. Motivation for study varied substantially between programmes. Over half (56.3%) of BA respondents listed personal interest as primary motivation, compared with less than 10% (8.8%) of nursing respondents and under one fifth of IT

(19.6%) and MIT (19.4%) respondents, and just over one quarter (27.0%) of on-campus respondents. On-campus respondents were primarily motivated by career objectives (72.2%), while Nursing, IT and MIT respondents were more motivated by obtaining or upgrading qualifications (75.4%, 61.1% and 48.4% respectively).

3.6 Highest Level of Previous Education

With regard to previous highest level of education, as would be expected, only 11.8% of on-campus students had completed post-second level education. Of the other groups, over half (56.2%) of BA and almost three quarters of IT (70.3%) respondents had some form of post-second level education. All Nursing and MIT respondents had completed post-second level qualifications.

3.7 Economic Status

The economic status of respondents varies between programmes. Even though the on-campus students are studying full-time, almost one quarter (23.5%) were in employment. BA respondents were less likely to be in the paid workforce (71.3%) than other ODL respondents (91.0% IT; 96.6% Nursing; 92.3% MIT). Data on annual income should be treated with some caution, as it is not clear if some respondents interpreted the question as relating to their own personal income, or to the household income. Nevertheless, differences emerge between programmes, with most (92.3%) on-campus respondents reporting an annual income of less than €15,000. Almost one quarter (23.6%) of BA respondents report a similar income, although this more likely reflects the comparatively high proportion of this group who are not in the paid workforce. Almost three quarters (72.2%) of MIT respondents earn over €40,000 compared with 39.7% of IT respondents, 24.7% of BA and just 15.5% of nursing respondents.

3.8 Location of main residence

Respondents were asked to indicate the location of their main residence, using categories from Eurobarometer surveys (metropolitan area - population over 1 million; non-metropolitan urban area; rural area). Respondents were relatively evenly distributed between the three types of area, although nursing respondents were twice as likely to reside in rural areas than on-campus students (44.1% of nursing compared with 22.4% of on-campus respondents). Data on residence for on-campus students should be treated with some caution, as some students may have been confused as to whether their main residence was their term time residence or their parents' residence. While this point was clarified during the session when the questionnaires were completed, it is possible that some respondents may not have heard the clarification. Finally, respondents were asked to indicate the distance from the university campus to their main residence. Over half (53.4%) of on-campus residents indicated they lived within five miles of the campus (again the caveat about how they interpreted this question must be applied). With regard to the ODL students, it may be surprising to note the proportion who live within five miles of the campus (24.7% of IT; 17.9% of BA; 15.5% of Nursing; 7.9% of MIT). However, substantial proportions live over fifty miles from the campus (38.0% of Nursing 30.5% of BA; 29.0% of MIT; 15.7% of IT).

Table 1: Profile of Respondents by Programme

Variable	Label	% ODL - BA	% ODL - IT	% ODL - Nursing	% ODL - MIT	% On-campus Psychology	Total %	Total N	χ^2	DF	Sig
Gender	Male	29.9	71.7	1.7	69.2	16.0	40.6	302			
	Female	70.1	28.3	98.3	30.8	84.0	59.4	442	187.405	4	0.000
Age Group	18-22		0.4			86.6	14.0	104			
	23-30	12.0	28.9	15.5	33.3	7.6	17.9	133			
	31-40	31.5	45.9	53.4	33.3	4.2	33.5	248			
	41-50	33.2	19.7	31.0	28.2	0.8	23.3	173			
	51-60	15.1	5.2		5.1	0.8	8.0	59			
	60+	8.2					3.2	24	724.667	20	0.000
Marital status	Single	21.2	30.0	20.3	35.9	91.6	36.0	266			
	Cohabiting	6.2	7.0	6.8	10.3	3.4	6.2	46			
	Married	65.4	60.9	67.8	48.7	5.0	53.6	396			
	Separated/divorced	4.5	2.2	3.4	2.6		2.8	21			
	Other	2.7		1.7	2.6		1.4	10	209.465	16	0.000
Nationality	Irish	94.2	94.0	91.7	100.0	52.8	87.1	548			
	UK	3.9	2.7	6.3		47.2	11.0	69			
	Other	1.9	3.3	2.1			1.9	12	179.296	8	0.000
Motivation for study	Personal interest	56.3	19.6	8.8	19.4	27.0	34.4	247			
	Career reasons	28.2	32.0	15.8	19.4	72.2	35.0	251			
	Qualification	15.5	48.4	75.4	61.1	0.9	30.5	219	253.826	8	0.000
Previous highest level of education	2nd level - Part	10.2	7.9	1.7	2.6	4.2	7.4	55			
	2nd level	33.6	21.8	5.1		84.0	34.1	252			
	Cert/Diploma	34.9	53.7	27.1	10.5	10.9	35.0	259			
	Bachelor's degree	8.5	7.9	3.4	52.6	0.8	8.9	66			
	Postgraduate	2.7	2.6	1.7	10.5		2.6	19			
	Professional	10.2	3.5	61.0	23.7		11.2	83			
	Other		2.6				0.8	6	463.546	24	0.000
Economic Status	Student	1.4	0.4			76.5	12.9	96			
	Employed	71.3	91.0	96.6	92.3	23.5	72.9	542			
	Home maker	15.4	3.4	1.7	2.6		7.4	55			
	Other	11.9	5.2	1.7	5.1		6.7	50	565.649	12	0.000
Annual income	>15K	23.6	5.9	6.9	2.8	92.3	24.6	166			
	15-25	20.3	16.4	8.6	5.6	4.4	15.1	102			
	25-40	31.4	47.9	69.0	19.4	2.2	35.4	239			
	40-60	16.6	26.5	15.5	50.0	1.1	19.4	131			
	60-85	5.5	2.7		19.4		4.1	28			
	85+	2.6	0.5		2.8		1.3	9	367.317	20	0.000
Location of main residence	Metropolitan	30.7	35.1	27.1	21.1	24.1	30.2	220			
	Urban	30.3	35.5	28.8	42.1	53.4	36.1	263			
	Rural	39.0	29.4	44.1	36.8	22.4	33.7	245	28.126	8	0.000
Distance of main residence from campus	0-5mls	17.9	24.7	15.5	7.9	53.4	25.0	184			
	6-10mls	18.6	20.3	20.7	21.1	15.3	18.9	139			
	11-20 mls	13.4	18.2	8.6	15.8	11.0	14.3	105			
	21-50 mls	19.6	22.1	17.2	26.3	13.6	19.6	144			
	51-100 mls	21.6	5.6	25.9	5.3	4.2	13.3	98			
	100+ mls	8.9	9.1	12.1	23.7	2.5	9.0	66	117.312	20	0.000

In summary, respondents may be classified into three main groups:

- ODL technical, comprising largely male students, aged between 23 and 40, in employment, taking IT courses to improve their qualifications.
- ODL non-technical, comprising mostly female students, aged between 30 and 50, taking humanities courses largely for personal interest, or nursing courses to improve their qualifications
- On-campus non-technical, comprising mostly female students, aged less than 23 years, taking a psychology degree, motivated by career objectives.

In the next section, data on access to technologies, expertise and experience of technologies will be analysed, before turning to an examination of attitudes to technology.

Part 4: Access to ICTs in Education

It is important to be able to study when unable to access the web because of poor connection speeds and need to share access to computing resources. The volume of course materials and textbooks requires continued use of written course materials in order not to deprive others of equal opportunity [by requiring] use of computer. Male MIT Student

4.1 Access to a range of technologies

Respondents were asked to indicate whether they had access to a list of nine technologies (Desktop PC, Laptop computer, CD-ROM drive, Internet connection, Fax, Digital TV, ISDN line, DVD Player and Mobile phone). They were given a number of options to indicate where these technologies could be accessed (no access, home only, university only, work only, other place only, or a combination of these options). While a number of respondents indicated that they had no access to PCs or the Internet, in fact, all students are provided with access on campus, even though, especially for ODL students, it may be impractical to attend. Following analysis of frequencies, it was decided to combine the figures for desktop PCs and laptop computers into one measure. The sites of access were recoded into three categories (minimal access: university/other location e.g. work or public library; restricted access: home and university; and extensive access: home, university and work). As Table 2 shows, home access to PCs and the Internet is high, with less than 7% relying solely on university access for PCs, and a further 15.8% relying on the university access to the Internet. While the figures indicate that access to PCs remains a problem for a small minority of students, access to the Internet is more restricted in that just 39% have extensive access (home/university/work) compared with 45.1% with more restricted access (home/university). Analysis of the other technologies listed shows that home access to CD-ROMs is extensive (91.6%), however, just over one third (38.6%) have access to digital TV at home, over one quarter (26.2%) have access to fax, and just 16% report having an ISDN line at home. It should be noted that the non-response rate to the latter technologies renders interpretation problematic.

It is apparent from examination of the non-responses that some respondents were not familiar with the technology. As one female BA respondent wrote *'It's difficult to answer questions about equipment I do not own and have never used'*. As can be seen, ownership of mobile phones is now ubiquitous with just 7.2% reporting that they did not own one. Interestingly, just one student from the on-campus group did not have a phone. Another factor of interest in view of speculation on the future direction of mobile computing, using enhanced mobile phones, is the relatively small proportion (17.1%) who report that their mobile phones have either infra red or blue tooth. Again, it was apparent from the responses that some respondents were not sure whether their phone had these features or not. In the next section, we will look further into access to the Internet to establish if there are any differential patterns of access.

4.2 Access to PCs and the Internet by Programme

The data on access to PCs and the Internet were further analysed by cross-tabulating by programme of study, as well as personal characteristics: gender, age, previous highest level of education and economic status. Table 3 shows that the distribution of PCs and Internet access varies by programme, with distance education students taking technical qualifications reporting most extensive access to both.

Table 2. Access to Selected Technologies

Technology	Minimal Access University or other location		Restricted Access Home + University		Maximum Access Home + University + Work			
	N	%	N	%	N	%	Total	No response
Desktop PC	51	6.8	299	39.8	401	53.4	751	0
Internet	114	15.8	325	45.1	282	39.1	721	30
	No Access at Home		Home		Home + Work			
	N	%	N	%	N	%	Total	No response
CD-ROM	58	8.4	303	44.0	327	47.5	688	63
Digital TV	384	61.4	220	35.2	21	3.4	625	126
FAX	478	73.8	71	11.0	99	15.3	648	103
ISDN	451	84.0	55	10.2	31	5.8	537	214
DVD Player	243	38.3	329	51.8	63	9.9	635	116
	No mobile phone		Mobile Phone		Mobile Phone with Blue Tooth/Infra Red			
	N	%	N	%	N	%	Total	No response
Mobile Phone	51	7.2	537	75.7	121	17.1	709	42

Table 3. Access to PCs and Internet by Programme

Programme of Study			Minimal Access University or other location		Restricted Access Home + University		Extensive Access Home + University + Work		Total		χ^2	
			N	%	N	%	N	%	N	%		
Access to Desktop PC	ODL	BA	27	9.0	133	44.5	139	46.5	299	100	χ^2	184.879
		IT	7	3.0	43	18.3	185	78.7	235	100	DF	8
		Nursing	4	6.8	18	30.5	37	62.7	59	100	Sig	0.000
		MIT	4	10.3	5	12.8	30	76.9	39	100		
	On-campus		9	7.6	100	84.0	10	8.4	119	100		
	Total		51	6.8	299	39.8	401	53.4	751	100		
Access to Internet	ODL	BA	51	18.1	135	48.0	95	33.8	281	100	χ^2	124.491
		IT	30	13.2	63	27.6	135	59.2	228	100	DF	8
		Nursing	7	12.5	26	46.4	23	41.1	56	100	Sig	0.000
		MIT	8	20.5	7	17.9	24	61.5	39	100		
	On-campus		18	15.4	94	80.3	5	4.3	117	100		
	Total		114	15.8	325	45.1	282	39.1	721	100		

Over three quarters of IT students (78.7%) compared with just under half (46.5%) of BA students report home/university/work access to PCs. Four fifths (84%) of on-campus students report home/university access. However, access to the Internet is less ubiquitous than would be required for courses delivered on the web and utilising Internet based virtual learning environments, especially for off-campus students.

Almost one in five (18.1%) BA students report only having access to the Internet in the university, and just one third have access at work/home/university. It may be surprising that even technology students report relatively restricted access to the Internet. Just over one half of IT students (59.2%) have home/university/work access. From anecdotal evidence, restrictions on access at work are increasing due to the creation of firewalls by company IT departments to prevent hackers and viruses attacking the company system. From the figures given in Table 3, it would appear that on-campus students have the best access to the Internet with almost 85% of students in a position to access the Internet at home/University/work.

Besides establishing if students have access to the technologies required for eLearning, it is also important to establish the quality of that access. Aspects of quality include the level of flexibility in terms of hours of use, or in the case of on-campus access, the number of PCs per student and opening hours. ODL respondents were asked to indicate, if they were in paid employment, the extent to which their employer would allow them to use work-based PCs for educational purposes. On-campus students were asked to indicate if they experienced restrictions on access to PCs in the university. The responses are summarised on Table 4.

As Table 4 demonstrates the fact of having access to technology does not necessarily imply that access is unconditional. Less than half (47.8%) of BA students can access work-based computers for educational purposes, compared with almost three quarters of undergraduate IT students (74.6%). However, even where employers permit the use of work PCs most respondents experience restrictions with usage limited to outside working hours. Of all respondents permitted to use PCs at work, 62.9% were allowed to use them after working hours only; 5.1% could use them during working hours only, and 32% had no restrictions with regard to time of access. Less than one quarter of all IT undergraduates (23.2%) were permitted to use work PCs without restrictions, compared with 16.4% of all BA undergraduates. One ODL respondent wrote:

> *My job has a strict use of work of computer policy. I can study paper-based material in work before/after work or at lunchtime. PC based learning would be less flexible for me. I also find that using PC for Internet searches/printing off printer etc can be very time consuming decreasing the limited time I have available for study. If [presented] solely PC based I might discontinue my Oscail studies.* Male BA respondent.

