Perceptions and performance: ICT at Monash University

Draft Report

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Executive Summary

This is a report of a study carried during Semester 1 2006 on the perceptions students bring into ICT courses and the perceptions that staff have of student expectations.

The broad outcome of the project was that that the ICT experiences, expectations and perceptions that a student brought into his/her course had little impact on the way they adapted to the university, with adaptation being seen in terms of completing semester 1. Whether or not they had done ICT subjects in High School did not appear to prepare them any better and some interview data suggested that some students may have an inflated view of what they know through having done ICT subjects. For example, there was the student who felt she knew all about ICT, defined as using a spread sheet, from the VCE IT subjects she completed.

The students entering the FIT degrees are fairly 'normal' - the things that they are interested in and the things they expect to learn are in line with the course content. For example, the Berwick students are more likely to see graphics as a component in their course than are students doing the other courses. Similarly, the Berwick students are more likely to have a greater interest in graphics than are the students in other courses.

These responses must be seen as the type and level of response that would be expected from any attitudinal measure of interest in that the differences do not represent responses that clearly differentiate one individual from another. There is substantial overlap in the distributions of responses for each course and this reduces the ability to differentiate between individuals in terms of interests and learning expectations.

From the sub-sample that agreed to take part in the longitudinal component of the project, there is no indication that they perform on end of semester assessments any differently from the rest of their cohort. Their performance on the three core subjects in Semester 1 did not differ from the rest of the students in the sample.

The interviews that were carried out with the students suggested that they did not have clear expectations of what the course would be about but those who had done ICT subjects at school, felt that they were better prepared.

> The staff response on student behaviour are quite well-structured, in that staff have clear views on students and what they want, but there is some suggestion that staff may not be grasping some important issues. For example, staff see the students as lacking preparation and of not having clear expectations. They see part of the solution in better information being given to students, particularly from the "horse's mouth" – the course

coordinators –, before students make a choice yet the student data indicates that students may not be ready to focus upon such information.

Where to next

This research project suffered from the fact that a number of unrelated data collection exercises were taking place during semester 1 2006. Not only was there the Unit Evaluations but there was also the formal evaluation of the core units (Spratt & Lueckenhausen, 2006), not to forget teaching evaluation. Students could be said to have been "researched out" during this period. Some integration of such data collection endeavours would be advised.

There is a clear need to invest in exit research where students who withdraw or who fail to sit for exams are interviewed. We need to have a better understanding of the process that leads to withdrawal from courses. This will help develop a more realistic understanding of how best to market courses.

Summary points

- *There are no meaningful[1] differences across all variables based upon Monash IT being first preference in IT courses or first preference of all courses.*
- *There are no meaningful differences based on gender.*
- *There were no significant[2] differences between the sample and the general intake on any of the core units FIT1001, FIT1002 and FIT1003.*
- *The pattern of reasons for doing a course is different from what might be expected in that the Parent/Teacher/Friend structure was not there, rather it was about internal factors. This has to be interpreted against the open ended question and the interview data.*
- *The qualitative data from the survey presented no additional information over and beyond what was in the survey. The response rates of students to the qualitative item was poor in both content and volume.*
- *There are minimal differences between the courses based upon the reasons that students have given for choosing their course.*
- *There was little pattern in the problems that students saw they would have in doing their course. The two high points were based upon uncertainty in expectations about university and course activities.*
- *Staff participation in interviews was excellent and the data gathered reflected an interest in developing the teaching and learning environment.*
- *There is general agreement between how staff and student view the teaching-learning environment. Even in lectures, students tend to prefer a student centred presentation rather than a 'video tape' lecture. Staff tend*

[1] "meaningful" is used to indicate not only statistical significance but also practical significance.
[2] "significant" generally refers to statistical significance

to have forward looking views that support the development of a more student centred environment.

- *Students were reluctant to take part in interviews, and this was particularly the case with female students. At has to be recognised that the student group had been over-researched.*

Conclusions and recommendations

- The thinking about recruiting students and about student performance must be realistic. Staff expect students to know why they are there and what is going to happen. ICT, given its nature, is unlikely to have such a simple world. Consequently, the Faculty should look at strategies that can be implemented to help develop staff awareness.
- An emphasis upon increasing information dissemination to prospective students may be a waste of resources unless it can be shown that this will have an effect. In this study, students appeared to know what they would be learning but this had no effect upon performance. More research needs to be done on evaluating the actual impact of information-based marketing activities on student recruitment and consquential retention. This could include independent exit interviewing of withdrawing students.
- A recommendation from the study is that the Faculty needs to define possible target groups for entry into FIT degrees and should begin by looking at the individuals who are ***not*** choosing to do these types of degrees. In particular, there is the female market that has been shown to have an interest in IT but a disinclination to enter the male, geek world. This has been reported from research carried out by Swinburn University and the University of Melbourne.
- The level of attrition in FIT courses needs to be analysed in more detail and compared to similar courses in other universities. It is possibly the case that ICT courses attract individuals who are undecided or who have mixed thoughts about career options and are more likely to withdraw from their course.
- This project was not designed around a framework with explicit student behaviour parameters because it was exploratory in nature. We would suggest that future research should be carried out using a more complex framework that explicitly incorporates some model of student behaviour. The importance of having a behavioural framework can be seen in the concern over the number of hours that students spend in paid. Conflicting published research supports the idea that 'hours of paid employment' has to be dealt with as only one component in the set of interacting factors determining student adaptation.
- An overall recommendation is that there is a need to carry out exit studies on students who withdraw from the course during, particularly, first semester. All the

data points to the need to get a better understanding of the relationship between choice of course and early withdrawal from that course.

Project Background

Students come into their courses with a set of stereotypes and with limited expectations. The process for changing this has taxed the intellects of the careers advisory system for the past 30 years. When the careers teaching system in Victoria was upgraded in the late 1970's and training courses were developed, the role of information development was emphasized. Australian state and federal governments have spent significant amounts of money in this period on both paper-based and computerized information systems but there is little to show that this has been very effective: attrition rates still vary wildly between discipline and across institutions; graduates still change occupational areas a few years after entering the workforce (Hillman, 2005).

There has been extensive work on the issue of student progression in the Australian tertiary education sector (Marks, McMillan & Hillman, 2001; McMillan, 2005). Most of this has researched the general trends in samples and has found that, for example, students who are uncertain about their choice of career are less likely to succeed with their course and more likely to withdraw. But research studies have also found a range of other factors which have affected student performance and students' decision to continue with their course.

This leads to the more general point that there may need to be a review of our understanding of the nature of the student experience in Higher Education. The concatenation of factors influencing student behaviour in 2006 has elements that may be different from those even 10 years ago although the 1999 DETYA report on transition (DETYA, 1999), using data from 1997 and before, reads as if its data is current rather than being 10 year old.

One of the assumed negative impacts on student learning and progression is the hours spent on paid work. In a review of what had been reported in the US, Riggert and his associates (2006) found little consistency in the results from studies into paid work and student performance. An unpublished paper by Applegate and Daly (2005), on students at the University of Canberra, indicates that there is no simple relationship between paid work and performance. Riggert etal (2006) raise the issue that more is needed to be done in defining and developing effective conceptual models of student behaviour if we are to have an effective understanding of what is happening.

Within the 1999 DETYA report on transition there is some emphasis upon the social contacts created by students and suggests more work be done on building initial socialization into tertiary life of the ex-high school student. This idea has been presented elsewhere through Tinto's (eg.Tucker,1999) model of social interaction. A newer definition of this approach is student engagement or connectedness but work such as that of Fredricks, Blumfield & Paris (2004) does not add a great deal to what is already known. What is clear is that this a complex area and any analysis needs quite sophisticated behavioural models (eg Tucker, 1999). It is noteworthy that the engagement thinking began almost 20 years ago and still appears not to have made much of an impact. It will be argued

later that this is, partly, a consequence of a lack of meaningful models of student behaviour.

Conversely, changes in student behaviour should influence the teaching environment yet the research into student behaviour has not been complemented by work on the role of staff perceptions of what students know and expect, and the influence of these on curriculum design and assessment in higher education. For example, the reported work on transition (DETYA, 1999) fails to talk about the way in which academic staff approach transition students in spite of the fact that staff come in for some criticism from students. A recent paper by Manton, Turner and English (2004) that explored how student knowledge is best assessed in business education, failed to look at the antecedent conditions even though it was using coherent educational thinking in its formulation. Hoppes and Chesbro (2003) are amongst those researchers who have explored the commonality between staff and students in the level and type of values they hold and the impact that this has on instruction. They found that the quality of the interaction between staff and students is influenced by the values held and the way they are expressed.

ICT and students

The *Reality Bites* (2001) research showed that school students, five years ago, had fairly negative views of the role of IT in their career prospects. This was most pronounced in females. The more recent project, *Attitudes to ICT careers and study among 17-19 year old Victorians* (2004), indicates that this appear to have shifted and that there were, three years later, now more positive attitudes to ICT careers although few had much idea on what careers and courses were available. If we accept that one of the important reason for course attrition or low success is making a poor choice of course, then it can be seen that student knowledge and understanding of courses and careers is of interest to us. By exploring what students actually bring into their courses, we extend our understanding of student behaviour which adds to our knowledge on the best ways to market course and support careers staff in schools.

Clearly, courses in IT face particular problems through a combination of the relatively diverse nature of IT jobs and the relatively rapidly changing content in the IT area (Hurst & Lynch, 2001). This exacerbates the task of defining information that can be delivered to prospective students. This then creates difficulties in establishing that people have an understanding about what an IT course might be about. From this general set of issues a research project was designed to begin the analysis of student expectations of IT courses.

From this broad perspective, we chose to limit our interest to a narrower set of questions and focused on the possible role that the more specific knowledge and perceptions that students brought into a course could be influential in the way in which they coped with the transition period. Coupled with this, we also decided to

explore the ways in which staff viewed students as this is an obvious area that has limited coverage.

Project Aims

The aims for the project were defined as:

- To establish the perceptions of ICT that students bring into their course and investigate the role this has on their progression through the course.
- To explore staff understanding of the attitudes and knowledge that students bring into their course and the role this has on unit design and delivery.
- To research the associations between these aspects and staff and student behaviour in the teaching-learning context.
- To inform and enhance current teaching practice within FIT undergraduate teaching programs.
- To improve information provision to potential students and their advisers.

Project Design

The project objectives were to be achieved through a mixed quantitative and qualitative research design that had four phases:

1. The first phase would involve a start of semester survey using a structured questionnaire. This is reported in *Project Implementation Section 1* (p.14).
2. Next, interviews would be carried out with students who had participated in the survey. The data from this phase is reported in *Project Implementation Section 2* (p.23).
3. Interviews would also be carried out with staff who were teaching into the core units or who were coordinators of Special Interest Groups (SIG)[3]. This data is reported in *Project Implementation Section 3* (p.26).
4. Finally a second student survey would be carried out. This phase was never implemented and this is dealt with in the discussion.

The methodological basis for the research design was derived from the assumption that we had little knowledge of student expectations of their course and an exploratory survey would help provide a picture of those expectations. It would also allow us to collect data on the prior experience of the students in ICT activities. The interviews would allow us to gather in-depth data on the way students looked at their course and the way they were adapting to that course. The staff interviews were to provide us with insight into the way staff viewed their students and the material they were teaching. In addition it was hoped that the student and staff information could be compared to explore commonalities and differences.

The project was prepared for Ethics approval and the ethics committee allowed all aspects of the project data collection. The documents associated with ethics requirements are attached as Appendix 1.

Data was collected from all undergraduate courses within the faculty via the core unit FIT1001. The majority of first year students would do this unit and, by using it, data collections would not need to be carried out in more than one course unit. Most of the data was collected during the first and second week of the semester.

Survey form

The survey form is attached as Appendix 3. The items represent a number of different behavioural domains:

- Basic biographical data – questions 1-6, 10-12, 15-17
- Formal and informal experiences with ICT prior to entering the course – questions 7,13,14
- Time spent using a computer – questions 8, 9

[3] A Special Interest Group (SIG) was formed to develop each of the core units. It was made up of staff from, all campuses upon which the unit would be taught.

- Expectations about the course – questions 18, 2-28
- Expectations as an open-ended question – question 24
- Expectations about the university experience - questions 20-23, 25, 30
- Interests in ICT activities - question block 31
- Expected areas to be covered in the course - question block 29

Interview schedules

The second and third stages of the projects involved interviews with students and with staff teaching into the first year core units. Students were asked to agree to participate in the longitudinal study during the survey data collection. Staff were contacted directly and asked to participate.

Appendix 3 gives the interview schedule for student interviews while appendix 4 gives the schedule for staff.

Project Implementation

1. Semester 1 Survey data collection

i. Data collection

The survey data was collected through the core unit FIT1001. Almost all students entering the undergraduate IT courses would have to enroll in this Core Unit, therefore using it would make for a more efficient data collection process.

ii. Results

Response of the students varied as did their willingness to identify themselves (see Table 1).

Table 1 Participation of students from FIT1001

Course	Respondents	Identifiable	Enrollment
Berwick BITS	26	16	46
Caulfield BITS	38	30	77
Clayton	95	55	244
BCompSci	(23)	(14)	
BSE	(17)	(8)	
BBIS	(29)	(14)	
Other course	(26)	(19)	
Gippsland BITS	11	8	34
Pen BITS	15	10	21
Total	185	119	422

In presenting the results of particular analyses, the numbers used may vary depending on which combination of students is used, particularly when we move onto data that includes unit performance.

Student profile

The profile of the average student within the faculty, *as per the sample obtained by the project*, is shown below (See Appendix 5 Table 1):

Biographics

Median Year of Birth 1986

Unlikely to be female (23%)

Median ENTER score 81

Likely to have English as first language (66%)

Is unlikely to be an IFFP student (20% IFFP)

Likely to have studied at least one VCE IT subject (60%)

Is likely to have come directly from school (65%)

Is unlikely to have knowledge of any computer language (15% with no knowledge)

Might have studied a computer language (60% did)

Likely to have said that Monash IT was his/her first preference overall (68%)

Very likely to have said that it was his/her first preference with IT options (82%)

Most likely reasons for choosing Monash was Interest and Career

The main problem he/she sees is Uncertainty about University Life

Is reasonably confident he/she will pass the year (80%)

Is reasonably confident he/she will complete their degree (81%)

Strongly expects to get D+ grade this year (66%)

The median hours per week on the computer = 14.5

The median hours per week on the internet = 4

The median hours per week on email = <1

The median hours per week on chat = 1

The median hours per week on games = 1

May not spend time on programming and building web pages (<50%)

The median expected time outside class is 52

The median time for travel = 1 hour

The median hours working = 6

The least likely things they expect to learn are

Graphics

scientific computing

programming telephones

digital logic

robots

maths

programming games

Most likely things he/she expects to learn are

How a computer works

Write programs

The lowest interests are

Data base

Scientific

Programming Phones

Digital logic

Robots

legal

Maths

Highest interest are

Write programs

Operating systems

Software design

Selected results for sample

Reason for doing course

From Table 2 it can be seen that the pattern of reasons for doing this course are clear with *Interest in IT* and *Getting in IT Career* being the top two reasons. What is unexpected is the low frequencies for parents, teachers and friends.

There is no direct interpretation of this result although it is interesting that during the interviews, students were not able to give comprehensive answers and their response to the open ended question in the survey was limited.

Table 2 Reason for doing course

Main Reasons for doing course	N	% of total group
Parents	14	8
Teacher	7	4
Friends	9	5
Interest in IT	146	79
Good course for Career in IT	109	59
Reputation of Monash course	42	23
Best I could get with ENTER score	26	14
Extend my knowledge and skills	66	35
Interesting and challenging course	86	47
Earn good money	38	21
No clear reason	11	6
Other	15	8

- *The pattern of reasons for doing a course is different from what might be expected in that the Parent/Teacher/Friend structure was not there,*

rather it was about internal factors. This has to be interpreted against the open ended question and the interview data.

Qualitative data from Survey

About half of respondents gave no response or an unusable one to the open ended question. This held across all campuses.

Many gave single item or generalized responses. These responses included "how a computer works" and "programming" with no additional information. There were also responses that appeared to be from the handout/brochure etc.:

> Learn about the business and management aspects relating to information technology and its applications in the business industries.

There was little of the complexity implied in the responses to the 36 'learn' items. About 5% of the responses indicated a complex understanding of what might be in an ICT course – this was across campuses.

- *The qualitative data from the survey presented no additional information over and beyond what was in the survey. The response rates of students to the qualitative item was poor in both content and volume.*

Perceived Problems faced in doing course

It can be seen from Table 3 that the principle perceived problems in entering the university are related to uncertainty about the social and teaching environments.

Table 3 Perceived Problem faced in doing the course - all respondents

Problem	N	%
Unsure what is expected	74	62
Making social contact	41	35
Having to travel a long way	20	17
Enough money to live on	32	27
Enough money for books	30	25
Place to study	15	13
Express myself in groups	32	27
Express myself in writing	33	27
Not knowing what is expected of me	78	42
Other	13	7
None of these	13	7

- *There was a limited pattern in the problems that students saw they would have in doing their course. The two high points were based upon uncertainty in expectations about university and course activities.*

The Learning Environment

Question 25 asked the students to rate seven ways in which they might learn course materials. Table 4 gives the means and standard deviations for each of these. It is clear that students feel comfortable with the range of learning options even though they may have had minimal experience with some of them.

Table 4 Learning situations - mean ratings

	N	Mean	Std. Deviation
Learn lectures	180	3.44	.778
Learn Alone	180	3.67	.865
Learn with friends	175	3.45	.914
Learn Tute problems	173	3.68	.976
Learn Tute interact	170	3.87	.833
Learn Labs	177	3.98	.839
Learn small group	175	3.83	.858
Valid N (listwise)	154		

The Learning and Interest Items

The 26 items used in both Q29 and Q31 and Table 5 presents the descriptives for them. Appendix 6 gives some information on how these items might be structured.

Table 5 Descriptives for Learning and Interest items

Learn Data				Interest Data			
	N	Mean	SD		N	Mean	SD
learn. Data Base	162	3.33	.971	interest. Data Base	168	2.92	1.155
learn. Communication skills	169	3.27	.931	interest. Communication skills	171	3.25	1.006
learn. Graphics	173	2.83	1.206	interest. Graphics	171	3.55	1.199
learn. Networks	172	3.60	.902	interest. Networks	172	3.77	1.071
learn. Develop business	173	3.46	.979	interest. Develop business	172	3.34	1.201
learn. Develop scientific	170	3.08	1.049	interest. Develop scientific	171	2.99	1.237
learn. Develop Web	172	3.58	.904	interest. Develop Web	172	3.63	1.066
learn. Devleop phones	172	2.80	1.138	interest. Develop phones	171	3.07	1.239
learn. Digital logic	168	2.94	1.146	interest. Digital logic	167	2.83	1.207
learn. Computer works	175	4.05	.856	interest. Computer works	173	3.58	1.131
learn. OSs	173	3.83	.928	interest. OSs	173	3.73	1.110
learn. HCI	176	3.64	.903	interest. HCI	174	3.27	1.087
learn. Robots	163	2.47	1.172	interest. Robots	168	2.86	1.322

learn. Write progs.	175	4.11	.974	interest. Write progs.	171	3.84	1.165
learn. Info. Management	174	3.66	.822	interest. Info. Management	172	3.30	1.065
learn. IS analysis	174	3.77	.836	interest. IS analysis	170	3.31	1.141
learn. Legal etc issues	168	3.15	.964	interest. Legal etc issues	169	2.72	1.234
learn. Mathematics	172	3.05	1.176	interest. Mathematics	171	2.81	1.342
learn. Project man.	171	3.50	.942	interest. Project man.	172	3.21	1.088
learn. Documentation	172	3.53	.939	interest. Documentation	171	3.09	1.097
learn. Security	173	3.46	.886	interest. Security	173	3.59	1.023
learn. Software design	174	3.69	.977	interest. Software design	172	3.81	1.016
learn. Problem solving	174	3.91	.882	interest. Problem solving	174	3.89	1.006
learn. Prog. Testing	171	3.78	.955	interest. Prog. Testing	173	3.60	1.066
learn. Lang. Theory	174	3.80	.919	interest. Lang. Theory	172	3.14	1.206
learn. Write games	170	2.69	1.222	interest. Write games	172	3.31	1.382

Differences between courses

Biographics

There is only one significant differences between courses based upon the general biographic variables, namely the mean ENTER score. Table 6 clearly shows these differences.

Table 6 Enter Score by Course

		N	Mean	Std. Deviation
	Caul BITS	24	77.84	6.893
	Pen BITS	11	74.87	9.106
	Berwick BITS	14	79.64	6.597
	Gipps BITS	6	62.22	22.364
	BCompSci	17	82.52	6.528
	BSE	15	87.25	9.336
	BBIS	17	90.59	5.010
	Other course	16	85.91	9.023
	Total	120	81.72	10.778

Note: The N's for this and other tables reflects the number of students who chose not to respond.

There are difference based upon IT subjects studied at school and this appears to be strongly influenced by the three Clayton Degrees where most students do not do VCE IT subjects.

The last type of study students had done (Q.12) also produced differences but this has to be seen in light of a table with many empty cells. At best it shows that Gippsland students are more likely to have come from TAFE while BCS come from High School.

The computer languages students said they knew or had studied (Q13 & Q14), indicated that BCS are more likely to *know* Java. The Gippsland students are more likely to have *studied* Java, which probably relates to having come from TAFE. Peninsula and Berwick students are more likely to have *studied* VB while Clayton less likely.

A significant result for the number of hours spent programming was influenced mainly by the BSE students having much higher grouped hours.

