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End User Computing at Lincoln University: An Observational Study of Former Students

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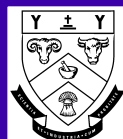
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End User Computing at Lincoln University: An Observational Study of Former Students

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Abstract

Increasingly end users in organisations are having to become more responsible for their own computing. Many of their applications are developed using standard business packages, especially spreadsheets and database managers, rather than being produced as customised software in a traditional 3GL. Typically, in a university curriculum, application software is only addressed in first year, introductory computing papers. In 1990, a 200 level paper "Problem Solving on Microcomputers" was introduced at Lincoln University. This was followed two years later with a 300 level paper, "Advanced End User Computing". To help with assessing the usefulness of these papers and to gain input on how the curriculum should evolve, a survey of former students was undertaken in 1996. This report contains the results of that survey.

1. Introduction

Towards the end of the 1980s, developing computer applications was still very much the domain of the expert. Compilers, interpreters and database managers all required a considerable amount of expertise to even get started and the user interfaces were poor. During the 1990s application software, spreadsheets, databases and other end user tools, have become much more accessible to the non-expert computer user. More and more users are now being required to construct their own solutions to computing problems using application software, rather than using custom software that has been developed for them in a traditional programming language. This is the concept of end user computing (EUC) and has been well discussed in the literature (Panko, 1987; Delligatta, 1992; Halloran, 1993 and many others). As application software becomes more powerful and complex the range of problems accessible in this way grows. Unfortunately, it cannot be assumed that the competence of the user is improving to match.

Most traditional computer science courses however, still teach software development (analysis, design, programming, testing) to computer science majors in the context of programming languages. The difference between typical computer science curricula and the skills used in industry have been addressed by several authors notably Trauth, Farwell and Lee (1993) and in New Zealand by Monin (1995).

In recognition of the changing face of computing, Lincoln University has introduced papers that concentrate on solving real world problems using end user tools. The aim of these papers is to produce graduates who can take unfamiliar problems, evaluate the software choices that are available at the time and produce accurate, maintainable and usable solutions.

Considerable efforts have been made to ensure these papers are also accessible to students who may be majoring in another area of study other than computing. At the same time it has been noted that almost all computing majors include the end user papers in their courses.

In order to evaluate the effectiveness of the end user computing curriculum at Lincoln, a survey of former students of COMP307 "Advanced End User Computing" was undertaken in 1996. The results were extremely positive: most students claimed that they regularly used the skills they had learned in the paper and considered it one of the "most useful" papers they had taken at Lincoln.

The usefulness of computing subjects at Lincoln is further emphasised by a survey undertaken during the course of the review of the Bachelor of Commerce and Management degree (Gow, Newman 1997). The survey had responses from 341 Lincoln University graduates (mostly commerce) and 310 employers. Both groups identified computing as their first choice in the compulsory subjects, ahead of all other subjects including financial management and economics. There was also strong support for the inclusion of additional advanced computing papers in the core.

This report contains the detailed results of the survey of former COMP307 students and is constructed as follows: section 2 gives a brief overview of the end user papers at Lincoln, section 3 outlines the survey methods, section 4 summarises some of the more interesting results and section 5 contains our conclusions. The remainder of the report contains the results (Appendix A), and the survey itself is in Appendix B.

2. End User Computing at Lincoln

Undergraduate computing students at Lincoln University fall into three broad categories: those taking the Bachelor of Applied Computing degree (approximately half computing papers and half subjects from some other discipline), students taking the Bachelor of Commerce and Management degree (majoring in Applied Computing) and those wishing to include some computing as part of any of the degrees offered at Lincoln. The Bachelor of Applied Computing has only been available since 1996.

The emphasis of the end user computing papers at Lincoln is on problem solving and transferability of skills. The latter is extremely important, as any product dependent skills will quickly become useless with the rapid evolution of software in today's market. The end user computing papers are in addition to the papers that are normally found in a computer science curriculum (programming, database theory, systems analysis, and technical computing papers), and are designed to be accessible to non-computing majors as well as those specialising in computing.

A 200 level paper "Problem Solving on Microcomputers" was introduced in 1990. It tackles the dual problems of producing users competent and confident in the current batch of products and also aims to provide skills that will enable graduates to adjust to future developments - whatever they may be. The emphasis is on the individual solving real world problems rather than on doing short class exercises. This means tackling problems involved with transferring data between applications and dealing with all the complexity that a real

situation introduces. Issues such as designing appropriate solutions, user interface design, documenting, testing and auditing are also covered and included in practical assignments.

A 300 level paper "Advanced End User Computing" was first taught in 1992 and builds on the skills acquired in the 200 level paper, which is a prerequisite. Students continue to develop applications using a variety of packages and are expected to be able to transfer their skills to unfamiliar products of the same genre. Considerable emphasis is placed on designing applications that are accessible to other users. End user issues are also examined from a management or project leader viewpoint. Topics include evaluating software and making decisions on the most appropriate type of software to use. As many of the graduates are expected to find themselves in positions of responsibility in a variety of organisations, issues such as "how to introduce and manage end user computing in an organisation" are addressed. Other topics such as security and privacy issues, user responsibility, and OOS are also introduced.

The papers have been extremely popular. Nearly all computing majors take them, and they are also attractive to non-computing majors. Over the last five years 60% - 70% of the 300 level class have majored in a subject other than computing, typically accounting, finance, general commerce or resource studies. For many of these students the 300 level end user computing paper was the only advanced computing subject in their course. This year the end user papers have been included in the science schedule; a move that reflects their general utility. A further EUC subject "Multimedia Development and Applications" was introduced in 1997. This paper has a strong emphasis on using and developing world wide web pages.

3. The Survey

To assess the usefulness of the end user computing papers at Lincoln a survey was carried out in late 1996. The potential population, numbered 199, and was made up of all students who had passed COMP307 during the years 1992 to 1995 and who were no longer studying at Lincoln University. Addresses were sought from the Lincoln University Alumni and were found for 160 people. We were aware, however, that many would be out of date. Responses were received from 70 people, 44% of those surveyed. 12% of the surveys were returned to sender and there were probably many more that never reached the intended recipients. Replies were received from New Zealand, Australia, England, Malaysia and Singapore. All other considerations apart the survey was a delightful way of catching up with news of our former students.

The survey respondents were generally representative of the population (Table A1), however, those with higher grades were somewhat over represented. Thus the results presented may paint an over favourable view of the effectiveness of EUC education at Lincoln.

The full questionnaire is contained in Appendix B. In summary it consisted of 3 sections. The first covered respondents' employment. It asked about their employment history, the types of tasks that the computing component of their current job involved and in particular asked if they described themselves as a computer professional. The second section covered respondents' general computing background and their perceived competence in computing.

The third section was more specific to COMP307. It assessed the respondents' reasons for enrolling in COMP307, their expectations and how they were met. They were asked to rate its difficulty, and its usefulness compared with the other subjects they had studied. They were also asked what other computing subjects they had enrolled in. This information was used to

identify those respondents who were computing majors (ie with a course including at least four 300 level computing papers).

The final question in this section listed a number of topics for inclusion in COMP307 (Tables 3.8a and 3.8b), and asked the respondents to indicate those topics that were useful in their current jobs, and those they considered important to include in the curriculum.

3.1 Survey Analysis

This survey is an observational study only as it was impossible to obtain a true sample of the population. The analysis was confined to producing cross tabulations (using pivot tables in Excel), and means where these were appropriate. Questions 1.4 and 2.5 were not analysed. The full results, along with respondents' comments, can be found in Appendix A. We include here a summary of some of the more interesting results.

