

# Survey into Computer Access for Computer Science Students at Mekelle University

Alex Little - October 2009

## Summary

In March 2009 all of the students in the computer science department were asked to complete a survey relating to their access to computers, basic computing skills and attitudes towards elearning and online activities. 64% of students (227) responded to the survey.

The key findings from the survey were:

- 19% have access to a computer outside the computer science department
- 21% never access the internet
- 52% found access to a computer was a major problem or not possible at all
- The main access difficulties expressed include: lack of computers, computer labs not open often enough and lack of or slow internet connection
- Low levels of basic computing skills
- 84% feel that online activities would be quite or very useful additions to their studies

From these key findings a number of recommendations can be made to improve the computing facilities for students:

1. *Review of the computer lab set-up and configuration*
2. *Increase in lab opening times*
3. *Increase number of computers available*
4. *Increase internet capacity*
5. *Basic computer skills training*
6. *Require courses to use the elearning system*

The results from this survey can be used as a baseline for future surveys to measure the impact of initiatives to improve student computer access (such as replacement or new computers and labs) and whether the recommendations have had the desired effect.

## 1. Introduction

This report summarizes the responses to a questionnaire given to all Computer Science (CS) and Information Systems (IS) students at Mekelle University during March 2009. In total the survey was given to 356 students, 227 responses were received, giving a response rate of 64%. A copy of the questionnaire given can be found in appendix 2.

The breakdown of responses per student cohort is given in table 1.1:

Cohort	Number of students in cohort			Number of responses		
	Female	Male	Total	Female	Male	Total
1 <sup>st</sup> year Computer Science	15	74	89	4	53	57
1 <sup>st</sup> year Information Systems	10	73	83	7	55	62
2 <sup>nd</sup> year Computer Science	20	83	103	11	50	61
3 <sup>rd</sup> year Computer Science	13	68	81	9	38	47

*Table 1.1: Responses*

Of the responses 86% (196)<sup>1</sup> were from male and 14% (31) female students, which is approximately equal to the proportion of male to female students in the cohort as a whole.

The rationale behind the survey was to determine how students could be best supported in their studies using elearning systems. Given that access to computing infrastructure and basic computer skills are fundamental prerequisites for any elearning system, students were also asked about these factors. The questionnaire then covered 3 main areas:

1. access to infrastructure (computers and internet) and any limiting factors
2. basic computer skills
3. attitudes towards elearning

Sections 2 to 6 provide detailed results of the survey and section 7 provides a set of recommendations based upon the results with the aim of improving the computing facilities for students. Discussion and analysis of the results have been deliberately left until the recommendations, rather than being included with the detailed results.

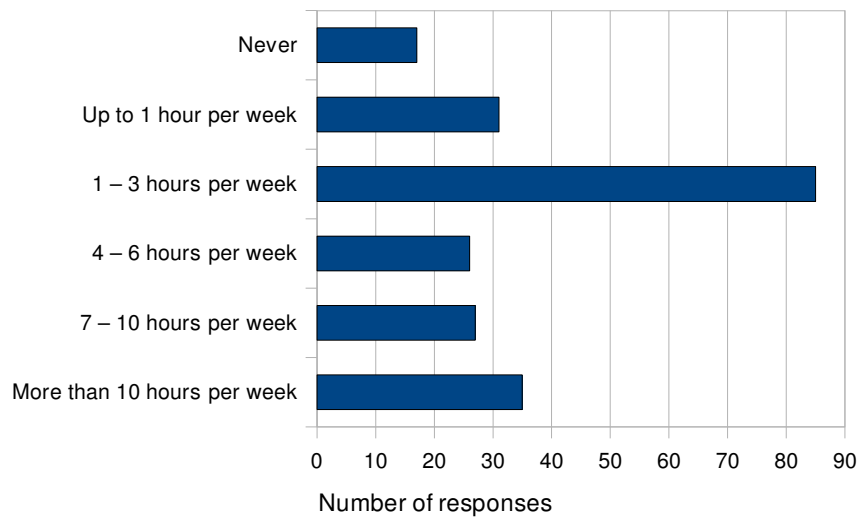
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<sup>1</sup> The figures in brackets refer to the absolute number of responses.