Course Preference

- *There are no meaningful differences between those students who chose their Monash course as their first or lower preference of IT courses or all course preferences.*

Gender

- *There are no meaningful differences based on gender.*

Reasons for doing Course

Of the 12 reasons for doing the course, only 2 gave significant differences between courses. Table 7 shows that "..getting into a career in IT" is driven by the *Other Course* group plus *BCompSci* having high negatives on this reason – note the residuals for these groups. The significant pattern in Table 8 has to be seen in the light of the negative bias on this item in that most students said that they did not come onto the course because this was the best they could get. Having said that, the *BSE* group have a distinctive pattern that goes against this.

- *There are minimal differences between the courses based upon the reasons that students have given for choosing their course.*

Table 7 Course by Reason: Career

	Reason: For Career		Total
	No	Yes	

Course	Caul BITS	Count	18	20	38
		Expected Count	15.6	22.4	38.0
	Pen BITS	Count	2	13	15
		Expected Count	6.2	8.8	15.0
	Berwick BITS	Count	8	18	26
		Expected Count	10.7	15.3	26.0
	Gipps BITS	Count	2	9	11
		Expected Count	4.5	6.5	11.0
	BCompSci	Count	15	8	23
		Expected Count	9.4	13.6	23.0
	BSE	Count	3	14	17
		Expected Count	7.0	10.0	17.0
	BBIS	Count	12	17	29
		Expected Count	11.9	17.1	29.0
	Other course	Count	16	10	26
		Expected Count	10.7	15.3	26.0
Total		Count	76	109	185

Pearson Chi-Square	22.807	Df 7	p=.002

Table 8 Course by Reason: Best I could Get

		Reason: Best Could Get		
		No	Yes	
	Count	30	8	38
	Expected Count	32.7	5.3	38.0
	Count	14	1	15
	Expected Count	12.9	2.1	15.0
	Count	25	1	26
	Expected Count	22.3	3.7	26.0
	Count	10	1	11
	Expected Count	9.5	1.5	11.0
	Count	15	8	23
	Expected Count	19.8	3.2	23.0
	Count	15	2	17
	Expected Count	14.6	2.4	17.0

	Count	24	5	29
	Expected Count	24.9	4.1	29.0
	Count	26	0	26
	Expected Count	22.3	3.7	26.0
Total	Count	159	26	185

Pearson Chi-Square	17.437	Df 7	p=.015

The Learning and Interest Items

These items that were subjected to analysis of variance based upon the list of courses. Appendix 5 includes the descriptive statistics for each course by the appropriate item for the analyses that produced significant differences. Table Learn - to Table Learn - give the descriptive statistics for the fifteen Learning items that have a significant difference while Table Interest - to Table Interest - give those for the thirteen Interest items. On both sets of tables the likely top and bottom values have been highlighted. It can be seen that there are no surprises in the results with the courses showing differences based upon there assumed specialisation. For example, the BerwickBITS provides the primary source of difference for the graphics item.

A detailed inspection shows that some the differences have to be taken with some reservation because of the size of the standard deviation. A five point scale was used and standard deviations of greater than 1 have been obtained. This means that the an item can cover three points on the scale with plus and minus one standard deviation. The overlap between courses is, in such cases, very large. This makes it difficult to sensibly interpret differences.

iii. Summary & Discussion

The data from the survey has given us an unusual picture where the students appear to be a relatively homogeneous group across all courses. They do not differ in any meaningful way on any of the biographic variables. There may be minor differences but we have to remember that with any set of statistical analyses, there will be about one in twenty tests that are significant by chance (assuming a 0.05 level of significance for rejecting the null hypothesis). The analysis here can be seen in that light.

Results that are particularly unusual are those that suggest the students in our sample are influenced in their choice of course through Interest and Career well ahead of Parents, Teachers and Friends. We do not have any comparable data from other faculties within Monash, but the common wisdom in the careers area is that the latter set of influences are usually more important with many areas of course choice.

2. Student Interviews

There were 25 student interviews carried out from a pool of 95 possible students. Only those students with complete data files were included in the "possible" list. The report is attached as Appendix 8. What follows is a general summary of the findings.

Although student cooperated well during the interview, most of them showed only low to moderate enthusiasm and provided a moderate level of detail. Responses were often closed in spite of the prompting question being open.

General Comments

Some models of student behaviour place emphasis upon the social environment in which students work and upon the way in which they participate and 'belong' in the university environment. This sample of student interviews suggest that the social environment within the university is not a critical element for many.

There is also a lack of richness in many of these responses. The interviewer tended to have to extract information in spite of using open questions.

Positive and negative experiences

- Overall, student's experiences toward the course were revealed as more positive than negative. There was an element of becoming aware of what was needed of them as the course progressed.
- Few students could expand on and define their experiences that were either positive or negative.
- When students talked about negative experiences they tended to specific units or situations they had difficulty with.

Expectations

- Almost all students indicated that they did not have clear expectations prior to coming to the course.
- When being asked if the course has met their expectation so far, most answered 'yes' with a few responses as 'I guess so' indicating that they were uncertain in their answer. A few students also slightly commented that they expected the course to have more focus in their area of interests. For example, Berwick students expected to be taught more in multi-media subjects. Peninsula students expected the course to be more involved in networking. BBIS students in Clayton expected the course to be less technical and more business oriented. However, these students also said that they understood that they were required to learn the foundation in the

first year and expected the course to be able to better meet their expectation in the coming semester/year.

Teaching methods

- Regardless of student's educational background or program of study, their views toward different teaching styles were somewhat similar.
- Students struggled mostly with units in which lecturers taught only theory, did not provide enough examples and read from slides/PowerPoint. Students disliked lecture when it had no engaging environment, the size of the class was too large and the duration of lecture was too long.
- Tutorial was found to be the most favorable method of learning for students. All students found the format of tutorials as being helpful as it provided an engaging learning environment.

Comments on Units

- Student response to the units was mixed with opposing evaluations being presented.

Changing from High School

- Most interviews were carried out about half way through semester 1 yet many students still related their experiences toward the course to their experiences in high school. There may be an issue on the speed of adaptation.

Level of work

- Overall, students found that the workload of the assignments and content of the units taking were at the right level.
- There were slight comments about the mark allocation in relation to the assignment given and the hours required to spend for assignment.

Previous skills

- Most students found that their own interest and curiosity in IT subjects played a big part in helping them to do the course.

- There was little mention of the role of VCE IT subjects as influences on their performance in BITS units although some commented on other subjects that helped with expression and writing in these units.

Time management

- Since entering university, most students found that they had more free time left, allowing them to maintain their social life and personal activities. None of the students had a defined set of time management practice.

Factors contributing to success

- When being asked what contributed to student's success or failure toward the course, only few students were able to answer.

3. Staff Interviews

Seventeen staff members were interviewed. The full report is attached as Appendix 9. What follows are the key points from the report, presented under the questions that formed the basis for the interviews (see page 14).

General Comments

Staff involvement in the project was excellent in spite of many pressures and concerns.

Understanding of Being a Student in an IT Course

- Most students are not well prepared for university and they do not really understand what it is going to be like
- Many students do not understand the relationship between lectures, tutorial (exercises) and assignments. That is, they do not understand *how* to study
- Some students are quite well prepared and seem to understand what is expected of them. Some students, at VCE level, visit universities and sit in on lectures before they enrol for university, and this improves their level of understanding

Understanding What an IT Degree Involves

- Unclear expectations. Several respondents noted that on occasion students say that the course is not what they were expecting. Other students say that what is covered in the degree is not what they will expect they will be doing once they are qualified and working as IT professionals in industry
- Unmet expectations. Several respondents noted that on occasion their students tell them that the course is variously not what they were expecting
- Pressure to enrol. One respondent pointed out that many students are doing particular subjects because their parents advise them to do so or because it is a Core Unit and they have no choice in the matter. As such, many students enrol in subjects not because they want to but because they are either persuaded to do so by family and/or peers, or because they are forced to do so.
- Like most things, there are some students who do understand what their degree involves and who know where they want to be, and there are others who have a very basic, or no, understanding of what is involved and where they want to be

Students Expectations of an IT Degree

- Vocational outcomes - the majority of students are looking for “a job”

- Gaining qualifications. Several respondents argued that in most cases IT students want a degree
- IT career counselling. What students want is somebody from within the faculty to show them how and what they should do, and to help them determine what kind of job they should be working towards
- Return on investment. Assessing whether an IT degree delivers value for money and a return on investment is important to students, and international full-fee paying students in particular
- Ethnicity and culture influence student expectations.

Academic Ability

- Students are academically able in most cases
- ENTER score and academic ability. ENTER scores are an inexact measure of academic ability but students wit higher scores generally have greater learning abilities
- Cross-campus course standardisation. Entry requirements and academic abilities differ between campuses.

Assumed Pre-Acquired ICT Skills

- Basic word processing skills
- Internet literacy
- Mathematics and numeracy

How Students Can Be Better Prepared

- Researching course options. Prospective students must speak to course coordinators or advisors and lecturers before deciding which course to enrol in
- A large number of students need to improve their communication skills
- Few students download and read the web published lecture notes before lectures. Many fail to show up to lectures and/or tutorials with pens, show an unwillingness to put pen to paper
- Students must be prepared to learn a substantial amount of programming and coding (many students say they do not like either). Programming is all about analytical thinking, and this is important
- Critical thinking, problem solving and communications skills. Teaching students “how to study and learn” is critical to their preparation for their IT degree and on-going success. Students need to learn to solve problems analytically and not just intuitively

BITS Program Design & Delivery Factors

Respondents were next asked to consider a range of issues relating specifically to the design and delivery of the BITS Programs. These issues were represented

by a set of nine interview schedule questions and are discussed in order of the sequence these were asked during the interviews.

Subject Delivery Preparation

- Flexibility in design and delivery. More flexibility needs to be built into course design and delivery to allow changes to be made during the semester. This takes into consideration the diverse and specific needs of the student cohorts for each subject and is believed to maximise rates of student success
- Industry experience. It is important to design courses with industry needs and outcomes in mind. Many students expected courses are designed with industry in mind[4]
- Back to basics, or foundational learning. Relates to the role of the university and its purpose in the education and/or training of students
- Ploys and devices must be used to gain and maintain students' interest
- Learning to learn. Many students are not used to the fact that they have to do the learning. An important aspect of good course design and delivery is making students appreciate that the courses are useful to them

Core Unit Structure (Problems)

- Common core units are problematic

Teaching Style: Adapting and Coping

- Personalising the learning experience. Building a sense of recognition and familiarity between staff and students makes a positive difference to students' adaptation to the learning experience
- Attendance rates at lectures are poor
- Avoid posting tutorial solutions on the web as it provides little incentive for students to think for themselves
- Fewer lectures, more tutorials, better tutors. The continued use of the lecture format is an impersonal and passive teaching method, the university should consider the benefits of tutorial and/or seminar-based learning where much smaller groups of students can interact and problem solve
- Adapting to mass market education. Changes to the tertiary education sector since the 1960s have led to significant changes to the style of teaching students
- Cultural and linguistic patterns of adaptations and coping. Asian international students in particular experience difficulties relating to their cultural norms of learning and English language proficiency

[4]

- Asian students have a very strong concept of finding the "single, correct answer" to problems.

Staff-Student Contact

- Generalising the student body. It is difficult to generalise about student levels of satisfaction in regard to staff-student contact because the student body crosses years (1st year through to Honours), class sizes and cultural barriers. The issue is that if it is a large subject size, students will usually have a lot of contact with the tutor and far less with the lecturer
- Students make snap judgements. Students form very strong and often quite unfair opinions quickly, and this is exacerbated by low levels of staff-student contact
- Staff-student meetings are recommended and should be held regularly (twice a semester)
- Importance of good tutors

Work Level

- Prescriptive approach. Most staff expect students to work twelve hours per unit a week
- Needs basis approach. Some staff argued that the requirement will vary from student to student, giving priority instead to help students achieve maximum understanding for the minimum time spent studying
- Secondary to tertiary transition. Many students' experience a difficult transition from secondary to tertiary education and it can take them some time to adjust to new work levels

Attitudes to Timetables

- Discipline and priorities. Top level students' priorities are to the course and these students they will adapt other issues and timetables around the course
- Part-time students are presented with more timetabling problems than full-time students. This related to the electives students can enrol in if they are scheduled during the day. Further, part-time students had a restricted set of electives they choose from do
- Duration of lectures. Two to three hour lectures are too long as students get restless and "switch off"
- Monday mornings 9am and Friday afternoons are not a good time to schedule lectures
- Lectures should run prior to tutorials, and both should be held on the same day if possible

Success/Failure Factors

- Motivation (enthusiasm and interest). Motivation, closely relate to enthusiasm and interest (the "unquantifiable stuff"), is a major factor contributing to students' success or failure in their degrees
- Working habits. Good working habits contribute to students' success, their ability to organise themselves. These contribute to levels of motivation and ability to deal with the "ups ad downs of life"
- Effort, preparedness and organisation. Student success largely depends on what they expect to get out of their time at university. Genuine effort and preparedness make all the difference, both in terms of before starting the subject (how much students already know) and how much students are prepared to put in each semester. Many students who fail do either
- Quality of teaching. Successful students make use of the teaching resources made available to them (i.e. the teaching staff). The ability of staff to engage with students on a wide range of levels should increase student success rates

Positive Changes

- Positive and negative reinforcement at the right stage. Any changes made to the core unit structure in order to positively affect students' adaptation to their degree would depend on what stage of their studies they were at
- Consistency in approach (between courses, schools, campuses and lecturing staff). Some lecturers are very strict about cut-off dates for the submission of material and other are more relaxed. Different staff teach differently and there are many approaches; lecturers want to apply these to create incentives for students to submit their work
- Flexibility in design and delivery. Monash is a diverse institution that enrols both top level students as well as lower level students across courses and campuses, and attempting to force foundation (common core) subjects across these was overwhelmingly seen as problematic
- Increasing student awareness. Staff could do much more to better educate students about what they are getting themselves into by enrolling in their degree
- Revised workload and content. Some staff proposed that a reduction in workload (in common core units) would help students positively adapt to their degrees

4. The staff-student matrix

The world of the student, as found here, is one of conventional, stereotyped expectations and staff may be seen as being quite realistic about their students. Some are seeing a need for a critical link between the student's needs and expectations and the way courses are structured.

Of particular interest is the extent to which staff believe students will be better able to cope through better information. This assumes that information directly given to the student is a primary driver of that student's choice of course. If we look at the reasons students give for coming onto the course, where the interest+career options lead the others, we may have some basis for improving knowledge if the interest they express is based on activity and not just on stereotypes and vague expectations.

Perceived problems students have about doing the course focus upon their expectations of what they do not understand. This is in agreement with the staff view that students are not well prepared for university activities.

There were proactive statements by staff on the way the teaching environment would best be developed. Some of these raised the question about the appropriateness of unit structures when we look at student preparedness. For instance, they point to an emphasis upon lectures when a tutorial structure might be more effective, although this is coloured by the need to have tutors who are not new graduates with little teaching background.

- *There is little obvious conflict between how staff and student view the teaching-learning environment. Staff tend to have forward looking views that support the development of a more student centred environment.*

5. Unit performance

Unit Performance allows us to look at the progression of the students through their course, a primary aim of this project.

We were able to analyse the difference between those in the research sample who agreed to be identified, versus the rest of the intake *where a result was recorded on Callista*. This gave us 64 of the sample and 266 from the rest of the intake for FIT1001, the unit in which data was collected and students agreed to participate.

There is no significant difference in the pattern of grades between those who agreed to fully participate and the rest of the students for FIT1001 and FIT1003 but there is one for FIT1002.

Table 9 Unit performance by Participated in FIT1001

			FIT1001					Total
			N	HD	D	C	P	
Participated	yes	Count	11	10	16	20	7	64
		Expected Count	16.1	10.5	11.6	14.2	11.6	64.0
	no	Count	72	44	44	53	53	266
		Expected Count	66.9	43.5	48.4	58.8	48.4	266.0
Total		Count	83	54	60	73	60	330
		Expected Count	83.0	54.0	60.0	73.0	60.0	330.0

Table 10 Unit performance by Participated in FIT1002

			FIT1002_A					Total
			N	HD	D	C	P	
Participated	yes	Count	5	26	8	7	5	51
		Expected Count	14.1	18.1	5.9	6.4	6.5	51.0
	no	Count	84	88	29	33	36	270
		Expected Count	74.9	95.9	31.1	33.6	34.5	270.0
Total		Count	89	114	37	40	41	321
		Expected Count	89.0	114.0	37.0	40.0	41.0	321.0
Pearson Chi-Square		12.515 (4)	alpha=0.014					

Table 11 Unit performance by Participated in FIT1003

			FIT1003					Total
			N	HD	D	C	P	
Participated	yes	Count	10	3	10	14	11	48
		Expected Count	9.1	4.2	9.8	14.7	10.3	48.0
	no	Count	40	20	44	67	46	217
		Expected Count	40.9	18.8	44.2	66.3	46.7	217.0
Total		Count	50	23	54	81	57	265
		Expected Count	50.0	23.0	54.0	81.0	57.0	265.0

- *There were no significant differences between the sample and the general intake on the core units FIT1001 and FIT1003, while for FIT1002 those in the sample were less likely to get an N than the others.*

With 64 individuals who were identifiable having a result for FIT1001 out of the original 95, the rate getting to an assessable result was 67%. The rate for the rest was 62% (266 of 427). This suggests that the sample did not differ on this indicator.

Table 12 contains the cross-tabulation of FIT1001 by Course studied for the participants in the project. This table is very spares with a number of low and empty cells so the results can be seen, at best, to be indicative. What is suggested is that the CaulBITS students withdrew (failed to be assessed) at a lower rate than would be expected and the Other Course students had a much higher rate of attrition. BerwickBITS may also have a higher attrition rate than expected.

The data for the other two core units also produced significant differences but the tables are even more sparse.

Table 12 Comparison across courses in FIT1001 for participants

	FIT1001						Total
	N	HD	D	Credit	Pass	DNS	

Course	Caul BITS	Count	2	2	7	7	5	7	30
		Expected Count	2.8	2.5	4.3	5.5	1.8	13.1	30.0
	Pen BITS	Count	0	1	1	5	0	3	10
		Expected Count	.9	.8	1.4	1.8	.6	4.4	10.0
	Berwick BITS	Count	0	1	3	2	0	10	16
		Expected Count	1.5	1.3	2.3	3.0	.9	7.0	16.0
	Gipps BITS	Count	3	1	1	1	0	2	8
		Expected Count	.7	.7	1.1	1.5	.5	3.5	8.0
	BCompSci	Count	2	0	2	4	1	5	14
		Expected Count	1.3	1.2	2.0	2.6	.8	6.1	14.0
	BSE	Count	2	1	2	2	0	1	8
		Expected Count	.7	.7	1.1	1.5	.5	3.5	8.0
	BBIS	Count	0	4	1	0	1	8	14
		Expected Count	1.3	1.2	2.0	2.6	.8	6.1	14.0
	Other course	Count	2	0	0	1	0	16	19
		Expected Count	1.8	1.6	2.7	3.5	1.1	8.3	19.0
Total		Count	11	10	17	22	7	52	119
		Expected Count	11.0	10.0	17.0	22.0	7.0	52.0	119.0
Pearson Chi-Square		65.497 df 35 alpha 0.001							

Expected versus Actual Grades

In the survey, the students were asked to nominate the grade that they expected to get for the year. Even with the Semester 1 exam data, it is difficult to define an overall grade, so we have compared the survey ratings against the actual performance in the 3 core subjects. Table 13 to Table 15 show that actual subject performance did not relate very strongly to their actual performance – none produce a statistically significant pattern.

- *Clearly, self-perceptions of performance are not good predictors of actual performance.*

Table 13 Grade expected against FIT1001 performance

	FIT1001_A					Total
	N	HD	D	Credit	Pass	

Grade expected	HD	3	3	5	2	0	13
	D	5	5	8	12	4	34
	Cr	2	2	4	7	3	18
	P	0	0	0	1	0	1
	DK	1	0	0	0	0	1
Total		11	10	17	22	7	67

Table 14 Grade expected against FIT1002 performance

		FIT1002_A					Total
		N	HD	D	Credit	4.00	
Grade expected	HD	1	7	1	0	0	9
	D	2	14	4	4	2	26
	Cr	1	8	3	3	3	18
	DK	1	0	0	0	0	1
Total		5	29	8	7	5	54

Table 15 Grade expected against FIT1003 performance

		FIT1003_A					Total
		N	HD	D	Credit	Pass	
Grade expected	HD	2	0	3	3	4	12
	D	2	2	6	7	4	21
	Cr	6	1	1	4	3	15
Total		10	3	10	14	11	48

General Points on Unit results

The correlations in Table 16 show that the unit assessments are reasonable comparable with FIT002 and FIT003 being less clearly related.

Table 16 Correlations between Unit results

		FIT1002	FIT1003
	Pearson Correlation	.830(**)	.883(**)
	N	49	44
	Pearson Correlation		.726(**)
	N		35

** Correlation is significant at the 0.01 level (2-tailed).

Correlation between learning or interest and unit results

The small number of responses restricts the extent to which analyses can be done to compare the attitudinal measures and the performance on the semester 1 units. What follows must be seen as indicative rather than as definitive.

This is illustrated by the correlation between some very high correlations for the BBIS group. Figure 2 shows how a single case in a small sample can give a high correlation. In this case 0.814 with N=6 giving a *p* of 0.049.

The most noteworthy data from this aspect of the analysis is that the “Interest” items have very few statistically significant correlations with unit performance in any of the courses. Few measures of interest tended to be related to actual performance. In fact, researchers in this area appeared reluctant to focus on this question.