It is interesting to note that less than one fifth (17.2%) of on-campus students report no problems in accessing PCs on campus. Two fifths (41.4%) report that opening times are restricted, but there are generally enough PCs. However, another two fifths (41.4%) experienced not only restricted opening times, but also agreed that there were sometimes not enough PCs available. These figures indicate that universal access by students to 'always on', available anytime technology is still to be achieved.

Table 4. Quality of access to PCs at work (ODL students) or university (on-campus students)

Quality of Access to PCs for educational purposes at work										
Programme/ mode	No work access		Access during working hours		Access after working hours		No restrictions on access at work		Total	
ODL student	N	%	N	%	N	%	N	%	N	%
BA	143	52.2	8	2.9	78	28.5	45	16.4	274	100.0
IT	58	25.4	6	2.6	111	48.7	53	23.2	228	100.0
Nursing	16	28.1	5	8.8	23	40.4	13	22.8	57	100.0
MIT	6	15.4	0	0.0	24	61.5	9	23.1	39	100.0

Quality of Access to PCs for educational purposes at University								
	Time restricted/not enough PCs		Time restricted/enough PCs		No Access Problems			
On-campus	N	%	N	%	N	%	N	%
Psychology	48	41.4	48	41.4	20	17.2	116	100.0

4.2 Access to PCs at home

> *'I think it is not a good idea to base substantial amounts of course learning on computers. It is difficult to access them - they easily breakdown 'crash', often web pages are unavailable, internet costs at home are relatively high so unable to use internet'* Male On-campus Student

The fact that a relatively small proportion of respondents has unrestricted access to technology during their working or study day is of concern. However, as has been shown above, 92.2% of respondents stated that they had access to a PC at home. It was considered useful to complement the data on work/university access with similar details on home access. Respondents were given a series of statements and asked to indicate which one reflected the level of access to the household. The findings are summarised in Table 5. Just over one quarter (26%) of respondents reported that they owned a PC which they did not share with anyone else in the household, whereas just over two thirds (67.4%) shared with others in the household. However, just 5.5% reported that they had difficulties in accessing the PC, while 61.9% stated 'I share a personal computer with others in the household, but I have no problems using it when I need to'. The pattern of access varies somewhat between disciplines. As would be expected undergraduate students of IT report higher sole ownership of PCs (35.2% of IT respondents compared with 22.4% of BA respondents own a PC). BA students are slightly more likely to experience difficulties in accessing a shared PC (8.8% compared with 2.1% of IT students). This figure when added to the 9.2% who do not have a PC at home indicates that almost one in five BA students (18%) compared with just 5.1% of IT students would experience difficulties in meeting the technology requirements for eLearning courses. In addition, the comment of one ODL respondent about home access deserves consideration

> *'Paper based course notes are generally better than using a PC to learn. Most home PCs are located in bedrooms with minimal workspace and bad ergonomic set ups. Long study hours at a PC can be painful.'* ODL student

Table 5 Quality of access to PCs at home

Programme/ mode		None		Owns PC – no access issues		Shares PC but access when required		Shares – problems in gaining access		Total	
		N	%	N	%	N	%	N	%	N	%
ODL	BA	27	9.2	66	22.4	175	59.5	26	8.8	294	100.0
	IT	7	3.0	82	35.2	139	59.7	5	2.1	233	100.0
	Nursing	4	6.8	14	23.7	38	64.4	3	5.1	59	100.0
	MIT	4	10.5	10	26.3	22	57.9	2	5.3	38	100.0
On-campus		7	5.9	21	17.6	86	72.3	5	4.2	119	100.0
Total		49	6.6	193	26.0	460	61.9	41	5.5	743	100.0

4.3 Access to PCs and Internet by Gender

When access to PCs and the Internet is cross-tabulated by gender, variations in access emerge. While similar proportions of men and women report minimal access to both PCs and Internet, it is apparent that in both cases, men are more likely than women to have extensive access to the technologies (see Table 6). Almost two thirds of men (64.9%) compared with less than half of women (45.5%) have extensive access to PCs; just under one half of men (49.3%) and under one third of women (31.8%) have extensive access to the Internet. These differences are statistically significant at the .000 level. Further analysis of household access by gender shows that, almost one third of men (30.3%), compared with almost just over one fifth (22.8%) of women own the PC outright, while the remainder share with partners, children or other adults in the household. Slightly more women report difficulties in gaining access to the shared PC (6.6% of women compared with 4.4% of men).

Table 6. Access to PCs and Internet by Gender

Gender		Minimal Access University or other location		Restricted Access Home + University		Extensive Access Home + University + Work		Total		χ^2	
		N	%	N	%	N	%	N	%		
Access to Desktop PC	Male	22	7.3	84	27.8	196	64.9	302	100	χ^2	31.133
	Female	29	6.6	212	48.0	201	45.5	442	100	DF	2
	Total	51	6.9	296	39.8	397	53.4	744	100	Sig	0.000
Access to Internet	Male	46	15.8	102	34.9	144	49.3	292	100	χ^2	25.007
	Female	68	16.1	220	52.1	134	31.8	422	100	DF	2
	Total	114	16.0	322	45.1	278	38.9	714	100	Sig	0.000
Quality of access to Home PC		No PC at Home		Owns PC		Shares – no access problems		Shares – problems in access		N	
	Male	6.7		30.3		58.6		4.4		297	
	Female	6.6		22.8		64.2		6.4		439	

4.4 Access to PCs and Internet by Age

> *Being of the older age group, I find it difficult to use modern technology. I have a personal computer which I use mainly as a word processor. I prefer to use libraries to source material for assignments. However I see the role of technology in education as the way forward in this age where people seem to have less time to spend in browsing and reading books.* Female BA Respondent

An examination of the difference in access to PCs and the Internet between age groups as shown in Table 7 reveals that there is somewhat of an age gap in terms of access to the technologies, with access declining steeply among the older age groups.

Almost 95% of the 18-22 age group (i.e. largely drawn from the on-campus group) have relatively unrestricted access to PCs, and 85% have similar access to the Internet at university and home. In the region of two thirds of the 23-50 age group have extensive access to PCs, and just under one half have similar access to the Internet. However, the over 50 age group experiences more restricted access, with one fifth of those over 60 accessing PCs at the university only and 30% accessing the Internet only through the university. These figures are of relevance in the context of promoting ICTs for lifelong learning.

4.5 Access to PCs and Internet by Education

An analysis of Table 8 shows that access to PCs and Internet varies by educational level. As the figures for those with second level prior qualifications are skewed by the presence of on-campus students, most of whom are not working and who have completed second level education only, on-campus students have been excluded from the analysis of respondents with incomplete or complete second level education. Respondents with second level education are more likely to experience restricted access while graduates experience the highest levels of access. Over two thirds (69.7%) of graduates have extensive access to PCs and half have extensive access to the Internet compared with approximately half of students with second level education who have access to PCs and just over one third who have access to the Internet.

Table 7 Access to PCs and Internet by Age

Age Group		Minimal Access University or other location		Restricted Access Home + University		Extensive Access Home + University + Work		Total		χ^2	
		N	%	N	%	N	%	N			
Access to Desktop PC	18-22	6	5.8	88	84.6	10	9.6	104	100	χ^2	154.68
	23-30	14	10.5	34	25.6	85	63.9	133	100	DF	10
	31-40	12	4.8	67	27.0	169	68.1	248	100	Sig	0.000
	41-50	11	6.4	57	32.9	105	60.7	173	100		
	51-60	3	5.1	32	54.2	24	40.7	59	100		
	60+	5	20.8	17	70.8	2	8.3	24	100		
	Total	51	6.9	295	39.8	395	53.3	741	100		
Access to Internet	18-22	13	12.6	85	82.5	5	4.9	103	100	χ^2	100.97
	23-30	31	23.5	42	31.8	59	44.7	132	100	DF	10
	31-40	39	16.5	81	34.3	116	49.2	236	100	Sig	0.000
	41-50	16	9.7	74	44.8	75	45.5	165	100		
	51-60	9	16.4	27	49.1	19	34.5	55	100		
	60+	6	30.0	12	60.0	2	10.0	20	100		
	Total	114	16.0	321	45.1	276	38.8	711	100		

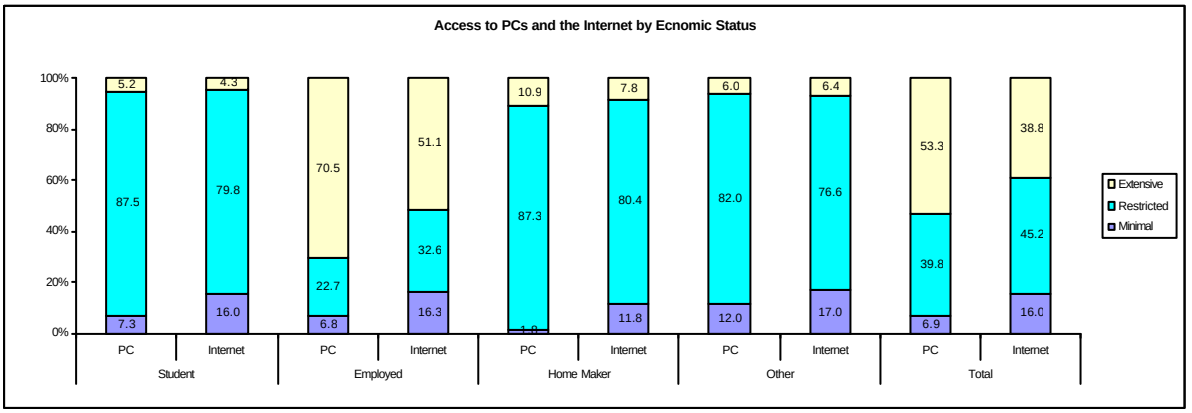
Table 8. Access to PCs and Internet by prior education level

Previous highest level of education		Minimal Access University or other location		Restricted Access Home + University		Extensive Access Home + University + Work		Total		χ^2	
Access to Desktop PC	2nd level - Part	6	12.0	19	38.0	25	50.0	50	100.0	χ^2	83.31
	2nd level	9	5.9	64	42.1	79	52.0	152	100.0	DF	12
	Cert/Diploma	11	4.2	76	29.3	172	66.4	259	100.0	Sig	0.000
	Bachelor's degree	9	13.6	11	16.7	46	69.7	66	100.0		
	Postgraduate	3	15.8	3	15.8	13	68.4	19	100.0		
	Professional	5	6.0	30	36.1	48	57.8	83	100.0		
	Other		0.0	1	16.7	5	83.3	6	100.0		
	Total	43	6.8	204	32.1	388	61.1	635	100.0		
Access to Internet	2nd level - Part	9	20.0	19	42.2	17	37.8	45	100.0	χ^2	88.45
	2nd level	17	11.7	77	53.1	51	35.2	145	100.0	DF	12
	Cert/Diploma	40	15.9	81	32.1	131	52.0	252	100.0	Sig	0.000
	Bachelor's degree	19	28.8	14	21.2	33	50.0	66	100.0		
	Postgraduate	3	17.6	4	23.5	10	58.8	17	100.0		
	Professional	14	18.2	35	45.5	28	36.4	77	100.0		
	Other		0.0	1	16.7	5	83.3	6	100.0		
	Total	102	16.8	231	38.0	275	45.2	608	100.0		

4.6 Access to PCs and the Internet by Economic Status

The relationship between economic status and access to PCs and the Internet is outlined in Figure 1. Respondents were asked to indicate their primary economic status (full-time student; employed part-time; employed full-time; self-employed; home-maker; retired; unemployed; other). For the purpose of analysis, this coding was simplified into four categories: full-time student, employed, home-maker, other. As would be expected, those in employment have the greatest access to the technology (70.5% have extensive access). However, it is also interesting to note that almost all (98.2%) home-makers have access to PCs at home and that 88.2% have home access to the Internet. This would indicate that for this group, given that they are at home during the day, access to PCs and Internet should not pose a barrier to participation in eLearning. However, access is more restricted among the 'other' category (unemployed and retired) with 17% restricted to accessing the Internet in the university.

Figure 1: Access to PCs and the Internet by Economic Status



Part 5 Expertise in ICTs

5.1 Expertise in Using ICTs

> *Sometimes I feel at a disadvantage because I am not really computer literate and taking courses is very time consuming and expensive i.e. I still cannot manage to send or receive attachments and I had to get a typist to print my assignment even though I have Microsoft word.* Female BA respondent.

While the previous findings have established that a small minority of respondents have difficulty in accessing the technology, it is important to establish the extent to which respondents can use the technology. A series of questions asked respondents to indicate their level of skill in exercising a number of key functions which are an essential part of the toolkit for effective utilisation of the ICTs in education. Table 9 shows that almost all respondents (93.7%) expressed confidence that they could use an Internet browser to look up a specific website unaided. There was slightly less confidence in their ability to use email to send messages and attached files unaided (88.1%) and wordprocessing (87.7%) to type up a well-formatted essay or report, using tables and figures. However, there was a steep drop in ability to use spreadsheets (68.3%) and search bibliographic databases (62.8%). Just over half (53.5%) stated they could use presentation software to create a short talk with computer projected images, however, just over one fifth (22.7%) could participate in an online computer conference, interacting with other students and tutors. Respondents appear to have some of the basic skills required for use of PCs but further training and support would be needed to ensure that they could cope with new technologies in education.