4 Results

It was informative to separate the results of those respondents who regarded themselves as currently working as a computer professional, from those who worked in some other role. A much larger proportion of the males (38%) considered themselves to be computer professionals than the females (17%). It was interesting to note that some graduates who regarded themselves as computing professionals were not computer majors and so the end user papers were probably the only formal computing subjects taken in their degree. The proportions of the respondents in each of these groups are contained in Table A2. A summary of the 300 level computing subjects taken by respondents is in Table 3.1.

4.1 Respondents' Computing Background.

It was useful to take the opportunity to collect demographic information about our EUC students, even though this was secondary to the main purpose of the survey. These questions were mainly concerned with respondents' computing experience prior to coming to Lincoln.

Some of the more interesting observations were:

Computer ownership prior to coming to Lincoln (Table 2.1):

- 50% of respondents overall
- 64% of the computing professional group and 44% of the non-professionals
- 35% of females and 57% of males

Those who had taken computing courses at high school (Table 2.3):

- 50% of the computing professionals and 38% of the non-professionals
- 48% of the males and 26% of the females

Perceived ability at using a computer on arrival at Lincoln (Table 2.6):

- Fewer than 10% of respondents considered themselves "very competent"
- One third considered themselves "absolute beginners"
- About 60% of both the professional and non-professional groups considered themselves as having "some knowledge"
- Surprisingly, a larger proportion of the males (36%) considered themselves "absolute beginners" than of the females (26%)

It would appear then that those who became computing professionals had a stronger computing background prior to university than the others.

86% of computer professionals and 77% of non professionals considered themselves “very competent” users on leaving Lincoln (Table 2.7). When asked to indicate their current level of ability, an increased number of people regarded themselves as “very competent” in their “area of operation”. This seems to indicate that their EUC education has provided a solid foundation upon which to build.

4.2 General Usefulness

The overwhelming opinion of the respondents was that the skills developed in their end user computing class were valuable.

- 86% used the skills in their present job (Table 3.7)
- 59% felt it gave them an advantage in applying for jobs (Table 3.6)
- 17% rated it “the most useful paper” they took at Lincoln, while a further 51% rated it “more useful than most” (Table 3.5)

These results were somewhat surprising when responses were broken down into computing and non-computing professionals.

- 91% of professionals and 83% of non-professionals used EUC skills in their current jobs
- 55% of professionals and 75% of non-professionals thought the end user paper “a lot more useful than most” or “the most useful” paper that they took at university.

We were surprised at the large percentages in both groups who are using end user skills in their current employment, especially those who regarded themselves as computing professionals. A considerable number of this group had taken many of the other traditional computing papers (programming, operating systems, algorithms etc) but still regarded the end user computing paper as “more useful than most”.

In general most students found this subject about the same or easier than most (Table 3.4). This may be a reflection of the level of support they receive in this paper. Not surprisingly computer professionals were more likely to have found the subject easier than others.

4.3 Important Topics

Question 3 in section 1 asked the respondents to briefly describe the computing content of their job in their own words. Spreadsheets and word processing topped the list with 82% and 77% of respondents mentioning these topics. Programming lagged at 24%. It was interesting to see the distinction between computing and non-computing professionals. As might be expected very few non-computing professionals’ jobs involved programming (only 2 out of 48). However it was interesting to note that programming, spreadsheets and databases were all mentioned by the same number of professionals (15 out of 22). These results tend to confirm the view that computing is changing, with more and more work being done in application packages and somewhat less emphasis being placed on traditional programming. The results are also consistent with those of a survey undertaken by the New Zealand Computer Society of IS professionals, Monin (1995) and of a survey of New Zealand accountants, Coy and Buchanan (1997).

The questionnaire also asked respondents to rate the usefulness of 24 end user topics in their current jobs with a Likert ranking of 0 (not applicable) to 5 (very useful). They were similarly asked to rank the importance they placed on including these topics in the curriculum, from 0 to 5 in increasing importance. The full results can be found in Tables 3.8a and 3.8b. A summary of those topics thought most important is presented in Figure 1. The numbers are the mean score of those respondents who chose an answer from 1-5 in each group.

It is interesting to note that spreadsheet basics and using email, moving data between applications, and selecting an appropriate application were highly valued skills for both computing and non-computing professionals. This further emphasises the fact that a significant amount of computing is carried out using a variety of existing end user tools rather than in developing new software. This might involve transferring partially processed data from one application package to another for further processing, or producing integrated reports with data from spreadsheets and databases linked to a word processed document.

TOPIC	used in current job			important in curriculum		
	All	Prof	Non-Prof	All	Prof	Non-Prof
Spreadsheet basics	4.5	4.1	4.7	4.5	4.2	4.6
Using Email, listservers etc	4.1	4.6	3.8	4.4	4.3	4.5
Moving data between applications	4.1	4.3	4.0	4.3	4.4	4.3
Selecting appropriate applications	3.9	4.2	3.7	4.4	4.2	4.5
Spreadsheet databases	3.4	3.2	3.4	4.1	3.9	4.2
Using SS templates	3.3	3.2	3.3	3.9	3.6	4.0
Using multi table databases	3.3	4.1	2.8	4.3	4.5	4.3
Creating database tables	3.3	4.1	2.8	4.2	4.4	4.1
Database forms/reports	3.2	4.0	2.8	4.2	4.5	4.2
Using World Wide Web	3.2	4.1	2.8	4.1	4.2	4.0
Software installation	3.1	3.7	2.8	3.5	3.3	3.5
Macros/Visual Basic modules	3.0	3.5	2.8	4.0	4.0	4.0
Data (Whatif) tables/pivot tables	2.7	2.8	2.6	3.9	3.6	4.0

Figure 1: Topics Most Used by Respondents and the Perceived Importance in the Curriculum

Another interesting point to note, is the difference in some topics, between the answers to question 3.8a and 3.8b. Pivot tables, VB/macros, Using the WWW, and a number of database topics scored considerably higher in “importance in the curriculum” than in “usefulness in current job”. The computing professionals scored consistently higher for these topics than the non-computing professionals. Possibly respondents could see the value of these topics but were not using them to their full potential in their current positions. This could be because of their own lack of confidence or that their employment situation did not allow full use of these topics. Most of these topics are ones that students have difficulty with, apart from “using the WWW” which would have been introduced after some of the respondents had graduated. It is the opinion of the authors that because spreadsheet skills are somewhat more prevalent among non-professionals than good database skills, that many individuals, companies and research institutions use spreadsheets in situations where a fully relational database would be more appropriate. The results in Figure 1 tend to show that our former students recognise this problem.

Looking at the rankings of topics for questions 3.8a and 3.8b reveals that “installing SW” (which has been in the COMP307 syllabus) and “using presentation software” (which has not), are often used but not considered so essential in the curriculum. This may indicate that

these topics are quite easy to pick up compared with some of the others. Certainly installing software has become easier in recent years.

Some of the topics had a low response rate (see Tables 3.8a and 3.8b) eg groupware, creating web pages, creating and using multimedia applications, and presentation software. This probably reflects the low uptake of these relatively new technologies in the workforce.