## 2. Access to and usage of computers

Students were asked whether they had access to a computer outside those provided in the departmental computer labs. 19% (43) of students have access to a computer not in the CS department. Only 5% (11) have their own computer, 14% (32) have another way to access a computer, such as sharing a computer with other family members, borrowing someone else computer, or using one in an internet cafe.

Students were asked how much time they spent using the CS department computer labs, outside of their timetabled lab sessions. Responses ranged from 8% (17) saying they never used the labs, to 16% (35) who used the lab for more than 10 hours per week, with half of the students spending between 1 and 6 hours per week in the computer labs. Results varied significantly between year groups, with third year students spending much more time in the labs. 31% (37) of first years spent up to 1 hour per week on the in the lab, compared to 4% (2) of third years. Conversely 10% (12) of first years spent more than 7 hours per week in the lab, compared to 65% (30) of third years. Table 2.1 shows the full results, broken down by the year.



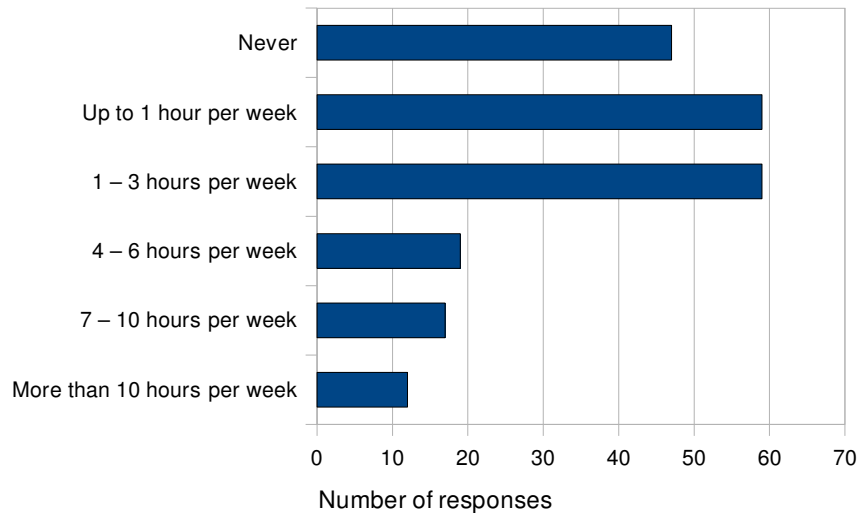
**Chart 2.1: Time spent per week in departmental computer labs**

Time spent in lab	1 <sup>st</sup> Years	2 <sup>nd</sup> Years	3 <sup>rd</sup> Years	All
Never	10% (12)	7% (4)	2% (1)	8% (17)
Up to 1 hour per week	21% (25)	8% (5)	2% (1)	14% (31)
1 – 3 hours per week	48% (56)	38% (22)	15% (7)	38% (85)
4 – 6 hours per week	10% (12)	12% (7)	15% (7)	12% (26)
7 – 10 hours per week	7% (8)	12% (7)	26% (12)	12% (27)
More than 10 hours per week	3% (4)	22% (13)	39% (18)	16% (35)

**Table 2.1: Time spent per week in departmental computer labs**

### 3. Access to and use of the Internet

Students were asked how much time per week they spent on the internet and also what activities they took part in whilst online. 21% (47) of students said they never accessed the internet, whilst 5% (12) spent more than 10 hours per week online. The amount of time spent on the internet varied significantly depending on the year of study the students were in. For example only 1% (2) first year students spent 7 or more hours per week on the internet compared with 44% (21) of third year students. Table 3.1 shows the breakdown by year.