- *There is no relationship between the measures of interest and unit results.*

The results for the "learning" questions are far more complex. For example, the Caulfield BITS students produced an array of significant coefficients. Interestingly enough *none of these are for FIT1001*. Table 17 shows the significant correlations (where the maximum sample size was 23). The last row of the table shows that there was a negative correlation between the idea that you would learn games and the unit performance. Figure 1 shows that this relation ship appears to be meaningful for this group although the result was not repeated in any of the other unit groups.

Table 17 CaulBITS Learning items by Unit Performance Correlations

Item	FIT Unit	Correlation
learn. Develop business	1003	0.49
learn. HCI	1002	0.54
learn. HCI	1003	0.72
learn. Write progs.	1002	0.56
learn. Write progs.	1003	0.70
learn. IS analysis	1003	0.43
learn. Software design	1003	0.59
learn. Problem solving	1002	0.69
learn. Problem solving	1003	0.62
learn. Prog. Testing	1002	0.55
learn. Prog. Testing	1003	0.68
learn. Lang. Theory	1003	0.47
learn. Write games	1002	-0.58

- *The relationship between "learning" attitudes and unit performance is complex and maybe a consequence of the small sample size.*

Figure 1 Correlation between writing games and unit performance - CaulBITS

Figure 2 BBIS - FIT1001 by Learn Data Base

Attrition

On the *reasons for doing the course* items there are 3 that produced significant differences. The first of these is *extended knowledge and skills* where those who did not sit FIT1001 were more likely to have said that they had the course for this reason. This is clearly an area that needs to be pursued. In this is supported by the pattern of the second item which is the *interest in challenging course* item. Again, those who do not sit of those expected and interest in challenging course.

Table 18 Attrition from FIT1001 by Reason: Extend Skills

			Reason Extend skills		Total
			No	Yes	
fit1001_attrit	Sat	Count	50	17	67
		Expected Count	42.8	24.2	67.0
	DNS	Count	26	26	52
		Expected Count	33.2	18.8	52.0
Total		Count	76	43	119
Pearson Chi-Square	7.694	DF 1	p=.006		

Table 19 Attrition by Reason: Challenging

			Reason Challenging		Total
			No	Yes	
fit1001_attrit	Sat	Count	42	25	67
		Expected Count	36.0	31.0	67.0
	DNS	Count	22	30	52
		Expected Count	28.0	24.0	52.0
Total		Count	64	55	119
Pearson Chi-Square	4.892	DF 1	p= .027		

Table 20 Attrition by Reason: No clear reason

	Reason: None		Total
	No	Yes	

fit1001_attrit	Sat	Count	62	5	67
		Expected Count	64.2	2.8	67.0
	DNS	Count	52	0	52
		Expected Count	49.8	2.2	52.0
Total		Count	114	5	119

Pearson Chi-Square	4.051	Df 1	p= .044

There is only one of the problems the students perceived that they might have that differentiates those who gained a final assessment in FIT1001 and those who did not. This was *Not knowing what is expected of me by lecturers and tutors*. Those who did not get to assessment were more likely to be less sure on this item.

Table 21 Problems: What is expected of me

			Prob. Expected of me		Total
			No	Yes	
fit1001_attrit	Sat	Count	44	23	67
		Expected Count	38.8	28.2	67.0
	DNS	Count	25	27	52
		Expected Count	30.2	21.8	52.0
Total		Count	69	50	119

Pearson Chi-Square	3.720	Df 1	p= .05

The items that asked students to rate learning situations (item block 25) produced no differences in mean trend on attrition. This may be a result of the students producing the ratings from poor information although they had had experience of some of these.

6. Student Case Studies

The information gained from the interviews coupled with survey data and unit performance data provides us with the opportunity to investigate some students as case studies. This is a useful approach because it provides some insights into the progression questions for the courses.

Case 1.

This individual entered the course with surveyed reasons including Interest, Career and Extend Skills and Knowledge. He was confident that he would get through year 1. His responses to the Learn items indicated a definite pattern of expectations although his Interest pattern was less clear. Of note is that even the areas he rated as high on Learn were in the middle on Interest.

During the interview he talked about elements of course being quite challenging. Suggests that the amount of work needed is challenging partly because the mark allocated does not reflect the content of the assignment. Many lectures are very boring.

He is unable to express any ideas on the teaching and learning environment, but feels that staff should check on student coping "I do not enough time to contact them, too much work together". Even though he criticised tutorials and said he didn't go to them, he could not express any actual criticism or ways of changing them

He said that he prefers to work alone.

He seems to have extremely good basic study skills, at least a very functional level.

In spite of all this, he failed to sit for any of the core subjects. There is no obvious feel for who he is but its is doubtful that he would have been seen as a potential withdrawl if interviewed on entry.

Case 2

This student could be seen as a classic uncertain individual. His Learn and Interest ratings have no positive pattern. He is not confident about passing the year or course.

During the interview he was uncertain and indecisive. He constantly talked about "I don't get ". When asked about his expectations all he could give was "hard to say". Even though he has had no expectations but the course is behaving like he expected.

He appears to be somewhat isolated, having little contact other than with one friend.

An impression gained from the interview is that there is a strong element in what he is saying that reflects his lack of technical knowledge and experience.

He gives the impression that he is not pressured by the course but this does not some convincing.

He, not surprisingly, did not sit any of the core units

It is probable that this student would not have been selected if a part of the selection procedure had been an interview about knowledge of the discipline area and confidence in progressing.

Case 3

From the survey results, this student is a good example of the motivated student with well-defined interests and expectations. He did all the VCE IT subjects.

During the interview the student did not a lot to say that allows for much understanding of why he is here and what he is getting out of the course. A typical phrase is: "I guess it's been okay."

He has come in from VCE IT, he has seemingly clear expectations about content yet he is unhappy with subjects where there is a lot of "technical stuff". He admits that he wants simple examples that may not even have anything to do with IT.

He does not talk about the course outside of content. There is no suggestion that has a bigger role in his life than the qualification and a job.

But he is basically happy with what he is getting.

He passed all subjects, getting an HD in FIT1002.

If he had have been interviewed he probably would have been accepted, but the interviewer would have had doubts about his motivation. This is a case where objective measures were more appropriate.

Case 4

This case is, from the survey, very similar to the previous one.

The interviews are very different as this student. He talks really well about his education experience and sounds as though it is a positive experience he is having. He is very positive about the lecturers attitude and approachability and feels is really learning from the course. It has been much more effective learning experience than in high school.

"So far I have pleasantly impressed with what we have got so far I'm quite"

He sounds as if he had it all under control at the time of the interview. Comes across as someone who did IT subjects and is a gamer who is interested in hardware.

".. before coming into the course I taught myself lots of stuff particularly to do with hardware."

He is a member of the IT students' group and sees it as a good social contact. but doesn't have a wider support or social group. He does have a group of friends would get together to study or review content etc.

According to the end of semester results he passed one core and deferred the other two. There is no suggestion as to why this might have happened. This is a case where a further follow-up interview would have been useful.

7. Relationship to other data

The data that was collected for the evaluation of the core units as well as the unit evaluations could be compared to that collected here. At the time of presenting this report, the raw data from the unit evaluations had not been processed, consequently we will deal only with the evaluation study.

There appears to be broad agreement between the data from the evaluation study and the one being reported here.

Discussion

In exploring the primary aim of this project, relating the perception students have of ICT to their progression through the course, we have being able to note a number of important factors. It is clear the students surveyed and interviewed did not have particularly clear views on what they were intending to. On the one hand they were able to rate a series of items on what the expected to learn in the course yet when asked what the expected to get from the course they had little to say. The important point here is that it is unclear how much information potential students can be given in order to facilitate their choice behaviour. We have already pointed to the fact what careers information systems are well-developed, with substantial resources having been allocated to them the last 20 years. Added to this, the university system spends a substantial amount of money each year on school-based marketing.

It is also informative that almost none of the measures used in our survey had any relationship to the end of the semester performance of participants. Admittedly the number of students we were able to utilise for this analysis was rather small. But under such circumstances extreme cases can often indicate possibilities yet we found few such indicators.

A consequence of this was that we decided not to continue with a second survey of the students. There was little that this could add. We had not found any information against the primary aims of the project, particularly effects upon progression, and additional data could not alter this. Furthermore, with the relatively high attrition rate, the sample we would obtain from a further data collection could not be guaranteed to have a clear relationship to the original data.

All of this can be seen to follow the pattern of educational research into student selection of courses and progression through courses. It is rare to find simple indicators or simple factors account for either effective selection or affective progression. See for example the ACER study into student progression (Hillman, 2005).

We may have to accept relatively high levels of attrition in ICT courses and look towards ways of establishing better means of helping students recover from poor choices. Another alternative is to take seriously the task of finding those students who would benefit from particular types of IT courses. For example, the faculty could look at the means for developing courses that will attract young woman through such things as positive discrimination support. There is continued evidence that there is a body of young women who are interested in IT but find the environment repressive.

The exploration of the second aim of this project to the research staff perception students is also generated some useful information. Staff see students is being unprepared from the point of view of both expectations about the course and about University study. They also see motivation of students is relatively narrow with a strong job focus. This, interestingly enough, raised the question in some

staff thinking that we may have to consider the idea of return on investment issue for some students, particularly those enrolling as full-fee paying students.

Staff do not appear to have high expectations of what knowledge and skills the students will bring into an ICT program. But they do expect students to have the preparation that allows them to deal with the course and university study. This may warrant some further discussion.

On some of the functional issues relating to how students should organize themselves, there seems to be a degree of regimentation in the approaches being talked about. This is not to say that some students may be comfortable with this, but it does raise questions about the way in which students are being prepared for a continuously changing world in ICT.

This has to be qualified by another set of comments that reflect upon the interests and motivation of students and how these might develop.

From results from the first two project objectives it might appear that there is conflict between staff and student thinking that would militate against a productive teaching and learning context. The feel of the interviews from both sides is that this is not the case. There are always dissatisfied students and there are always staff who will have unrealistic expectations about students. The issue here is to relate this to how the faculty can re-work itself to attract students. If it decided to look at attracting a non-traditional body of students, it may have to do a great deal more work on how staff think about ICT students.

We doubt that there is any simple way of increasing the depth and quality of the information going to students, teachers and parents. It is not a simplistic marketing exercise. Rather it is a problem of dealing with an evolving occupational area that overlaps with a number of disciplines including computer science.

Understanding student behaviour and future directions

The starting point for developing a better understanding of how students become a part of a university system is through developing meaningful models of student behaviour. Too much of what is reported is naïve in terms of understanding why students do what the do. The DETYA (1999) report uses a scattergun approach in defining what needs to be done as some 24 actions and a further 6 institutional policies. The ACER longitudinal study (Hillman, 2005) simply reports head counts.

The complexity of the student xperience has been pointed to by others. Applegate and Daly (2005), in an unpublished study, show that within a university there is no simple relationship between paid work and performance. Manthei and Gilmore (2005), based on NZ students, show that paid work that shows it is complex and not necessarily detrimental. These confirm the US experience and they increase the need to take a more sophisticated approach to the issue of attrition and performance.

The starting point for any effective behavioural model is to recognise the complexity of what we are dealing; to take seriously individual behaviour within varying societal settings. In addition we have try to think outside of one dimensional solutions. That is, to think about the diversity of students who enter a university and the need to reflect that inherent dimensionality of that diversity in any research into student behaviour.

Of importance here is the fact that vocational behaviour thinking is moving from relatively simplistic models based upon single assessment devices (such as the Holland VPI and its derivatives) into behavioural models that take into account complex individual behaviours, particularly the Social Cognitive Career Theory (Lent, Brown and Hackett, 1994) and the chaos model being developed by Pryor and Bright (2003).

There is now a surfeit of studies that count heads and generate limited connections. To continue head counting, no matter how sophisticated, is unlikely to lead very far because it does not tell us about structural things; it does not give us the *why*'s, it gives us only aggregations of ratings.

An important starting point is to move away from the attrition/failure concept and to look at a proactive concept like adaptation. The attrition/failure concept makes simplistic assumptions about entering and leaving courses, particularly the assumption that to drop out is bad and to stay in is good. It is often psychologically healthy for a student to drop out of a course. Student counselors have plenty of examples of the opposite where a person stays in a course because of external pressures even though they are very unhappy.

By adopting something like adaptation we accept that there are many ways in which people make decisions about what they do and, to that extent, it is value free. The term adjustment could be used but it has other connotations in behavioural analysis.

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Appendix 1

Documents for participants from Ethics approval process

Faculty of Information Technology

Monash University

Dear Student,

Ref: Project 2006/039– *Exploring the process of adaptation in the teaching/learning environment*

The Faculty is carrying out a project on how students approach their course and their study. We are also interested in the strategies you use to survive in the early part of your university experience. The senior researcher is Mr.Chris Avram. We are asking you, as one of the first year students entering FIT in 2006, to participate

The project will take very little of your time (about 45 minutes over the whole semester). You will be asked to complete a short survey at the beginning and end of semester. We will randomly select a few students to give feedback through a face-to-face or e-mail interview. All participation will be voluntary

To carry out this type of research we need to be able to follow your progress over time. This is the only way that we can effectively plot what is happening. Consequently, we are asking you to identify yourself through your student identification number.

Your responses will not be available to the teaching staff. The research database will be maintained by Dr.Selby Markham, the Research Fellow for computing education. The database will be password encrypted, using a password established by him.

Any follow-up of individual students, from the analysis of the database, will be carried out under the supervision of Selby.

All of the data reporting will be at an aggregated level and will be done in such a way that an individual could not be recognised.

You can remove your identifying information from the database at any time. A Web page will be made available for this.

Results will be reported on the project web site: http://cerg.csse.monash.edu.au/adaptation

I hope that you will appreciate the importance of this project and give it your full support.

Should you have any questions about how the data storage and handling will work, feel free to contact Selby at Selby.Markham@infotech.monash.edu.au or telephone (03) 9903 2660 or fax to (03) 9903 1077. For other information you can contact Cris Avram (Chris.Avram@infotech.monash.edu.au).

Should you have any complaints concerning the manner in which this research (Project number 99/026) is conducted, please do not hesitate to contact The Standing Committee on Ethics in Research on Humans at the following address:

The Secretary, The Standing Committee on Ethics in Research on Humans

Monash University

Wellington Road

Clayton Vic 3168

Telephone (03) 9905 2052 Fax (03) 9905 1420

Faculty of Information Technology

Monash University

Dear Staff Member,

Ref: Project 2006/039 – Perceptions and performance: ICT at Monash University

The Faculty is carrying out a project on interaction between the student perceptions of their course and the perceptions staff have of students. The senior researcher is Mr.Chris Avram. We are asking you, as one of the faculty staff, to participate. Your participation will help in the development of a better understanding of the faculty's teaching and learning activities, helping develop courses that are both academically sound and meeting student learning needs.

The project will take very little of your time (about 20 minutes over the whole semester). We will ask you to participate in an interview that will explore the your perceptions of students and the impact of them on unit design and delivery. If you choose to help in this way, your responses will be maintained securely.

All participation will be voluntary.

Your identifiable responses will not be accessible to the other academic staff on the project. They will access anonymous data. The research database will be maintained by Dr.Selby Markham, the Computing Education Group Research Fellow.

Any follow-up of individual staff, from the analysis of the data, will be carried out under the supervision of Selby. All of the data reporting will be at an aggregated level and will be done in such a way that an individual could not be recognised. Should we feel that a quotation from your response would be useful in a paper or report but may indirectly identify you, Selby will contact you to ask for your permission

You can remove your identifying information from the database at any time. A Web page will be made available for this.

Results will be reported on the project web site: http://cerg.csse.monash.edu.au/adaptation

I hope that you will appreciate the importance of this project and give it your full support.

Should you have any questions about how the data storage and handling will work, feel free to contact Selby at Selby.Markham@infotech.monash.edu.au or telephone (03) 9903 2660 or fax to (03) 9903 1077. For other information you can contact Cris Avram (Chris.Avram@infotech.monash.edu.au).

Should you have any complaints concerning the manner in which this research (Project number 2006/039) is conducted, please do not hesitate to contact The Standing Committee on Ethics in Research on Humans at the following address:

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Wellington Road

Clayton Vic 3168

Telephone (03) 9905 2052 Fax (03) 9905 1420

Chris Avram chris.avram@infotech.monash.edu.au

Faculty of Information Technology

Monash University

Informed Consent Form Staff Participants

Ref: Project 2006/039– *Perceptions and performance: ICT at Monash University*

I have read the attached information sheet on this project and I understand what it involves. I understand that agreeing to participate means that I willing to make myself available for one (aprox 20 minute) interview. I also understand that I am in no way compelled to participate in this project.

I accept that, in doing this I will have identifying information recorded in the project data base with the understanding that the indentifying data will not be accessible to academic staff on the research team.

I understand that I may withdraw from the project and have my data removed.

I am prepared to be a participant in this project [ ]

Name (please print) _____

Signature _____

Date _____

Faculty of Information Technology

Monash University

Informed Consent Form Student Participants

Ref: Project 2006/039– *Perceptions and performance: ICT at Monash University*

I have read the attached information sheet on this project and I understand what it involves. I understand that agreeing to participate means that I willing to

- Have my student identification number used to identify my responses

  (Understanding that the data will not be accessible to course staff)
- Complete the survey at the beginning of term
- Complete the survey at the end of term
- Make myself available for one (aprox 20 minute) interview*, if randomly selected*

I understand that participation is voluntary. I also understand that, at any time during the project I am able to withdraw my consent to participate.

I am prepared to be a participant in this project [ ]

I am not prepared to be a participant in this project [ ]

Name (please print) _____

Signature _____

Date _____

Appendix 2

First Semester survey

Faculty of Information Technology, Monash University
Survey - Perceptions and performance: IT at Monash University

We are asking you to fill out this questionnaire to give us information about what you want from the units and your course.

Your responses will NOT be available to your teaching or tutorial staff.

They will see only data from which all identifying information has been removed. The database of individual responses will be independently controlled by the Research Fellow in the Computing Education Research Group.

If you are not willing to identify yourself, could you leave "student ID" blank, and complete the survey.

1. Student ID ☐
2. Year of birth ☐
3. Gender (optional)
   Tick the box that applies to you
   Male ☐
   Female ☐
4. What was your ENTER score ☐ Not Applicable ☐
5. Is your first language English? (optional)
   Tick the box that applies to you
   Yes ☐
   No ☐
6. Where did you study for your VCE(Victorian Certificate of Education) or its equivalent? (optional)
   Tick the box that applies to you
   Victoria ☐
   Another Australian state ☐
   Outside Australia ☐
   Not applicable ☐
7. What IT units did you study at school?
   Tick all boxes that apply to you.
   Information Technology (Unit 1) ☐ 1
   Information Technology (Unit 2) ☐ 2
   Information Systems (Unit 3) ☐ 3
   Information Systems (Unit 4) ☐ 4
   Information Processing and Management (Unit 3) ☐ 5
   Information Processing and Management (Unit 4) ☐ 6
   VET Certificate in Information Technology ☐ 7
   Other units? Please specify: ☐ 8
   _____
   None of these. ☐ 9
8. How many hours did you spend using computers at home and at school during a normal school week? ☐
9. How much time did you use a computer during a <u>normal school week</u> to do each of the following? (Write in the hours)
   accessing the Internet
   email
   chat
   games
   programming

working on Web pages

	1
	2
	3
	4
	5
	6

10. Are you an international full fee paying student? (optional)

Yes ☐
No ☐

11. Which course are you enrolled in?

Bachelor of Information Technology Systems at:

Caulfield
Peninsula
Berwick
Gippsland

Bachelor of Computer Science
Bachelor of Software Engineering
Bachelor of Business Information Systems
Other course? Please specify:_____

	1
	2
	3
	4
	5
	6
	7
	8

12. What was the last study you did before entering this course?

High School
Diploma course
Another degree – completed
Another degree – incomplete
TAFE college
None

	1
	2
	3
	4
	5
	6

13. In which of the following programming languages do you have some experience or knowledge?

HTML ☐
Basic/VB ☐
Pascal/Delphi ☐
C/ C++ / C# ☐
Java ☐
CGI / Perl ☐
Other ☐
None ☐

14. Which of the following programming languages had you studied in a course prior to this semester?

HTML ☐
Basic / VB ☐
Pascal / Delphi ☐
C / C++ / C# ☐
Java ☐
CGI / Perl ☐
Other ☐
None ☐

15. What mode of study are you doing?

Full Time ☐
Part Time ☐

16. Where did this course fit in your overall course preferences?

1st choice ☐
2nd choice overall ☐
3rd or lower overall ☐

17. Where did this course fit in your IT course preferences?

1st choice in IT studies ☐
2nd or lower in IT studies ☐

18. What are the MAIN reasons you are doing this course? *Tick up to 4 of these.*

My parents wanted me to do this type of course	1
A teacher suggested that I do it	2
My friends were doing this type of course	3
I am interested in information technology	4
I see it as a good course for getting into a career in IT	5
The reputation of this Monash course	6
The best I could get with my ENTER score	7
To extend my basic knowledge and skills	8
It appears to be an interesting and challenging course	9
To earn good money.	10
No clear reason.	11
Other.	12

19. Is this your first attempt at an IT degree or diploma?

Yes ☐
No ☐

20. Approximately how many <u>hours a week</u>, on average, do you expect you will need to allocate for your university course outside class times? ☐
21. Approximately how many <u>hours a day</u>, on average, will you be travelling to and from University? ☐
22. Approximately how many <u>hours a week</u>, on average, will you be working in a job during semester? (include travel time to and from work) ☐
23. What access do you have to a computer?