4.4 Respondents' Recommendations.

The best starting point for considering the future developments of COMP307 is probably the suggestions that the survey respondents gave for improvement. These can be found in Appendix A, section 3.10. On the whole these suggestions tend to support changes that are already evident in the constantly changing curriculum (ie *keep up with new software*). The many contradictory comments (*teach more DOS, don't teach DOS; no use for WWW, more internet*) probably reflect the different work environments in which people are finding themselves. A request for more OLE will probably fit into the syllabus more naturally with our intended move to Visual Basic as a first programming language in 1998. This is clearly a growing area of importance and needs to be addressed though the entire applied computing curriculum. The increasing importance of the internet is being met with the introduction of COMP309 "Multimedia Development and Applications" in 1997.

One of the most often repeated views was for *more real world projects* rather than a formal examination. This is not surprising and reflects a conflict between the respondents' educational needs and our assessment requirements. We are constantly experimenting with how to balance these requirements in all of our computing subjects.

5 Conclusion

The survey results confirmed our belief that advanced end user computing plays an important role in tertiary applied computing courses. The respondents mostly felt that the topics covered were valuable and applicable to real world problems. One criticism of this type of course can be that they constitute "training" in specific application software. The feedback we received demonstrates that the skills taught are genuinely transferable. Some respondents were using the skills more than four years after completing the subject by which time the specific software would be quite different.

The skills were used by respondents in a variety of jobs and were as much, if not more, appreciated by those in professional computing jobs as those in other jobs where end user computing is most often expected to occur. This was a particularly rewarding finding.

While spreadsheet topics are the most commonly used skills, respondents saw a definite need for improved database proficiency. While formal database theory and design are covered in other subjects available to computing majors at Lincoln University, there is clearly a need for aspects of these topics to be made more readily accessible to non-computing specialists.

The survey results were encouraging and reinforced our views that a broad ranging computing education is essential in producing graduates able to adapt to the rapidly changing environment in which they will find themselves.

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Appendix A: Results

Survey Population

Table A1 Representativeness Of Survey

	Survey	Population
Females	35%	33%
Computing Majors	34%	30%-40% in any year
A grades	50%	30%
B	36%	47%
C	14%	23%

Table A2 Survey Respondents Broken Down by Employment Category and Degree Type.

	Computer major	Non-computer major	Total
Employed as Computer Professional	17 (24%)	5 (7%)	22 (31%)
Non-Computer Professionals	7 (10%)	41 (59%)	48 (69%)
Total	24 (34%)	46 (66%)	70 (100%)

Section 1: Employment History

1.1. Would you describe yourself as a computer professional?

eg. An accountant is not a computer professional but a computer trainer is.

	Computer Professionals		Non-Computer Professionals		Totals	
	n	%	n	%	n	%
Females	4	5	19	27	23	33
Males	18	26	29	41	47	67
Total	22	31	48	69	70	100

1.2 Job title or description (if currently or recently employed.)

Non-Computer Professionals

Financial analyst
Accountant
Fixed assets accountant
Bank teller
Accountant
Technical assistant
Project coordinator
Accountant
Business analyst
Marketing coordinator
Trade analysis accountant
Category manager
Student (Otago University)
Traffic design officer
Assistant accountant
Management Cadet
Manager-Business banking
Technical officer
Property investor
Auditor
Marketing coordinator
Office administrator
Assistant accountant
Secondary school teacher
Accounts clerk/Help desk operator
Audit assistant
Investment banking
Marketing analyst
Marketing inductee
Audit senior
Accountant
Accountant-Auditor
Quality assurance officer
Accountant
Property valuer
Product manager - mortgages
Auditor
General manager
Salesperson
Officer secretary/Library assistant
Marketing manager
Property consultant
Science technician
Mechanic
Banking consultant
Nursery worker

Computer Professionals

Casemix system analyst
Programmer
Junior designer
Assistant system analyst
Computer tutor/Programmer
Digital Services Manager
Software engineer
Executive officer
Software developer
System analyst
IT Consultant (regional)
Senior programmer analyst
Technology Application Officer
IT analyst
Data analyst
Analyst/Programmer
System Consultant
Information System Auditor
Senior analyst programmer
Senior application specialist
Systems Management
Application analyst

1.3. Briefly describe the computing component (if any) of your job.

eg. *I use a variety of packages for several hours each day and set up software for others to use.*

or- *I mainly use a wordprocessor to write reports.*

or *I don't use a computer in my job.*

(The results below are those most often mentioned by the respondents)

	Computer Professional	Non-computing Professionals	Total	
	(22)	(48)	n	%
Use Spreadsheets/Money	15	43	58	82
Use Word Processing	19	35	54	77
Use Databases	15	24	39	56
Use Programming	15	2	17	24
Support other users	9	6	15	22
Mail/Internet	5	7	12	17
Use Network Operations	9	0	9	13

Section 2: General Computing Background

2.1. Did you have a computer at home before you came to University?

	No		Yes		Total	
	n	%	n	%	n	%
Computer Professionals	8	11	14	20	22	31
Non-Computer Professionals	27	39	21	30	48	69
Total	35	50	35	50	70	100

	No		Yes		Total	
	n	%	n	%	n	%
Females	15	21	8	11	23	33
Males	20	29	27	39	47	67
Total	35	50	35	50	70	100

2.2a Do you currently have a computer at home?

	No		Yes		Total	
	n	%	n	%	n	%
Computer Professionals	5	7	17	24	22	31
Non-Computer Professionals	16	23	32	46	48	69
Total	21	30	49	70	70	100

2.2b If yes to 2.2a, What do you use it for? eg *Very little, writing letters, doing work tasks at home*

	Use Home Computer for Work Purposes	
	n	%
Computer Professionals	11	16
Non-Computer Professionals	16	23
Total	27	39

Additional uses

Writing letters (9)	Small business accounting, balance sheets
Children use for school projects (2)	Internet (9)
Games (17)	Assignments at varsity
Voluntary work tasks at home (2)	Personal interests (2)
Personal accounts, budgeting (6)	Sending/receiving faxes
Word Processing (16)	Programming, contract programming (4)
Spreadsheets (9)	Database design (2)
Nothing now, very little, too old, use work computer (8)	Music
Extramural study (2)	Art work
	Desktop publishing

2.3 Did you take any computing courses at high school? eg. *Sixth Form computer studies, etc.*

	No		Yes		Total	
	n	%	n	%	n	%
Computer Professionals	11	16	11	16	22	31
Non-Computer Professionals	30	43	18	26	48	69
Total	41	59	29	41	70	100

	No		Yes		Total	
	n	%	n	%	n	%
Females	17	24	6	9	23	33
Males	24	34	23	33	47	67
Total	41	59	29	41	70	100

2.3 Did you take any computing courses at high school?

Fortran programming	Wordstar (2)
Typing	DOS
Computer programming (4)	ICI Correspondence course
Sixth form computer studies (12)	Fourth form Computer Studies
Basic and Pascal programming languages (4)	Dbase
Seventh form Applied Maths - punch cards for PDP11	Seventh Form Computer Studies
Lotus 123 (2)	Fifth Form Computer Studies

2.4 Did you take any other computing courses before starting university? eg. Night Class in Basic programming at Polytechnic, WordPerfect training course.