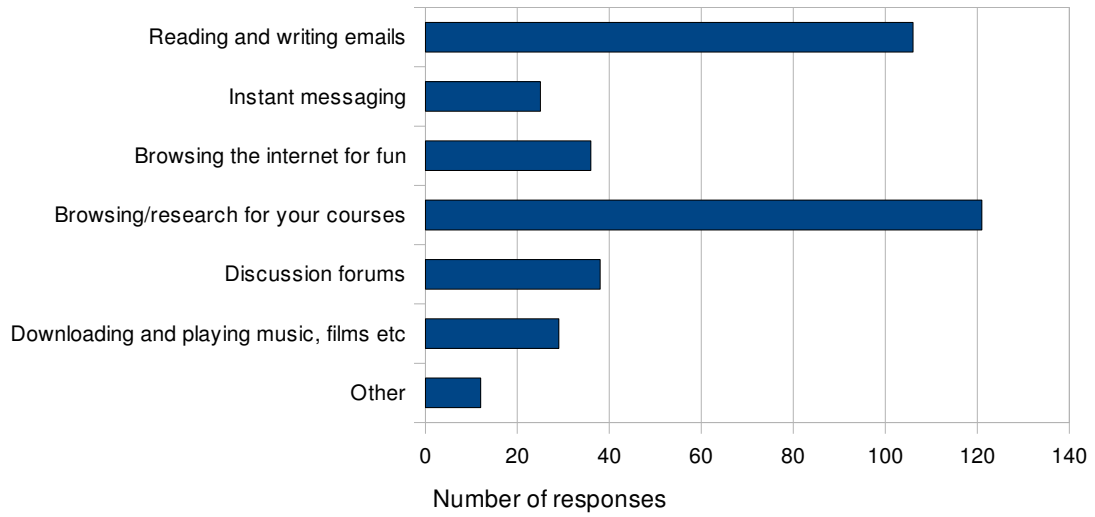


**Chart 3.1: Time spent on the Internet**

<b>Time spent on the Internet</b>	<b>1<sup>st</sup> Years</b>	<b>2<sup>nd</sup> Years</b>	<b>3<sup>rd</sup> Years</b>	<b>All</b>
None at all	32% (38)	14% (8)	2% (1)	21% (47)
Up to 1 hour per week	36% (42)	20% (12)	11% (5)	26% (59)
1 – 3 hours per week	21% (25)	40% (24)	21% (10)	26% (59)
4 – 6 hours per week	9% (10)	15% (9)	21% (10)	13% (29)
7 – 10 hours per week	1% (2)	8% (5)	21% (10)	8% (17)
More than 10 hours per week	0% (0)	2% (1)	23% (11)	5% (12)

**Table 3.1: Time spent on the Internet**

Students were asked to indicate (from a predetermined list) which activities they took part in whilst online, selecting all that applied. Almost half (47%) of the students used the internet for email and over half (53%) used the internet for browsing/research for their courses. These were the two most popular activities students used the internet for. Table 3.2 shows the results in full.



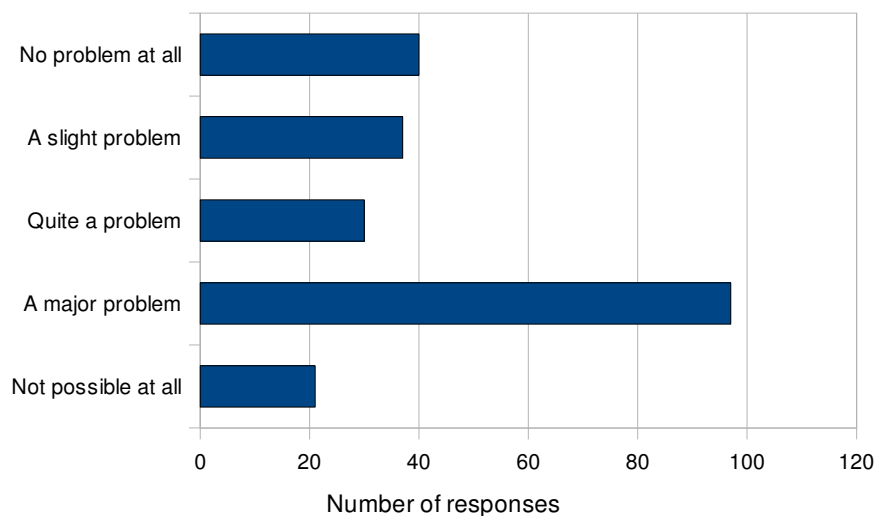
**Chart 3.2: Internet activities**

<b>Activity</b>	<b>% (No.)</b>
Reading and writing emails	47% (106)
Instant messaging	11% (25)
Browsing the internet for fun	16% (36)
Browsing/research for your courses	53% (121)
Discussion forums	17% (38)
Downloading and playing music, films etc	13% (29)
Other (e.g. downloading software, books and code)	5% (12)