None outside Monash ☐
My own computer ☐
A laptop I bring to university ☐
A family computer I can use ☐
A computer I share with friends ☐

24. Can you please describe in your own words what you think you will be doing in this course:

25. **How well do you feel you learn in the following situations**
Circle the number that applies to your choice.
*Circle **DK** if you don't know what a particular situation is.*

	Not at all				Very well	
Lectures/Formal classes	1	2	3	4	5	DK
Outside class on my own	1	2	3	4	5	DK
Outside class with my friends or classmates	1	2	3	4	5	DK
Tutorials where most of the time is spent being given answers to problems	1	2	3	4	5	DK

Tutorials or seminars where I am expected to participate and make a contribution	1	2	3	4	5	DK
Computer lab classes where I have to work at a computer on my own	1	2	3	4	5	DK
Tutorials or computer lab classes where I have to work in a small group	1	2	3	4	5	DK

26. What grade, overall, do you think you can attain in your course this year?

- High Distinction (80-100%) ☐
- Distinction (70-79%) ☐
- Credit (60-69%) ☐
- Pass (50-59%) ☐
- Don't know ☐

Unsure Confident

27.	How confident are you that you will pass all units this year?	1	2	3	4	5	DK
28.	How confident are you that you will complete your degree?	1	2	3	4	5	DK

29. **How much do you think that you will learn about these topics in this course**?

Circle the number that applies to your choice.

*Circle **DK** if you don't know what the topic is about.*

	Nothing				*A great Deal*	
Building databases e.g. Access	1	2	3	4	5	DK
Communication and presentation skills	1	2	3	4	5	DK
Computer graphics and animations	1	2	3	4	5	DK
Computer networks	1	2	3	4	5	DK
Developing computer systems for businesses applications	1	2	3	4	5	DK
Developing computer systems for scientific/engineering applications	1	2	3	4	5	DK
Developing computer systems for the World Wide Web (Web)	1	2	3	4	5	DK
Developing computer systems for use in devices such as mobile phones	1	2	3	4	5	DK
Digital logic and electronic circuit design	1	2	3	4	5	DK
How a computer works	1	2	3	4	5	DK
How operating systems work e.g. Windows, Linux	1	2	3	4	5	DK
How people interact with computers	1	2	3	4	5	DK
How to build computer controlled robots	1	2	3	4	5	DK
How to write programs	1	2	3	4	5	DK
Information management	1	2	3	4	5	DK
Information systems analysis and design	1	2	3	4	5	DK
Legal / Professional / Ethical issues in computing	1	2	3	4	5	DK
Mathematics	1	2	3	4	5	DK
Project Management	1	2	3	4	5	DK
Report writing and program documentation	1	2	3	4	5	DK
Security issues and management e.g. computer viruses	1	2	3	4	5	DK
Software design	1	2	3	4	5	DK
Solving computer problems	1	2	3	4	5	DK
Testing computer programs and systems e.g. finding bugs	1	2	3	4	5	DK
Theory of programming languages	1	2	3	4	5	DK
Writing computer games	1	2	3	4	5	DK

30 **What are the MAIN problems you see yourself facing this year?**

Tick up to 4 of these.

I have not studied at university level and am unsure of what is expected	1
Making social contact because I do not know anyone	2
Having to travel a long way to attend classes	3
Having enough money to live on	4
Having enough money to buy books and equipment for the course	5
Not having a place where I can study properly	6
My ability to express myself well in discussion groups	7
My ability to express myself well in writing	8
Not knowing what is expected of me by lecturers and tutors	9
Other problems, please specify._____	10
None of these	11

31.

What is your level of interest in the following topics?

Circle the number that applies to your choice.

*Circle **DK** if you don't know what the topic is about.*

	Nothing			*A Deal*	*great*	
Building databases e.g. Access	1	2	3	4	5	DK
Communication and presentation skills	1	2	3	4	5	DK
Computer graphics and animations	1	2	3	4	5	DK
Computer networks	1	2	3	4	5	DK
Developing computer systems for businesses applications	1	2	3	4	5	DK
Developing computer systems for scientific/engineering applications	1	2	3	4	5	DK
Developing computer systems for the World Wide Web (Web)	1	2	3	4	5	DK
Developing computer systems for use in devices such as mobile phones	1	2	3	4	5	DK
Digital logic and electronic circuit design	1	2	3	4	5	DK
How a computer works	1	2	3	4	5	DK
How operating systems work e.g. Windows, Linux	1	2	3	4	5	DK
How people interact with computers	1	2	3	4	5	DK
How to build computer controlled robots	1	2	3	4	5	DK
How to write programs	1	2	3	4	5	DK
Information management	1	2	3	4	5	DK
Information systems analysis and design	1	2	3	4	5	DK
Legal / Professional / Ethical issues in computing	1	2	3	4	5	DK
Mathematics	1	2	3	4	5	DK
Project Management	1	2	3	4	5	DK
Report writing and program documentation	1	2	3	4	5	DK
Security issues and management e.g. computer viruses	1	2	3	4	5	DK
Software design	1	2	3	4	5	DK
Solving computer problems	1	2	3	4	5	DK
Testing computer programs and systems e.g. finding bugs	1	2	3	4	5	DK
Theory of programming languages	1	2	3	4	5	DK
Writing computer games	1	2	3	4	5	DK

Appendix 3

Student Interview Schedule

Perceptions and performance: ICT at Monash University

Draft Student Interview Schedule

Name:

Comment: The interview is confidential between you and I. No member of academic staff will hear or see your responses. They will not know what you, as an individual, have said about the course and your experiences.

How would you describe your reaction to the course so far?

What have been the main positive experiences in the course?

If there have been any negative experiences, can you describe them for me?

When you think about the feelings about the course:

- What do you now want from the course?
- The type of teaching you cope with
- The level of work you are having do
- The relationship between the skills you had on entering the course and how you are doing on the course.

What are the factors that, in your opinion, contribute most to success or failure on this course?

Appendix 4

Staff Interview Schedule

Perceptions and performance: ICT at Monash University

Draft staff Interview Schedule

Note: The aim of the interview is to get a feel for the way staff approach curriculum development in terms of what they understand about student background and knowledge.

What first year subjects are you teaching this year?

Can you tell me how you prepare a subject for delivery?

When you think about the average first year student how would you define:

What they want from the course they are doing?

The type of teaching they cope with

The level of work you expect them to do

The ICT skills you assume they will bring in.

What are the factors that, in your opinion, contribute most to success or failure in ICT courses?

Appendix 5

Survey Data Results

1. Summary Data

NOTE The following table uses the means for all items. This is not necessarily appropriate but will give an indication of patterns.

	N	Minimum	Maximum	Mean	Std. Deviation
YOB	181	1972	1989	1985.87	2.529
Gender	180	1	2	1.24	.431
ENTER	120	39	100	81.72	10.778
First Lang. English	182	1	2	1.33	.471
Where VCE sat	185	1	4	1.42	.924
InfoTech U1	185	0	1	.41	.492
InfoTech U2	185	0	1	.34	.475
InfoSystems U3	185	0	1	.23	.424
InfoSys U4	185	0	1	.23	.424
IP Manage U3	185	0	1	.35	.477
IP Manage U4	185	0	1	.34	.475
Vet Cert	185	0	1	.11	.318
Other IT Units	185	0	1	.05	.216
No IT units	185	0	1	.32	.469
Hours on computer	185	0	80	18.71	15.703
Hours on internet	185	0	70	7.87	10.462
Hours on email	185	0	30	2.18	3.153
Hours on chat	185	0	30	3.92	5.624
Hours on games	185	0	60	4.52	8.374
Hours on programing	185	0	30	1.57	3.510
Hours on Web Pages	185	0	10	.98	1.840
Internat FFP	180	0	2	1.78	.443
Course	185	1	8	4.42	2.514
Last study	184	1	6	1.84	1.365
Know HTML	185	0	1	.62	.486
Know VB	185	0	1	.60	.491
Know Delphi	185	0	1	.05	.216
Know C	185	0	1	.19	.393
Know Java	185	0	1	.30	.458
Know CGI	185	0	1	.04	.191
Know Other	185	0	1	.14	.343

Know none	185	0	1	.16	.365
Study HTML	185	0	1	.31	.463
Study VB	185	0	1	.42	.495
Study Delphi	185	0	1	.03	.163
Study C	185	0	1	.10	.304
Study Java	185	0	1	.26	.440
Study CGI	185	0	0	.00	.000
Study Other	185	0	1	.06	.247
Study None	185	0	1	.41	.493
Mode of study	185	1	2	1.04	.191
Overall preferencees	184	1	3	1.45	.723
IT preferences	183	1	3	1.17	.395
Reason parents	185	1	2	1.08	.265
Reason Teacher	185	1	2	1.04	.191
Reason Friends	185	1	2	1.05	.216
Reason Interest	185	1	2	1.79	.409
Reason For Career	185	1	2	1.59	.493
Reason Reputation	185	1	2	1.23	.420
Reason Best Could Get	185	1	2	1.14	.348
Reason Extend skills	185	1	2	1.36	.480
Reason Challenging	185	1	2	1.46	.500
Reason Money	185	1	2	1.21	.405
Reason None	185	1	2	1.06	.237
Reason Other	185	1	2	1.08	.274
First IT attempt	184	1	2	1.14	.349
Hours outside class	182	0	60	17.56	11.759
Hours Travel	184	0	50	2.92	5.788
Hours Work	178	0	60	8.25	9.858
Computer access	183	1	5	2.31	.723
Learn lectures	180	1	5	3.44	.778
Learn Alone	180	1	5	3.67	.865
Learn with friends	175	1	5	3.45	.914
Learn Tute problems	173	1	5	3.68	.976
Learn Tute interact	170	1	5	3.87	.833
Learn Labs	177	1	5	3.98	.839
Learn small group	175	1	5	3.83	.858
Grade expected	185	1	5	2.29	1.068
Pass year	183	1	5	4.21	.890
Complete degree	182	1	5	4.36	.801

learn. Data Base	162	1	5	3.33	.971
learn. Communication skills	169	1	5	3.27	.931
learn. Graphics	173	1	5	2.83	1.206
learn. Networks	172	1	5	3.60	.902
learn. Develop business	173	1	5	3.46	.979
learn. Develop scientific	170	1	5	3.08	1.049
learn. Develop Web	172	1	5	3.58	.904
learn. Devleop phones	172	1	5	2.80	1.138
learn. Digital logic	168	1	5	2.94	1.146
learn. Computer works	175	2	5	4.05	.856
learn. OSs	173	1	5	3.83	.928
learn. HCI	176	1	5	3.64	.903
learn. Robots	163	1	5	2.47	1.172
learn. Write progs.	175	1	5	4.11	.974
learn. Info. Management	174	1	5	3.66	.822
learn. IS analysis	174	1	5	3.77	.836
learn. Legal etc issues	168	1	5	3.15	.964
learn. Mathematics	172	1	5	3.05	1.176
learn. Project man.	171	1	5	3.50	.942
learn. Documentation	172	1	5	3.53	.939
learn. Security	173	1	5	3.46	.886
learn. Software design	174	1	5	3.69	.977
learn. Problem solving	174	1	5	3.91	.882
learn. Prog. Testing	171	1	5	3.78	.955
learn. Lang. Theory	174	1	5	3.80	.919
learn. Write games	170	1	5	2.69	1.222
Prob. Unsure of Uni	185	1	2	1.60	.491
Prob. Social contact	185	1	2	1.32	.469
Prob. Travel	185	1	2	1.18	.384
Prob. Money to live	185	1	2	1.24	.427
Prob. Money books	185	1	2	1.26	.442
Prob. Proper study	185	1	2	1.12	.325
Prob. Express groups	185	1	2	1.26	.440
Prob. Express write	185	1	2	1.26	.440
Prob. Expected of me	185	1	2	1.42	.495
Prob. Other	185	1	2	1.07	.256
Prob. None of these	185	1	2	1.07	.256
interest. Data Base	168	1	5	2.92	1.155

interest. Communication skills	171	1	5	3.25	1.006
interest. Graphics	171	1	5	3.55	1.199
interest. Networks	172	1	5	3.77	1.071
interest. Develop business	172	1	5	3.34	1.201
interest. Develop scientific	171	1	5	2.99	1.237
interest. Develop Web	172	1	5	3.63	1.066
interest. Develop phones	171	1	5	3.07	1.239
interest. Digital logic	167	1	5	2.83	1.207
interest. Computer works	173	1	5	3.58	1.131
interest. OSs	173	1	5	3.73	1.110
interest. HCI	174	1	5	3.27	1.087
interest. Robots	168	1	5	2.86	1.322
interest. Write progs.	171	1	5	3.84	1.165
interest. Info. Management	172	1	5	3.30	1.065
interest. IS analysis	170	1	5	3.31	1.141
interest. Legal etc issues	169	1	5	2.72	1.234
interest. Mathematics	171	1	5	2.81	1.342
interest. Project man.	172	1	5	3.21	1.088
interest. Documentation	171	1	5	3.09	1.097
interest. Security	173	1	5	3.59	1.023
interest. Software design	172	1	5	3.81	1.016
interest. Problem solving	174	1	5	3.89	1.006
interest. Prog. Testing	173	1	5	3.60	1.066
interest. Lang. Theory	172	1	5	3.14	1.206
interest. Write games	172	1	5	3.31	1.382
campus	185	1	6	3.71	2.139
Valid N (listwise)	65				

Course by Attitudes

The following tables are those that were statistically significant at or beyond the 0.05 level from an Analysis of Variance. The first block covers the questions in section 29 of the Survey (see Appendix 3) and the second covers section 31.

They have been called the “Learning questions” and the “Interest questions” respectively.

Table Learn -

Learn Data Base		N	Mean	Std. Deviation
	Caul BITS	34	3.65	.812
	Pen BITS	**15**	**4.00**	**.926**
	Berwick BITS	23	3.57	.843
	Gipps BITS	9	3.33	.866
	BCompSci	**20**	**2.80**	**.768**
	BSE	11	2.82	.874
	BBIS	28	3.18	1.020
	Other course	22	3.05	1.133
	Total	162	3.33	.971
	BCompSci	22	3.00	.535
	BSE	15	3.27	.961
	BBIS	28	3.36	1.026
	Other course	**22**	**2.73**	**.985**
	Total	169	3.27	.931

Table Learn -

Table Learn -

Learn Graphics		N	Mean	Std. Deviation
	Caul BITS	**37**	**2.30**	**1.024**
	Pen BITS	15	2.33	1.047
	Berwick BITS	**24**	**4.29**	**.859**
	Gipps BITS	10	3.10	.994
	BCompSci	22	3.05	.899
	BSE	15	3.13	.990

	BBIS	27	2.48	1.252
	Other course	23	2.39	1.033
	Total	173	2.83	1.206

Table Learn -

Learn Networks		N	Mean	Std. Deviation
	Caul BITS	36	3.56	.843
	Pen BITS	**15**	**4.47**	**.743**
	Berwick BITS	23	3.52	.730
	Gipps BITS	11	3.82	.874
	BCompSci	22	3.45	.858
	BSE	15	3.87	.743
	BBIS	**28**	**3.18**	**1.056**
	Other course	22	3.59	.854
	Total	172	3.60	.902

Table Learn -

Learn scientific programming		N	Mean	Std. Deviation
	Caul BITS	35	3.00	1.057
	Pen BITS	**15**	**2.67**	**1.047**
	Berwick BITS	23	3.22	1.085
	Gipps BITS	10	2.80	.919
	BCompSci	23	3.39	.891
	BSE	**15**	**3.87**	**.990**
	BBIS	**26**	**2.65**	**1.093**
	Other course	23	3.09	.900
	Total	170	3.08	1.049

Table Learn -

Learn Digital logic		N	Mean	Std. Deviation
	Caul BITS	33	2.91	1.128
	Pen BITS	**15**	**2.53**	**.834**
	Berwick BITS	22	2.82	.958

	Gipps BITS	9	2.89	1.269
	BCompSci	23	2.91	1.164
	BSE	**15**	**3.93**	**.799**
	BBIS	**27**	**2.48**	**1.282**
	Other course	24	3.29	1.122
	Total	168	2.94	1.146

Table Learn -

Learn Robots		N	Mean	Std. Deviation
	Caul BITS	33	2.42	1.173
	Pen BITS	**15**	**2.00**	**1.069**
	Berwick BITS	23	2.78	1.204
	Gipps BITS	7	2.14	1.676
	BCompSci	**23**	**3.17**	**.937**
	BSE	13	2.54	1.127
	BBIS	26	2.19	1.096
	Other course	23	2.17	1.114
	Total	163	2.47	1.172

Table Learn -

Learn Write programmes		N	Mean	Std. Deviation
	Caul BITS	**38**	**4.50**	**.762**
	Pen BITS	15	3.93	.961
	Berwick BITS	24	4.21	.779
	Gipps BITS	**11**	**4.36**	**.674**
	BCompSci	**22**	**4.36**	**.848**
	BSE	15	4.13	1.125
	BBIS	**27**	**3.37**	**1.149**
	Other course	23	3.96	.976
	Total	175	4.11	.974

Table Learn -

Learn Information Management	N	Mean	Std. Deviation

Caul BITS	**38**	**4.00**	**.838**
Pen BITS	15	3.80	.561
Berwick BITS	23	3.70	.876
Gipps BITS	10	3.80	.632
BCompSci	**23**	**3.35**	**.775**
BSE	15	3.67	.724
BBIS	27	3.52	.893
Other course	23	3.39	.839
Total	174	3.66	.822

Table Learn -

Learn IS analysis		N	Mean	Std. Deviation
	Caul BITS	**38**	**4.18**	**.652**
	Pen BITS	15	3.73	.704
	Berwick BITS	23	3.65	.832
	Gipps BITS	11	3.91	.701
	BCompSci	**23**	**3.43**	**.843**
	BSE	15	3.87	.834
	BBIS	26	3.54	.989
	Other course	23	3.70	.876
	Total	174	3.77	.836

Table Learn -

Learn Mathematics		N	Mean	Std. Deviation
	Caul BITS	36	2.89	.919
	Pen BITS	14	2.86	1.027
	Berwick BITS	23	3.17	.984
	Gipps BITS	10	3.30	1.252
	BCompSci	**23**	**3.70**	**1.146**
	BSE	**15**	**3.73**	**1.033**
	BBIS	**27**	**2.52**	**1.341**
	Other course	24	2.75	1.294
	Total	172	3.05	1.176

Table Learn -

Learn Software design		N	Mean	Std. Deviation
	Caul BITS	38	3.63	.998
	Pen BITS	**15**	**3.33**	**1.113**
	Berwick BITS	23	3.87	.815
	Gipps BITS	**11**	**4.36**	**.809**
	BCompSci	22	3.41	.734
	BSE	**15**	**4.40**	**.828**
	BBIS	27	3.41	1.010
	Other course	23	3.65	1.027
	Total	174	3.69	.977

Table Learn -

Learn Program Testing		N	Mean	Std. Deviation
	Caul BITS	38	3.97	.716
	Pen BITS	13	3.62	1.261
	Berwick BITS	23	3.78	.736
	Gipps BITS	**11**	**4.36**	**1.120**
	BCompSci	22	4.00	.690
	BSE	14	4.07	.997
	BBIS	**27**	**3.26**	**1.059**
	Other course	23	3.52	1.039
	Total	171	3.78	.955

Table Learn -

Learn Language Theory		N	Mean	Std. Deviation
	Caul BITS	38	3.97	.885
	Pen BITS	15	3.80	.862
	Berwick BITS	23	3.52	.730
	Gipps BITS	**11**	**4.27**	**.905**
	BCompSci	22	3.95	.785
	BSE	15	4.00	1.134

	BBIS	**27**	**3.26**	**.944**
	Other course	23	3.91	.900
	Total	174	3.80	.919

Table Learn -

Learn Write games		N	Mean	Std. Deviation
	Caul BITS	35	2.69	1.022
	Pen BITS	**14**	**2.00**	**1.038**
	Berwick BITS	24	3.96	.955
	Gipps BITS	11	2.73	1.489
	BCompSci	22	2.64	.848
	BSE	15	2.93	1.438
	BBIS	**27**	**2.11**	**1.121**
	Other course	22	2.32	1.086
	Total	170	2.69	1.222

2. Interest Questions

Table Interest -

Interest Graphics		N	Mean	Std. Deviation
	Caul BITS	34	3.12	1.200
	Pen BITS	**15**	**2.53**	**.990**
	Berwick BITS	**23**	**4.43**	**1.037**
	Gipps BITS	11	3.64	1.206
	BCompSci	23	3.57	.843
	BSE	16	3.81	1.377
	BBIS	27	3.74	1.095
	Other course	22	3.50	1.144
	Total	171	3.55	1.199

Table Interest -

Interest Networks		N	Mean	Std. Deviation
	Caul BITS	35	3.89	.932

	Pen BITS	**15**	**4.53**	**.743**
	Berwick BITS	**23**	**3.30**	**1.146**
	Gipps BITS	11	3.73	1.191
	BCompSci	23	3.70	1.185
	BSE	16	4.19	.981
	BBIS	27	3.52	1.051
	Other course	22	3.68	1.041
	Total	172	3.77	1.071

Table Interest -

Interest Develop business		N	Mean	Std. Deviation
	Caul BITS	**35**	**3.86**	**1.089**
	Pen BITS	15	3.47	1.125
	Berwick BITS	23	3.00	1.206
	Gipps BITS	11	3.09	1.578
	BCompSci	**23**	**2.91**	**1.240**
	BSE	16	3.81	1.109
	BBIS	27	3.37	.967
	Other course	22	3.00	1.234
	Total	172	3.34	1.201