Table 9 Expertise in using ICT functions

	Can do this unaided		Would need help		Have never done this		
Function/Task Description	N	%	N	%	N	%	Total
Internet browser: e.g. use Netscape or Internet Explorer to look up a specific website	697	93.7	32	4.3	15	2.0	744
Email: Send messages, attach files	652	88.1	59	8.0	29	3.9	740
Word processor: type a well formatted essay or report, using tables and figures	655	87.7	69	9.2	23	3.1	747
Spreadsheet: enter data, sort, filter, calculate	506	68.3	145	19.6	90	12.1	741
Bibliographic database: use online database to search for a specific publication	466	62.8	185	24.9	91	12.3	742
Presentation manager: create a short talk with computer projected images e.g. Powerpoint	397	53.5	149	20.1	196	26.4	742
Computer conferencing: interact with other students and tutors in an online conference	168	22.7	212	28.7	359	48.6	739

5.2 Training in computer skills

> *Technology in education has provided opportunities for me for further education that would otherwise have been very difficult due to living in a rural setting, with no work access to a medical/nursing library. I did the ECDL in preparation for my studies and also bought a computer, both expensive but certainly necessary and in the long term an investment due to typing/presentation skills and access to online libraries.* ODL Nursing Respondent

I think that older people taking part in a 'Distance Education programme' should not have to try to learn computer skills as well. I am computer literate, but for many in my class they would be seriously disadvantaged without computer skills and I feel it would put them off enrolling for 'Distance Learning'. I prefer face-to-face tutorials with hard copies of my course notes. Female BA Respondent

Respondents were asked to state the type of computer training, if any, they had received. The question was not precoded, however respondents were offered prompts (e.g. none, largely self taught, ECDL, short training courses, certificate/diploma/degree qualifications etc). The 709 usable responses received were categorised into three main groups (no formal training, the European Computer Driving Licence (ECDL) and 'other'). Over 40% of respondents stated they had no formal training in computers (35.5% described themselves as 'self-taught' while 6.3% said they had no training at all). Of the 42.6% who had taken some type of course, 31.6% had followed a range of short courses and 11.0% had taken courses in degree/diploma programmes). It is interesting to note that 15.5% had taken the ECDL which is a qualification pioneered in Ireland and has a relatively high takeup vis-à-vis other countries.

Table 10 analyses the levels of training received by programme, gender, age, and economic status.

Table 10. Analysis of ICT Training

Variable	Value	No formal training		ECDL		Other		Total
		N	%	N	%	N	%	
Programme	ODL BA	136	48.2	58	20.6	88	31.2	282
	IT	79	35.3	34	15.2	111	49.6	224
	Nursing	26	46.4	11	19.6	19	33.9	56
	MIT	23	59.0	3	7.7	13	33.3	39
	On-campus Psy	33	30.6	4	3.7	71	65.7	108
Gender	Male	139	48.3	34	11.8	115	39.9	288
	Female	157	37.7	73	17.5	186	44.7	416
Age Group	18-22	31	32.3	2	2.1	63	65.6	96
	23-30	54	43.2	20	16.0	51	40.8	125
	31-40	101	42.4	41	17.2	96	40.3	238
	41-50	75	46.3	26	16.0	61	37.7	162
	51-60	23	39.7	13	22.4	22	37.9	58
	60+	11	50.0	5	22.7	6	27.3	22
Economic Status	Student	26	30.2	4	4.7	56	65.1	86
	Employed	228	44.1	89	17.2	200	38.7	517
	Home maker	27	50.9	6	11.3	20	37.7	53
	Other	15	31.9	8	17.0	24	51.1	47
	Totals	297	41.9	110	15.5	302	42.6	709

On-campus students are more likely to have received some form of training than ODL students. Almost seventy percent (69.4%) of on-campus students took either the ECDL or some other course (mainly through the schools). This is no doubt an effect of vigorous government policies on ICTs in schools since the early 1990s. Of the ODL students, not surprisingly, undergraduate IT students are more likely to have taken courses (64.8% of IT students, compared with 51.8% of BA students). A high proportion of Masters in IT students report not having received formal training and this may be explained by the fact that the programmes followed by these students tend to be aimed at providing IT skills for graduates from non-IT backgrounds. Women are more likely than men to have taken formal courses (e.g. 17.5% of females took the ECDL compared with 11.8% of men). The older age groups are less like to have received training however, the most distinct variation is between the 18-22 group (i.e. mostly on-campus students, who have gone to university directly after school) and

those 23 years and upwards. Just under one third (32.3%) of the 18-22 group have received no formal training compared with 43.6% of those aged over 23 years. Level of training is also linked with economic status. It is surprising to note that a high proportion of those in employment (44.1%) have received no formal training, compared with just under one third of students (30.2%) and 31.9% of those in the 'other' category (unemployed, retired).

Part 6 Experience of ICTs in Learning

6.1 Usage of the Internet

Having established the level of access and expertise in using technology, respondents were asked a number of questions on their usage of the Internet in the previous three months. They were also asked to indicate how often they had been involved in a number of technology supported educational activities. The responses are summarised in Tables 11 and 12. Respondents were given a list of five activities involving use of the Internet and asked to indicate the frequency of use in the previous three months. As Table 11 shows, students made substantial use of the Internet for accessing educational material and for preparing assignments. Some 60% had used the Internet at least once a week in the previous three months to access educational material, and a further 28.1% had accessed on a monthly basis. The figures for preparing assignments are similar. However, just under 30% reported emailing fellow students or tutors at least once per week and just over one quarter (26%) reported that they had never done so. Just over 5% had ever participated in a video conference.

Table 11. Use of Internet in Previous Three Months

Used Internet to:	% No Response	% Never	% Monthly	% Weekly	% Daily	% Total	N
Email students/tutors	11.7	26.0	34.1	20.5	7.7	100.0	751
Access educational material	4.0	7.9	28.1	47.0	13.0	100.0	751
Prepare Assignments	5.3	7.9	36.0	40.5	10.4	100.0	751
Video conference	17.6	77.4	3.5	1.2	0.4	100.0	751
Travel/holiday arrangements	13.8	32.0	45.5	7.9	0.8	100.0	751

6.2 Experience of ICT in education

I am not anti eLearning but my experience of Pageout proved to me that eLearning has to improve a lot or be very good, before it can substitute for the tried trusted methods. Depends on subject matter too. ELearning can be a very useful aid in subject like history but is not substitute for reading work by historians. Female BA Respondent

The data on usage of email and accessing educational material were further analysed by programme, to establish if there are any variations in patterns of usage. Table 12 demonstrates clearly that students vary in their usage of the Internet depending on the programme on which they are registered, as well as mode of study. On-campus students made consistently more use of the Internet for both email and accessing educational material. Over half (55.5%) of on-campus students reported emailing fellow students or tutors at least once per week, compared with just 37.1% of ODL undergraduate IT students. ODL students in other programmes were even less likely to report emailing students/tutors. Just over one fifth (20.3%) of nursing students and 12.0% of BA student reported using email at least once per week. The data show that respondents reported high usage of the Internet for accessing educational material, however, again, rates of usage vary substantially by programme. Almost all (95%) of on-campus respondents had accessed educational material on the Internet at least once per week, compared with over two thirds (69.4%) of ODL undergraduate IT

respondents. Again, BA respondents were least likely to have used the Internet; just over two fifths (41.8%) had accessed educational material at least once per week, compared with just under half (49.2%) of nursing respondents.

Table 12. Use of Internet analysed by Programme

a) Email students/tutors

Programme		No response		Never		Monthly		Weekly		Daily		Total	
		N	%	N	%	N	%	N	%	N	%	N	%
ODL	BA	59	19.7	105	35.1	99	33.1	27	9.0	9	3.0	299	100.0
	IT	11	4.7	38	16.2	99	42.1	61	26.0	26	11.1	235	100.0
	Nursing	7	11.9	25	42.4	15	25.4	11	18.6	1	1.7	59	100.0
	MIT	4	10.3	5	12.8	19	48.7	9	23.1	2	5.1	39	100.0
On-campus	Psychology	7	5.9	22	18.5	24	20.2	46	38.7	20	16.8	119	100.0
	Total	88	11.7	195	26.0	256	34.1	154	20.5	58	7.7	751	100.0

b) Access educational material

Programme		No response		Never		Monthly		Weekly		Daily		Total	
		N	%	N	%	N	%	N	%	N	%	N	%
ODL	BA	23	7.7	41	13.7	110	36.8	111	37.1	14	4.7	299	100.0
	IT	4	1.7	10	4.3	58	24.7	128	54.5	35	14.9	235	100.0
	Nursing	0	0.0	6	10.2	24	40.7	25	42.4	4	6.8	59	100.0
	MIT	3	7.7	2	5.1	13	33.3	17	43.6	4	10.3	39	100.0
On-campus	Psychology	0	0.0		0.0	6	5.0	72	60.5	41	34.5	119	100.0
	Total	30	4.0	59	7.9	211	28.1	353	47.0	98	13.0	751	100.0

In an attempt to further probe the level of experience in using ICTs in educational contexts, respondents were given a list of five educational scenarios (derived from the SPOTPLUS questionnaire): academic support and advice from a teacher by email; a course website with interactive features, such as assessment, online tasks or learning materials; an online discussion forum; video conferencing; virtual learning environment (VLE) such as WebCT, Blackboard or Pageout. Respondents were asked to indicate the frequency, if any, of their involvement in these scenarios. As Table 13 shows, over half (59.2%) of respondents had received tutor support by email at least once. Just 39.5% had experience of a course supported by a website; under one quarter (23.6%) had experience of an online discussion forum; 18% had participated in a video conference, and only 12.5% had experience of a VLE.

Table 13. Involvement in Online Education

Online educational activity	Several Times		Once		Never		Never heard of this		No response		Total	
	N	%	N	%	N	%	N	%	N	%	N	%
Tutor support	306	40.7	139	18.5	282	37.5	17	2.3	7	0.9	751	100.0
Course Website	172	22.9	125	16.6	397	52.9	50	6.7	7	0.9	751	100.0
Online discussion forum	127	16.9	50	6.7	526	70.0	36	4.8	12	1.6	751	100.0
Video Conferencing	84	11.2	51	6.8	571	76.0	31	4.1	14	1.9	751	100.0
VLE (e.g. WebCT)	43	5.7	51	6.8	491	65.4	154	20.5	12	1.6	751	100.0

When the data on involvement in online education are further analysed by programme, it is clear that ODL IT respondents and on-campus respondents are more likely to have been involved in online education. Table 14 breaks down the figures for those who participated in the five activities at least once by programme. Over four fifths (84.6%) of postgraduate IT and over three quarters 76.8%) of undergraduate IT

students received support by email from tutors, compared with less than half (47.1%) of BA respondents and one third (32.8%) of nursing respondents. Almost two thirds (63.0%) of on-campus respondents had received similar support. While involvement in the other four activities is considerably less, the pattern of disparities between the technical/non technical disciplines in the ODL group remains, as does the disparity between the on-campus/ODL groups.

Table 14. Involvement by Online Education by Programme

Online educational activity – at least once	ODL Respondents								On-Campus	
	BA	%	IT	%	Nursing	%	MIT	%	Psy	%
Tutor support	139	47.1	179	76.8	19	32.8	33	84.6	75	63.0
Course Website	81	27.6	123	52.6	8	13.8	21	53.8	64	53.8
Online discussion forum	43	14.7	86	37.2	5	8.6	12	31.6	31	26.1
Video Conferencing	34	11.7	72	31.3	6	10.3	10	25.6	13	10.9
VLE (e.g. WebCT)	25	8.6	49	21.0	1	1.7	5	12.8	14	11.8

The previous sections have analysed data in respect of respondents' access to technology, their expertise in using the technology, and the extent of their experience in using the Internet for educational purposes. These analyses have shown that respondents are not a homogenous group, and that the major differentiating factors are programme of studies and mode of study. Programmes of study vary in terms of their population by gender, age, economic status, motivation for study, previous educational background. Respondents on technology programmes are more likely to be male, younger, employed, and motivated by extrinsic factors than students in the non-technical disciplines, who are largely female, older, less likely to be employed and more motivated by intrinsic factors. The technology group are also more likely to have greater access to technology, greater expertise in using the technology and more experience in ICTs in education. However, it is also useful to note that mode of study differentiates the groups. The on-campus group is concentrated into the 18-22 age group, and is more likely than the ODL group to use ICTs in education. This is of course facilitated by the fact that these are full-time students who are in an educational environment for most of the working day, with access (however restricted) to a wide range of technology, without direct cost to themselves. ODL students, on the other hand have a number of demands on their time, and are restricted in both the time and duration of access to technology, most of which must be paid for out of their income. In the next section, respondents' attitudes to ICTs in education will be described and analysed.

Part 7 Attitudes to ODL/eLearning

The traditional methods of teaching should be erased completely. Female On-campus student

Technology cannot be allowed to disadvantage or marginalise sections of the population with no access. Technology should start by making resources available to all e.g. texts, library etc. … Technology needs to provide active learning experience; reading text off the VDU is worse than text on page. Technology has a role to play in reforming antiquated academic structures in Ireland and Abroad. Male BA student

Technology especially Internet and advanced communications, is now a mainstay of many types of activity and not just economic and is a part of modern life. So it has to be given a bigger place in education. Distance learning, conventional courses and adult education are ideal areas for greater expansion. Female BA Student

7.1 Attitudes to ICTs in Education – Factor Analysis

A series of 40 Likert statements were drawn up to probe attitudes to various aspects of ICTs in education. The statements were selected from a range of sources to cover the maximum amount of nuances and to provide for checking of internal consistency. The list included statements designed to measure respondents' computer self-efficacy, their value on ICTs in education, their attitude to ICTs as a response to social demands on education and preferences for learning approach. Ten statements were drawn from the questionnaire used by Jill McMahon in her study of the attitudes of students in Queen's University Belfast (McMahon 1997). These statements comprised two factors identified in the study measuring 'computer confidence' (e.g. 'I would generally feel ok trying something new on the computer') and 'computer valuing' (e.g. 'All students should learn something about computers as part of their course'). A further twelve statements were derived from the SPOTPLUS questionnaire designed by EU Minerva funded project team led by the ESIB – the National Unions of Students in Europe to examine student perspectives on technology in teaching and learning. This questionnaire was administered via the web to students throughout Europe in 2002[5] These statements probed attitudes to both negative (e.g. 'Good access to a tutor requires face to face contact') and positive aspects of technology (e.g. 'I think that ICTs can improve my learning') as well as preferences for traditional learning approaches (e.g. 'I prefer reading from a printed text'). The remaining eighteen statements were derived from previous surveys carried out by the author on student attitudes to societal imperatives for technology in education (e.g. 'Access to the Internet is essential for the modern learner'), as well as the impact of ICTs on the quality of the learning experience (e.g. 'Computers reduce the quality of the learning experience'(Mac Keogh 2001)). Respondents were asked to indicate the extent to which they agreed or disagreed with the statements and responses were coded 1 (strongly agree), 2 (generally agree), 3 (mixed views), 4 (generally agree) and 5 (strongly agree).