**Table 3.2: Internet activities**

## 4. Factors Limiting Access

Students were asked if they had problems accessing a computer outside their normal supervised lab sessions, 18% (40) said they had no problem, but over half 52% (118) said it was a major problem or it wasn't possible at all. Whether students had a problem accessing a computer appears to be related to the year of study they are in, perhaps because in this academic year (2008/09) the number of first year students doubled with the introduction of the Information Systems programme, but with no corresponding increase in the number of computers available to first years. The full breakdown is shown in table 4.1.

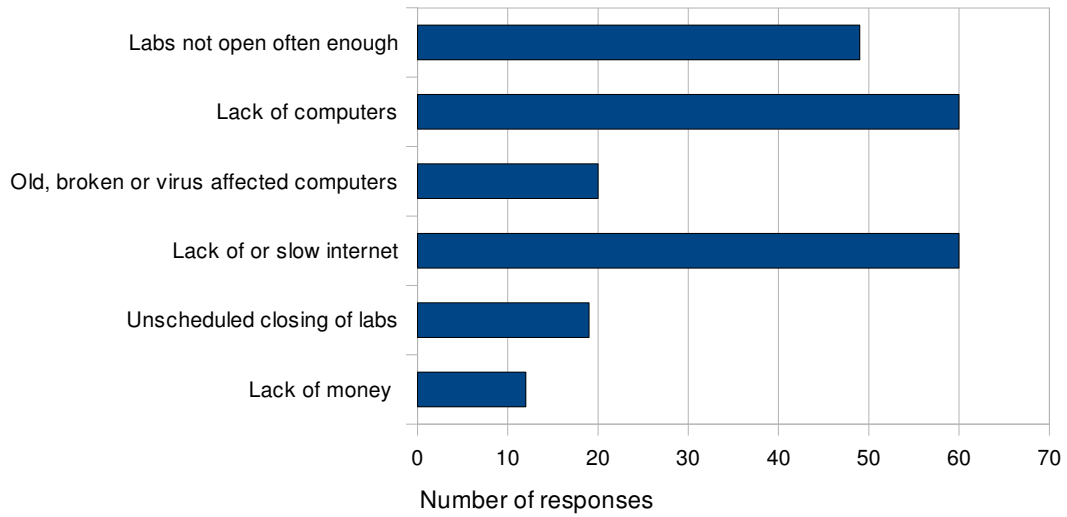


**Chart 4.1: level of difficulty in accessing a computer**

Level of difficulty	1 <sup>st</sup> Years	2 <sup>nd</sup> Years	3 <sup>rd</sup> Years	All
No problem at all	13% (15)	18% (11)	30% (14)	18% (40)
A slight problem	20% (24)	10% (6)	15% (7)	16% (37)
Quite a problem	8% (10)	23% (14)	13% (6)	13% (30)
A major problem	47% (55)	43% (26)	35% (16)	43% (97)
Not possible at all	12% (14)	7% (4)	7% (3)	9% (21)

**Table 4.1: level of difficulty in accessing a computer**

Those students who said that access was a problem were then asked to explain the problems. The responses to this question were free text so the responses have been categorized. This categorization included any comments or problems regarding access that students gave in the final free comment section at the end of the survey. The percentages in table 4.2 are based on the total number of students (185) who stated that there was at least a slight problem in accessing a computer.