	No		Yes		No Response	Total	
	n	%	n	%	n	n	%
Computer Professionals	18	26	3	4	1	22	31
Non-Computer Professionals	41	59	7	10	0	48	69
Total	59	84	10	14	1	70	100

(P)= Subjects taken at Polytechnic

H P Systems management
 Introduction to computing (P)
 Profax Accounting (P)
 Intro to Excel
 MS Word-Intro
 Basic Programming (P) (4)
 WordPerfect
 Beginners computer course (P)

Word Processing (2)
 Dbase (2)
 Pascal programming (P)
 Spreadsheets (P)
 Data Entry (P)
 Wordstar
 Lotus (2)
 Aldus Pagemaker

2.6 How would you rate your ability to use a computer on arrival at Lincoln University?

	Absolute Beginner		Some Knowledge		Very Competent		No Response	Total	
	n	%	n	%	n	%	n	n	%
Computer Professionals	5	7	13	19	4	6	0	22	31
Non-Computer Professionals	18	26	28	40	1	1	1	48	69
Total	23	33	41	59	5	7	1	70	100

	Absolute Beginner		Some Knowledge		Very Competent		No Response	Total	
	n	%	n	%	n	%	n	n	%
Females	6	9	15	21	2	3	0	23	33
Males	17	24	26	37	3	4	1	47	67
Total	23	33	41	59	5	7	1	70	100

2.7 How did you rate your ability to use a computer on leaving Lincoln University?

	Absolute Beginner		Some Knowledge		Very Competent		No Response	Total	
	n	%	n	%	n	%	n	n	%
Computer Professionals			3	4	19	27	0	22	31
Non-Computer Professionals			10	14	37	53	1	48	69
Total			13	19	56	80	1	70	100

	Absolute Beginner		Some Knowledge		Very Competent		No Response	Total	
	n	%	n	%	n	%	n	n	%
Females			6	9	17	24	0	23	33
Males			7	10	39	56	1	47	67
Total			13	19	56	80	1	70	100

2.8 How would you rate your ability to use a computer now?

	Absolute Beginner		Some Knowledge		Very Competent in my area		No Response	Total	
	n	%	n	%	n	%	n	n	%
Computer Professionals			2	3	20	29	0	22	31
Non-Computer Professionals			8	11	39	56	1	48	69
Total			10	14	59	84	1	70	100

Comments:

- Still learning
- My skills have fallen since COMP307. This is mainly due to neglect as I did not have much opportunity to use them in post-graduate year. This is a definite pity as I feel that were I to enter my current job immediately having completed COMP307 I would be the most competent user (From a package familiarity perspective NOT HARDWARE etc) in the office by a significant margin - particularly in the field of database's.
- Only know enough to keep the computers going while the 'lady' who is an expert isn't here. (Accountant)
- I am learning more every day. Since I have been at Air NZ I have learnt to use: PowerPoint, ABC Flowcharter, MX Schedule, MS Project, and increased my skills in WORD (eg designing tables and using company standard documents).
- Have lost contact with Word & Excel and have no idea about the "NET". (Bank teller)
- *Very competent in my area of operation* - although I am always finding out things/features I didn't know about.
- *Very competent in my area of operation* - When I went and got a real job in the auditing field, I knew no systems for MAC, now can hardly remember PC systems. Applications are basically the same on both platforms though.
- Am very competent (I think) at all Microsoft Windows applications, learning some CAD software use, and am a confident user of MS-DOS. (Marketing inductee).
- *Some knowledge* - A lot more to learn and I am a bit behind time or not competent enough. (Information System Auditor).
- *Very competent in my area of operation* - Am able to find solutions myself- diagnose when I am unable to fix or correct and point those responsible for the fix in the right place (target effort).
- Very competent in my area but I would like to learn more about other software packages as well.

- *Very competent in my area of operation* - In areas of word processing, spreadsheet, database, publishing, and downloading files for 'on-demand' printing.
- Always learning something as software packages are upgraded. Little need to consult the manual.
- *Very competent in my area of operation* - I'm not up-to-date with the latest developments and technical/hardware areas.
- *Very competent in my area of operation* - Let's put it this way - not much retraining was necessary.
- *Very competent in my area of operation* - Especially in the area of Software & hardware architecture of the ATM system, communication protocol with the host etc.
- *Some knowledge* - I know enough to be aware that there is a lot I don't know.
- *Very competent in my area of operation* - find it hard to relate to all of the new developments in the computer environment. Some areas of study seem out-of-date. (Casemix system analyst)
- Competent programmer. Expert in DOS and Windows.
- *Very competent in my area of operation* - Could probably do some tasks better if had the time to learn how! (Science technician)
- *Very competent in my area of operation* - Although a "refresher" course would be good!
- *Some knowledge* -but feel confident applying for jobs that say "knowledge of Word, SS, etc essential"

Section 3: COMP307

3.1 Which of the following Lincoln computing subjects do you remember taking?

Those responding that "yes" they remember taking the course

Course	Computing Professional	Non-Computing Professional	Total	
			n	%
COMP301 Advanced Programming and Computer Files	18	11	29	41
COMP302 Information Systems	19	13	32	46
COMP303 Concepts and Organisation of Databases	18	8	26	39
COMP304 Advanced Topics in Computing	13	5	18	26
COMP305 Computer Modelling and Simulation	13	4	17	24
COMP306 Objected Oriented Programming	17	5	22	31
COMP307 Advanced End User Computing	22	48	70	100

3.2 If you can remember, please give the reason(s) why you enrolled in COMP307.

Summary-

- Enjoyed COMP203 - 10
- Computing skills important for work in "real world"- (17)
- Wanted to have a greater knowledge of the use of applications - (26)
- Interested in computer software rather than the technical, programming side - (8)
- Students who were advised to, timetabling, seemed interesting, computing subject, better than accounting, compliments degree, paper put towards PD Dip, already had the prerequisite (9)

Comments

- Advised to. To complete my post grad I needed a certain amount of credits.
- Enjoyed COMP203 and felt that computing skills would be an important tool to be able to offer employers. During interviewing for jobs it was clear that potential employers regard this area as important.
- So I would have a knowledge of the use and application of a wide range of computer programmes.
- Because I did not need the programming classes for my Mgmt degree, but end user comp skills such as those offered in 307 were essential to succeeding in a typical organisation.
- Interest, timetabling & required a stage 3 paper
- Enjoyed COMP203. Wanted to understand end user requirements in greater depth.
- It seemed useful to learn end user packages since they are very common.