[5] Results of this survey were not available at time of writing. It is hoped that when available this paper will be redrafted to take account of the findings.

Table 15. Attitudes to ICTs in Education – responses (1 = strongly agree, 5 = strongly disagree)

Source	Statement No	Statement	Mean	Std. Deviation	N
KMK	3	ICTs in education will disadvantage students who cannot afford the technology	2.14	1.09	749
KMK	8	Course information should be available on the web	1.57	0.86	748
KMK	10	Computer based conferencing would help learning	2.53	0.84	742
KMK	11	Computer access to libraries is preferable to personal visits	2.65	1.17	746
KMK	12	Access to the internet is essential for the modern learner	1.83	0.97	747
KMK	13	We should use ICT in education because we live in the Information Society	2.08	0.92	748
KMK	14	Time spent learning on the computer is time well spent	2.13	0.83	749
KMK	22	ICTs in education will help to develop a European workforce qualified to compete against global competition	2.27	0.95	740
KMK	24	Quality information is hard to find on the web (WWW)	2.93	1.15	744
KMK	26	Computer based learning is the way of the future	2.21	0.92	746
KMK	31	Courses should be presented on CD-ROMs	2.48	1.03	745
KMK	32	Computers can bring students together to share ideas and problems	2.60	0.96	748
KMK	33	Computers reduce the quality of the learning experience	3.23	0.96	748
KMK	34	Computer based materials are more likely to be up to date	2.27	0.82	747
KMK	35	Anyone can develop the skills needed to use new technology	2.08	0.81	747
KMK	36	The web allows information to be made available at just the right time	2.24	0.84	744
KMK	37	Investing in ICTs in education is a waste of money	4.20	0.77	742
KMK	39	ICTs provide greater flexibility in learning	2.02	0.75	742
MCMAHON	2	I would generally feel ok trying something new on a computer	1.92	0.93	745
MCMAHON	5	I feel threatened by the thought of having to use a computer	4.29	1.01	749
MCMAHON	6	I avoid using computers whenever I can	4.26	1.10	744
MCMAHON	17	I feel fairly confident when working with computers	1.88	1.02	747
MCMAHON	20	I would like to know more about computers	1.85	0.94	749
MCMAHON	21	I'm often unsure what to do when using a computer	3.55	1.25	748
MCMAHON	25	All students should learn something about computers as part of their course	1.76	0.84	748
MCMAHON	29	I do not understand how people can enjoy working with computers	3.86	1.05	750
MCMAHON	30	I am generally quite good with computers	2.09	1.08	747
MCMAHON	38	If I could afford to I would buy a home computer	1.52	0.82	692
SPOTPLUS	1	I prefer to learn on my own	2.58	0.94	746
SPOTPLUS	4	I prefer reading from a printed text	2.04	0.94	744
SPOTPLUS	7	Good access to a tutor requires face to face contact	2.56	1.15	750
SPOTPLUS	9	Computer based teaching/learning is lacking in 'human interaction' since there is no face to face contact	2.54	1.09	750
SPOTPLUS	15	Learning with ICT requires highly developed study skills	2.85	0.95	746
SPOTPLUS	16	If studying with a computer turned out to be too complex, I would like to return to traditional education methods	2.47	1.09	744
SPOTPLUS	18	I like to learn in teams or small groups	2.51	1.01	748
SPOTPLUS	19	I think that ICTs can improve my learning	2.17	0.85	746
SPOTPLUS	23	In general learning with ICT is very time consuming	2.89	0.98	738
SPOTPLUS	27	I think that in online courses, small-group learning may become disorganised	2.85	0.84	746
SPOTPLUS	28	I prefer to study with traditional education methods	2.85	1.02	744
SPOTPLUS	40	I would like to cooperate on learning tasks with people from different countries	2.38	0.97	741

Table 15 provides a summary of the mean response to each statement. Statement 38 taken from the McMahon study ('If I could afford to I would buy a home computer') caused confusion among some respondents who already owned a PC and who were uncertain about how to answer the question. This resulted in a higher non-response to this question compared to the other statements (53 students did not respond to this statement compared with the next highest non-response of 13 to question 23).

Accordingly, this statement was withdrawn from the subsequent factor analysis. The main functions of Factor Analysis are to reduce the number of variables and to detect structures in relationships between variables (Aron and Aron 2003). Using SPSS to carry out the calculations, Principal Components Analysis identified eight factors with eigenvalues above 1 (the normal cut-off point for extracting factors (Cattell 1966)). However, a Scree test indicated that no more than four factors (accounting for 44.6% of the total variance) should be considered. The factors were rotated using the varimax method with Kaiser normalisation. This yielded the factor structure outlined in Table 16.

Table 16. Factor Loadings Matrix

Orthogonal Factor Loading Matrix for Factors				
Factor 1: Computer Confidence	Factor 1	Factor 2	Factor 3	Factor 4
I feel fairly confident when working with computers	0.859	0.092	-0.061	0.066
I am generally quite good with computers	0.846	0.110	-0.037	0.058
I feel threatened by having to use a computer	-0.826	-0.159	0.146	-0.140
I avoid using computers	-0.804	-0.140	0.149	-0.120
I'm often unsure what to do when using a computer	-0.777	-0.018	0.071	-0.067
I would generally feel ok trying something new on a computer	0.737	0.176	-0.036	0.163
I don't understand how people enjoy working with computers	-0.575	-0.214	0.184	-0.107
Factor 2: Valuing ICTs				
ICTs will develop European workforce against global comp	0.025	0.697	0.044	0.079
ICT should be used in the Informatio n Society	0.129	0.689	-0.032	0.042
I would like to know more about computers	0.066	0.646	-0.241	0.018
I think that ICTs can improve my learning	0.236	0.641	-0.196	0.232
Time spent learning on the computer is time well spent	0.198	0.622	0.013	0.197
Computer based learning is the way of the future	-0.005	0.578	-0.037	0.175
All students should learn about computers	0.202	0.575	0.099	0.007
ICTs provide greater flexibility in learning	0.131	0.569	-0.150	0.275
I would like to cooperate on learning tasks with other countries	0.112	0.546	-0.025	0.363
Investing in ICTs in education is a waste of money	-0.186	-0.538	0.120	-0.110
Access to the internet is essential for the modern learner	0.187	0.511	0.022	-0.058
Factor 3: Impact on Pedagogy				
Computer based teaching lacks human interaction	-0.136	-0.161	0.660	-0.230
ICTs in education will disadvantage poor students who cannot afford the technology	0.038	-0.029	0.588	-0.006
Good access to a tutor requires face to face contact	-0.211	-0.035	0.572	-0.339
Learning with ICT requires highly developed study skills	-0.126	0.168	0.541	0.048
I prefer to study with traditional methods	-0.318	-0.334	0.462	-0.297
If studying with a computer turned out to be too complex, I would like to return to traditional education methods	-0.268	-0.305	0.454	-0.025
Computers reduce the quality of the learning experience	-0.261	-0.321	0.361	-0.326
Eigenvalue	10.25	3.27	2.15	1.67
% of Variance	26.28	8.39	5.51	4.29
Cumulative %	26.28	34.66	40.17	44.46
Cronbach's Alpha Coefficient	.9142	.8721	.7420	.6654

The reliability for each factor was evaluated using Cronbach's Alpha. The first factor, comprises seven statements from McMahon's computer confidence factor, accounting for 26.28% of variables. The reliability coefficient (Cronbach's Alpha) was .9142 suggesting that there was a high degree of internal consistency in the items loading on to this factor and confirms the robustness of that measure. The second factor,

comprising eleven statements accounts for 8.39% of the variance. This factor appears to relate to positively valuing ICTs. Cronbach's Alpha was .8721. The third factor accounts for 5.51% of the variance and comprises seven statements which appear to relate to concerns about the impact of technology on pedagogy and the learning experience. The Cronbach's Alpha for this factor was .7420. The fourth factor accounted for 4.29% of the variance and comprised five statements. However, Cronbach's Alpha was .6654, suggesting a lower internal consistency. In view of the difficulty of interpreting Factor 4 it was decided to retain the first three factors for further analysis.

7.2 Attitudes by characteristics of respondents

The often conflicting attitudes to ICTs expressed by respondents are illustrated in the following responses:

> *Learning courses can be available to all with computers, Rural living does not hinder one's ability to access info/education. For this reason I fully support E-learning. Learning is not now restricted to those living beside colleges, institutions for education. It will give equal opportunity to all who wish to further their education. The cost etc may create inequalities.* Female BA respondent

> *I would rather avoid computers outside work and find Oscail's existing methods suit me very well.* Female BA respondent

> *I believe it is elitist. Not everyone has access to a computer. At home or in an Internet shop, if accessing the Internet, it all costs money, even to print is expensive. If you missed out going to college after secondary school and after working some years can just about afford to go to college through distance education then Internet access is an unnecessary expense*. Female BA respondent

> *I would not like to see use of technology excluding people from education. I think it would be important for traditional methods of learning to exist side by side with the latest technology. However there is such a wealth of info available in compact form on cd-rom, Internet etc. It would be a shame not to make use of it. It should be stressed that technology is only a tool, it does not replace the hand graft of learning.* Female BA respondent

The items identified by the three factors were used to create three scales which could then be related to other variables including programme of study, and gender. By summing up the items, respondents were allocated a score for each factor. Scores were then divided into three categories for easier analysis. The distribution of respondents according to Factors scores is given in Table 17.

Table 17. Analysis of Attitudinal Factors by Programme and Gender

a) Factor 1: Computer Confidence Measure

Programme		High Confidence Score (7-14)		Moderate Confidence Score (15-21)		Low Confidence Score (22-35)		Total	
		N	%	N	%	N	%	N	%
ODL	BA	150	52.4	83	29.0	53	18.5	286	100.0
	IT	209	90.5	21	9.1	1	0.4	231	100.0
	Nursing	26	44.1	18	30.5	15	25.4	59	100.0
	MIT	30	78.9	7	18.4	1	2.6	38	100.0
On-Campus	Psy	50	43.1	45	38.8	21	18.1	116	100.0
	Total	465	63.7	174	23.8	91	12.5	730	100.0
Gender		High Confidence Level		Moderate Confidence Level		Low Confidence Level		Total	
	Male	224	75.4	56	18.9	17	5.7	297	100.0
	Female	237	55.6	117	27.5	72	16.9	426	100.0
	Total	461	63.8	173	23.9	89	12.3	723	100.0

b) Factor 2: Valuing ICTs Measure

Programme		High Value Score (11-22)		Neutral Value Score (23-33)		Low Value Score 34-55)		Total	
		N	%	N	%	N	%	N	%
ODL	BA	120	43.6	131	47.6	24	8.7	275	100.0
	IT	150	66.4	73	32.3	3	1.3	226	100.0
	Nursing	36	65.5	17	30.9	2	3.6	55	100.0
	MIT	18	50.0	14	38.9	4	11.1	36	100.0
On-Campus	Psy	46	39.7	68	58.6	2	1.7	116	100.0
	Total	370	52.3	303	42.8	35	4.9	708	100.0
Gender		High Value		Neutral		Low Value		Total	
	Male	159	55.6	119	41.6	8	2.8	286	100.0
	Female	209	50.0	182	43.5	27	6.5	418	100.0
	Total	368	52.3	301	42.8	35	5.0	704	100.0

c) Factor 3: Impact on Pedagogy Measure

Programme		Negative Impact (7-14)		Neutral Impact (15-21)		Positive Impact (22-35)		Total	
		N	%	N	%	N	%	N	%
ODL	BA	74	26.1	161	56.7	49	17.3	284	100.0
	IT	21	9.1	136	59.1	73	31.7	230	100.0
	Nursing	12	20.7	27	46.6	19	32.8	58	100.0
	MIT	5	13.5	21	56.8	11	29.7	37	100.0
On-Campus	Psy	13	11.0	74	62.7	31	26.3	118	100.0
	Total	125	17.2	419	57.6	183	25.2	727	100.0
Gender		Negative Impact		Neutral Impact		Positive Impact		Total	
	Male	44	15.0	188	63.9	62	21.1	294	100.0
	Female	79	18.5	231	54.0	118	27.6	428	100.0
	Total	123	17.0	419	58.0	180	24.9	722	100.0

From Analysis of Table 17, it may be deduced that ODL technology respondents, as would be expected, rate higher on the computer confidence scale than either ODL non-technology respondents or on-campus respondents. Almost all (90.5%) of ODL undergraduate IT respondents scored in the high computer confidence category, compared with just 52.4% of ODL BA respondents and 43.1% of on-campus

respondents. Again, not surprisingly, technology respondents scored higher on the valuing ICT scale, with two thirds (66.4%) of undergraduate IT respondents rating ICTs highly, compared with just 43.6% of BA respondents. However, nursing respondents rated highly on this measure with almost three quarters of respondents scoring in the high value category (65.5%).

Just over one quarter (25.2%) of respondents scored in the highly positive impact category for Factor 3: Impact on Pedagogy. ODL BA respondents appear to be least positive towards the impact of technology on the student experience (17.3% were positive compared with 31.7% of IT or 32.8% of Nursing respondents). It is interesting to note that a higher proportion of respondents fall into the neutral category, displaying a high degree of reservations and mixed views on the potential impact of technology on the educational experience.

7.3 Rating of potential of ICTs

Respondents were presented with a list of educational opportunities which could be enhanced by ICTs (the items were drawn from the SPOTPLUS questionnaire). Only a small percentage of respondents rated these opportunities as not important, however it is interesting to note the variation in levels of importance ascribed to the different elements, depending to a certain extent on the potential impact on the individual learner. Table 18 provides the percentages of those who rated items as very important, broken down by programme. As the data show, the highest levels of importance were ascribed to ICTs' potential to widen access to those in remote regions (74.9%), or to disadvantaged students (71.2%). There is also widespread acknowledgement of the importance of providing improved services and support to students (67.3% consider it very important that ICTs provide more effective feedback to students; 60.9% consider widening sources of information to students to be very important). There is less support for development of employability skills (55.9%). However, support drops substantially in respect of collaboration between students, and more collaborative learning approaches. Just over one third (35.4%) rated development of a more autonomous learner centred approach to be very important, compared with 14.9% who rated a more collaborative and less individual approach to learning as very important. Responses varied between programmes, with non-technical ODL students, and in particular nursing respondents, being more supportive of the potential of ICTs across the range of opportunities, whether for equalising access to higher education or for developing more collaborative approaches to learning. For example, 59.3% of nursing respondents rated development of autonomous learner centred approaches as important compared with just 29.9% of undergraduate IT respondents, or 15.4% of MIT respondents.