***Chart 4.2: Access difficulties experienced by students***

<b>Access Difficulty</b>	<b>% (No.)</b>
Labs not open often enough	26% (49)
Lack of computers	32% (60)
Old, broken or virus affected computers	11% (20)
Lack of or slow internet	32% (60)
Unscheduled closing of labs	10% (19)
Lack of money (either to buy computer, or to pay to use an internet cafe)	6% (12)
Overall (any difficulty expressed)	74% (136)

***Table 4.2: Access difficulties experienced by students***

## **5. Basic Computing Skills**

The survey asked students how much help they would need to perform a range of common computer tasks, ranging from the basics of starting up a computer to more advanced tasks such as creating a presentation. Students were asked to score themselves on a range from needing help to perform the task to it being a task they had performed many times. The full results from this question can be found in Appendix 1.

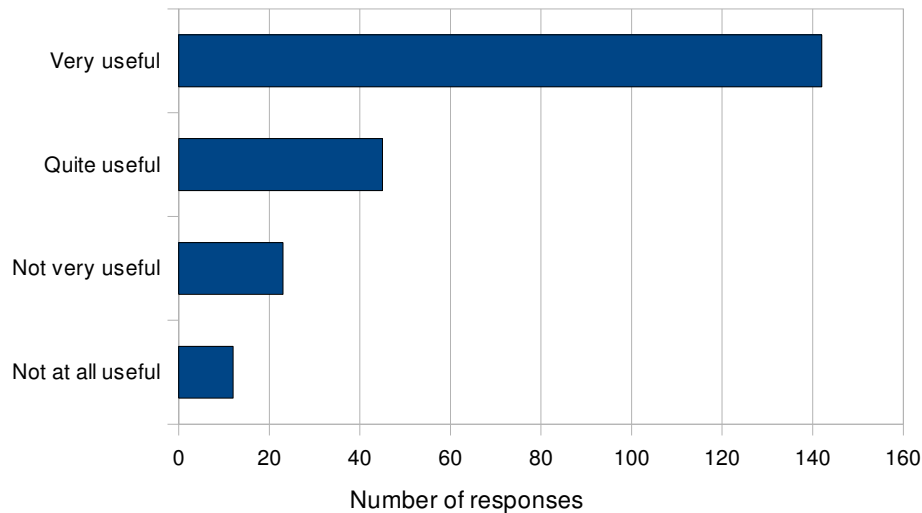
Interesting results from this question include:

- 76% have performed the task of starting up or shutting down a computer many times
- 66% need at least a little help using software to get rid of a computer virus
- 21% need at least a little help opening a computer file
- 47% need at least a little help printing a document
- 54% need at least a little help attaching a file to an email
- 64% need no help in writing and sending an email

At the time of year students were given this survey (March 2009 – at the beginning of the second semester) all students, including the first years, had completed the “Introduction to Computing” course, which is a required course for all students at the university.

## 6. Elearning and online activities

Students were asked how useful they would find online activities to do outside their normal classes, they were also asked to select from a predefined list the top 3 online activities which they would find most useful in their studies. 84% (187) students felt that access to online activities outside their normal classes would be useful or very useful, whereas only 5% (12) students felt that this would not be useful at all. Table 6.1 shows the full breakdown by year.