Table Interest -

Interest Develop scientific		N	Mean	Std. Deviation
	Caul BITS	34	3.12	1.274
	Pen BITS	**15**	**2.40**	**1.056**
	Berwick BITS	22	2.68	1.287
	Gipps BITS	11	2.45	1.635
	BCompSci	23	3.04	1.107
	BSE	**16**	**4.00**	**.730**
	BBIS	27	2.63	1.079
	Other course	23	3.39	1.158
	Total	171	2.99	1.237

Table Interest -

Interest Digital logic		N	Mean	Std. Deviation
	Caul BITS	31	2.71	1.160
	Pen BITS	15	2.53	1.187
	Berwick BITS	**23**	**2.39**	**1.158**
	Gipps BITS	11	2.82	1.401
	BCompSci	23	2.83	1.114
	BSE	**15**	**3.53**	**.834**
	BBIS	26	2.54	1.334
	Other course	23	3.48	1.082
	Total	167	2.83	1.207

Table Interest -

Interest Computer works		N	Mean	Std. Deviation
	Caul BITS	35	3.49	1.040
	Pen BITS	15	4.27	1.033
	Berwick BITS	**23**	**3.26**	**1.137**
	Gipps BITS	11	3.91	1.044
	BCompSci	23	3.35	.832
	BSE	**15**	**4.13**	**1.060**
	BBIS	**28**	**3.21**	**1.371**
	Other course	23	3.78	1.085
	Total	173	3.58	1.131

Table Interest -

Interest Operating Systems		N	Mean	Std. Deviation
	Caul BITS	35	3.94	.838
	Pen BITS	**15**	**4.47**	**.915**
	Berwick BITS	**23**	**3.22**	**1.043**
	Gipps BITS	11	3.55	1.128
	BCompSci	23	3.61	.783
	BSE	**16**	**4.63**	**.806**
	BBIS	**27**	**3.22**	**1.251**

	Other course	23	3.65	1.335
	Total	173	3.73	1.110

Table Interest -

Interest Write programms		N	Mean	Std. Deviation
	Caul BITS	35	3.91	1.095
	Pen BITS	**15**	**3.07**	**1.387**
	Berwick BITS	22	3.50	1.185
	Gipps BITS	11	4.09	1.136
	BCompSci	23	4.22	.902
	BSE	**15**	**4.47**	**.640**
	BBIS	28	3.54	1.319
	Other course	22	4.05	1.090
	Total	171	3.84	1.165

Table Interest -

Interest Legal etc issues		N	Mean	Std. Deviation
	Caul BITS	35	2.91	1.173
	Pen BITS	**15**	**3.27**	**1.163**
	Berwick BITS	23	2.35	1.229
	Gipps BITS	**11**	**1.73**	**.905**
	BCompSci	21	2.48	1.327
	BSE	15	2.93	.884
	BBIS	27	3.00	1.271
	Other course	22	2.68	1.323
	Total	169	2.72	1.234

Table Interest -

Interest Mathematics		N	Mean	Std. Deviation
	Caul BITS	33	2.39	1.273
	Pen BITS	**15**	**2.07**	**.961**
	Berwick BITS	23	2.65	1.301
	Gipps BITS	11	2.91	1.578

	BCompSci	22	3.27	1.202
	BSE	**16**	**3.69**	**1.250**
	BBIS	28	2.57	1.200
	Other course	23	3.26	1.484
	Total	171	2.81	1.342

Table Interest -

Interest Software design		N	Mean	Std. Deviation
	Caul BITS	35	3.83	.954
	Pen BITS	**15**	**3.13**	**1.125**
	Berwick BITS	24	3.83	1.129
	Gipps BITS	11	4.00	.894
	BCompSci	22	3.82	.958
	BSE	**16**	**4.50**	**.632**
	BBIS	27	3.52	1.051
	Other course	22	3.95	.950
	Total	172	3.81	1.016

Table Interest -

Interest Language Theory		N	Mean	Std. Deviation
	Caul BITS	35	3.09	1.173
	Pen BITS	15	2.87	1.125
	Berwick BITS	23	3.00	1.243
	Gipps BITS	11	3.18	1.328
	BCompSci	22	3.55	1.184
	BSE	**16**	**3.88**	**.885**
	BBIS	**28**	**2.57**	**1.136**
	Other course	22	3.32	1.249
	Total	172	3.14	1.206

Table Interest -

Interest Write games		N	Mean	Std. Deviation
	Caul BITS	35	3.14	1.438

Pen BITS	**15**	**2.33**	**.816**
Berwick BITS	23	3.74	1.544
Gipps BITS	11	3.64	1.433
BCompSci	22	3.45	1.224
BSE	**16**	**4.13**	**1.088**
BBIS	28	3.11	1.257
Other course	22	3.14	1.521
Total	172	3.31	1.382

Appendix 6

Theoretical notes

The Nature of Interests and Learning

Self-reported interests in things is often measured when looking at student behaviour. This can be done with conventional interest inventories () or with simplified measures such as the one used here. In order to establish what the interest items in this survey meant, a factor analysis was carried out. This would help us see how the items performed against each other.

Interest Items

The results of the factor analysis (see Appendix for the tables) showed that there were seven factors that account for the common variation between the items. These can be described as:

Information control/management 2, 15-16, 19-20 [12][17]

Computer Science 14, 22, 25 [24][26]

Develop systems 5,7,8

System understanding 10,11

Animation 3, 13 [26] (graphics + robots)

Science 6,9,18 (weak)

Databases 1 (weak)

Five questions had mixed loading and they are shown in square brackets.

Learning Items

The results of the factor analysis (see Appendix for the tables) showed that there were seven factors that account for the common variation between the items. These can be described as:

Computer science: 14, 22-25

Background skills 2, 12, 15-17, 19-21

Games 3, 26

System understanding 10,11

Digital logic 9

Mobile phones 8

WWW 7

There are 3 questions that load on no particular factor.

What appears to be the case is that questions 5 through 8 do not measure anything that is in common with the other questions. An attempt to force them into a factor structure reduced the information content of the results.

Factor Analysis of Interests

The rotated factor structure is presented based on a Varimax rotation of a Principle Axes solution using an eigen value of >1.00 as the cut-off for factor selection. Any factor loading with a value <0.1 is not presented.

Rotated Factor Matrix(a)

	Factor						
	1	2	3	4	5	6	7
interest. Data Base	.263	.133	.259	.236		.162	.499
interest. Communication skills	.543	-.218		.156	.287		.373
interest. Graphics		.104			.701		
interest. Networks	.230	.198	.301	.361	-.107	.143	.208
interest. Develop business	.425	.114	.643	.114		.154	.115
interest. Develop scientific	.134	.285	.368	.159		.587	
interest. Develop Web		.300	.637		.110		
interest. Develop phones	.215		.659	.118	.268	.225	
interest. Digital logic	.144		.263	.248	.200	.594	
interest. Computer works	.176	.134		.841	.127		
interest. OSs	.217	.266	.122	.674			.118
interest. HCI	.466		.278	.303	.136		.170
interest. Robots		.197	.340	.107	.569	.216	
interest. Write progs.		.693			.163		
interest. Info. Management	.768	.149	.265				
interest. IS analysis	.734	.169	.279	.143			.116
interest. Legal etc issues	.522		.371	.132			.190
interest. Mathematics		.302	-.108			.514	.193
interest. Project man.	.708			.191		.204	
interest. Documentation	.675	.105		.161		.178	
interest. Security	.280	.323	.137	.463			.270
interest. Software design		.632	.110	.147	.329	.158	.110
interest. Problem solving	.188	.533	.175	.354		.138	.179
interest. Prog. Testing	.169	.491	.310	.195		.125	.124

interest. Lang. Theory	.211	.584		.311		.273	-.173
interest. Write games		.479			.588		-.332

Factor Analysis of Learning

The rotated factor structure is presented based on a Varimax rotation of a Principle Axes solution using an eigen value of >1.00 as the cut-off for factor selection. Any factor loading with a value <0.1 is not presented.

Rotated Factor Matrix(a)

	Factor						
	1	2	3	4	5	6	7
learn. Data Base		.336		.402		.346	-.107
learn. Communication skills		.662	.276	.238	-.201	.181	-.103
learn. Graphics		.160	.763				
learn. Networks	.126	.127		.247		.393	
learn. Develop business	.473	.215	-.135		.222	.458	.338
learn. Develop scientific	.285		.142		.527	.467	
learn. Develop Web	.276	.117	.283	.244		.176	.594
learn. Devleop phones		.120	.366		.291	.643	.101
learn. Digital logic	.166	.121		.154	.652		.112
learn. Computer works	.146	.160	-.197	.718			
learn. OSs	.216	.206		.686		.153	.105
learn. HCI	.262	.516		.157	-.114	.119	
learn. Robots			.441		.440	.191	
learn. Write progs.	.658	.120		.147		.134	.125
learn. Info. Management	.210	.646	-.102	.178		.151	.173
learn. IS analysis	.301	.632	-.170	.208	.104	.134	.222
learn. Legal etc issues		.661	.122		.153		
learn. Mathematics	.314		.189	.153	.408		-.234
learn. Project man.	.270	.569	.125		.101	.180	-.162
learn. Documentation	.265	.546	.126	.112	.208		
learn. Security	.119	.408		.438	.223		.298
learn. Software design	.608	.133	.163		.234		.237
learn. Problem solving	.665	.328		.192			
learn. Prog. Testing	.774	.220	.138	.160	.102	.111	
learn. Lang. Theory	.693	.191			.244	.156	
learn. Write games	.210		.695		.151		

Appendix 7

Graphics output

Appendix 8

Student Interview Report

Prepared by Varintra Sirisuthikul

ICT INTERVIEW ANALYSIS: STUDENT VERSION

I.PARTICIPANT SELECTION PROCESS

25 Participants were recruited from student's lists extracted from Callista, providing these students had previously taken the ICT survey and agreed to take part in future research activities in the consent forms. About 4-6 students were aimed for on each campus. Emails were sent to students who have given consent to participate in future research to acknowledge on the ongoing research activities and to request cooperation.

In order to find participants who best represent the first year IT students across 5 campuses (based on the student's biographics from the previous survey), 5 criteria were established as followed:

1. Being enrolled as a local student
2. Having first attempt in IT course
3. Having studied high school within Australia
4. Providing enter score
5. First language is English

Students who met all the criteria were on the first list of contacts. Overall, ninteen participants met all five criteria, one participant met four of the criteria, two participants met three criteria, two of the participants met two criteria and one participant was unidentifiable due to incomplete information given in the survey.

II.STUDENT BIOGRAPHICS

Participants were made up of 25 first-year Monash undergraduate students enrolled in one of the IT course across 5 campuses. 5 students were enrolled in Clayton, 5 were enrolled in Caulfield, 4 were enrolled in Berwick, 5 were enrolled in Gippsland and 6 were enrolled in Peninsular. All students were enrolled in the IT units, except one student in Clayton campus who withdrew from all the IT units

but still enrolled in IT course at the time of interview. There were 22 male and three female aged between 18-25. The majority of the participants were local students (21 out of 25) with English being first language (20 out of 25) and had previously enrolled in high school within Victoria (24 out of 25). Their enter scores varied from 39.15 to 96.70. Only 2 students out of 25 reported having attempted to study IT degree in the past, with one successfully completed the degree and one dropped out.

III.INTERVIEW SITUATIONAL FACTORS

The preferred method for conducting interview was face-to-face, however in the case that students hesitated to take part in the interview due to unsuitable time schedule that the option of phone interview was given. In addition, some students who did not show up for the interview appointment were followed up by phone interview. As a result, 21 face-to-face interviews were conducted with 4 phone interviews. Interview durations varied between 4.28 to 19.56 minutes. Noticeably, those who participated in phone interview provided less detailed answer than those who participated in personal interview, resulting in shorter interview duration, between 4.28 to12.07 minutes. All the interviews were conducted at student's home campus at the time of their convenience. As a result, there was high response rate. Only 3 from 25 male students refused to participate when being contacted by phone, while 3 from 6 female students had agreed to participate, however, did not show up at the appointment time. All other interviewees showed up on time for their scheduled appointments.

It was observed that female students seemed to be more concerned of time factor compared to male students as they tended to ask for the length of interview when being approached to participate in the interview. One female student revealed on the phone conversation that she was stressed out because of assignments of the week and therefore felt hesitate to participate. Although she agreed to participate, she did not show up at the appointment time eventually. No attempt was made to follow up with this student to avoid over pressure.

During interview, there was little to no interruption as all the interviews were conducted in a private setting. With the permission of the interviewees, the interviews were audio recorded. Although student cooperated well during the interview, most of them showed only low to moderate enthusiasm and provided moderate details.

IV.STUDENT'S PERCEPTION TOWARD THE COURSE

Overall experience toward the course:

When being asked about their overall experience, most students responded to the question as their attitude toward the lectures/lecturers or tutors of the units taken, which included both positive and negative experiences. Overall, student's experiences toward the course were revealed as more positive than negative.

#1 Attended the first few lectures, I found them difficult to follow. I found that it was more effective for me just to skip the lectures and do the readings with the lecture's guide. Sitting in the classes to listen to the lectures without an engaging environment did not encourage learning. During the tutorials is where I learned the most. Tutorials provide the educational environment that is similar to high school where students are expected to actively contribute to classes and tutors actively help students. (BCS, Clayton)

#2 More difficult than high school, more workload, more difficult things to learn. A lot less guidance compared to high school. They only give you the weekly topic and you need to prepare before coming to class. The guide is very broad, they don't tell you specific things to study for exam. Need to do a lot of preparation. I think tutorial sessions are usual. I think they are more helpful than the lectures. I actually learn more in tutorial sessions. (BBIS, Clayton)

#3 The unit is good. I have no problem changing from high school. Workload is fine, taking 4 classes. Some lectures are hard to follow. I can't gain understanding on some materials. I like to learn by example, better than straight theory. I absorb it really well that way. (BBIS, Clayton)

#4 The units have been pretty good. (BSE, Clayton)

#5 All the lectures are good. I am fortunate that I haven't got any lecturer that reads from lecture's note. (BITS, Caulfield)

#6 Everything is fine. The tutor and lecturers are nice. The works are very helpful, the tutorials work and homework. (BITS, Caulfield)

#7 For the IT Stuff, things have been pretty cool. Some of the kind of basic stuff are not interesting that much, like real jargon. (Commerce/BITS, Berwick)

#8 Stuff that we are doing are really new, things that I've never done before. It's enjoyable, rewarding. It's about problem solving, reaching milestone in the project. So it's good. (BITS, Berwick)

#9 So far I have been pleasantly impressed about the stuff that we are doing in the units. All the lectures and tutorials are really approachable. The contents really help to learn stuff. I have actually learned more than what I have expected to learn. The course is challenging. (BITS, Peninsula)

#10 I enjoyed IT for many years. Started out young age when I was in primary school. The course here is slightly different to what I have done originally but that will change coming to next semester and second year. I will start doing stuff that I have been doing for awhile. The stuff that I used to in primary and secondary school were a lot of programming in visual basic and PHP web development, that will happen next year. (BITS, Peninsula)

#11 It's good but it was harder than what I expected. I guess I expected it to be broader. (BITS, Gippsland)

#12The work has been great, it's kind of help me to get into the direction where I want to go. (BITS, Gippsland)

In order to best capture student's perception toward the course, students were urged to provide further details on main positive and negative experiences. Some students simply repeated their first responses about their overall experiences toward the course. It was observed that, in most cases, students described their main positive experiences broadly, while providing specific comments about units taken as part of their negative experiences.

Main positive experiences:

Most students tended to describe their feelings toward the course broadly as good, positive, not bad, OK etc. Other positive experiences being mentioned most were friendly lecturers & tutors, flexible hours, meeting new friends, learning new things etc.

#1 It's really help when the subject tells you ahead of time what you need to do, what to read and what kind of assignment, how many hours you should spend on reading and so on. I liked that in IT course, whereas in commerce they don't do that. (BBIS, Clayton)

#2 Everything is fine. The tutor and lecturers are nice. The works are very helpful. (BITS, Caulfield)

#3 I like the course. I think it's been in a good pace. Some of the unit, a lot of information that you need to take home before you can understand the rest of it. I understand that that needs to be done. (Commerce/BITS, Caulfield)

#4 Main positive experience is about the course itself because it offers technical knowledge and teach how to get things right. Enjoy most units that provide technical knowledge. (BITS, Caulfield)

#5 Lectures and tutes are pretty keen to tell you stuff. Lecturers have been nice and helpful. (BITS, Berwick)

Only one student from Peninsula campus revealed that there was no main positive experience coming to mind.

#6 I couldn't really think of anything. I expected people to know what they were talking about. (BITS, Peninsula)

Negative experience:

Many students reported having no real negative experience. Mostly students talked about negative experiences by commenting on specific units and teaching styles that they had difficulties with. Detailed comments follow in later sections.

Expectation toward the course:

Almost all students stated that they did not have expectation prior to coming to the course.

When being asked if the course has met their expectation so far, most answered 'yes' with a few responses as 'I guess so' indicating that they were uncertain in their answer. A few students also slightly commented that they expected the course to have more focus in their area of interests. For example, Berwick students expected to be taught more in multi-media subjects. Peninsula students expected the course to be more involved in networking. BBIS students in Clayton expected the course to be less technical and more business oriented. However, these students also said that they understood that they were required to learn the foundation in the first year and expected the course to be able to better meet their expectation in the coming semester/year.

#1 I didn't clearly know what's my expectation before doing the course because I only decided to do it one month before coming to uni, but I was pretty excited about it. I guess I expected it to be more about using IT in business, more about business aspects than technical aspects. (BBIS, Clayton)

As stated, almost all students rarely had a clear expectation and responded vaguely when being asked if the course met their expectation. The only exception was in the case of one student from Peninsula campus who strongly indicated that the course has not yet met his expectation.

#7 The course has not yet met my expectation. I actually expected it to be more involved in networking as the name suggested. It came to the point that I felt some of the classes were pointless. I am not learning anything new with the way the course was structured. (BITS, Peninsula)

However, his fellow student from the same campus had an opposite view.

#8 So far I have been pleasantly impressed about the stuff that we are doing in the units. I have actually learned more than what I have expected to learn. The course is challenging enough. The content has been brilliant. All of the lecturers and tutors are very approachable. (BITS, Peninsula)

Teaching Method coping in the course:

Regardless of student's educational background or program of study, their views toward different teaching styles were somewhat similar. Students struggled mostly with units in which lecturers taught only theory, did not provide enough examples and read from slides/PowerPoint. Students disliked lecture when it had no engaging environment, the size of the class was too large and the duration of lecture was too long. Many students pointed out that 2 hour-lecture was considered to be too long, as a result, reducing their level of concentration regardless of the teaching style they were coping with. Yet, most students saw the benefits of lecture as a way to learn foundation and theory, but suggested that lecturer should provide more examples in class in order to facilitate learning. Other things that students reported as helping them to absorb lecture better were having lecture's note in front of them while attending lecture, reading unit guideline before coming to class, having adequate practicing assignments and having Q&A or consultation period.

#1 Attended the first few lectures, found them difficult to follow. I found that it was more effective for me just to skip the lectures and do the readings

with the lecture's guide. Sitting in the classes to listen to the lectures without an engaging environment did not encourage learning. During the tutorials is where I learned the most. Tutorials provide the educational environment that is similar to high school where students are expected to actively contribute to classes and tutors actively help students.

Tutorials were found to be the most favorable method of learning for students. All students found the format of tutorials as being helpful as it provided an engaging learning environment. Besides the advantages that tutorial can offer, it was also considered by many students as a learning method that was similar to high school environment which they were accustomed to and therefore allowed them to adjust easier. However, there were also cases where tutorials were criticized as ineffective such as when tutors focused on teaching theory instead of giving emphasis on hands-on exercises, tutors were unwilling to provide individual assistance or tutors provided answers without explanations.

Comment on specific unit:

When students talked about their experiences toward the course, many also elaborated on the various teaching styles they were coping in the units. Students provided both positive and negative comments on the units.

Caulfield

#1 I don't like the tutor for programming and the assignments for computer system. For the assignment in computer system, the mark in relation to the amount of work that they give is not suitable. Took a few days to finish one assignment which was only 5%. (BITS, Caulfield)

#9 I don't like unit that content is too broad like IT & Organization that try to make general knowledge sound technical. (BITS, Caulfield)

#10Computer system is not very good for me. I am not the technical type of person. (BITS, Caulfield)

Clayton

#1 The biggest problem for me is computer system because it is very technical. My friends which are all female, also struggled a lot from the technical aspect of this class. But part of the reason is that the lecturer's

voice projection was not well, she started mumbling toward the end, plus she's reading out of the lecture's note. She could have helped to explain things a bit more. (BBIS, Clayton)

#11Systems-the lectures are kind of boring, the lecturer reads stuff from the PowerPoint. Don't really explain stuff that much. The math one is pretty good, I have two lecturers, the first one left and the second one is pretty good, explains a lot of stuff, gives lots of examples and when I have problem I can go to them and ask. Digital logic-a lot of people have problem, he's hard and his explanation is not that good. The programming-the lecturer is really good in that but when you actually go to do the work, like in the tutorials, they can't really help you because it's like your mark, so if they help you, it's not your work so it's kind of hard. (BSE, Clayton)

Berwick

#1 IT Organization is not a complicated class but it seems to be made complicated. (BITS, Berwick)

#12I like teachers in Computer systems, IT in Organizations because they are helpful. You can raise your hand to stop them and ask questions in the classes and the size of the class are more. (BITS, Berwick)

Peninsula

#1 IT & Organization, the lecturer just read it out from slides, didn't actually explain things. (BITS, Peninsula)

#131002 and 1003, the way the class is conducted is not productive. Programming is completely pointless. We were given assignment to create a graphic package when some of us didn't even know even how to draw up a window yet. (BITS, Peninsula)

#14With FIT 1002 Programming, it's coming to the end of it but it's still like what we were doing at the beginning where we were expected to know how to program by ourselves. The lecturer just went through the theory behind it and not until like the past three or four weeks that we got to learn about programming. (BITS, Peninsula)

#15FIT 1002 where the tutor doesn't want to help. FIT 1003 the lecturer just reads out the lecture's note but she's pretty approachable if anyone needs help. (BITS, Peninsula)

Gippsland

#1 Most of the subjects are quite technical. But one subject is too broad, I feel that it's vague and that subject is Organization. (BITS)

As above, it was noted that even students from the same campus with the same program of study, such as BITS students in Caulfield, could have different opinions toward the units taking as each student has different way of learning, different level of technical skills as well as different area of interest.