Table 18. Importance of opportunities which could be enhanced by ICTs

Opportunities which could be enhanced by ICT:	% Rating element 'Very Important'					
	% BA	% IT	% Nursing	% MIT	% Psy	Total
Access from remote regions to HE	80.8	73.2	81.4	57.9	66.4	74.9
Access by disadvantaged students to HE	74.7	68.8	79.7	42.1	72.4	71.2
Providing more effective/frequent feedback to students	72.0	67.0	78.0	53.8	55.5	67.3
Widening sources of information to students	61.2	60.7	64.4	56.4	60.5	60.9
Development of employability skills	61.0	56.0	61.0	38.5	46.2	55.9
Development of autonomous learner centred approach in HE	42.6	29.9	59.3	15.4	23.5	35.4
Collaboration between students in other countries	32.5	29.4	43.1	12.8	19.3	29.2
Internet courses between other institutions and countries	32.5	28.9	43.9	15.4	16.8	28.8
More collaborative/less individual approach to learning	18.6	12.1	18.6	12.8	10.2	14.9

7.4 Preference for mode of study

Ideally, full-time, face-to-face with online support etc is the best method for learning. Unfortunately, this option is not available to all students. I feel it is essential that a combination of face-to-face interaction with tutors and other students along with a combination of printed texts and IT access will create a balance.' Female BA student.

Respondents were asked to rank a list of seven modes of study in order of preference (traditional on campus, full-time, face-to-face lectures and tutorials or enhanced with online support; traditional on campus, part-time, face-to-face lectures and tutorials, or enhanced with online support; traditional ODL or enhanced with online support; or eLearning, defined as a mix of written course materials, online materials, online tutorial support and interaction with other students and tutors). Table 19 shows the first preferences for mode of study broken down by programme. As would be expected, on-campus students strongly support full-time on-campus education enhanced by online learning with over half (58.4%) ranking this as their first preference, while almost one quarter (24.8%) opt for part-time face-to-face online enhanced mode as their first preference. Just 2.7% of the on-campus group rated ODL as their first preference. As would be expected, ODL students are more inclined to rank ODL enhanced by online support as their first preference, although this group tended to distribute their preferences more widely across the options (37.7% of Nursing; 29.1% IT/MIT; 25.7% BA selected online enhanced ODL as their first preferences). For the ODL IT and BA respondents, the next largest group allocated their first preference to full-time education enhanced by online learning (23.3% and 25.2% respectively rated this as first preference), whereas the second largest group (22.6%) of Nursing respondents opted for part-time education enhanced by online learning. From a number of comments it is apparent that the respondents' circumstances (employment status, distance from universities, and availability of flexible programmes locally) tend to dictate preferences and that for ODL students the choice of study mode is severely limited. One female BA student commented

'If I had the choice, on campus education would be the best option but distance learning is very flexible and compatible with home/work commitments'. Female BA student

Of interest is the fact that over four fifths of all respondents (80.8%) indicated their first preference for online enhanced learning (whether full-time, part-time, ODL or eLearning). This, of course, leaves a relatively large group who appear to reject any form of online enhancement to their studies. Rejection of technology is highest among ODL BA respondents (28.3% selected non-technology enhanced modes as first preference, compared with 18.8% of nursing respondents). One male BA student commented:

'The necessity for human contact should always be kept in mind, as should the fundamental and traditional love of books and reading which is and should be an integral part of Humanities courses in particular. Too much technology may be sterile, intellectually. Technology is here to stay but should be seen only as an aid to flesh and blood'. Male BA student

The 'technology resistant' group among ODL IT and on-campus respondents was somewhat lower (12.4% of respondents in both groups selected non-technology enhanced modes as their first preference). Even where respondents are supportive of online enhancement, there is still strong support for some element of face-to-face contact, with eLearning being placed lowest of the four online enhanced modes of study (just 2.7% of on-campus respondents, compared with 16.7% of IT/MIT, 13.2% of nursing and 9.7% of BA opted for eLearning as their first preference). According to a female BA student

'Distance education enables those working to participate on courses they would otherwise not have access to. While online support is better than nothing I would not like it to be the only mode of communicating with students and tutors. If I was communicating with another student or students regularly without seeing a face I think it would freak me a little.' Female BA student

An ODL MIT student also favoured face-to-face contact:

Technology provides brilliant opportunities for improvement in learning. I am however of a disposition that favours personal contact in training and education. Some people I believe, learn much better when material is explained to them once (i.e. lectures). Male MIT student

Table 19. Preferences for mode of study by programme

	BA		IT (incl MIT)		Nursing		On-campus Psy		Total	
Mode of Study	Rank	%	Rank	%	Rank	%	Rank	%	Rank	%
Full-Time + Online	2	23.3	2	25.2	5	7.5	1	58.4	1	28.8
ODL + online	1	25.7	1	29.1	1	37.7	7	0.0	2	23.4
Part-Time + Online	4	12.8	3	16.7	2	22.6	2	24.8	3	17.0
ELearning	5	9.7	4	16.7	3	13.2	4	4.4	4	11.6
Full-time	3	13.6	6	4.3	5	7.5	3	5.3	5	8.4
ODL	6	9.3	5	6.4	4	11.3	6	2.7	6	7.3
Part-time	7	5.4	7	1.7	7	0.0	4	4.4	7	3.5
N	257	100.0	234	100.0	53	100.0	113	100.0	657	

7.5 Who should pay?

Generally speaking, I have nothing against the use of Internet to deliver the IT course. It is a matter of whether I can afford a computer and the Internet access. At the moment I can afford neither of them
Female IT Student

As a further measure of attitudes to the use of ICTs in education, respondents were asked 'If a course requires you to purchase a personal computer, what is the maximum price you would be prepared to pay?'. The precoded responses included the option that the respondent could not afford to pay anything, or would not want to take a course requiring a PC. Analysis of Table 20 shows that just over one fifth (21.6%) of respondents either could not afford to pay anything, or would not want to take a course which required a computer. Just under one third (32.3%) would be prepared to spend up to €1000 on a PC, while another third (33.0%) would be prepared to spend between €1001-1500. Willingness to purchase computers varied substantially among programmes and mode of study. Two fifths (42.0%) of on-campus respondents would not buy a PC (33.6% because they could not afford to pay and 8.4% because they would not want to take a course requiring a PC). Among ODL respondents, BA and Nursing groups are least likely to purchase PCs. A higher proportion of BA respondents state they can't pay for a PC (11.8% compared with 7.2% Nursing, 7.0% IT and 5.41% MIT). However BA respondents are also more likely to state that they would not want to take a course requiring a PC (14.8% compared with 10.9% Nursing, 5.4% MIT and just 0.9% IT). When the figures are further broken down by gender it is apparent that over one quarter (27.7%) of women would not purchase a PC compared with just 13.2% of men (17.5% women can't pay compared with 7.3% of men and 10.2% won't pay compared with 5.9% of men). While there is a disparity between men and women across the programmes, there is an interesting variation in the pattern of reasons for non-purchase. For example, while just 5.1% of male BA respondents cannot afford to pay compared with 14.8% women, male respondents on this programme are more resistant to taking a PC based course, with 17.9% stating that they would not want to take a course requiring a computer compared with 14.8% of female BA respondents. It is also interesting to note that over half (52.6%) of male respondents on the full-time on-campus programme cannot afford to pay for a PC compared with under one third of female respondents (30.0%).

Finally, respondents were asked an open-ended question 'If access to personal computers and the Internet are compulsory in educational courses, who do you think should cover the cost?'. As Table 21 shows, just over one quarter (25.9%) of respondents consider that the student should pay, a further 14.4% consider that the costs should be shared between the student and the Institution, while over half (59.6%) consider that the cost should be borne by another source (institution, government, Internet providers etc). Responses varied between programmes, with MIT respondents (i.e. those with the highest incomes) being most likely to suggest that the student should bear the cost. Almost half (48.6%) of MIT respondents compared with just over one third (35.1%) of IT and approximately one quarter of BA (26.8%) and Nursing (23.5%) respondents agreed that students should bear the cost. It is interesting to note than nine out of ten on-campus students (90.4%) felt that the cost should be borne by other institutions or organisations and only 1.8% considered that

the student should bear the cost. The response with regard to student payment was further broken down by gender. Male respondents were more likely to agree that students should pay (over one third (34.1%) compared with one fifth (20.4%) of females). This disparity persisted among male and female BA, IT and MIT respondents. The male/female disparity in the Nursing and on-campus groups does not emerge in view of the small number of males in the nursing cohort and the small number of on-campus respondents (2 in total) who considered that students should pay.

Table 20. Willingness to Pay for PCs if required for course

Willingness to Pay		BA		IT		Nursing		MIT		On-campus		Total	
		N	%	N	%	N	%	N	%	N	%	N	%
Can't afford		31	11.79	16	6.99	4	7.27	2	5.41	40	33.61	93	13.23
Wouldn't want PC course		39	14.83	2	0.87	6	10.91	2	5.41	10	8.40	59	8.39
<€1000		71	27.00	75	32.75	15	27.27	10	27.03	56	47.06	227	32.29
€1000-1500		86	32.70	101	44.10	17	30.91	17	45.95	11	9.24	232	33.00
€1500+		36	13.69	35	15.28	13	23.64	6	16.22	2	1.68	92	13.09
Total		263	100.00	229	100.00	55	100.00	37	100.00	119	100.00	703	100.00
Gender		N	%	N	%	N	%	N	%	N	%	N	%
Can't pay	M	4	5.1	6	3.7	0	0.0	1	3.8	10	52.6	21	7.3
	F	27	14.8	10	15.6	4	7.4	1	9.1	30	30.0	72	17.5
Won't pay	M	14	17.9	1	0.6	0	0.0	1	3.8	1	5.3	17	5.9
	F	25	13.7	1	1.6	6	11.1	1	9.1	9	9.0	42	10.2

The key points to emerge from examination of respondents' attitudes to payment for the basic tools required to utilise new forms of learning is that there is a sizeable group (approximately one quarter) who can't or won't pay for access, and an even larger group (almost three quarters) who consider that the student should not have to bear the cost of access alone. However, students are not a homogenous group, and the figures show that some groups are more likely to be amenable to investing in the technology: e.g. post-graduate level respondents, and those taking IT programmes are more likely to invest than humanities and on-campus students. It is therefore likely that a 'one size fits all' approach will be unsuccessful and that institutions must tailor their approaches to the financial and attitudinal circumstances of their target audiences.

Table 21. Who should pay for access to PCs and Internet in educational courses?

Who should pay?		BA		IT		Nursing		MIT		On-campus		Total	
		N	%	N	%	N	%	N	%	N	%	N	%
Student		69	26.8	71	35.1	12	23.5	17	48.6	2	1.8	171	25.9
Share costs		37	14.4	37	18.3	8	15.7	4	11.4	9	7.9	95	14.4
Others Pay		151	58.8	94	46.5	31	60.8	14	40.0	103	90.4	393	59.6
Total		257	100.0	202	100.0	51	100.0	35	100.0	114	100.0	659	100.0
Gender		N	%	N	%	N	%	N	%	N	%	N	%
Student should pay	M	23	30.3	54	37.2	0	0.0	14	51.9	0	0.0	91	34.1
	F	45	25.3	17	30.9	12	24.0	3	37.5	2	2.1	79	20.4

Part 8 Attitudes to EU Role in Educational Policy Making

Technology is not only required but essential in modern Education. But involvement of the EU in the Irish education system would be very worrying at any level. Male IT Respondent

Technology should be considered as a tool for helping people reach their potential The EU needs a qualified workforce if it is truly to become an international economic and social force for good. Not just for the people of the EU but for all people. Male IT Respondent

8.1 Awareness of the EU

This Report started by posing the question: 'How do EU policies on ICTs in education resonate with students?'. The previous sections have dealt with the question of how respondents react to technology in education. In this section, their response to the involvement of the EU in educational policy making, specifically in the area of ICTs is probed. Respondent were first asked a number of questions designed to test their knowledge of the EU, their attitudes to the EU project, before seeking their response to EU involvement in the specific area of education policy.

Respondents were asked to rate their knowledge of the European Union on a scale of 1 to 10, where 1 meant that the respondent knew nothing at all and 10 meant they knew a great deal. This is a standard question used on most Eurobarometer questionnaires. For ease of analysis, the ten-point scale was reduced to five categories (1-2 = no knowledge; 3-4 minimal knowledge; 5-6 moderate knowledge; 7-8 high level of knowledge; 9-10 great deal of knowledge). A survey of the Irish adult population in November 2002 found that 12% rated their knowledge in the highest categories (Sinnott 2003). In contrast, respondents to this survey regarded themselves as more informed with IT and BA respondents rating themselves best informed. Approximately one third (35.5%) of IT respondents and BA (32.7%) respondents rated themselves as having a high level of knowledge or great deal of knowledge compared with approximately one quarter of Nursing (25.8%) and MIT (28.2%) respondents. It is of interest to note that only 11.9% of on-campus students rate themselves in the top two categories of knowledge. At the other end of the spectrum, MIT respondents were most inclined to rate themselves as having little or no knowledge of the EU. Over half (51.3%) of MIT respondents rated themselves in the lowest category, compared with in the region of one third in each of the other ODL programmes (39.7% IT, 34.0% BA and 31.6% IT). Over one quarter (26.3%) of on-campus students rated themselves in the lowest category of knowledge. Among the possible explanations for these differences would be the different cultural backgrounds between the ODL respondents (mostly Irish) and the on-campus respondents (mostly UK).