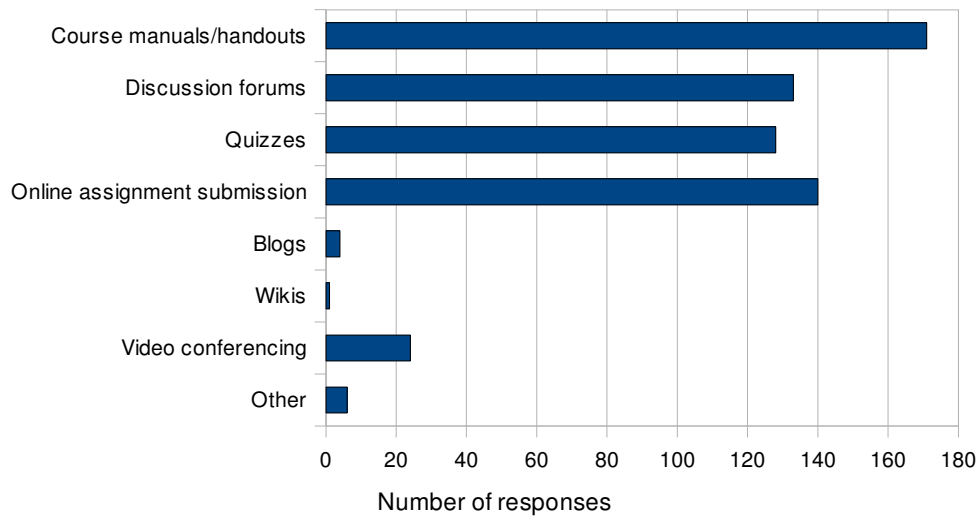


**Chart 6.1: Usefulness of elearning**

Usefulness of elearning	1 <sup>st</sup> Years	2 <sup>nd</sup> Years	3 <sup>rd</sup> Years	All
Very useful	59% (68)	65% (39)	74% (35)	64% (142)
Quite useful	21% (24)	23% (14)	15% (7)	20% (45)
Not very useful	11% (13)	10% (6)	9% (4)	10% (23)
Not at all useful	9% (10)	2% (1)	2% (1)	5% (12)

**Table 6.1: Usefulness of elearning**

When asked what type of online activities students would find most useful, 4 activity types stood out as being the most popular; access to course materials (79%), discussion forums (61%), quizzes (59%) and online submission of assignments (65%). Table 6.2 shows the breakdown including all the options students were offered to select from.



**Chart 6.2: Online activities**

Online Activity	% (No.)
Word or PDF copies of course manuals and handouts	79% (171)
Discussion forums, to discuss the course content	61% (133)
Quizzes to check your understanding of course material	59% (128)
Online submission of assignments	65% (140)
Blogs	2% (4)
Wikis	0% (1)
Video conferencing	11% (24)
Other (eg. software)	3% (6)

**Table 6.2: Online activities**

## **7. Recommendations**

A number of recommendations can be made from the results of this survey to help improve the departments' computing facilities for students.

### ***Recommendation 1: Review of the computer lab set-up and configuration***

The standard configuration of the computer labs is a networked PC running Windows. Although many of the computers are now old and have low specifications compared to newer computers, there are alternative ways in which computer labs can be set up and configured to make best use of these computers and extend their lifetime, despite their age. A review of alternative computer lab configurations and subsequent implementation is needed to ensure the best is made from the resources currently available.

### ***Recommendation 2: Increase in lab opening times***

Students felt that the computer labs were not always open at times that are convenient to them, and that lab supervisors may close the labs for no apparent reason. The computer lab opening times and how the labs are supervised should be reviewed with a view to increasing the opening times, especially in the evenings. The lab opening schedule should be posted on the door of the lab, with the supervisors name and contact details. Importantly there must be a mechanism to report (to the Department Head) when the lab experiences an unscheduled closure and the supervisor made accountable. A system for monitoring lab usage should also be put in place.

### ***Recommendation 3: Increase number of computers available***

With increasing student numbers each year, applications to obtain funding for the purchase of new computers, to replace the existing old machines as well as increase capacity, should be made by the department. Around 20 additional computers are already set up, but the lab is not open to students, and is reserved for occasional training courses, which may only be held in the evenings and weekends, and is kept locked during the normal working week – an opening and supervisory schedule must be made to ensure this lab is open to students.

### ***Recommendation 4: Increase internet capacity***

Few computers available to students have the capability to access the internet, yet the ability to effectively search the internet and make use of this huge resource is vital for any computer science student and graduate. Although the internet available available is low, investigations should be made in how the internet access could be increased for students.

### ***Recommendation 5: Basic computer skills training***

Given that the students surveyed are all studying computer science or information systems, it would be expected that they should all have a good basic practical computer skills. In fact, this is vital for students to be able to perform well in their course and develop the skills sought by prospective employers. However the level of basic computing skills amongst students is very low, possibly due to lack of practical experience or a lack of training. Basic computer skills training should be offered to students – focusing on the freshmen students, as these students are likely to have had the least practical computing experience.