- Gain credit towards Applied Computing major. COMP307 had minimal prerequisite requirements. Couldn't take any other papers at that time.
- Mainly because I had the prerequisite.
- Enjoyed COMP203, wanted to expand on end user computing.
- To increase my knowledge in use S/W applications. To gain appreciation of different packages. To increase confidence to try new things and advance in areas of interest.
- To get general all round knowledge & experience without "hard core" subjects.
- Next step up after 203 if you did want more info, but didn't want to do all the technical computing degree side.
- I really enjoyed the prerequisite (was it COMP207). I didn't enjoy programming, and didn't see my career in that field, but recognised the use of PC's in the commerce area.
- Thought it was an essential topic to gain understanding of spreadsheets, databases and windows.
- Enjoying COMP203, though subject would be useful, enjoyed lecturing style.
- Because I dropped a finance paper 'cos I had to do lots of class presentations (yuk!) & thought that I may actually use COMP307 in the outside world. (Accountant)
- I wished to develop more refined skills in software use, as opposed to wanting a knowledge of programming.
- As a non-computing professional, useful to know how to use Microsoft products no need for programming etc of above.
- All round end-user course. Project work. Internal assessment structure.
- It's useful in current business or working environment. And I love it.
- Natural follow on from 203 & I wanted to be able to use the software competently since I was not totally sure I would be doing a computing degree rather than accounting. (Accounts clerk/Help desk consultant)
- Paper that will be very useful in the future ie 'word of window' is common used by all company.
- To further develop my spreadsheeting skills, enjoyed COMP203.
- I enjoyed COMP20? (the prerequisite). And thought it valuable as computers are an integral part of life and employment.
- Because I intended to get double major (accounting & computing) and because this subject give me a chance to learn advanced spreadsheet features.
- Its usefulness to my VAPM major.
- To use Excel package at work.
- General software applications & Excel.
- Very interested in end-user computing. Very easy to get good grades.
- I knew it would be very useful, practical for the real world. It would help me to get a job.
- I like the subject. End-user computing will help me in my future career (Which is proven now). I like the lecturer.
- I enjoyed COMP203 and needed a certain number of 300 level papers from schedule A to complete my degree.
- Application skills and knowledge the course was offering. Could see this as a big plus in the "real world".
- COMP203 made me realise how important and practical an understanding of end user computing can be in today's business environment.
- Interested in external database and spreadsheet use.
- To take the base of computing knowledge learnt at first and second year levels to the more advanced stage.
- Really enjoyed COMP203 - found it excellent for developing problem solving skills and it gave me a sound basis for spreadsheets an databases - I just needed to learn more.
- To improve spreadsheet and database capabilities and learn something about the hardware.
- The course outline seems interesting. I remember that this was a paper in the computing subject block (I took all except a few) couldn't accommodate them in the timetable.
- Because Theresa needed tutors for COMP307. Also more experience in advanced spreadsheeting and databases.
- COMP307 is a good course to learn or master common application software especially for a student who took accounting papers because accounting won't separate from computer.
- I think it's very useful to be able to use a range of end-user type softwares (spreadsheet, wordprocessor, database) to increase efficiency. By learning all these softwares, it also makes it much easier to learn other softwares.
- Get a running knowledge of packages I would be using in the workforce.
- To further master my knowledge in those computer knowledge other than programming languages. For instance, software packages for end user.
- Wanted to learn more software skills.
- Primarily for power use of tools such as Excel.
- One of the computing modules, since going into computing, might as well take it.
- To get real world knowledge of computer applications.

- More interested in end user computing than technical/hardware areas.
- Honestly speaking, this paper is the most enjoyable paper & useful for me. I took this paper immediately after COMP203 in my second year. If someone love COMP203, he will love COMP307 too and it is not too hard to understand.
- Follow on from COMP203 - not many computing papers anyway.
- Interested in applications rather than programming.
- I wanted to gain an understanding of the most commonly used packages for business applications.
- After taken COMP203, I felt that it was interesting to know more as an end user.
- It was a 300 level comp subject.
- This area of study seemed interesting.
- It was a COMP paper. Sure beats doing accounting.
- Because of practical aspect of this paper - skills gained might be useful in other areas.
- It complimented the rest of my degree and was a good finishing paper. (Marketing)
- Recommended by Leonie Freeman (Property Lecturer) and Theresa McLennan upon completion of COMP203.
- As a paper to put towards by PG Dip to help with my job.
- To gain further knowledge in the use of modern software packages and be able to apply them in a work environment, as well as assignments/work at university.
- To follow through the other end user papers I did COMP101, 203.

3.3 Did this subject meet you expectations at the time?

Yes -	65
No -	2
Unsure -	2

Comments:

- Yes, the course was well conducted and very practical ie “hands on”.
- Yes, although I was working full time so found it difficult to put enough time into the subject.
- Quite disappointed - it was only learning another software application. (The main concentration was on Excel & Paradox).
- Not quite - at that time it was a mere extension of the COMP203 course. I felt that more could have been incorporated.
- Yes, covered packages with a good level of detail.
- Yes, I did find it was very useful to help me at general knowledge on software packages. It forms a basis for me to start work on new software packages..
- I was expecting a little bit more but it was the first year COMP307 was offered and it would be difficult to estimate the level at which to pitch the paper.
- Yes, I remember enjoying it cause I didn't have to spent that much effort. It kind of like coming natural to me. This apparently is what I like to do as a job. Having the satisfaction of finishing something (projects)!
- Yes, didn't really know what to expect but was very pleased with the way the subject was collated. I would have liked to learn more hardware but don't know if this would be practical for this subject.
- No, it exceeded them.
- Yes, exceeded them to some extent.
- I found it quite difficult, as I don't consider myself a “computer natural”. (Management Cadet)
- Yes, except I would have preferred to have learned MS Access to Paradox. When you teach MS Access I would be very interested in attending the lectures. (Gave phone number so you could contact him).
- Yes, thanks to Theresa.
- Yes, but partially. I would expect it to be a full year course (2 semesters).
- Yes, excellent.
- Yes, perhaps needs to develop further from COMP203 -almost more of the same.
- Yes, met my expectations of a continuation of COMP203, at a more advanced level.
- Yes, exceeded.
- Yes, Spreadsheet and database facilities that I picked up have been invaluable at my work.
- Yes, I guess I would have liked exposure to more s/w though. (But I know that costs more) for eg. power point is quick and easy to learn and would have broken up the course content. The Excel info was invaluable.
- Yes, and I still know enough to be able to take a quick look at the book or take a guess and do something profound.
- I enjoyed the subject and was generally happy with the skills I obtained. BUT I felt at the time that the use of WINDOWS, and Microsoft products should have played a greater role.

3.4 How difficult did you find COMP307 compared with other 300 level subjects (not just computing) at Lincoln?

	Easier than Most		Easier than some		About the same		Harder than some		Harder than most		Total	
	n	%	n	%	n	%	n	%	n	%	n	%
Computer Professionals	12	17	7	10	2	3	1	1	0	0	22	31
Non-Computer Professionals	9	13	17	24	16	23	3	4	3	4	48	69
Total	21	30	24	34	18	26	4	6	3	4	70	100

	Easier than Most		Easier than some		About the same		Harder than some		Harder than most		Total	
	n	%	n	%	n	%	n	%	n	%	n	%
Females	3	4	6	9	11	16	2	3	1	1	23	33
Males	18	26	18	26	7	10	2	3	2	3	47	67
Total	21	30	24	34	18	26	4	6	3	4	70	100

Comments

Easier than most

- I found it easier than most but I felt that the way it was structured and taught suited me really well. I also met someone in the class who was knowledgeable and motivated me to do well. (What's that called - extenuating circumstances?)
- Easier, more enjoyable, however more time involved.
- Very time consuming but basis not that hard.
- The work was easier than many other topics, but to balance this I found it was time consuming.
- This is because I like the subject and of course, we have a good lecturer.
- But I took it when it was given the for the first time. Might have increased the standard now?
- I favoured subjects with a high practical component.
- It was the easiest 300 level subject to score the best mark overall once we have absorbed the concepts from COMP203.
- I felt it was easy as once you did well and had good groundings in COMP203, COMP307 was not a problem.
- I think the only reason I took the computing papers is because the subject appeals to me. I didn't have to study a lot but I did spent time on my labs. It's kind of like a good match for 300 - other heavy loader paper. I encourage this paper to be taken by all students! Get some computing sense into them!
- Easy, b/c I found the subject easy to related to, but not lacking in valuable content when compare to other 300 level papers.
- COMP307 is not difficult in that the packages are not really an intellectual challenge. However, there was an extensive time commitment involved with COMP307 per completing labs and projects (which used to highly intimidate me sometimes I can tell you). So while it is intellectually easy it definitely requires a '300 level' commitment in order to do well.