Subject such as Computer Systems was mostly commented as being too technical and boring for students, especially those who had no technical background.

Changing from high school:

It is interesting to point out that many students related their experiences toward the course to their experiences in high school. Tutorial was said to be the most preferred method of learning. Given that all the interviewees were students who recently entered university, they may need to adapt themselves to the university's teaching style. Besides the advantages that tutorial can offer, it was also considered by many students as a learning method that was similar to high school environment which they were accustomed to and thus allowing them to adjust easier.

The majority of students found that changing from high school to university was a big difference, only few students found themselves as having not much different when compared from previous year in high school.

#1 Totally different environment than high school. It's a lot more like you are on your own a little bit. Unlike in high school that you are having someone and the same classes everyday. It's interesting. It made you feel independent. It's good.

#16Changing from high school, I found myself settled quite well. The hours are a lot less restricted. Workload is lighter, have more time left. I have more choices. High school at this time had a lot of workload. I just started university, so the workload is not much now. Don't see much different from high school. I am just required to be more independent.

Although some students admitted that they still needed time to adjust to the new environment and teaching style, they seemed to be favorable and optimistic about their new university experiences. All students enjoyed the flexible hours that university offered and that they were not required to come to university everyday. Most students liked that university experiences made them become more independent as less guidance was provided compared to high school. Meanwhile, they were aware that they were required to be more focused and responsible, as well as having better time management. Noticeably, those who were local students seemed to have more favorable attitude toward changing from high school to university, compared to international students and female students who found themselves having less time left and struggled more in university.

#17It's very hard. I came from high school in NZ. Not a lot of work. I find it very different from here. There are less subjects in university but a lot more workload and the pace is very fast. If you can't catch up, you miss the whole thing. I don't have time left for other things. (International student)

#18I need to work harder. There is more stress in uni than in high school. For me the IT things are new. I have to spend time to go through all the slides, unit guides and the readings. (International student)

#19A lot more busier. I have been under pressure. The amount of work is higher and the amount of work required is much higher. Having less time to do thing I used to do. Simply because I want to put my best into the course and to the units so that I can achieve what I want to achieve. (Female student)

Level of work and content:

Overall, students found that the workload of the assignments and content of the units taking were at the right level, with the exception of international students who may struggle more due to language barrier.

There were slight comments about the mark allocation in relation to the assignment given and the hours required to spend for assignment.

#1 Computer system is interesting but I don't like the assignment. There are a lot of assignments for just little mark. There are around 4 assignments, two assignments are only 5% the other two are 10%. It's time consuming. The lecturer keeps giving assignment week after week. It's hard for me to have time to prepare for other subjects. (BITS, Caulfield)

#20The work takes up a lot of hours. A couple of assignments take a long time for each one. Stuff that we are doing are really new, things that I've never done before. It's enjoyable, rewarding. It's about problem solving, reaching milestone in the project. So it's good. (BITS, Berwick)

#21Some subjects are quite challenging. One second subject last year but it was moved to this year. I had to spend a lot of time even though the mark allocated was only 5-10% was not that much. (BITS, Gippland)

Previous skills helping toward the course:

Most students found that their own interest and curiosity in IT subjects played a big part in helping them to do the course. VCE units taken in high school also helped to familiarize them with IT units in the university, however did not directly contribute to their performances in those units.

#1 The VCE units that I took was not directly related to uni work. But the knowledge of computer that I gained out of my own interest helps a lot. (Art/BCS, Clayton)

#22The VCE units help me to prepare. I didn't know java before I came here but it's OK. (Commerce/ITS, Caulfield)

No significant difference was found between students who have previously taken IT units and those who have not. Although students with non-IT background may need more training and practicing in the technical aspects of the IT, they reported having no difficulty to catch up in class.

#23I don't really have any previous skills in IT before. I came from a commerce side. I only learn IT here. But they are not too difficult now. I guess I just have to try to like it. (BBIS, Clayton)

Information Processing was mentioned as the most as the VC units that helped with the IT course at university level.

Time management:

Since entering university, most students found that they had more free time left, allowing them to maintain their social life and personal activities. None of the students had a defined set of time management practice. The majority of students said they were able to divide time between school works and maintain the same level of social life, while some felt that they were under pressure due to the intensity and fast pace of the university teaching style.

Although many students worked part-time during school period and lived away from campus which took approximately 25 to 45 minutes to commute, none regarded these as giving them time pressure.

#1 I don't work but I play a lot. I do my assignments. I go to tutes and classes. I don't miss any classes and that helps me a lot. When I go to lectures, I understand better, and then I have more time left to do other things. I make sure that I don't miss anything. But many students they don't really come to class. (International student, ITS)

#24Work one day per week. Still get in touch with friends in high school. Mostly hang out with new friends at uni between classes. Still have plenty of time outside school because workload is still light. Live quite close to uni. Have no problem with traveling time. Although it is not required, I still spend a lot of time in library to do class work and readings because it helps me to focus better.

Factors contributing to student's success:

When being asked what contributed to student's success or failure toward the course, only few students were able to answer. For those who provided the answers, they defined success as getting good grade and having good future career. Two key factors that students viewed as contributing to their success were self-motivations or their willingness to put effort, together with the capabilities of the lecturers/tutors in delivering the course.

#1 *I enjoy the course because I have a reason to come to the course. I know what I want to pursue in the future. (BITS, Caulfield)*

Things that would help to improve the course:

#1 *I think computer system needs to be promoted more because when I was in year 12, not many people know what it was. If I were told more about what I would be doing in this course, I wouldn't be so panic. I reacted upon my emotion, if I wasn't so panic, I would still be doing that course...It would be beneficial if tutorials were to be started on week one. Other faculties have it started on week one. Some IT units have tutorials in week one, but those that I took didn't. (Discontinuing student, BBIS,Clayton)*

#25*There are groups of friends who got together and helped to learn things. Basically it's because it's so small here that we know everybody and everybody is quite comfortable to approach each other for help if we need it. We are more motivated to do because we do it ourselves, not that we have to do it. (BITS, Peninsula)*

#26*Completely structure the course. (BITS, Peninsula)*

Appendix 9

Staff Interview Report

Prepared by Victoria Heathcote

RESEARCH RESULTS

The research findings are represented by the two interview schedule parts, and incorporates both SIG and teaching staff responses. The exceptions to this are SIG responses to the question of how their preparation of a subject for delivery related to the development of the Core Unit(s) worked on in the SIG Group, and miscellaneous comments made by respondents regarding SIG management of course design. In these instances separate discussions of these findings is included at the end of the report (page 34).

Student Preparedness

Respondents were asked first to consider a range of issues relating specifically to students' preparedness for an IT course. These issues were represented by a set of six interview schedule questions and are discussed in order of the sequence these were asked during the interviews.

Understanding of Being a Student in an IT Course

Many respondents were careful to note that students' level of understanding of what it is like to be an IT student in an IT course varies and that it is difficult and at times irresponsible to generalise on this. Nonetheless, respondents had a broad range of observations on the level of understanding that students have of what it is like to be an undergraduate student in an IT course.

There seemed to be little consensus on students level understanding of what is entailed in being an IT student. Rather, respondents discussed related issues to do with their level of understanding on this matter. Key findings from individual respondents follow:

- Most students are not well prepared for university and they do not really understand what it is going to be like
- Many students do not understand the relationship between lectures, tutorial (exercises) and assignments. That is, they do not understand *how* to study
- Other students quite well prepared and seem to understand what is expected of them. Some students, at VCE level, visit universities and sit in on lectures before they enrol for university, and this improves their level of understanding
- It is more a case of what it is like to be a *university* student, as opposed to an *IT* student. Many students are totally unprepared for the learning experience in a university environment. Autonomy is the big issue as far as having the discipline to apply themselves to the subjects

- Students have conflicting commitments. Many work between 20-30 hours a week. It is not correct to say that students lack ability or the right background to study the materials, it is just that they have time constraints imposed on them and this means that they cannot devote adequate time to study.

- The students are no less intelligent or prepared than in the past. These days students pay approximately 40% of the fees and many live away from home; therefore they have problems in simply trying to survive. The ideal that students study full-time no longer exists. University guidelines state that full-time students must study 38 hours a week. However, if they also doing 20-30 hours of paid work a week it is simply unachievable.

- The degrees we have today, IT and others, are pre-1970 and are of an era when students probably did study full-time and had this as their main commitment. All university students are, in net effect, part-time students

One respondent proposed that IT students progress in their understanding of what is like to be a student in an IT course by passing through the following stages:

5. Stage one commences at week one of first semester, first year and is characterised by fright and timidity and extreme caution;
6. Stage two commences between weeks 3-6 of first semester, first year and is characterised by a sense of discovery and independence ("No one is checking up on me!"), and students charge around having fun thinking it is all easy;
7. Stage three commences towards the end of first semester, first year and is characterised by the realisation that exams are upon them and they panic ("What am I supposed to know and maybe I should have attended the lectures and tutorials. Help, I'm frightened!").

Understanding What an IT Degree Involves

Related to the issue of students' levels of understanding of what it is like to be a student in an IT course, is the issue of their understanding of what their degree actually involves. Similarly with responses to the former, respondent's observations ranged from believing that students lacked understanding altogether, to believing that they had a fair understanding, to believing that students had a strong understanding of what their degree involves.

Unclear Expectations

One respondent stated that students have very little idea about what an IT degree involves, and suggested the following three things are completely foreign to them as new students:

1. The nature of the content they are going to be covering;
2. The nature of the career outcomes the university are directing them toward;

3. The way in which the lecturers are going to try to convey content to them and the expectations lecturers have of them regarding what they are expected to learn and think about these things.

The respondent explained that tor these reasons first year students cannot be expected to know what they are going to do or even what they want to do. They are unlikely to have much of an idea at such an early stage, and some students find themselves in a bind when they get some way into first year because they may realise or suspect they have made the wrong choice(s).

Key findings, in order of students' unclear understanding of what their degree actually involves (as observed by individual respondents), follow:

1. Many students are fairly naïve, and they have not thought about why they want to do IT or considered their motivations for doing it. Some students do an IT degree because it is the only degree they can get into
4. There are more students who are unaware of what is in their course than are aware of what is in it. This is particularly true of subject selection, in that they do not know what they are going to learn. Students see a subject name and synopsis but they have little idea of what is actually involved in it. They do not do any pre-reading and they do not understand the jargon used in the handbooks, for example
5. Like most things, there are some students who do understand what their degree involves and who know where they want to be, and there are others who have a very basic, or no, understanding of what is involved and where they want to be

Unmet Expectations

Several respondents noted that on occasion students say that the course is not what they were expecting. Other students say that what is covered in the degree is not what they will expect they will be doing once they are qualified and working as IT professionals in industry. The respondent added that students to not appreciate or comprehend that although they may do specialised work once in industry, the university and faculty must however cater to a wide range of opportunities for them, and that these should not be narrowed down. Students find this difficult to understand, and they fail to appreciate that the faculty design a generic degree so that students can easily apply what they learn it in a range of different fields later on.

Pressures to Enrol

Another respondent pointed out that many students are doing particular subjects because their parents advise them to do so or because it is a Core Unit and they have no choice in the matter. As such, many students enrol in subjects not because they want to but because they are either persuaded to do so by family and/or peers, or because they are forced to do so. The respondent commented that it is regrettable that those students are usually the ones who do not do too well in their studies.

Finally, several respondents thought that students overall do have a good understanding of what their degree involves and this is partly because they have

access to MUSO and WebCT, and so on. Accessing and using these has become a routine activity. This is a good way for staff to get messages to students, and is much better than relying on information passing from student to student.

Students Expectations of an IT Degree

Respondents were asked what they thought students want from their degrees, and the overwhelming response was that students want a vocational outcome, i.e. a job and career path. Interestingly, respondents discussed this in close context with previously discussed issues of students' preparedness for an IT degree.

Further discussion with respondents elicited underlying factors relating to differences in student expectations linked to their choice of course and campus, course fees, student ethnicity, and cultural and social conditioning. These themes and factors are discussed in turn below.

Vocational Outcomes

Individual respondent perceptions of students' job and career expectations follow:

- The majority are looking for a job. Although the university is focused on research and research students, the majority of our students will not head in that direction. Students enrol in IT because they hope it' is going to be of interest to them, and because they have no experience that is usually all they can do – hope. They hope for career and job opportunities. Most students have not got the faintest idea what they are in for. DEST are very concerned about this and that they want the university to tackle this. But frankly, secondary schools just do not have the knowledge and experience to prepare the students for what university life is going to be like

- Students coming into an IT course are very job and career focused, so they do not want a purely technical IT degree but an IT degree with a business focus that will enable them to get a job in a business environment. Some students do put in a lot of research about their course options before they enrol, but it depends. This varies a lot. A lot of students do think quite carefully about the sort of career they are interested in. On the other hand some are less career focused and do not give it little thought.

- Students want a job at the end of a course and they are very focused. It is a difficult issue because an undergraduate degree is a generalist degree and not a specialist degree; the idea is that the faculty is building fundamental skills in IT but not turning out individuals who are multimedia specialists. Students find that difficult because they are looking for the 'best of the best' in multimedia and come out and step straight into a job with high level skills. So their focus is very much career-focused

On respondent noted that although students realise that they need a tertiary degree to make them employable, many study part-time and work full-time, have heavy and conflicting commitments, and they just want to get through a subject and course. For these students, career and vocational employment matters most.

Gaining Qualifications

Several respondents argued that IT students want a degree in most cases. It was these respondents view that although some students know exactly where they are going, others are just doing an IT degree because they thought it was a good idea, or because they thought there was money in it, or because their parents told them this was the right degree to do. Many respondents thought that some students simply apply to enter an IT course and hope they will get accepted, but that they have little idea why they want to do the degree.

One circumspect respondent noted that whether students want a degree or a job (or both) differs from course to course and perhaps campus to campus. The respondent suspected that a top computer science student would be interested in higher research, whereas a top business systems student would be more interested in getting a good job.

Another respondent proposed that the key question for IT students is whether they want to simply survive (the circumstances, exams) or else maximise their opportunities. That is, the question is whether students will worry about maximising their (industry or higher research) career opportunities by securing the best marks or whether they will put in just enough work to qualify for the award of a degree.

IT Career Counselling

One respondent thought what students want most is somebody from within the faculty to show them the way and what they should do, whether to go this way or that, and to help them determine whether it is this or that kind of job they should be working towards. The respondent summarised this as “Students are in many ways looking for someone to tell them what the answer is and to map out a nice clear path for them.”

Many respondents acknowledged that for most students first year is an exploratory exercise. Students enrol in IT with a vague idea of the usefulness of an degree. One respondent commented that years ago IT students were genuinely curious about IT because they did not know anything about them and computers sounded glamorous and exciting. Students today have so much exposure to computers that the “sex appeal” of computing has faded.

Return on Investment

Another important issue for students raised by respondents had to do with assessing whether an IT degree delivers value for money and a return on

investment. In many cases respondents focused their discussion on international students who pay large amounts of money to gain their degrees.

Respondents thought that most students want to see value for money, and they want to see a valuable experience from the course, as well as it being up-to-date and relevant. They want a valuable experience from the whole learning environment. It is important to discern from the first year students what they want, because they often do not know what this is. Some students have thought about what they want, and this often depends on their background.

Ethnicity and Culture Influence Student Expectations

The importance of students' evaluation of the return on their educational investment ties in closely with ethnic, cultural and social background and conditioning factors.

One respondent was careful to explain that the IT faculty has students from a wide range of backgrounds and there are international educational markets where student expectations are different. Asian parents drive their children very heavily and the children have a very good idea of what is expected (of them). In a country like Singapore students are highly literate in IT and do not go through educational agents directly, and that is because they are highly literate in what they want out of a tertiary degree. They know exactly what they want from an employment and a prestige (of the university) point of view. Whereas other markets are more agent-driven, and students are sold to. Those students' expectations are different to those who are highly active in searching out the universities. Local students again would have different sets of expectations.

Another respondent observed that there are significant cultural differences between Australian and overseas students, and second generation immigrant students often have different work practices and work ethic as well. These can be difficult to balance at times. At the undergraduate level the respondent felt that there are tensions between local students' expectations and the overseas students' expectations.

Staff Expectation of Students

One respondent reflected on an interesting question asked of him at Cambridge by an eminent. The question, "Do you expect your students to understand everything in the lecture at the time they give the lecture?" was answered by the respondent in the negative. That is, of course he did not expect his students to understand everything. The respondent was then informed that most lecturers say the direct opposite, which is that they do expect their students to understand everything. The respondent explained that he did not expect this of students because often they are given sophisticated ideas and to expect them to absorb it

all in the lecture is unrealistic. Students need time to think about these things and to reflect and evaluate.

Academic Ability

Respondents were overwhelmingly of the opinion that IT students are academically able for the BITS program, either in terms of their overall capability or in having a background in specific core subjects. However, consensus on students' levels of academic ability varied and the research elicited a range of factors to explain this variability, including levels of motivation, effort and interest in IT subjects and courses overall, learning style, and differences between courses and campuses. Following is a list of themes discussed by various individual respondents:

Students are definitely able, in terms of my field (databases). New students are motivated at the tutorials, the lectures, they are working away. No doubt they can do it. Motivation is the only concern, and some of them do not have it

If students know what learning is all about and what it means to them they have few problems. Learning means being reflective, learning is life-long and continues after the two hours of lectures and two hours of tutes a week. Attitude is very important, as is students' approach to learning. Transfer of facts, memorisation, exam sitting, none of this is learning. Students need to learn to grasp concepts and internalise their learning, they can then re-use it anytime, in any situation. Learning is about long-term retention of knowledge

A significant problem is student application, and if they are not motivated they will not apply themselves to their study. There are many students in Business Systems who do not understand that they are in an IT Faculty and that they should have enrolled in the Business & Economics faculty instead. The same sort of thing occurs in Computer Science with a lot of students enrolling in Programming thinking it is highly mathematical and have trouble coping with logic (writing algorithms). There are many of examples reflecting the sorts of problems students have applying themselves to the course, and it is not a case of them having the academic mind to study

Although students are academically able they have to learn a completely different mode of thought (independent thinking), and they are not prepared for that at all. To some extent those students that have done well at secondary school have learned bad habits which may mean they do relatively worse when they arrive at university

In terms of IT students' academic ability, some international Asian students struggle with poor English language skills and comprehension

ENTER Score and Academic Ability

One respondent discussed that in 2006 only a handful of IT students in his course had an ENTER score in the 80s. The respondent acknowledged that the ENTER score is an inexact measure of academic ability but nonetheless that if a batch of students with scores in the 90s and a batch of students with scores in the 70s were averaged out the students in the 90s would have greater learning abilities than the other group, albeit with a number of individual variations though.

Cross-Campus Course Standardisation

A handful of respondents emphasised that entry requirements, and academic abilities, differ between campuses. One respondent had the experience of teaching the same subject across the South Africa and Malaysia campuses and observed that students in Malaysia are academically bright, but the South African students were comparatively less so on average. The respondent speculated that entry requirements at the later campus were not as high as in Malaysia or Australia, and student results in each campus reflected this difference. The respondent was careful to add that if there is a discrimination of the students across these campuses, it is the top students who would be discriminated against in the sense that they would be denied challenging work and material for the sake of designing and delivering subjects that the less academically able students and campuses can cope with.

The respondent felt strongly that the SIG Groups went to a lot of trouble to try and identify and ameliorate this form of discrimination, and thought the Groups worked out the correct balance. Nonetheless, the respondent believed that it would have been better to have some variation across campuses in terms of the depth and level of examination rather than in terms of Unit content. Further, slight variation would have been welcome across the different degrees and different courses. The respondent illustrated this with a negative example of the effect of having a common subject across campuses and courses

Another respondent was adamant that students would quite clearly benefit from an attempt to structure courses in the context of identifying the depth of what we teach to match the audience rather than merely wanting to show industry and other external bodies that Monash have a formidable structure. The respondent felt that "The students who are prepared to work hard and are talented should not be penalized or handicapped but be taught at that higher level. They should not suffer from being held back by any standardization process that benefits the poorer performing students. Eventually the top students will simply go elsewhere

if they realize that the standard has been dropped to cater to the lesser students."

Assumed Pre-Acquired ICT Skills

Respondents were mostly in agreement that in accordance with first year undergraduate course requirements no expectations can be made about what ICT skills students bring into their IT degree.