### ***Recommendation 6: Require courses to use the elearning system***

Despite the access problems and low level of basic computing skills, students were very keen on having online activities to do outside their normal classes. In light of this, all courses should be

required to make use of the elearning system. Not only should the course manuals and handouts be uploaded, but, as students themselves have requested, online activities such as discussion forums and quizzes should be created by course teachers and enable the online submission of assignments.

Most aspects of these recommendations can be implemented at zero cost and with the resources currently available, all that is required is some basic training and the commitment of Computer Science staff to improve the computing facilities for students.

## **8. Conclusion and Further Work**

Although students feel they would find online activities a very useful addition for their studies, much groundwork needs to be done in terms of giving students regular access to well maintained computers and building up their basic computing skills. Recommendations 1-5 are designed to help with this groundwork and would have benefits for all aspects of students studies. It should not be taken that the development of elearning and online activities should wait until all the groundwork recommendations have been completed.

With student numbers increasing each year and the recent addition of the new Information Systems programme, work needs to begin as soon as possible to increase computer access. If the number of computers remains at the current level, yet students number increase, students are likely to become more dissatisfied and they will be unable to gain the practical computing skills necessary for them to become highly employable graduates.

In terms of rolling out the elearning system in other departments and colleges it would be useful to conduct a similar survey for non-computer science students to compare their computer access and basic computing skill levels.

It is hoped that this survey can be used as a benchmark, for future similar surveys to compare their results with, giving an indication of the improvements and progress being made.

## Appendix 1

<b>How well can you do each of these tasks on the computer?</b>	<b>Performed the task many times</b>	<b>Have performed the task alone</b>	<b>Might need a little help to perform the task</b>	<b>Need help to perform this task</b>
Start and shutdown the computer?	76% (168)	16% (37)	5% (12)	2% (4)
Start a computer game?	39% (81)	25% (53)	21% (45)	15% (31)
Use software to find and get rid of viruses?	19% (40)	14% (30)	25% (53)	41% (85)
Open a file?	59% (127)	20% (43)	13% (28)	8% (17)
Create/edit a document?	53% (115)	21% (45)	15% (32)	11% (24)
Scroll a document up and down the screen?	62% (130)	16% (34)	11% (24)	10% (22)
Use a database to produce a list of addresses?	22% (47)	16% (34)	29% (63)	33% (70)
Copy a file from a floppy disk or flash drive (USB memory stick)?	46% (99)	17% (37)	14% (31)	23% (50)
Save a computer document or file?	68% (148)	19% (41)	7% (15)	6% (13)
Print a computer document or file?	31% (66)	21% (45)	20% (43)	27% (58)
Delete a computer document or file?	54% (115)	21% (44)	15% (33)	10% (21)
Move files from one place to another on the computer?	49% (107)	17% (37)	12% (27)	21% (46)
Get onto the Internet?	54% (115)	18% (38)	14% (30)	14% (29)
Copy or download file from the Internet?	41% (88)	13% (28)	18% (38)	27% (58)
Attach a file to an email message?	32% (68)	14% (30)	25% (53)	29% (63)
Use a spreadsheet to plot a graph?	17% (36)	20% (41)	27% (57)	36% (76)
Create a presentation (e.g. using MS PowerPoint)?	27% (57)	18% (37)	23% (49)	32% (68)
Play computer games?	31% (65)	19% (40)	28% (59)	21% (43)
Download music from the Internet?	22% (48)	18% (38)	29% (63)	30% (65)
Create a multimedia presentation (with sound, pictures and video)?	22% (46)	13% (27)	24% (50)	41% (87)
Draw pictures using a mouse?	38% (80)	23% (49)	21% (45)	18% (39)
Write and send emails?	50% (108)	14% (30)	14% (31)	22% (49)

## Appendix 2: Survey

This survey is to help find out how the DIF E-Learning Project can best help support you in your studies. Please complete this survey as fully and honestly as possible. All your answers will be treated anonymously.