In order to further test respondents' knowledge of the EU a number of specific questions were asked. These related to the number of MEPs representing Ireland (15) or Northern Ireland (3) and the method of electing the European Parliament. As Table 22 demonstrates, respondents were better informed about the method of election than about the number of MEPs. Over half (51.4%) of respondents gave the correct

response about method of election (direct election by citizens) while only 16.6% were able to give the correct number of MEPs. On-campus respondents appeared to be least informed in both cases, with just 2.6% providing the correct number of MEPs and only 12.8% giving the correct method of election. Levels of knowledge varied somewhat between ODL programmes, with BA respondents more inclined to provide the correct answer for number of MEPs (23.8% compared with 17.0% of Nursing, 15.4% of IT and 13.2% of MIT). Over three quarters (76.9%) of MIT respondents gave the correct method of election compared with almost two thirds of BA (64.3%), over half of IT (54.8%) and just 37.0% of Nursing respondents.

Figure 2: Self rated knowledge of the European Union by Programme of Studies

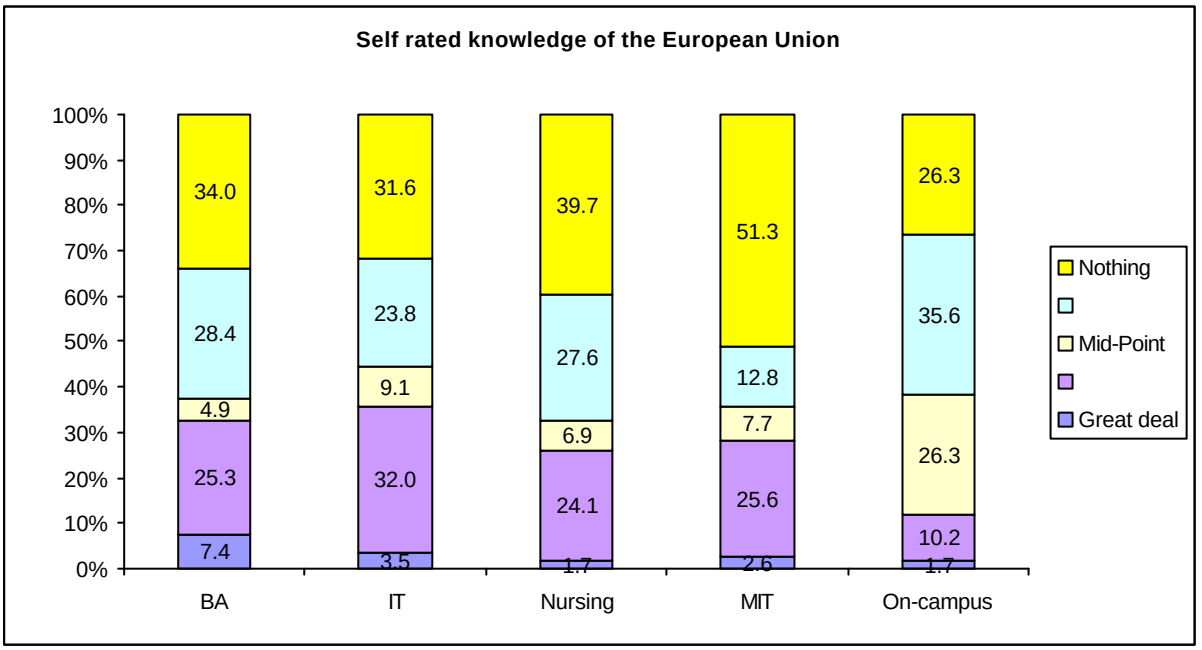


Table 22. Knowledge of selected aspects of the European Union (number of MEPs and method of election of European Parliament)

Number of MEPs	BA		IT		Nursing		MIT		On-campus		Total	
	N	%	N	%	N	%	N	%	N	%	N	%
Don't know	134	48.4	121	54.8	35	66.0	21	55.3	104	90.4	415	58.9
Gave incorrect number	77	27.8	66	29.9	9	17.0	12	31.6	8	7.0	172	24.4
Gave correct number	66	23.8	34	15.4	9	17.0	5	13.2	3	2.6	117	16.6
Total	277	100.0	221	100.0	53	100.0	38	100.0	115	100.0	704	100.0
Election to EU Parliament	BA		IT		Nursing		MIT		On-campus		Total	
	N	%	N	%	N	%	N	%	N	%	N	%
Don't know	46	16.6	48	21.7	11	20.4	3	7.7	66	56.4	174	24.6
Gave incorrect answer	53	19.1	52	23.5	23	42.6	6	15.4	36	30.8	170	24.0
Gave correct answer	178	64.3	121	54.8	20	37.0	30	76.9	15	12.8	364	51.4
Total	277	100.0	221	100.0	54	100.0	39	100.0	117	100.0	708	100.0

8.2 Attitude to the EU project

Respondents were asked a series of questions to assess their attitude to the European Union project. These included the respondents' level of attachment to Europe,

whether membership of the EU was a good thing, whether the country had benefited from membership, whether the EU conjured up a positive or negative image, the extent to which they were in favour of unifying Europe and extending membership to additional countries, and finally the extent to which they were in favour of the common currency. The responses are summarised in Table 23, broken down by programme as well as by nationality. As can be seen there are clear differences between Irish and UK respondents' attitudes to the EU, with the UK respondents in each case being less positive than the Irish respondents. This mirrors the pattern of responses to Eurobarometer surveys where Irish respondents have been consistently more favourable to the EU project than UK respondents. Almost two thirds (65.4%) of Irish respondents compared with 42.0% of UK respondents are very or fairly attached to Europe. Over three quarters of Irish respondents consider that membership of the EU is a good thing, and that the country has benefited from membership (79.7% and 77.9% respectively) compared with less than half of UK respondents (47.8% and 39.1% respectively). While Irish respondents are more favourable to efforts to unify Europe the difference in attitude is not as marked (58.5% of Irish respondents favour unification of Europe, compared with 43.5% of UK respondents). It is interesting to note the overwhelming majority of Irish respondents support the common currency (86.3%) compared with just 43.5% of UK respondents. In this the respondents reflect the attitudes of the general population in both countries. In the next section, the attitudes of respondents to specific aspects of EU involvement in educational policy will be examined.

Table 23. Attitudes to the EU Project

	% BA	% IT	%Nursing	% MIT	% On-campus	% Irish	% UK	% Total
Very/Fairly attached to Europe	67.5	69.8	58.6	82.1	40.3	65.4	42.0	63.9
Membership of the EU is a good thing	78.3	85.8	78.9	87.2	49.6	79.7	47.8	76.5
The country has benefited from membership of the EU	80.4	83.8	82.8	94.9	31.1	77.9	39.1	74.5
Very/fairly positive image of the EU	78.7	81.1	84.5	87.2	51.7	79.4	47.8	76.1
Very much for/for to some extent - efforts to unify Europe	60.7	64.2	58.6	64.1	39.5	58.5	43.5	58.4
Very much for/for to some extent - extending membership of EU to additional countries	75.2	74.2	60.3	69.2	37.8	69.7	46.4	67.4
Very much for/for to some extent - the common currency	84.6	89.2	82.5	94.9	52.9	86.3	43.5	81.4

8.3 Attitude to EU role in educational policy

I believe IT should be used primarily to help disadvantaged students. This is where the EU can have a role in making society more equal by funding access to eLearning for people with low skills base/educational levels. Male MIT respondent

The interaction of students in a classroom environment enhances learning. Internet connection in Ireland is too slow and too costly to promote web-based learning. The EU might not always be committed to retaining the national identity of a country when implementing education policy. Male MIT Respondent

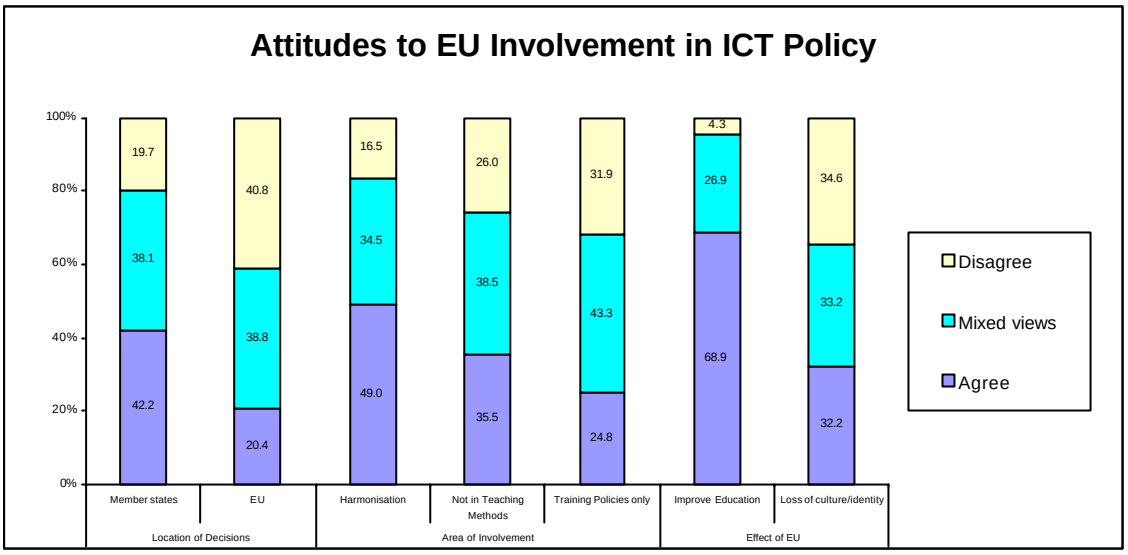
It should be accessible to everyone but not take the place completely of people interaction. It would be useful to increase communication with other European countries especially at school level. European influence on our education system would be an advantage especially at national/secondary level Female BA Respondent

Respondents were presented with a list of six statements concerning EU involvement in the area of eLearning policy. They were also asked to indicate the extent to which they supported the EU taking a role in harmonising education systems. Table 24 summarises the responses by indicating the percentage of respondents who strongly agreed or agreed with the statements. The figures are broken down by programme of study. Figure 3 also illustrates the total responses. Examination of the figures in Table 24 and Figure 3 indicates that, in general, respondents appear to be relatively favourably disposed to EU involvement in the area of policy making, although the scale of resistance varies depending on the area of involvement as well as the role of the EU in decision-making as opposed to provision of support. On the question of location of decision making in educational policy, over two fifths (42.2%) agreed that only member states should decide on policies on eLearning in their education and training institutions while just 20.4% agreed that decisions on introducing ICTs in education should be made at EU level. With respect to the areas in which the EU could be involved, almost half (49.0%) were supportive of the EU taking a role in making education systems in the member states more alike (e.g. harmonisation), however over one third (35.5%) agreed that the EU should not try to influence institutions about how they teach their courses. Just under one quarter (24.8%) would agree that the EU should restrict its involvement to policies for training. With regard to the impact of EU policy on education, over two thirds (69.9%) agreed that EU support for eLearning could improve education and training, however, just under one third (3.2%) feared that a common EU approach to ICTs in education would lead to a loss of national culture and identity.

Table 24. Resistance to EU role in eLearning Policy Making

% Respondents who strongly agreed or agreed with the following statements:	% BA	% IT	% Nursing	% MIT	% On-Campus	Total	%
Only the member states should decide policies on eLearning in their education and training institutions	43.8	43.0	43.9	28.2	40.5	304	42.2
Decisions on introducing ICTs in education should be made at EU level	20.4	20.1	17.9	15.4	23.9	148	20.4
The EU should not try to influence institutions about how they teach their courses	42.6	32.3	29.1	35.9	27.4	257	35.5
Common EU approach to ICTs in education would lead to loss of national culture and identity	33.6	24.6	35.1	46.2	37.9	234	32.2
The EU should restrict its involvement to policies for training for jobs and employment	23.2	27.1	26.8	33.3	20.5	180	24.8
In favour of harmonisation of education systems	52.2	51.9	55.4	38.5	35.9	360	49.0
EU support for eLearning could result in an improvement in education and training in the member states	70.4	70.9	71.9	74.4	57.8	502	68.9

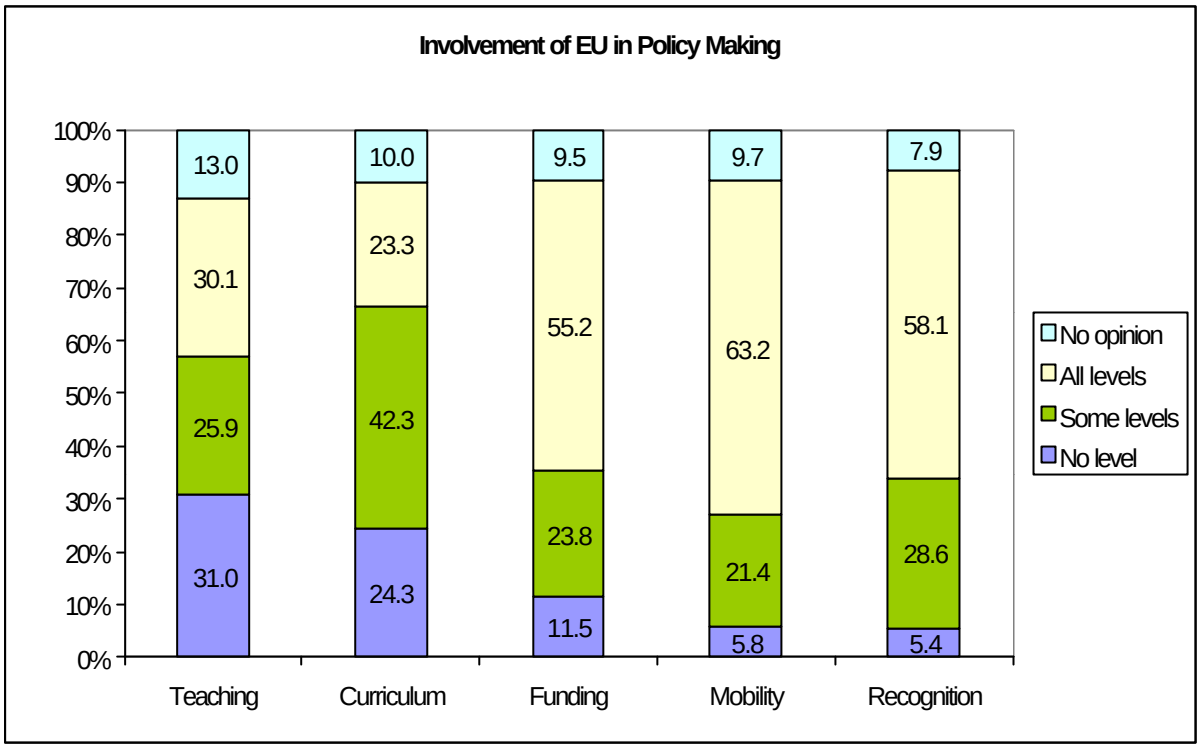
Figure 3 Attitude to EU involvement in Educational Policy Making



Respondents were presented with a list of five areas of educational policy (curriculum, recognition of qualifications, funding, teaching methods, and student mobility) and asked to indicate at what level (school level, higher education, vocational education and training, adult education) if any, they considered the EU should have a role in deciding policy. Table 25 summarises the responses from those who indicated that they did not agree with the EU taking a role at any educational level. The full picture of responses is illustrated graphically in Figure 4. Again, a minority of respondents could be regarded as strongly resistant to EU involvement with greatest resistance to involvement in teaching methods and curriculum. Just under one third (31.0%) of respondents would reject EU involvement in teaching methods, and under one quarter (24.3%) would reject involvement in deciding on curriculum at any level of education. Resistance to an EU role in deciding policy on funding, student mobility and recognition of qualifications was lower (11.5%, 5.8% and 5.4% respectively rejected the idea of EU involvement in these areas at any educational level). Respondents were most supportive of the EU taking a role in deciding policy at all levels with regard to student mobility (63.2%), recognition of qualifications (58.1%) and funding (55.2%), whereas only 23.3% would support an EU role at all levels in curriculum and 30.1% would support involvement in teaching methods.