Word Processing Skills

Most respondents qualified the statement that they could not expect the students will bring any ICT skills into their degree by adding that it is nonetheless fair to assume most students will have basic computer and word processing skills. In addition to these clear written expression and the ability to put a report together (some do not know how to and need the help) was a common expectation held by respondents. Individual respondent findings on this set of assumptions follow:

There is a small problem across some of the units, for example in the programming units there are a range of students who have programming experience already, and some of them have extensive experience. Then there are those students who have never done any programming at all and this difference does lead to some difficulties

Lecturers have to start with the basics. However they cannot spend too much time on the basics and must assume that students that have not done any work in these areas will spend additional time catching up on that material. This is because most of the students who have started that course have an interest in that area and have therefore exposed themselves to it through their own personal actions or through subjects that they have done in high school

- Basic word processing (Word and Excel) is assumed and most students are comfortable with that. Most important is students' ability to access and use the Internet. They are used to reading articles, reports and papers on screen. Many students sit with their Note Books during lectures and take lecture notes. This is a good thing

Handling all sorts of word processing skills and things like presentation of materials when handing in assignments. Some international students have never seen a mouse. Lecturers cannot expect tutors to hold the rest of the class back

for these students, and may have to get the tutor to give them special attention or separate lessons

One respondent speculated as to whether IT courses should be taught as vocational courses or as a university courses, partly because contemporary students are extremely “tech-savvy” in their everyday life.

Internet Literacy

A substantial number of respondents assumed students would be literate in terms of use of the World Wide Web, which came with the expectation that lecturers and tutors will not have to show them where to search and find information on the web (web browser and search engines). Respondent expectations are met in the sense that students know how to use these things, but not in the sense that they will use them appropriately. That means citing and referencing sources correctly, and not using the Web as a replacement for proper research which requires that students not only find the information but that they also critically analyse it. These respondents also expect that the students will therefore have basic mouse and keyboard skills.

Another respondent did expect students to know how to use a personal computer and to have done some word processing, played computer games, and used various associated devices and hardware. This respondent also assumed that students had done so without thinking too much about it, and believed that this is an issue because lecturers often start teaching material and students will say “Done that” and the lecturer will have to stop them and say “Well hang on, you think you’ve done this but you’ve done it without thinking about it.”

Mathematics and Numeracy

One respondent thought that students need a good mathematical background, but then cautioned that what this means needs to be clearly defined. That is, does it mean manipulating numbers and modeling a problem, adding and subtracting? The respondent concluded that analytical thinking is more important than “number crunching” and that lecturers’ task is to prepare the students to become experts working from the assumption that they have no pre-existing ICT skills.

Several respondents assumed that students are numerate because there is a requirement that they complete Year 12 mathematics. For those students who struggle with this some lecturers allow them to come to attend than one tutorial a week or attempt to run extra tutorials for them. However, these students do struggle even though this group constitute a small number of individuals at undergraduate degree level.

How Students Can Be Better Prepared

Respondents were asked what observations that had of how students might become better prepared for an IT degree. A couple of common themes emerged and included the importance of students more carefully researching their course options before enrolling and learning basic critical thinking, problem solving and communication skills early in their degree. These themes are discussed below.

Researching Course Options

Several respondents emphasised how important it is for prospective students to speak to course coordinators or advisors and lecturers before they decide what course to enrol in. The respondent felt that most students do not bother doing this and that many of them refer to the online handbook descriptions of subjects and courses and decide on that basis alone when those descriptions can be vague. Over all, respondents agreed that current high school students in particular should be more proactive in finding information on university courses.

Respondents said that students may express interest in the *area*, but often failed to understand what the *area* can be large, so they need to have investigated the course because there are many different IT courses. Students must understanding the differences between the possible courses they are considering, and they need to be motivated to do this thoroughly. Most respondents believed that unless students have the desire and motivation to research their options, they're not going to be able to do it well and may encounter further problems of motivation later on.

Critical Thinking, Problem Solving and Communication Skills

A significant number of respondents believed strongly that teaching students how to study is critical to their preparation for their IT degree and on-going success in it. Students need to learn to solve problems analytically and not just intuitively.

On respondent used the example of a number of his students who had done some of first year IT content in Year 12 so they often felt they were repeating material. The respondent answered his students by explaining that in Year 12 students had probably been taught "That's what you do, and if you do that you'll get the right answer," whereas in university it was going to be more a case of "Let's look at the range of ways you might do it and why." Under certain circumstances all respondents' students encountered problems, so he believed his students would need to learn a new *type* of thinking. This thinking, he added,

"Entails being comfortable with the fact that life is not as simple as 'Here's A and there's B, and A is right and B is wrong,' but rather to see life as an entire alphabet full of choices."

Overall, there appears to be a lack of preparation by the students and many respondents believe that this is partly because students have "everything" provided for them, although this was variously viewed as both good and bad. The majority of respondents nonetheless thought that it was important that students should learn and understand *how* to get the most out of lecture and tutorials and *what* to get out of them.

Additional miscellaneous findings from individual respondents on the issue of how students might become better prepared for an IT degree include the following:

A large number of students need to improve their communication skills

Few students download and read the web published lecture notes before lectures. Many fail to show up to lectures and/or tutorials with pens, show an unwillingness to put pen to paper and would rather communicate via email

Students must be prepared to learn a substantial amount of programming and coding (many students say they do not like either). Programming is all about analytical thinking, and this is important. It is also important that they come prepared to think positively and be enthusiastic, then their chances of succeeding will be higher

It would help if the Federal government could fund students properly so that they would not need to both work full-time and study full-time. Students are all part-time students now; there are few full-time students anymore. The international students are under even more pressure, and that pressure strongly mitigates against their ability to perform well

BITS Program Design & Delivery Factors

Respondents were next asked to consider a range of issues relating specifically to the design and delivery of the BITS Programs. These issues were represented

by a set of nine interview schedule questions and are discussed in order of the sequence these were asked during the interviews.

Subject Delivery Preparation

A majority of respondents emphasised that the design and delivery of subjects needs to conform to established structures and formats that have been pre-agreed in close consultation with colleagues and variously tested over time where there is course precedent.

Flexibility in Design and Delivery

Many respondents proposed that of equal importance to following established course structures and formats is the requirement that there is enough flexibility built into in course design and delivery to allow for changes to be made during the semester. This flexible approach complements and takes into consideration the diverse and specific needs of the student cohorts for each subject and is believed to maximise rates of student success. Most respondents, when asked, stated that it is crucial to keep the audience in mind. The first thing is to look at the material and change the style of presentation according to the audience.

Throughout the interviews, many respondents repeatedly emphasised the need in preparing a course to expect to change it and be a little bit dynamic based on the students and the feedback you get. One respondent observed that he could usually tell within the first few weeks what the majority of the cohort is like and how they are actually coping with what he was giving them. In some of the elective units he asked the students what they were interested in and he would take that feedback and try and provide more of a focus on that topic or area when the opportunity arose. The respondent commented that with core units there was usually a set of slides already prepared and lecturers needed to follow that process, although the lecturer may vary it based on responses in the classroom. Where core units are concerned he noted that there was not usually much leeway to actually diverge from that set of (core) material.

Some respondents said that under the common core units they have had much less freedom and flexibility than they would have had in the past in the sense that they had agreed that “This is the twelve weeks of content we agreed on and this is the sequence in which it shall be delivered.” Respondents felt enthusiastic about some parts of the content they collaborated with others to include in courses they were involved in designing and some less so. It was seen as a delicate balance because everyone involved in designing a course is inclined to

say “Everything that I have recommended be included is worth knowing” and the selection process was difficult and often stressful as a result.

Finally, respondents largely agreed that course designers need to be aware that the issues and topics that fascinate and interest them may not be shred by their students, and lecturers need to account for this and factor it into course design and delivery a bit more.

Industry Experience

Some respondents held the opinion that it is important to design courses with industry needs and outcomes in mind, and that many students expected that courses would be designed with industry in mind[5].

Several respondents had industry experience and their observations on the merits of incorporating this experience in course design were consonant with each other. These respondents explained that when lecturers start teaching there are many things they talk about relating to industry although many first year students obviously do not have this same understanding (to appreciate what organisations are and what they do; how people work in workplaces; the prevalence of hierarchies; what job functions are). It was deemed important for students to understand this, but acknowledged that it takes time and the majority of students do not have this knowledge at first. A lecturer’s industry exposure and experience gives him or her an advantage over those colleagues who have not had the exposure in regard to designing and delivering subjects, especially with Business Systems.

Back to Basics

Many respondents also considered the importance of so-called foundational learning, that is, of “teaching students the basics”, however open to interpretation this task may be. The issue of what foundation learning means is explored further in this section and relates to respondents further questioning of the role of the university and of its purpose in education and training students. These issues and others are discussed below.

It is important when thinking about first year students to ask what the bare minimum is that course design can start from, and you also have to remember the set curriculum that they must to get through in one semester. Therefore it is a case of working from both ends. This means starting off being basic enough with the material, but also making sure the material is covered in enough details to meet the requirements for the subject so students then have the prerequisites for the future subjects they need to do

[5] It should be noted that only those respondents who themselves had industry experience commented on the importance or need for consideration of it in course design

Always emphasise the foundations; fewer facts and more building confidence so that when students graduate they feel they can handle all manner of IT problems. Lecturers need to expose students to the importance of foundations with zeal and try to build on what they already know (assumes background knowledge). From here comes the next step involving them in the evolutionary process of constructing meaning from what they know. Provide a lot of feedback; never give students direct answers as this produces passive learning. Encourage more active involvement.

Ploys and Devices

With regard to course delivery and ensuring students engage with the material, one respondent tried to get her second year students more involved as she found that with the tutes very few students had read the set questions. As a result the respondent often spent 20-30 minutes going over the material with the students before “starting” the class.

An approach another respondent devised consisted of assigning topics to students that they are obliged to present. These presentations are then marked them on the basis of the student’s understanding and presentation of the material, and they are therefore forced to commit to understanding it. It was a successful way for the respondent to assess how much her students knew about the topic because she was able to see student’s misconceptions as they presented their work and again when later asked questions about it. For this respondent it meant she could then intervene and say “This is not quite right, let’s try it this way.” The process exposed misconceptions that students had that might otherwise have remained hidden. The respondent admitted that her students did not immediately embrace the process because they were reticent about presenting their work and that this posed a (small) hurdle. But she has continued with this approach because she can at least know what the students do and do not understand, whereas in the past she could not tell which students understood and which students misunderstood a topic.

Learning Styles

The biggest problem identified by respondents when designing and delivering courses is the belief that the students are not used to the fact that they have to do the learning. Respondents explained that an important aspect of good course design and delivery is making students appreciate that it the courses and their content are useful to them. Several respondent comments relating to this matter follow:

Lecturers can tell students how they want to run the tutorial. They can also ask students to advise them how they would like to have the tutorial run, which

enthuses them and they then discuss different approaches, which tutors must say they will not necessarily agree to. Students are then full of good intentions and came back in order to collaborate on how the class will run, and the students all agree they will do the tute exercise in advance. Of course within two weeks none of them are doing the tute preparation in advance, no matter how much tutors say “You’ve devised the method and I’m going to sit back here and monitor you all.” After several weeks tutors simply start hounding and pestering them, and this is inevitable

The abstractness of the concepts must be carefully considered. Questions like “What is information; what is an organisation; what is communication” must be addressed. Some students are not good at dealing with these problems and they prefer lecturers to produce simple concrete examples. The danger is that as soon as students are given this they latch on to it and say “That’s what this is all about,” and the lecturers has to say “No, no… that was just an example. What about this..?” The difficulty of bringing it all together for students is another problem. They tend to partition things and put things into little boxes, so lecturers must help students break open those categories and think more broadly. Lecturers and tutors should try to use examples and cases in classes

It is the transition from first year to third year where students’ application and discipline to their study and how subjects are delivered can change. Students are conscious of the fact that they will soon have to go and get jobs so they are more interested in being proactive. At school they were being driven by parents and this is the regime they were used to. Making that adjustment from school to university where they are responsible for their learning can be difficult. It is their process at this stage, not the lecturer’s

Core Unit Structure (Problems)

Most respondents believed that under the new common core unit system there will be aspects that are problematic for some students. Reasons for this ranged from the likelihood that students come from different degrees, and where the courses are concerned students will have different expectations.

A minority of respondents believed that the change to common core units across campuses, degrees and courses would not pose significant learning obstacles for students. Key findings are detailed below:

Common core units are going to create problems because different student cohorts are not going to have the same interest in the subject. Students doing Information Systems at Caulfield are not going to be so interested in learning how to do programming in C. If they are forced into that situation they will not

respond as well as they could academically if they apply themselves based on personal choice and interest

Previously there were fewer problems. Most lecturers were happy with the previous structure for example, but some lecturers do not agree with the current degree structure, for example where the common core units are to be spread over 10-20 different degrees. In many cases those degrees have different requirements and therefore very often the core subjects do not satisfy all of them, especially with the programming subjects. There is a vast difference, for example, between a computer science-based degree and, say, a business-based degree. Both require programming, but to very different extents. And at the moment the faculty are mandating that students will all do the same subjects. The effect of that is that the subject needs to be reduced down to such a level that it has to satisfy both, and in the process important content is excluded

Teaching Style: Adapting and Coping

It was immediately apparent from the research that respondents perceive the (previous) problem of subject design and delivery and the problem of what type(s) of teaching students adapt to and cope with best as closely related. In many cases respondent feedback on these issues was similar and contents were often difficult to separate. Several distinctions were made, however, and these are discussed below.

Personalising the Learning Experience

Several respondents thought that a personal touch, that sense of recognition and familiarity between staff and students makes a difference to students' adaptation to the learning experience. One respondent noted that at Caulfield campus academic staff would not know one student from the other as there are so many.

Respondents also thought that personalising students' learning experience involves giving students something that relates to specific experiences they may have encountered in the real world. It also involves lecturers injecting humour and light-heartedness into their interactions with students. Content, too, needs to be personalised where possible. On respondent advised that lecturers must avoid talk about an impersonal organisation that students have no emotional or intellectual connection with, rather they should involve a human element where human interactions are involved in the example.

One respondent thought that is lecturers made a genuine effort to learn their students names and chat to them, the students would turn up to lectures and tutes because they have expressed a personal interest in them. And if they do not turn up the lecturer or tutor should question them and ask "Why didn't you come?" The respondent was adamant that a slightly more personalised

experience makes a tremendous difference to students, and speculated that one reason many do not show up without this personalisation is because they feel disenfranchised by the whole university process.

Fewer Lectures, More Tutorials, Better Tutors

A handful of respondents lamented the continued use of the lecture format as being impersonal and passive a teaching method, and were keen to promote the benefits of tutorial and/or seminar-based learning where much smaller groups of students can interact and problem solve. One respondent questioned what the benefits of lecturing were other than cost effectiveness. Individual respondent feedback on this issue elicited the following findings:

Attendance rates at lectures are abysmal. Ideally it would be better to move away from lectures and towards a method with one staff member per group of twenty students, and then teach to these small groups for the entire semester. There is a cost issue, of course

Avoid posting tutorial solutions on the web as it discourages students from attempting to think for themselves

It students respond best to hands-on, workshop type activities where a lot of feedback is given to them about their progress. For example, teaching the programming units in first year via lecture delivery is not an ideal way to help students adapt. It is a two-hour non-interactive session, essentially, of theory. First year students do not deal too well with that. They do however get better results and derive benefit from interactive activities which can be done in tutorials

The faculty currently rely on part-time tutors who may come recommended by colleagues. It is difficult, however, to know how well the tutors are going to perform and difficult to predict their ability to understand the material. Lecturers must rely on their students to say “That tutor is no good,” although it may be that tutor’s first semester tutoring. The faculty ask students to pay $20k+ a year and are providing them one staff member per unit or subject who is fully trained and the rest are part-time staff who are sometimes learning the material just one week ahead of the students

Teaching into a tutor group is a learning experience for the new tutor as well, and their experience takes time to acquire. The faculty are nonetheless “churning tutors through the system” therefore it is difficult to build up a skills base

Adapting to Mass Market Education

Several respondents discussed the significance of the changes to the tertiary education sector since the 1960s and the changes in the style of teaching students' adapt to and cope with best over this period. Individual respondent feedback follows:

The university approach in the 1960s was an ideal. Class sizes were comparatively small and the universities had the "cream of the cream". Admittedly, the tutor may have been an Honours student but at the time they were exemplary. Universities in 2006 comprise a mass student group. Currently Australia has a mass education system and in terms of how the faculty designs courses it now mimics what occurs at high school level. That is, the faculty has lengthy brochures explaining the unit details. The faculty are now adopting that model in terms of how its formulating the structure of the courses. It is like HSC or VCE. The faculty are de facto realising that this is what is happening

Education is today a mass market and faculties have to cope with a wide range of academic abilities whereas in the 1960s they were enrolling students who were extremely capable and academically able to do whatever was thrown at them. Today faculties are fielding an enormous range of abilities and it is very difficult for both students and staff to adapt to this

A handful of respondents raised the issue that university itself was in a dilemma in terms of the expectations it has of staff. One respondent in particular believed that the university was trying to,

> *Make us all top researchers and top teachers, and those days are long gone. If they had of wanted to restructure the Faculty they should have created a research school and a teaching school and get the staff to be committed to put together teaching programs and other who are committed to full-time research. You can't survive today by doing things piece meal. If you want to be a top researcher you can't do it 2.5 days a week, and teach the other 2.5. That's not how it works. And if you want to produce good teaching material that you can even sell on the market then that takes a total commitment too. I think the university has gone a bit schizophrenic in a sense in terms of it hasn't realized the world has changed. You've got to have researchers that are committed to research with performance guidelines for them to be measured by, and then you have to have teaching staff to teach the programs. I can't see any sense in doing it the way we're doing it. This was OK until the 1970s, but we've now adopted a secondary school teaching model and find ourselves in a mass (student) market. The university has to bite the bullet and decide what it's going to 'be' and what's it going to do therein.*

Pedagogy and WebCT/MUSO

All respondents acknowledged that different students learn in different ways. Most respondents believed that many students fail to attend lectures, and most speculated that this was partly because lectures notes are made available to students on the Web and they therefore perceive little advantage is be gained in attending lectures as well.

Several respondents did not make lectures notes available online for the above reason, and students have to come along and involve themselves in the discussion because there' is no exact material online that is going to supplement what they do in class. A lot of that is supplemented by videos and practical examples that can't get out of a book.

One respondent despaired at what he perceived as a strong lack of interest by staff towards students, to the point that many students attend only the first and the last lectures. The respondent proposed that this disconnect and disregard for students was enabled further by allowing lecturers to post all their lectures, and solutions to these, on WebCT and MUSO.

Cultural and Linguistic Patterns of Adaptation and Coping

About a third of respondents emphasised the difficulties that Asian international students in particular experience and how these students' cultural norms of learning and English language proficiency informs and affects their learning experience. Key findings elicited from individual respondents include:

The faculty is enrolling more Chinese students and some lecturers have to repeat and speak more slowly because there is a significant language barrier. These students find it very hard to engage with the English language let alone the concepts behind it. Staff have to be acutely aware of this group's different cultural norms

Many Asian students have a very strong concept of "this is the answer", and to be able to say that there are many, different ways of doing something and that they are all quite reasonable, and getting the students to express their opinions is a real challenge for many lecturers. These students often want the solution rather than going through with the discussion beforehand. Once they are comfortable this does change.

Getting Asian students into that zone where they realise that the lecturer or tutor is willing to help them; that they do not think these students stupid because they

cannot speak English but that they value what the students have to say produces a positive shift in their ability to cope with a new way of learning. It needs to be quite an intense personalised experience

Staff-Student Contact

Most respondents believed that students are generally happy about staff-student contact and interaction, and only one felt that students dissatisfied with staff-student with this. This particular respondent argued that staff are largely focused on other matters such as “Simply keeping their job or getting that promotion.” The respondent concluded by saying that many staff are focused on how to go about doing these things and that their priorities are simply not directed at teaching.

Another respondent noted that students seldom make the effort to visit the lecturer for help, and that this is affected by how personable the lecturer appears to the student, and on the lecturer’s availability. The respondent added that some students make time to meet with him but problems with conflicting schedules can stymie these attempts.

Much anecdotal evidence was offered to support the views held by the majority of respondents who believed that students are generally satisfied with the amount and quality of their interaction with staff.

Individual respondent feedback elicited the following bullet-point findings and subsequent sub-headings on the issue of achieving satisfactory levels of staff-student interaction:

At the start of the semester staff should call a staff-student meeting as this should help to improve quality off interaction and understanding between staff and students

If students are unhappy it is because they do not come to lectures and tutorials. Most lecturers doors are open [to students], and many lecturers advise students that if they do not want to visit them in their offices they can reply to their queries by email

At the start of semester walk around the lecture theatre for about 5-10 minutes as students are arriving and talk to them very informally, especially in the first few lectures as this is where staff and students can get to know one another. Students would especially benefit form this approach because they may feel less

overwhelmed and intimidated by lecturers as a result. When lecturers do this the gap between the students and staff should be very much reduced and students will "open up"

Importance of Tutors

On respondent noted that 2003-4 was a boom time for the Faculty and that he had 250 students in a subject where he was the only staff member capable of teaching the subject and therefore had to rely on tutors, many of whom had only just finished the degree.

The respondent suspected that this is situation is not uncommon and that there is therefore "A big issue with tutors [in the context of staff-student interaction]. Some students will come to me and ask to be put into a particular tutor's tute group. So they rate them and pick the ones they think are going to help them the most. We have no consistency in that area in terms of picking tutors who can be considered to be knowledgeable, committed and interactive. We just have no consistency there at all."

Generalising the Student Body

Another respondent said that was difficult one to generalise about student levels of satisfaction in regard to staff-student contact because the student body crosses years (1st year through to Honours), class sizes and cultural barriers. The issue is that if it is a large subject size, students will usually have a lot of contact with the tutor and far less with the lecturer.