Easier than some

- This is because I found it extremely interesting & therefore easier to study.
- When one kept up with the workload it was easy but, as with most courses, when you get behind it's hard yakka to keep up let alone catch up. Would have been easier if I'd taken COMP202, COMP204, and COMP301 before rather than after (knowledge base would have been broader) but then I gained when I took those courses. Would have been easier if not pregnant too!
- It depended on the package. I found Paradox a little confusing & loved Excel. I enjoyed spending the time playing around.
- I think the reason for this is because Theresa is a very stimulating lecturer and so was the course material - it's easier to learn when you thoroughly enjoy what you are learning.

- I think because I enjoyed it more it appeared to be easier, however I think the workload was on a par with other subjects.
- Easier to understand, but about the same workload.
- Easier than some as computing was of interest to me. Therefore, I found it easy to allocate time to this subject because I enjoyed it. It did take up a lot of time and was challenging.
- Hey - if you enjoy the subject and lecturers it will be easier.
- But longer hours!!
- I took a lot of specialist accounting 3rd year subjects which were very hard, but COMP307 was harder than the equivalent final year subjects that I did at CSU Fresno.
- The workload was similar to other 300 papers except I found this paper more enjoyable. Because of that I would say it was easier than some.

About the same

- Assignments easier than most assignments for other papers (did not involve so much writing). Tests and exams more difficult than other papers. Tests & exams (not enough time to write questions specially difficult for people with English as a second language).
- My economics courses were the hardest/required the most effort.
- Different type of learning compared to accounting type subjects ie, playing on the computer was almost relaxing.

Harder than some.

- The only reason it was harder than some was that I struggled with the database mgmt section at times.

Harder than most

- I had to spend a lot of time in labs just to keep up! (Management cadet)
- Given my lack of computing experience. But well worth the effort.

3.5 How would you rate COMP307 compared to all other subjects taken at Lincoln?

	One of the least useful		A bit more useful than most		Neither more nor less useful		A lot more useful than most		The most useful		Total	
	n	%	n	%	n	%	n	%	n	%	n	%
Computer Professionals	0	0	5	7	5	7	9	13	3	4	22	31
Non-Computer Professionals	1	1	3	4	8	11	27	39	9	13	48	69
Total	1	1	8	11	13	19	36	51	12	17	70	100

- The training received in 307 is more applicable to me now than say, ENGN202. But not by much.
- Useful on my job now
- I use the skills gained from this course daily
- This helps build a logically thinking whenever I start a project. Not forgetting that there's a lot more to handle as the scope of the project grows.
- Potential employers are very interested in computer skills, much more so than what marks were obtained in some 'theory-laden' paper. In my current job I would be performing at an appreciably lower level without the knowledge gained in COMP307 (and I've forgotten half of it!).
- This paper has without doubt been the subject I have most readily applied to the working environment.
- A lot more useful than most - Especially true for a non-computer professional.
- The most relevant for practical work needs. Even though accounting was useful, it doesn't apply to the real accounting world that I joined.

3.6 Do you think taking COMP307 gave you an advantage when applying for jobs?

	No		Unsure/ Maybe		Yes		Total	
	n	%	n	%	n	%	n	%
Computer Professionals	5	7	5	7	12	17	22	31
Non-Computer Professionals	11	16	8	11	29	41	48	69
Total	16	23	13	19	41	59	70	100

- Ability to explain computers without going into specifics eg methods involved with EUC
- Save the employers training cost
- COMP307 should be a core paper
- It doesn't help much - But, it is for my own benefit, just like people might need to take 3 hours to create a complicated spreadsheet, I might just need 1.5 hours by using macro command.
- It gave me a list of software (popular office software, that is) that I could say I was fairly competent in. Employers need not spend time and resources in educating me in these areas.
- In certain areas, especially in end-user computing area (eg help desk).
- It helped me to view things from an end users point of view when designing applications, forms, spreadsheets, etc.
- It seems that a working knowledge of these kind of things is expected.
- No - but it help and aid us faster understand new tools.
- It's effect is marginal when applying, at least in my line of job. However, the knowledge does help a lot in doing your job efficiently.
- Knowing Excel will help in applying for EUC jobs but it is less important for jobs when spend most of the time in designing and analysing the system.
- Unsure, I certainly find some of the skills/knowledge gained very useful in the job.
- Hard to say. Definitely the skills I acquired in COMP307 are a must in my work but perhaps would not preclude me from the position if I did not take COMP307.
- I present it as one of my greatest assets - though I'm not sure if it's recognised by employers as this.
- The question was always asked, and it has helped me in my job.
- COMP307 gave me a basic grounding in different applications which I expanded through use and experimentation.
- Definitely.
- Absolutely. The paper proved to be exceedingly practical and relevant in the work environment and provided a clear advantage for myself over others.
- Yes - It helped me enhance my computer skills beyond the basics.
- Yes - The small accounting practice was looking forward to my arrival to sort out the computers.
- Yes - People in the organisation didn't know much about the power of time saving features available. The works Computer Department was useless.
- I always tell my employers that I have the computing skills that others might not have. In fact, it is true that my computer skills is better than most of my colleagues.
- I was able to say that although I hadn't used all of the computer packages expected for the job, I had gained the skills to approach problems in a competent manner.
- Most of the company in Malaysia are looking for employee who are computer-literate.
- I wouldn't have the job I have today if I didn't take COMP307.
- My job with NMH is directly attributable to my "documented" computing skills.
- Almost all companies require some knowledge on computers.
- Computer confidence to take on and learn any new package.
- The ability to go into a job and manage computers straight away is a distinct advantage.
- Can directly apply knowledge to a job where any aspect of computing may be necessary. At least have an awareness of what the jargon means.
- All employers are now looking for these skills as a minimum and were in my day.
- A definite advantage in obtaining my current job - especially the spreadsheets.
- Nowadays, it is an added bonus if a Property Consultant can use computer applications with confidence.
- A lot of employers seemed to take a lot of interest in computing papers.

3.7 Do you use skills gained in COMP307 at work?

	No		Yes		No Response	Total	
	n	%	n	%	n	n	%
Computer Professionals	1	1	20	29	1	22	31
Non-Computer Professionals	6	9	40	57	2	48	69
Total	7	10	60	86	3	70	100

- Yes - when I need to give presentation to clients it really help me prepare my stuff in a professional way and train me to understand better how and what user think and problem they likely faced.
- Excel macro helps me to understand “Microsoft” macro language. It helps me to read and write Excel’s DDE macro to communicate with other applications.
- I would say I do a lot of ‘Advanced’ spreadsheet work (Modelling, formulae, macro’s database within spreadsheets).
- In general spreadsheets and databases (whatever the program) as well as general problem solving (not just computer problems).
- Very often.
- Everyday I use at least one piece of information gained on the COMP307 course in my job.
- I even helped some colleagues to set up their spreadsheets.
- Although we didn’t spend a lot of time on Excel, I am more knowledgeable in spreadsheet formulas etc than most of my workmates.
- I use Access a lot and even though it was not in the course I can still use database skills learnt in Paradox etc.
- I am constantly required to solve problems - the ability to look up the correct synonym in help screens is vital as is a working knowledge of how to access information (looking at status bars etc). An ability to read and follow instructions without embellishment or omission and an ability to diagnose what is going on rather than relying on “??” questionable assumptions eg understanding the difference between character formatting oriented packages (WP5.1) and paragraph formatting oriented packages (Word). The
- Ability to apply a set of instructions and modify those instructions as required for the circumstances - “on the job knowledge”.
- Almost everyday - I am in a practice of valuers of 40 years plus age, my computer skills have enable our firm to modernise and become more competitive.
- Not as much as I would like - my job does not entail this. However, I do help colleagues out with Excel from time to time.