Table 25. Resistance to EU role in specific areas of education by Programme of Study

% who agree that EU should not have a role at any level:	% BA	% IT	% Nursing	% MIT	% On-Campus	Total	%
Teaching methods	33.2	27.7	27.3	29.7	33.9	214	31.0
Curriculum	28.3	21.5	22.2	27.0	20.3	168	24.3
Funding	7.7	16.8	16.4	11.1	8.6	79	11.5
Student mobility	5.1	8.0	9.4	8.3	0.8	40	5.8
Recognition of qualifications	5.8	4.6	5.5	8.1	5.2	38	5.4



In summary, in answering the question about how EU policies resonate with students, one must be careful in specifying which policies, and whether the EU is to take a supportive role in line with the principle of subsidiarity, or to take a more directive decision making approach. The responses to this survey indicate that students welcome the EU taking a supportive role, but resist any overtaking of more bottom up approaches to decision making, and certainly resist attempts to interfere with local cultures and tradition of teaching approaches and course content as embedded in national education systems.

Part 9 Discussion

This paper has reported on a survey of students' attitudes to ICTs in European education, carried out in late 2002. The questionnaire sought to answer the question 'how do EU policies resonate with students?'. This is a matter of increasing concern to the EU. In late 2002, the DG Education and Culture embarked on a consultation process concerning the future of its education and training programmes (CEC 2002). Given the strong emphasis on eLearning and technology based approaches as the future direction for education, it is interesting to note the concerns about eLearning expressed by ESIB – the National Unions of Students in Europe, representing mainly on-campus students:

> E-learning will be an issue of the future that will need to be addressed, however there will need to be close monitoring of the future of e-learning. It is currently seen as the answer to all the potential problems that currently face education, whether being perceived as enabling access or being seen as a cheap way of delivering education to a large number of people. Whilst there is a grain of truth in some of these claims, it is not the entire situation by any means. There must remain the importance of the value of physical mobility and having real contact with the teachers and the support structures associated with traditional HEIs and education systems. E-Learning has some benefits in the context of higher education, however Virtual Mobility does not exist as it is the education rather than the student which is moving.
>
> E-learning will be a valuable tool in some cases such as facilitating lifelong learning and ensuring greater access to traditional education but should not be seen as a replacement for it. It will also play a role as an addition to traditional learning through access to information and other aspects. When it comes to the question of e-learning, in the future, the issue of quality and quality assurance will become a centre point of discussion. A need for discussing the quality issues and finding necessary tools is fairly obvious.
>
> Since e-learning will be further developed, it is necessary that the question of access of individuals to infrastructures is resolved not to create a technology gap between different regions in and beyond Europe. Further more, it should be noted that e-learning stipulates the necessity to devise new teaching and learning paradigms and that investment into hardware has to be met by investment into teacher and student training, and design of teaching modules to help to make e-learning a beneficial learning arrangement.'(ESIB 2003).

These concerns are mirrored in the responses to the survey of Irish and UK students, both on-campus and ODL students. The figures show that while a relatively small minority of students do not have access to PCs a larger percentage do not have access to the Internet. However, it is when probing further the quality and availability of access that it becomes obvious that there are many forms of digital divide. If programmes are designed on the assumption that students have unlimited access at any time any place to the appropriate technology then this scenario does not reflect the actual circumstances of real students, particularly those who are unable to attend on-campus. Furthermore, the skills gap becomes apparent with students unfamiliar with some of the basic skills required to participate in online learning. Even where access and expertise do not pose a barrier, a number of students will resist removal of some form of face-to-face contact in the learning experience. There is considerable support for the use of technology as an enhancement, not a replacement for good traditional forms of education. Finally, the survey shows that respondents are relatively positively disposed towards the EU taking a role in educational policy, by supporting

and encouraging developments, but leaving decision making to national and institutional level. There is more resistance to EU involvement in decision-making with regard to curriculum and teaching methods, than in funding and recognition of qualifications.

One of the key findings from this survey is that students are not a homogenous mass of end users and that disciplinary differences and orientations will affect the degree of receptivity to new technologies. Many surveys of student attitudes to technology focus on a group within one discipline (frequently taking IT based courses, or technology in education courses) and they do not take a comparative perspective. Howard highlights the role of IT specialists as early adopters of new technologies as an aid to learning, stating 'the early support for distance education came from the information technology groups. With their comfort with workstation interaction, constant shortage of time and egos that fit the self study mode, the early CBT students were taking courses on mainframe, using crude languages and blue screens to transfer new knowledge and new rules of COBOL' (Howard 2001: 273). In this study, it is apparent that groups studying technology-based disciplines continue to be more favourably disposed to using technology than those in non-technical disciplines.

The challenge for institutions is to develop models which fit in with the reality of students' expectations and circumstances. Students welcome the enhancements that technology offers: access to resources, communication with students and tutors. However they fear the loss of human contact and indeed flexibility caused by an overly rigid application of technology. The cost element and who pays is also of concern. Students motivated by extrinsic motivations may be more prepared to pay for the cost of technology than those taking courses for more intrinsic motivations.

Of concern is the level of resistance to technologies among up to one fifth of students and residual disquiet among an even greater proportion. It should be recalled that many students take ODL programmes because there is no other option available to them because of their life stage, domestic circumstances or location. If policies are introduced which serve to erect further barriers to participation, the pioneering work of ODL in extending access to education to a wide range of the population on a lifelong learning basis will have been severely undermined. The EU can use its powers to persuade students of the benefits of the new technologies, only if those benefits are actually realised and demonstrated through successful, sustainable programmes, carried out in real-life situations, and the real concerns and fears of students are listened to and addressed. This report is a contribution to this project.

APPENDIX 1: QUESTIONNAIRE SURVEY FORM

Quesno:

Perceptions of ICT in European Education
Questionnaire 2002

Dear Student

In recent years developments in information and communications technologies (ICTs) have presented the possibility of transforming the way we teach and learn. The term eLearning now covers a range of technologies in education, based on the use of personal computers, email and the Internet. The PICTURE project (funded by the European Union) aims to investigate the views of students in Denmark, Ireland, and the United Kingdom on the role of ICTs in education. We hope you will take a few minutes to complete this questionnaire as your views will help us to improve the type of education we provide, and benefit students throughout Europe. Please be assured that any information you provide will be confidential and all data will be presented in aggregate form. Personal details are requested purely for comparative purposes.

Kay MacKeogh
Project Coordinator
Oscail – National Distance Education Centre, Dublin City University, Dublin 9, Ireland

Section 1: Access to Technologies

Please indicate whether you have access to the following technologies *(please circle the relevant code)*

	No access	Home *only*	Work *only*	University *only*	Other location *only*	Home *and* University	Home *and* work	Home, work *and* university	Don't know
1. Desktop Computer	1	2	3	4	5	6	7	8	9
2. Laptop computer	1	2	3	4	5	6	7	8	9
3. CD-ROM drive	1	2	3	4	5	6	7	8	9
4. Internet connection	1	2	3	4	5	6	7	8	9
5. FAX	1	2	3	4	5	6	7	8	9
6. Digital TV	1	2	3	4	5	6	7	8	9
7. ISDN line	1	2	3	4	5	6	7	8	9
8. DVD player	1	2	3	4	5	6	7	8	9
9. Mobile phone	Yes [1]	No mobile phone [2]		If yes: does it have Bluetooth? [Y]		[N]	[DK]	Infrared? [Y]	[N] [DK]

10. If you are in paid employment, to what extent would your employer allow you to use workbased computers for study purposes? *(please circle the relevant code)*

Not at all	Outside work hours only	During work hours only	During and after work hours	Not applicable (not employed, no facilities in workplace)
[1]	[2]	[3]	[4]	[9]

11. Which of the following statements reflects the level of access you have to a personal computer in your home *(please circle the relevant code)*

1	There is no personal computer in my home
2	I own a personal computer which I do not share with any one else in the household
3	I share a personal computer with others in the household, but I have no problems in using it when I need to
4	I have difficulty in gaining access to the computer because I have to share with my children
5	I have difficulty in gaining access to the computer because I have to share with my partner and/or other adults in the household.
6	I have difficulty in gaining access to the computer because I have to share with my children/partner and/or other adults in the household.

Please indicate below the types of use you have made of the Internet in the last three months *(please circle the relevant code)*

	Never	Daily	Weekly	Monthly
12. Email to fellow students/tutors	1	2	3	4
13. Accessing educational material	1	2	3	4
14. Preparing assignments	1	2	3	4
15. Video conferencing	1	2	3	4
16. Preparing for travel/holiday	1	2	3	4
17. Other (please specify)				

Where have you accessed the Internet in the last three months? *(please circle the relevant code)*

	Never	Daily	Weekly	Monthly
18. Home	1	2	3	4
19. Friend's/relation's home	1	2	3	4
20. Office/workplace	1	2	3	4
21. University/college	1	2	3	4
22. School	1	2	3	4
23. Cybercafé	1	2	3	4
24. Public library	1	2	3	4
25. Other public internet access point (e.g. public telephone kiosk)	1	2	3	4
26. Other (please specify)				

27. If a course requires you to purchase a personal computer, what is the maximum price you would be prepared to pay? *(please circle the relevant code)*

Nothing – I could not afford to pay	Nothing – I would not want to take a course which required a computer	Less than €500	€501-1000	€1001-1500	€1501-2000	€2000+
[1]	[2]	[3]	[4]	[5]	[6]	[7]

28. If a course requires you to have access to the Internet from home, what is the maximum monthly sum you would be prepared to pay in charges to the Internet provider? *(please circle the relevant code)*

Nothing – I could not afford to pay	Nothing – I would not want to take a course which required internet access	Less than €10	€11-30	€31-60	€61-90	€91+
[1]	[2]	[3]	[4]	[5]	[6]	[7]

29. If access to personal computers and Internet are compulsory in educational courses, who do you think should cover the cost? (*Please indicate those you think should cover the cost)*

Section 2: Expertise in Information and Communications Technologies (ICTs)

What is your level of expertise in using the following technologies? *(please circle the relevant code)*

	I can do this by myself	I would need help to do this	I have never done this type of task
30. Word processor (type up a well-formatted essay or report, using tables, and figures)	1	2	3
31. Spreadsheets (enter data, sort, filter, calculate etc)	1	2	3
32. Email (send messages, attach files)	1	2	3
33. Presentation manager (create a short talk with computer projected images e.g. Powerpoint)	1	2	3
34. Internet browser (e.g. use Netscape or Internet explorer to look up a specific website)	1	2	3
35. Bibliographic database (use an online database to search for a specific publication)	1	2	3
36. Computer conferencing (interact with other students and tutors in an online conference)	1	2	3

37. What type of computer training, if any, have your received? (e.g. none, largely self taught, ECDL, short training courses, cert/diploma/degree qualification etc)

Please indicate how often, if ever, you have used or been involved in one of the following *(please circle the relevant code)*

	Several times	Once	Never	Never heard of this
38. A course with a website with interactive features, such as assessment, online tasks or learning materials	1	2	3	4
39. An online discussion forum	1	2	3	4
40. Video conferencing	1	2	3	4
41. Virtual learning environment such as WebCT, Blackboard or Pageout	1	2	3	4
42. Academic support and advice from a teacher by email	1	2	3	4

Section 3: Information and Communications Technologies (ICTs) in Education

Please read the following list of statements and indicate the extent to which you agree or disagree with the statements. *(Please circle the relevant code)*

	Strongly agree	Generally agree	Mixed views	Generally Disagree	Strongly disagree
43. I prefer to learn on my own	1	2	3	4	5
44. I would generally feel ok trying something new on a computer	1	2	3	4	5
45. ICTs in education will disadvantage students who cannot afford the technology	1	2	3	4	5
46. I prefer reading from a printed text	1	2	3	4	5
47. I feel threatened by the thought of having to use a computer	1	2	3	4	5
48. I avoid using computers whenever I can	1	2	3	4	5
49. Good access to a tutor requires face to face contact	1	2	3	4	5
50. Course information should be available on the web	1	2	3	4	5
51. Computer based teaching/learning is lacking in 'human interaction' since there is no face to face contact	1	2	3	4	5
52. Computer based conferencing would help learning	1	2	3	4	5
53. Computer access to libraries is preferable to personal visits	1	2	3	4	5
54. Access to the internet is essential for the modern learner	1	2	3	4	5
55. We should use ICT in education because we live in the Information Society	1	2	3	4	5
56. Time spent learning on the computer is time well spent	1	2	3	4	5
57. Learning with ICT requires highly developed study skills	1	2	3	4	5
58. If studying with a computer turned out to be too complex, I would like to return to traditional education methods	1	2	3	4	5
59. I feel fairly confident when working with computers	1	2	3	4	5
60. I like to learn in teams or small groups	1	2	3	4	5
61. I think that ICTs can improve my learning	1	2	3	4	5
62. I would like to know more about computers	1	2	3	4	5
63. I'm often unsure what to do when using a computer	1	2	3	4	5
64. ICTs in education will help to develop a European workforce qualified to compete against global competition	1	2	3	4	5
65. In general learning with ICT is very time consuming	1	2	3	4	5
66. Quality information is hard to find on the web (WWW)	1	2	3	4	5
67. All students should learn something about computers as part of their course	1	2	3	4	5