1. Which year of study are you in?

- First                       Second                       Third  
 Other, please explain:

2. Are you male or female

- Female                       Male

3. Which course are you studying?

- Information Systems       Computer Science

4. In an average term-time week, how often do you use the Computer Science computer labs **outside your normal supervised lab sessions**? (please tick one)

- Never                       Up to 1 hour per week  
 1 – 3 hours per week       4 – 6 hours per week  
 7 – 10 hours per week       more than 10 hours per week

5. Do you have access to a computer **outside the Computer Science department**? (please tick all that apply)

- No, I have no access to a computer outside the department  
 Yes – I have my own computer  
 Yes – I share a computer with other family members  
 Yes – I borrow someone else's computer, e.g. friends, family  
 Yes – I use a computer in an internet café  
 Yes – I have another means of access, please explain:
- 

6. In general, is it a problem for you to get to use a computer **outside your normal supervised lab sessions**?

- No, no problem at all (go to Q7)  
 Yes, a slight problem                       Yes, quite a problem  
 Yes, a major problem                       Yes, it's not possible at all

If Yes, please explain the problems:

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7. On average, how much time per week do you spend on the internet? (please tick one)

- |  |  |
|--|--|
| <input type="checkbox"/> None at all           | <input type="checkbox"/> Up to 1 hour per week       |
| <input type="checkbox"/> 1 – 3 hours per week  | <input type="checkbox"/> 4 – 6 hours per week        |
| <input type="checkbox"/> 7 – 10 hours per week | <input type="checkbox"/> more than 10 hours per week |

8. What activities do you take part in whilst using the internet? (please tick all that apply)

- Reading and writing emails
- Instant messaging
- Browsing the internet for fun
- Browsing/research for your courses
- Discussion forums
- Downloading and playing music, films etc
- Other, please specify:

9. During term time, roughly how often do you use the FBE-Server (Faculty of Business & Economics Server) for accessing course materials, handouts and other documentation related to your course? (please tick one)

- |                                     |                                      |
|-------------------------------------|--------------------------------------|
| <input type="checkbox"/> Never      | <input type="checkbox"/> Every month |
| <input type="checkbox"/> Every week | <input type="checkbox"/> Every day   |

10. How useful would you find it in your studies to have online activities to do outside your normal classes?

- |  |  |
|--|--|
| <input type="checkbox"/> Very useful     | <input type="checkbox"/> Quite useful      |
| <input type="checkbox"/> Not very useful | <input type="checkbox"/> Not at all useful |

Please explain your answer:

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11. Please tick the 3 online activities which you would find most useful in your studies. (**Please tick 3 boxes only**)

- Word or PDF copies of course manuals and handouts
- Discussion forums, to discuss the course content
- Quizzes to check your understanding of course material
- Online submission of assignments
- Blogs
- Wikis
- Video conferencing
- Other, please specify:

12. Please place a tick in the most appropriate box of the table below to show how confident you feel performing the stated tasks.

	<b>Performed the task many times</b>	<b>Have performed the task alone</b>	<b>Might need a little help to perform the task</b>	<b>Need help to perform this task</b>
<b>How well can you do each of these tasks on the computer?</b>				
Start and shutdown the computer?				
Start a computer game?				
Use software to find and get rid of viruses?				
Open a file?				
Create/edit a document?				
Scroll a document up and down the screen?				
Use a database to produce a list of addresses?				
Copy a file from a floppy disk or flash drive (USB memory stick)?				
Save a computer document or file?				
Print a computer document or file?				
Delete a computer document or file?				
Move files from one place to another on the computer?				
Get onto the Internet?				
Copy or download file from the Internet?				
Attach a file to an email message?				
Use a spreadsheet to plot a graph?				
Create a presentation (e.g. using MS PowerPoint)?				
Play computer games?				
Download music from the Internet?				
Create a multimedia presentation (with sound, pictures and video)?				
Draw pictures using a mouse?				
Write and send emails?				

**13.** Do you have any other comments regarding the use of computers or the internet in your course?

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Thank you for your time in completing this survey, your feedback and opinions are very useful to us.

**Please return your completed survey to Alex Little**