3.8a. A list of topics, most of which are covered in COMP307, follows. Please indicate whether or not a knowledge of each of them is (a) useful in your current or most recent job. Feel free to add other items to the list.

In answering the questions use the following scales.

Usefulness in your job

Not applicable	Not used at all					Very useful
0	1	2	3	4	5	

These results show the mean value of the response for the N respondents in each group that answered with 1-5 for each question. (ie Those not responding or responding with 0 have not been included in the mean.)

TOPIC	All respondents	N	Computing Professional	N	Non-Professional	N
Spreadsheets						
Using templates	3.3	63	3.2	20	3.3	43
Basics: formulas, copying, etc	4.5	65	4.1	21	4.7	44
Spreadsheet databases	3.4	62	3.2	20	3.4	42
Macros/Visual Basic modules	3.0	62	3.5	21	2.8	41
User defined functions	2.7	58	3.1	21	2.5	37
Data (Whatif) tables/pivot tables	2.7	60	2.8	21	2.6	39
Spreadsheet auditing and model evaluation	2.7	55	2.6	19	2.7	36
Databases						
Using single table databases	2.9	56	2.9	17	2.9	39
Using multi table databases	3.3	60	4.1	21	2.8	39
Creating/modifying forms/reports	3.2	60	4.0	21	2.8	39
Creating/modifying tables/databases	3.3	59	4.1	21	2.8	38
Multimedia Systems						
Using multimedia applications	2.2	52	2.7	15	1.9	37
Creating multimedia applications	1.9	46	2.7	15	1.5	31
Internet						
Using Email, listservers etc	4.1	57	4.6	20	3.8	37
Using World Wide Web	3.2	54	4.1	20	2.8	34
Creating web pages	2.3	47	3.3	16	1.7	31
Other Software						
Presentation software(e.g. Powerpoint, Presentations)	3.4	55	3.9	19	3.1	36
Groupware (e.g. Lotus Notes)	2.7	44	3.1	15	2.5	29
Other Topics						
Selecting appropriate applications for problems	3.9	60	4.2	20	3.7	40
Moving data between applications	4.1	63	4.3	21	4.0	42
Software evaluation	2.8	56	3.5	21	2.4	35
Software installation	3.1	57	3.7	21	2.8	36
Occupational Overuse Syndrome education	2.8	56	2.5	19	2.9	37
Computer viruses education	3.2	57	3.3	20	3.2	37

3.8b. A list of topics, most of which are covered in COMP307, follows. Please indicate whether or not a knowledge of each of them is (b) important for us to teach students wanting to become competent computer users. Feel free to add other items to the list.

In answering the questions use the following scales.

Importance in COMP307

Don't know	Not important				Very important
0	1	2	3	4	5

These results show the mean value of the response for the N respondents in each group that answered with 1-5 for each question. (ie Those not responding or responding with 0 have not been included in the mean.)

TOPIC	All respondents	N	Computing Professional	N	Non-Professional	N
Spreadsheets						
Using templates	3.9	67	3.6	22	4.0	44
Basics: formulas, copying, etc	4.5	69	4.2	22	4.6	46
Spreadsheet databases	4.1	68	3.9	22	4.2	45
Macros/Visual Basic modules	4.0	69	4.0	22	4.0	46
User defined functions	3.8	65	3.7	22	3.9	42
Data (Whatif) tables/pivot tables	3.9	68	3.6	22	4.0	45
Spreadsheet auditing and model evaluation	3.6	59	3.4	19	3.7	39
Databases						
Using single table databases	3.9	68	3.5	21	4.2	46
Using multi table databases	4.3	70	4.5	22	4.3	47
Creating/modifying forms/reports	4.2	69	4.5	22	4.2	46
Creating/modifying tables/database	4.2	66	4.4	22	4.1	43
Multimedia Systems						
Using multimedia applications	3.6	61	2.9	19	3.8	41
Creating multimedia applications	3.4	61	2.9	19	3.6	41
Internet						
Using Email, listservers etc	4.4	64	4.3	18	4.5	45
Using World Wide Web	4.1	62	4.2	18	4.0	43
Creating web pages	3.6	61	3.7	18	3.5	42
Other Software						
Presentation software(e.g. Powerpoint Presentations)	3.9	58	3.9	18	3.9	39
Groupware (e.g. Lotus Notes)	3.5	44	3.7	15	3.4	28
Other Topics						
Selecting appropriate applications for problems	4.4	64	4.2	20	4.5	43
Moving data between applications	4.3	66	4.4	20	4.3	45
Software evaluation	3.7	67	3.4	22	3.8	44
Software installation	3.5	66	3.3	20	3.5	45
Occupational Overuse Syndrome education	3.6	62	3.1	20	3.9	41
Computer viruses education	3.9	66	3.5	20	4.1	45

Items added by the respondents to the list in Question 3.8

Spreadsheets

- Charts creation
- Objects of spreadsheets
- OS spreadsheet layout

Databases

- Multi-users
- Security levels
- Network environments
- Macros
- Basic database design theory

Internet

- News, FTP, Netiquette

Other Software

- Analytical tools - Impromptu and PowerPlay
- Scheduler
- Access
- MS Schedule
- Data Management - Directories and naming documents
- Word Processing MS Word - advanced level
- Graphical packages
- Basic: Communication S/W

Other

- Different OS eg Win95/WIN NT, UNIX, SUN (3)
- Knowledge of different platforms
- DDE macro
- ODBC
- System design and team task allocation
- Software History
- Software troubleshooting
- Communication application - eg Modem Remote Access

Question 3.10. How could we improve COMP307

Operating Systems

- Need to recognise that there are other computer platforms (not just PC's) that end users should be aware of eg. MACS (2)
- More DOS and hardware
- DOS based material is redundant
- More DOS - although should teach more at 100 and 200 level
- More concentration on OS control

Assessment

- More projects and practical work that relate to the real world (6) - more time spent in front of computers - eliminate the exam and substitute with projects
- More presentations (3) improves communication skills
- Assignments that create customer database and spreadsheet that calculates increases/decreases on example data. Then incorporate that into a report in the form of a mail merge to send out reports to a group of clients
- Vary the applications used in the projects
- Individual projects instead of group projects

Course (General)

- Split course into 2 courses and look at all topics in more detail (3) - covers too much material - relate to COMP203
- Separate Internet course

Course Content

- More Database knowledge
- More discussion of current and developing issues and software
- Internet (3)
- More time spent moving data between applications
- Retain core areas - spreadsheet, databases
- Make course material relevant to work situations - found no use for multi-media material, MAC evaluation
- Cover OOS in lectures
- More presentation software
- More WP lectures/labs at advanced level
- Have guest speaks from working environments to tell us how they use computers
- Use of search tools and data manipulation
- 4GL languages and packages
- Teach Access (5)

Windows

- Windows files - how to read/modify, what they are used for
- More OLE - eg control Excel from Access

Business environment

- Keep up with current industry software (6)
- Industry software - eg quality issues ISO9000, Product Life Cycle
- Look into areas of office integration/communication through computer technology
- Greater focus on business systems

Labs

- Ensure there are enough tutors
- Make lab attendance compulsory

Spreadsheets

- More macros education - in particular spreadsheets (2)

Continuing Education

- Allowing students remote access to the course programs and notes (with a charge)
- Manuals available for follow-up work (3) - availability of a user manual with tips and summary information on the core course concepts

General

- teach students how to "think" - problem solving

Appendix B : The Survey

Name: _____

Contact Address: (If different from the one on the envelope)

Phone: _____

Fax: _____

Email: _____

I am/am not happy for Theresa McLennan to forward my name and address to fellow ex-students who may wish to get in touch with me.