	Strongly agree	Generally agree	Mixed views	Generally Disagree	Strongly disagree
68. Computer based learning is the way of the future	1	2	3	4	5
69. I think that in online courses, small-group learning may become disorganised	1	2	3	4	5
70. I prefer to study with traditional education methods	1	2	3	4	5
71. I do not understand how people can enjoy working with computers	1	2	3	4	5
72. I am generally quite good with computers	1	2	3	4	5
73. Courses should be presented on CD-ROMs	1	2	3	4	5
74. Computers can bring students together to share ideas and problems	1	2	3	4	5
75. Computers reduce the quality of the leaming experience	1	2	3	4	5
76. Computer based materials are more likely to be up to date	1	2	3	4	5
77. Anyone can develop the skills needed to use new technology	1	2	3	4	5
78. The web allows information to be made available at just the right time	1	2	3	4	5
79. Investing in ICTs in education is a waste of money	1	2	3	4	5
80. If I could afford to I would buy a home computer	1	2	3	4	5
81. ICTs provide greater flexibility in learning	1	2	3	4	5
82. I would like to cooperate on learning tasks with people from different countries	1	2	3	4	5

The following is a list of opportunities that might be enhanced by ICTs. Please indicate how important you think each of them is *(please circle the relevant code)*

	Very important	Important	Mixed views	Not important	Not important at all
83. Enabling European students to take courses and modules via the internet from higher education institutions in their own and other countries is	1	2	3	4	5
84. Enabling students to collaborate on academic work with other students in their own and other countries is	1	2	3	4	5
85. Enabling students from less-favoured social backgrounds to access higher education more easily is	1	2	3	4	5
86. Enabling students from remote geographical regions to access higher education more easily is	1	2	3	4	5
87. Developing employability skills such as teamwork, problem-solving, self-learning capability, presentation skills etc. is	1	2	3	4	5
88. Developing a more autonomous and learner centred approach in university teaching is	1	2	3	4	5
89. Developing a more collaborative and less individual approach to learning is	1	2	3	4	5
90. Widening the range of sources of information and knowledge available to students is	1	2	3	4	5
91. Providing more effective and/or frequent feedback to students on their learning progress is	1	2	3	4	5

Please rank the following modes of study in order of preference, where 1=most preferred, and 8=least preferred method

Rank	Mode
	92. On campus, full-time, face to face lectures and tutorials
	93. On campus, full-time, face to face lectures and tutorials plus online support including websites, online access to library databases
	94. On campus, part -time, face to face lectures/tutorials
	95. On campus, part -time, face to face lectures/tutorials plus online support including websites, online access to library databases
	96. Distance education, written course materials, with occasional face to face tutorials
	97. Distance education, mix of written course materials, online support, face to face tutorials
	98. eLearning, mix of written course materials, online materials, online tutorial support and interaction with other students and tutors
	99. Other (please specify). Any further comments on your preferred mode of study?

Section 4: The European Union

100. How would you rate your knowledge of the European Union, on a scale of 1 to 10 where 1 means you know nothing at all and 10 means you know a great deal about the European Union? *(please circle the relevant code)*

I know nothing about the EU	1	2	3	4	5	6	7	8	9	10	I know a great deal about the EU

101. To what extent do you feel attached to Europe? *(Please circle the relevant code)*

Very attached	Fairly attached	Not very attached	Not at all attached	No opinion
[1]	[2]	[3]	[4]	[5]

102. Do you think membership of the EU is a good thing, a bad thing, or neither *(please circle the relevant code)*

A good thing	Neither good nor bad	A bad thing	No opinion
[1]	[2]	[3]	[4]

103. Has Ireland benefited from membership of the EU? *(please circle the relevant code)*

Yes [1] No [2] Yes and no [3] Don't know [4]

104. In general, which of the following most accurately describes the image the European Union conjures up for you? *(please circle the relevant code)*

Very positive	Fairly positive	Neutral	Fairly Negative	Very negative
[1]	[2]	[3]	[4]	[5]

105. To what extent are you against or in favour of efforts to unify Europe? *(please circle the relevant code)*

Very much for	For to some extent	Mixed views	Against to some extent	Very much against
[1]	[2]	[3]	[4]	[5]

106. To what extent are you against or in favour of extending the membership of the EU to additional countries? *(please circle the relevant code)*

Very much for	For to some extent	Mixed views	Against to some extent	Very much against
[1]	[2]	[3]	[4]	[5]

107. How many Members of the European Parliament (MEPs) represent Ireland:

Number of MEPs [ ] Don't know [ ] Don't know, not from Ireland [ ]

108. How is the European parliament established? *(please circle the relevant code)*

Appointed by national governments	Selected by the European Commission	Elected directly by citizens of each country	Not sure/don't know
[1]	[2]	[3]	[4]

109. Can you name any Irish MEPs? Yes [1] No [2] If yes, what names do you know?

110. Did you vote in the last European election? *(please circle the relevant code)*

Yes [1] Eligible, but didn't vote [2] Wasn't eligible [3] Don't remember [4]

111. Have you ever visited other countries in the European Union? Yes [1] No [2] If yes, please list those countries you have visited:

For what purposes have you visited other European Union countries? *(please circle the relevant code)*

	Several times per year	Once per year	Once every few years	Once only	Never
112. Holiday	1	2	3	4	5
113. Work	1	2	3	4	5
114. Study	1	2	3	4	5
115. Erasmus exchange	1	2	3	4	5
116. Study visit funded by EU	1	2	3	4	5
117. Other *(please specify)*					

118. To what extent are you against or in favour of a common currency in Europe *(please circle the relevant code)*

Very much for [1] For to some extent [2] Mixed views [3] Against to some extent [4] Very much against [5]

119. In your opinion, at what level should education policy be decided? *(please circle the relevant code)*

Regional level only [1] EU level only [2] National level only [3] Both EU and National [4] No opinion [5]

Other level (please specify):_____

120. To what extent are you against or in favour of the EU taking a role in making the education systems in the member states more alike (e.g. common degree structures, common curricula etc) *(please circle the relevant code)*

Very much for [1] For to some extent [2] Mixed views [3] Against to some extent [4] Very much against [5]

The EU is promoting the increased use of eLearning approaches in all levels of education (where eLearning means the use of internet and computer technologies to deliver education). Please indicate below your views on EU involvement in this area. *(please circle the relevant code)*

	Strongly agree	Generally agree	Mixed views	Generally Disagree	Strongly disagree
121. The EU should not try to influence institutions about how they teach their courses	1	2	3	4	5
122. Decisions on introducing ICTs in education should be made at EU level	1	2	3	4	5
123. The EU should restrict its involvement to policies for training for jobs and employment	1	2	3	4	5
124. EU support for eLearning could result in an improvement in education and training in the member states	1	2	3	4	5
125. Only the member states should decide policies on eLearning in their education and training institutions	1	2	3	4	5
126. A common EU approach to ICTs in education could lead to a loss of national culture and identity	1	2	3	4	5

In your view, should the EU have a role in deciding policy in the following areas *(please write Y (yes) or N (no) or ? (don't know/no opinion) in the relevant box*

	School level	Higher Education	Vocational Education & Training	Adult education Lifelong learning	No opinion
127. Curriculum					
128. Recognition of qualifications					
129. Funding					
130. Teaching methods					
131. Student mobility between countries					

Section 5: Personal Information

132. Gender (please circle the relevant code) Male [1] Female [2] 133. Nationality

134. Age group (please circle the relevant code) 18-22yrs [1] 23-30 [2] 31-40 [3] 41-50 [4] 51-60 [5] 60+ [6]

135. Marital status (please circle the relevant code) Single [1] Cohabiting [2] Married [3] Separated/ Divorced [4] Other [5]

136. Economic status (please circle the relevant code) Student full-time [1] Employed part-time [2] Employed full-time [3] Self-employed [4] Home maker [5] Retired [6] Unemployed [7] Other [8]

137. If you are working in paid employment, at what level do you work? *(please circle the relevant code)*

Supervisory [1] Junior Management [2] Middle Management [3] Senior Management [4] Professional [5] Other [6] Not applicable/not in paid employment [9]

138. Annual income (please circle the relevant code) Under €15,000 [1] €15,001-25,000 [2] €25,001-40,000 [3] €40,001-60,000 [4] €60,001-85,000 [5] Over €85000 [6]

139. Location of main residence: *(please circle the relevant code)* A metropolitan area (population over 1 million) [1] Non-metropolitan urban area [2] A rural area [3]

140. Distance of main residence from campus *(please circle the relevant code)* 0-5mls/ 0-8kms [1] 6-10mls/ 9-16kms [2] 11-20mls/ 17-32kms [3] 21-50mls/ 33-80kms [4] 51-100mls/ 81-160kms [5] 100mls+/ 160kms+ [6]

141. Previous highest level of education *(please circle the relevant code)*

Incomplete second level [1] Completed second level [2] Undergraduate certificate/diploma [3] Bachelor 's degree [4] Postgraduate degree [5] Professional qualification (e.g. nursing etc) [6]

Other [7] *please specify*:_____

142. Programme on which you are registered in 2002:_____

142. Please indicate your primary motivation for studying this programme *(please circle the relevant code)*

Personal interest [1] To prepare for career [2] To change current career [3] To upgrade qualifications[4]

143. Year you started this programme: [ ]

144. Have you taken a module in Psychology as part of this programme? Yes [1] No [2]

Would you be willing to be interviewed by telephone as part of this study? Yes [ ] No [ ]
If yes, please print your name, telephone number (including STD dialling code), and email below:

Name:_____ Contact telephone: _____

Email _____@_____ (please print legibly)

If you wish to receive a copy of the final report, please give the address to which you wish it to be sent:
_____
Finally, have you any comments on the role of technology in education? Please use extra pages if required.

Thank you for your cooperation.
Please return the form **as soon as possible** , using the reply paid envelope to
Kay Mac Keogh, Oscail, DCU, Dublin City University, Dublin 9, Ireland.
If you wish to receive a word version of the questionnaire for completion and return by email. Please send a message to kay.mackeogh@dcu.ie.

REFERENCES

Aron, A. and E. Aron (2003) *Statistics for Psychology*. New Jersey: Prentice Hall.

Baruch, Y. (1999) "Response rate in academic studies - a comparative analysis." *Human relations* 52(4): 421-438.

Cattell, R. B. (1966) *Handbook of multivariate experimental psychology*. Chicago: Rand McNally.

CEC (1999) Promotion of open and distance learning - Information and Communication Technologies in the field of education (Minerva): Addendum to Guidelines 1999. Brussels.

CEC (2002) *The future development of the European Union Education, Training and Youth Programmes after 2006: A public consultation document November 2002* Brussels: Commission of the European Communities

Eastin, M. and R. LaRose (2000) "Internet self-efficacy and the psychology of the digital divide." *JCMC* Vol 6 No 1.

ESIB (2003) *Response to the European Commission (DG Education and Culture) Public Consultation 'The Future Development of the European Union Education, Training and Youth Programmes after 2006'* http://www.esib.org/wg/mobility/ConsultationSocrates.htm Accessed: 5 March 2003

Eurobarometer (1997) *Europeans and Their Attitudes to Education and Training: Eurobarometer 47.1 3-4 1997* http://europa.eu.int/comm/public_opinion/archives/special.htm Accessed: 2002

Flynn, P. (1999) Social policy. J. Dooge and R. Barrington (eds). *A vital national interest: Ireland in Europe 1973-1998*.Dublin: Institute of Public Administration 312-323.

Foster, J. J. and I. Parker (1995) *Carrying out investigations in Psychology: Methods and Statistics*. Leicester: British Psychological Society.

Fox, S. and K. Mac Keogh (2001) *The PICTURE eLearning Project: Online Resources; Pedagogical Techniques; Higher Order Learning and Tutor Support* Dublin: Oscail - National Distance Education Centre

Howard, B. (2001) 'Supporting an enterprise distance learning programme at NYNEX'. Z. L. Berge (eds). *Sustaining Distance Training: Integrating Learning Technologies into the Fabric of the Enterprise*.San Francisco: Jossey-Bass 270-290.

Joo, Y.-J., M. Bong, et al. (2000) "Self-efficacy for self-regulated learning, academic self-efficacy, and internet self-efficacy in web-based instruction." *ETR&D* Vol 48 No 2: pp5-17.

Laffan, B. (1998) "The European Union: a distinctive model of internationalization." *Journal of European Public Policy* Vol 5(No 2): pp235-253.

Mac Keogh, K. (2001) *Access, Expertise, Attitudes and ICTs in the Humanities: An Irish Case Study*. EADTU Millennium Conference: Wiring the Ivory Tower: Linking Universities Across Europe Paris 28-30 September 2000 Proceedings, Heerlen: European Association of Distance Education Universities.

McMahon, J. (1997) *Factors associated with student computer usage in higher education* PhD Thesis, Faculty of Education, Queen's University Belfast.

Reding, V. (2000) "Policies and perspectives: an interview with Commissioner Viviane Reding." *Vocational Training European Journal* 19: 3-5.

Sinnott, R. (2003) *Attitudes and behaviour of the Irish electorate in the second referendum on the Treaty of Nice* Dublin: European Commission Representation in Ireland

SPOTPLUS (2002) *Spot Plus Survey: Students' Perspective on Technology in Teaching and Learning in European Universities - Perception and Learning of University Students* www.spotplus.odl.org Accessed: 2002