I am/am not willing to be contacted by Theresa for a short discussion or structured interview.

Survey of Former Students of COMP307

Please circle the most appropriate option. Any additional comments you would like to add would be most welcome.

Section 1: Employment History

1. Would you describe yourself as a computer professional?
 eg. *An accountant is not a computer professional but a computer trainer is.*

Yes / No

2. Job title or description (if currently or recently employed).

3. Briefly describe the computing component (if any) of your job.
 eg. *I use a variety of packages for several hours each day and set up software for others to use.*
 or *I mainly use a wordprocessor to write reports.*
 or *I don't use a computer in my job.*

4. Please list positions you have had since leaving Lincoln University and classify them as being primarily a computing position or not.

<u>Description</u>	<u>Computing Professional</u>	<u>Approx Length of Employment</u>
<hr/>	Yes / No	<hr/>
<hr/>	Yes / No	<hr/>
<hr/>	Yes / No	<hr/>
<hr/>	Yes / No	<hr/>
<hr/>	Yes / No	<hr/>
<hr/>	Yes / No	<hr/>

Section 2: General Computing Background

1. (a) Did you have a computer at home before you came to University?

Yes / No

(b) If yes to 1(a), what did you use it for?
eg. *Word processing and games.*

2. (a) Do you currently have a computer at home?

Yes / No

(b) If yes to 2(a), what do you use it for?
eg. *very little, it is too old!*
writing letters and doing work tasks at home.

3. (a) Did you take any computing courses at high school? eg. *Sixth Form computer studies.*

Yes / No

(b) If yes to 3(a), please list.

4. (a) Did you take any other computing courses before starting university?

eg. *Night class in Basic programming at Polytechnic.*
WordPerfect training course.

Yes / No

(b) If yes to 4(a), please list.

5. Please list any computing courses you have completed since leaving University.

6. How would you rate your ability to use a computer on arrival at Lincoln University?

1. Absolute beginner
2. Some knowledge
3. Very competent

7. How did you rate your ability to use a computer on leaving Lincoln University?

1. Absolute beginner
2. Some knowledge
3. Very competent

8. How would you rate your ability to use a computer now?

1. Absolute beginner
2. Some knowledge
3. Very competent in my area of operation.

Section 3: COMP307

1. Which of the following Lincoln computing subjects do you remember taking?

- 1. COMP301 Advanced Programming and Computer Files
- 2. COMP302 Information Systems
- 3. COMP303 Concepts and Organisation of Databases
- 4. COMP304 Advanced Topics in Computing
- 5. COMP305 Computer Modelling and Simulation
- 6. COMP306 Objected Oriented Programming

2. If you can remember, please give the reason(s) why you enrolled in COMP307?

3. Did this subject meet your expectations at the time?

4. How difficult did you find COMP307 compared with other 300 level subjects (not just computing) at Lincoln?

- 1. Easier than most.
- 2. Easier than some.
- 3. About the same.
- 4. Harder than some.
- 5. Harder than most.

5. How would you rate COMP307 compared to all other subjects taken at Lincoln?

1. One of the least useful.
2. A bit more useful than most.
3. Neither more nor less useful than most.
4. A lot more useful than most.
5. The most useful.

6. Do you think taking COMP307 gave you an advantage when applying for jobs?

Yes / No

7. Do you use skills gained in COMP307 at work?

Yes / No

Only two pages to go!

8. A list of topics, most of which are covered in COMP307, follows. Please indicate whether or not a knowledge of each of them is (a) useful in your current or most recent job, and (b) important for us to teach students wanting to become competent computer users. Feel free to add other items to the list.

In answering the questions use the following scales.

Usefulness in your job						Importance in COMP307					
Not applicable	Not used at all				Very useful	Don't know	Not important				Very important
0	1	2	3	4	5	0	1	2	3	4	5

TOPIC	(a)					(b)						
	Usefulness in your job					Importance in						
COMP307												
<u>Spreadsheets</u>												
Using templates	0	1	2	3	4	5	0	1	2	3	4	5
Basics: formulas, copying, etc	0	1	2	3	4	5	0	1	2	3	4	5
Spreadsheet databases	0	1	2	3	4	5	0	1	2	3	4	5
Macros/Visual Basic modules	0	1	2	3	4	5	0	1	2	3	4	5
User defined functions	0	1	2	3	4	5	0	1	2	3	4	5
Data (Whatif) tables/pivot tables	0	1	2	3	4	5	0	1	2	3	4	5
Spreadsheet auditing and model evaluation	0	1	2	3	4	5	0	1	2	3	4	5
_____	0	1	2	3	4	5	0	1	2	3	4	5
_____	0	1	2	3	4	5	0	1	2	3	4	5
_____	0	1	2	3	4	5	0	1	2	3	4	5
<u>Databases</u>												
Using single table databases	0	1	2	3	4	5	0	1	2	3	4	5
Using multi table databases	0	1	2	3	4	5	0	1	2	3	4	5
Creating/modifying forms/reports	0	1	2	3	4	5	0	1	2	3	4	5
Creating/modifying tables/databases	0	1	2	3	4	5	0	1	2	3	4	5
_____	0	1	2	3	4	5	0	1	2	3	4	5
_____	0	1	2	3	4	5	0	1	2	3	4	5
_____	0	1	2	3	4	5	0	1	2	3	4	5
<u>Multimedia Systems</u>												
Using multimedia applications	0	1	2	3	4	5	0	1	2	3	4	5
Creating multimedia applications	0	1	2	3	4	5	0	1	2	3	4	5
_____	0	1	2	3	4	5	0	1	2	3	4	5
<u>Internet</u>												
Using Email, listservers etc	0	1	2	3	4	5	0	1	2	3	4	5
Using World Wide Web	0	1	2	3	4	5	0	1	2	3	4	5
Creating web pages	0	1	2	3	4	5	0	1	2	3	4	5
_____	0	1	2	3	4	5	0	1	2	3	4	5

Other Software

Presentation software

(eg Powerpoint, Presentations)

0 1 2 3 4 5

0 1 2 3 4 5

Groupware (eg Lotus Notes)

0 1 2 3 4 5

0 1 2 3 4 5

_____ 0 1 2 3 4 5

0 1 2 3 4 5

_____ 0 1 2 3 4 5

0 1 2 3 4 5

_____ 0 1 2 3 4 5

0 1 2 3 4 5

Selecting appropriate applications
for problems

0 1 2 3 4 5

0 1 2 3 4 5

Moving data between applications

0 1 2 3 4 5

0 1 2 3 4 5

Software evaluation

0 1 2 3 4 5

0 1 2 3 4 5

Software installation

0 1 2 3 4 5

0 1 2 3 4 5

Occupational Overuse Syndrome
education

0 1 2 3 4 5

0 1 2 3 4 5

Computer viruses education

0 1 2 3 4 5

0 1 2 3 4 5

_____ 0 1 2 3 4 5

0 1 2 3 4 5

_____ 0 1 2 3 4 5

0 1 2 3 4 5

_____ 0 1 2 3 4 5

0 1 2 3 4 5

9. Please circle, in the list above for question 8, the topics which you think are the most important ones to be included in COMP307.

eg. Software evaluation

10. How could we improve COMP307?

Thanks very much for responding to this survey.