Staff-Student Meetings

Several respondents recommended student-staff meetings be held regularly (twice a semester) as a means of getting feedback in order to improve staff-student contact and familiarity as well as the curricula for future years.

Snap Judgments (Lecturer as Performer)

One respondent emphasised that in regard to the quantity and quality of staff-student contact, students form very strong and often quite unfair opinions quickly, and believed that was unfortunate that the nature of the contact available to students is such that if a particular academic does not fit into a certain mould, students will say "Phhh, he or she is a disaster. Hopeless."

Several respondents enjoyed the performance aspect of giving lectures and that this helped generate positive perceptions of staff by students. One of these respondents claimed to have plenty of colleagues that had not “performed very well in a lecture environment [poor delivery]” and that the students had made unfair and harsh judgments about them as a result. A link was proposed between “performance” and abstract and highly academic concepts, which are perceived to bore students and in turn affects how the lecturers are perceived. Lecturer inability to explain to students what the point of the content is and what it is for were also cited as contributing to the problem.

Work Level

Most respondents expected a medium to high level of work from their students, but added that a minority of students meet these expectations. Several respondents recommended a range of quite prescriptive approaches students might adopt to meet their expectations and, by extension, achieve academic results. Other respondents were reticent to recommend a single standard approach to suit all students, noting instead that many learning styles exist that suit different students and that these preclude enforcement of a set number of hours that all students must rigidly adhere to.

The following feedback elicited the following mix of general bullet-point findings and subsequent topic-specific sub-headings on the issue of levels of work expected of students:

Prescriptive Approach

One respondent who promotes a prescriptive approach stated that he expected quite a high standard and that he pushed students to achieve it, especially at a time when there are so many distractions. The respondent explained that he instructs students that ”If you read the lecture notes ten times and read all of the tutorial material tell me what exam question you can’t get 80% for.”

One respondent commented that typically in a first year university subject tutorials are compulsory, and the lectures are not and new students look at the schedule and say to themselves “Hang on a minute, all I’ve got to do is attend 8 hours of classes a week. This great.” They reduce their efforts until the time when first assignments are due and then all suddenly 3 or 4 are due all at once across their subjects and they cannot cope. The respondent say to them, “Well, you were supposed to be working on them already.” It is not only that, but for many subjects the skills are cumulative and must be worked at regularly, week on week. At the start of semester lecturers must impress on students that they have made a 12 hour per unit commitment and they have got to structure a timetable that includes 8 hours of work outside of class, and they have to do it

from week one. First year coordinators try to reinforce that message over and over, but like anywhere there are students who are doing 30 hours of paid work a week and cannot put that time and effort in.

Another respondent believed the prescribed 12 hours per subject a week was adequate and expected that level of work from his students. The respondent however added that the standard 12 hours of work is not expected every weeks, for example those weeks when assignments fall due many more hours of work is expected of students. Specific respondent comments follow:

There are two types of work to be done. The university mandates twelve hours of work per subject, per week. Realistically students tend to do just what is assessable, and unless something is assessed it will not get done. It would be ideal to think that students read material because they feel it was necessary to read, but that is simply not the case. Students will only read things material if it is explicitly indicated that it is necessary to read it and there are marks allocated to it. As a general rule very few students do background reading

The university has the official estimate of 12 hours a week so lecturers cannot really design anything else outside of this, much as they might like to “throw all material at them”. There is always some guess work in working out what 12 hours of work equals for the “average” student. Lecturers attempt to put some of their efficiencies back into the students’ inefficiencies. What takes the lecturer one hour to do will take the students 4-5 hours longer to do. Sometimes lecturers get this equation wrong to the perceived detriment of students

Students can do very little and yet a many subjects have help guides written to help them which are “almost kindergarten standard”, but students seem almost to need that very basic repetition. It helps them. Over the years some lecturers’ expectations have reduced dramatically. Students seem to need or else expect the material at “real building block style level”. They seem to be able to “jump off” by themselves after that

Needs Basis Approach

Several respondents took a less prescriptive approach to the level of work expected of their students. Generally, these respondents argued that the requirement should vary because, as one respondent put it “Learning is not limited to two hours in the tute and lecture.” These respondents overall preferred the minimum amount of lecture and tute hours, wanting instead to help students achieve maximum understanding for the minimum time spent studying.

One respondent firmly believed that a different approach to how the students should study was required and emphasised that "We have to do this, we shouldn't place emphasis on repetition. It wastes time, do one thing at a time in a way that they get a proper understanding first time. We shouldn't encourage rote learning by making students do a prescribed number of questions each week." Specific respondent comments follow:

I think the system we have where the amount of points that a subject is worth is related to the number of hours we expect students to work isn't really about the 'level' of work… I expect a high level of independence. The level is defined by the objectives and assessment. I expect a high level of independence, that's how I define the level of work expected.

Some students do have difficulty coping with the work load, and other do not. It is not because they have too much work, it is [possibly] because they are not too good at managing the work load. Occasionally there are students who say they cannot cope and lecturers must tell them that if they cannot do the 12 hours a week of work then they should consider pulling out of the subject

Secondary to Tertiary Transition

An issue raised by several respondents concerned students' difficult transition from secondary to tertiary education. Respondents also perceived the situation of transferring from VCE/HSC where students have had someone standing over them saying "Get this done, get that done, this is due..."

Attitudes to Timetables

The majority of respondents believed that students avoid selecting, or where there is no choice of times, attending lectures and tutorials that begin before 10am or after 4pm, especially Monday mornings and Friday afternoons. Respondents added that students are far less likely to attend lectures or tutorials if they have no other lectures or tutorials scheduled for their other subjects on that day. Overall, respondents identified student discipline and prioritising of study, competing demands of employment and social life, and the duration of lectures as the main themes relating to the influence of timetabling on students attitudes to their courses. These themes are discussed below.

Discipline and Priorities

Respondents generally agreed that top level students' priorities are to the course and these students they will adapt other issues and timetables around the course. That is, for most students the problem of whether timetabling affects students attitudes to their course comes down to the issue of where their

priorities lie. On respondent thought that students grow more conscientious in third and fourth year, and that by that stage they will find other things to do when they come in. By second and third year level students are more likely to look carefully at their timetable options and work out what they think they can "get away with missing."

Another respondent felt strongly that timetables affect student attitudes to their course and explained that Monday morning at 9am is not a good time to schedule a lecture. The respondent noted that if she splits tutes and lecture across days, she can understand that students are disinclined to come in on two separate two days for one subject because of travelling time and distance travelled. It was the respondent's opinion that lecturers should try and schedule the lecture before the tutes so that tutorials can begin in week one, and to schedule both the lecture and tutorial to be held the same day.

Subject Clashes & Common Core Units

A handful of respondents commented that they had taught students who would turn up for only one hour of a class because of a clash with another subject. One respondent recalled how he had to reschedule an additional exam time period for students who were doing a subject. Where clash of subjects and exams of this kind had occurred.

Another respondent found that subject clashes were a big problem for the students (less at first year level) because they desperately wanted to do certain subjects that clashed and still decided to enrol in them. The respondent commented that although these students may be conscientious they just cannot get to the subject to listen to the lecture and raise issues. These students try to learn and catch up from the audio feedback and also from lecture notes.

Several respondents argued that timetable clashes are going to become a crucial issue as the university tries to make more of the subjects common across the faculty. These respondents generally believed that this will lead to serious timetabling problems (programming). Schedulers tend to look at a specific course and they tend to look at a specific year, so for example there might be Computer Science at Clayton and they will schedule all of the subjects that relate to that course so that the students can get to it. But then students from Business Systems, from Software Engineering, from Caulfield do not have the ability to adjust those classes. Many of those problem stem from tutorials because there are a large number of tutorials and students have clashes with them, and lecturers must continually and increasingly deal with that in the large campuses especially. Many of these problems are bigger problem from the student

perspective than from the staff perspective, but respondents state that it nonetheless affects their ability to teach students well.

Exam Timetabling

The issues of exam timetabling in general and parallel marking of all exams in the core subjects in particular were raised by some of the respondents. Respondents explained that if it was the case that parallel marking were to be adopted, many staff had expressed their preference that all the exams be scheduled to take place in the first week. One respondent thought this was unrealistic because expecting a first year student to have three exams in the first week is unreasonable. Rather, it was important to spread exams out. The majority of respondents when prompted said that most students study for the first exam and then the next one and so on; they will not begin studying for a subject until 2-3 days before the exam.

Part-Time Students

One respondent did not think that timetable organisation influenced students' attitudes to their course, that it was not seen as an issue. Part-time students would be more affected by timetabling than full-time students, and this related to the electives students can enrol in if the are scheduled during the day. By comparison. Part-time students had a restricted set of electives they choose from do.

Duration of Lectures

Finally, several respondents thought that one hour lectures are essential and that 2-3 lectures are too long as students get restless and "switch off". One respondent advised scheduling a short break between the first and second hour of a lecture as she had found that many more students attend when this has been done.

Success/Failure Factors

When asked to describe the factors that contribute most to the success and failure of students in the IT degree respondents overwhelmingly cited motivation, enthusiasm and interest, effort, and the quality or teaching. These, and other, issues are discussed below

Motivation (Enthusiasm and Interest)

Motivation, which closely relate to enthusiasm and interest (the "unquantifiable stuff" as one respondent put it), was seen as a major factor contributing to

students' success or failure in their degrees. Several respondents felt that students "Come in and think they can get a good job in this area but they're not particularly interested in the subject matter so they're less likely to succeed". Respondents generally agreed that students who exhibit interest in using technology to solve business and technical problems and are highly motivated to work are going to succeed.

Several respondents thought that what contributes to students' success is their working habits, their ability to organize themselves, and that these contribute to levels of motivation and ability to deal with the "ups ad downs of life".

One respondent formulated four reasons why students lack motivation and fail their course. The first reason was because students dislike the subject area and emphasised the need to explain this to students "You are not going to like every single subject area. So that's a problem, but it's a problem you're going to have to work out how to overcome". The second problem was that students do not adapt well to the "university style of thinking" and what a particular unit wants and requires them to do. Thirdly, students are too busy having a good time, and do not prioritise their study. Finally, students do not develop any interest in the study or understand what the point of the unit is, to which the respondents replies "Well, tough. It's in the course and you have to do it so you have to go back to plan B which is working out how to overcome this problem".

Effort and Preparedness and Organisation

Most respondents agreed that student success largely depends on what they expect to get out of their time at university. In terms of marks, respondents thought that students who made a genuine attempt and effort would have little likelihood or reason to fail. Genuine effort and preparedness make all the difference, both in terms of before starting the subject (how much students already know) and how much students are prepared to put in each semester. Many students who fail do either.

One respondent recalled the old truism that "80% of success is being there" and added to this that many students do not come to all the tutorials. The simple fact that these students have not made the commitment to come to the tutorials affects their commitment overall which in turn means they are placing themselves in that "grey area of getting through the course."

Another respondent recalled a conversation with some Honours students who said to him that in first year students would start working on an assignment the morning it was due and realised that they had not left enough time for it. By second year these students had "wised up to it" and started working on an

assignment the night before or two nights before it was due and still found that they were not getting it done in time. By the time they get to third year the students felt they "got really clever" and were starting the work a week before it was due and yet were still not getting it completed to a satisfactory level. From this example the respondent identified a progression by the students as they go through the course but asked himself why he bothered handing out this material 4 weeks before it was due if the students are only going to start the work 3 or 4 days before it is due. The students do not ask themselves the question "Why did the lecturer give that to me now?"

Mathematics and Communication Skills

A handful of respondents argued that if students improved their communication skills, and strengthened their analytic skills as used through mathematics or English they would be more likely to succeed in their degree. As one respondent explained it, "The more willing they are to become nerds through learning new things the better. The more nerdish they become, especially for computer programming, the better they'll do. It certainly doesn't help the information systems skills to become a nerd because to tend to go off into corners and hack into programs. About 30% have nerdish capabilities and attributes, some go completely overboard".

Quality of Teaching

Respondents overall believed that successful students make use of the resources made available to them, that is, the teaching staff. With this came the additional comments that a providing high quality academic staff was instrumental to student success or failure.

One respondent proposed that it was the ability of staff to engage with students on a wide range of levels that increased student success. A strong sense of "We really want you here" and "We really want to help you" is also required to boost students chances of success. This respondent felt that staff and students alike would benefit from having more help and information sessions, especially for the practical classes, as well as creating communities so that there is a more personalised experience for students.

Several respondents commented that "at the moment" the quality of teaching and attention by staff of students has "Gone by the wayside because the focus is moved from teaching and the rewards of the system are not for teaching, it's seen as more of a chore that has to be done. Make as little effort as possible because the rewards just aren't there". The respondent concluded that those lecturers and tutors that do put more effort in to help students do well are "punished for it and given more teaching because they have not done enough

research and so on". When lecturers are given 4 or 5 subjects this becomes even harder, "It's become a cultural thing in this Department".

Student Selection

One respondent discussed the approach taken by the IBL program as an exemplar of selecting students who exhibit promise of achieving academic and career success. These students are selected to enter the program not by the academic staff, but by interview with the Program's industry partners. These partners look not only at academic results (assumed), but at the ability of the student to work as part of a team; their communication skills; whether the student is a well-rounded person. The industry partners are looking for people who have outside interests as well as academic interests, whether they have had outside work experience as well. So we're not looking just looking for one dimensional people (based on ENTER scores) when selecting people for the IBL program.

Positive Changes

Respondents were asked what changes to the core unit structure might positively affect students' adaptation to their degree. A diverse range of responses were provided and included such changes as positive and negative reinforcement, consistency in approach, increased flexibility in the design and delivery of courses and subjects, and generally improvements in raising students' awareness of what their courses entail and what is expected of them. These changes are discussed in turn below.

Positive and Negative Reinforcement

Most respondents emphasised that any changes made to the core unit structure in order to positively affect students' adaptation to their degree would depend on what stage of their studies they were at. Respondents agreed that first year students require a lot of guidance studying and need the "big stick" insofar as they require incentives to complete tasks in a timely manner (includes negative reinforcement).

Consistency in Approach

Another issue raised was the inconsistency in cultures between schools, and also lecturers. Respondents noted that a number of lecturers are very strict about cut-off dates for the submission of material and other are more relaxed. Most respondents acknowledged that staff teach differently and that there are different approaches to be had, and that lecturers want to apply these to create incentives for students to submit their work.

A number of respondents lamented, however, that the inconsistency in approaches for encouraging students to submit their work on time tended to create sloppiness in the students who were confused by differing expectations.

Respondents identified another problem to arise out a perceived inconsistency in approach taken by the common core unit structure that would benefit students by being revised. In the previous model, prior to the adoption of the core unit approach, lecturing staff would provide a list to the administrative staff of their assignment or tutorial work due dates. This meant that administrative staff knew clearly when assignments were due in and could cut off the file on the students who were late. This procedure also meant administrative staff were able to revert to the lecturer and say “We’ve got two other subjects of that particular year that have got assignments due in that week. Can you shift yours?” Respondents claim to have lost control of this process in recent times, and that someone needs to take the initiative to re-establish this procedure. One respondent recognised that this may generate a new problem when the faculty has got students enrolled in different courses across different campuses and with different timetables.

Flexibility in Design and Delivery

The issue of designing a more consistent or standardised approach across the faculty was supported by respondents who conceded a need for less variety in approach across campuses where each campus had the equivalent and comparable numbers of students. However Monash was viewed by most respondents as a diverse institution that enrols both top level students as well as lower level students across courses and campuses, and attempting to force foundation (common core) subjects across these was overwhelmingly seen to be problematic.

Increase Student Awareness

Some respondents did not believe there lecturers could do much in the way of making changes to the core unit structure to help students adapt to their degree other than to better educate students about what they are getting themselves into in enrolling in the degree.

One respondent noted that there was nothing worse than a student doing a course “because someone tells them to, because those students will keep failing. Over every year and every semester we get students who keep failing a particular subject, and when we ask them why they keep doing that they say ‘we just hate this subject.’ And when we ask them why they’re doing it then, they say ‘because it’s a compulsory common core unit in my degree.’ So they get into the degree without realizing they have to do certain things.”

Revised Workload and Content

One respondent felt a significant reduction in workload (in common core units) would help students positively adapt to their degrees. The respondent commented that in some units lecturers attempt to squeeze in up to 18 weeks of work into 13 and then try and talk really fast to get through it all in the lectures.

Finally, another respondent recommended doing much more to establish credible and substantive bodies of case studies and so forth that are made available to students. The respondent argued the need for bodies of materials to be made available to students as an alternatives means to help them problem solve and appreciate the diversity of solutions to problems.

Topics/Areas of Interest

The final question asked of teaching staff was what topics or areas within the subjects they teach into students appear to take most interest in. Responses were directed at highly targeted and specific topics and problems from within respondents' subjects and cannot be easily generalised, however the following individual respondent feedback draws out some themes.

Often what is of interest to students is not the core material which they need to understand. Students have a hard time coping with the backbone of the subject, i.e. the basic building blocks. Students are all keen to learn the applications and the process in which these things are used, but the drudgery of having to go through and learn the fundamentals is something they are not altogether interested in and do not cope well with. That makes it difficult and a challenge for teaching

When lecturers are teaching core material they try to explain the direction in which it will lead and why the students are learning this material and this is often lost on the students. They have difficulty with some of the material. For example some of the students have a genuine dislike or disinterest in mathematics, and lecturers have problems with them doing basic mathematics. Students aren't allowed to bring calculators into exams and lecturers end up with students who cannot add up or subtract or multiply and are lost as to why they should be forced to do this work. The students get engrossed in this problem doing the mathematical calculation rather than the actual purpose of the calculation

To conclude, one respondent "I can tell you which ones they're not interested in… a lot of students are having trouble with programming! They might like the idea of programming but they're finding the process of programming difficult. It

might be because not a lot of people have the mindset to think in a programmer's way."

SIG Group

SIG Group Members' Preparation of a Subject for Delivery in Relation to Development of Core Unit(s)

SIG Group respondents and/or those who were involved in the design of the new degree structure but who were not teaching any first year subjects in first semester (2006) were asked to explain how they:

Prepare a subject for delivery, and;
How this relates to the development of the Core Unit they worked on in the SIG Group.

These questions generated a great amount of discussion from respondents, and their responses to both questions have been aggregated into themes (sub-headings) identified below.

General Process

SIG Group respondents in general took a similar process and approach to designing subjects for delivery. Most begin by reviewing a range of textbooks for the course relating to the area, and called on prior knowledge of other lecturers' experience in that area or subject. Respondents also reviewed previous years lecture notes and start working from these materials. Typically though, most respondents also have their own ideas about how any subject should be delivered, and will start modifying anything they have been given fairly rapidly. One respondent commented that she knows there is a group of people who would rather take a textbook and work largely from that so that the students have a standard reference they can refer to, with the lectures following closely, although she had never been a proponent of that approach. As she put it "I steal examples from all over the place."

Respondents thought it was important to be aware of what the unit outline states, and clear on what the objectives of the unit are. Most SIG Group members claimed to have a fair number of resources available to them, including previous lecture materials, research papers on topic areas, and the internet. Many respondents made little notes during their lectures about things they want to improve if they were delivering that topic again.

Most respondents also devised a high level plan of the unit, and then kept an eye on the objectives and made sure that they continued to meet them. This was viewed as a quite different process however, because it was quite separate to the delivery which was very specific. One respondent commented that when his SIG Group worked on the core units for the new BITS there were two aspects to it they carefully considered:

core units shared across the faculty;
core units that were for each major that we created

This respondent was involved lightly in the overview of the core units and a partial member of a SIG Group, whose members were individuals who had taught in that particular subject area for quite a while and bringing their experience to bear on the design of the unit. The respondent did it at a much higher level where he was looking at Caulfield campus in particular, and the Group used fairly seminal references about course syllabus in IT areas to inform direction rather than following it to the letter (US-based curriculum). The group used that together with their combined experience to decide on what to focus on, and what they provided at that point were main areas that the group put out for discussion and then a group of people got together and then decided what it was that we were going to focus on. The group then came up with the units and put them out to different SIGs and the process these different SIGs used there was again to get people together of like mind to hasten the process because sometimes there was a great deal of time spent in discussion. The respondent again prepared a general outline that was made available for review by the group and that outline got modified substantially by people providing expert input (to flesh it out).

What commonly brought many respondents' subject preparation together was their experience in life around the issues involved, their reading around the issues involved, and their experience of students and the issues they grapple and struggle with.

One respondent explained it as "Looking for the things that are missing and would be useful." Another respondent thought that the faculty tends to "Pay lip service to desirable graduate attributes such as problem solving, thinking analytically and creatively and so on, but I wonder where we actually teach students (a) how to think about these things, and (b) then to do them. It's important to think about what we want to achieve and then consider what sorts of ways to engage students in developing these attributes." The respondent concluded by saying that it is one thing for students to understand things conceptually and another to know it in themselves, what it looks like for them and know how they can access it in other things.

Revised Workload and Content

The majority of respondents believed that the common core units have too much content in them because each SIG group member naturally desires their proposed content to be included without exception. Several respondents were concerned that there was too much material in some first year subjects and that students would struggle to keep up.

Given a Hammer Every Problem Resembles a Nail

Many respondents observed that the diversity of different thinking styles, interests and disciplinary approaches, or mind-sets, shared between SIG group members across courses and campuses created problems and opportunities during the development of some subjects.

One respondent organised the SIG group he moderated by selecting individuals who were actively teaching in first year and then let them lead them lead the discussions. The respondent explained that there was the potential in the common core units for quite diverse approaches to things and that there were several different approaches the group [could have] used for computing topics, and several that came from computer science. The respondent made the point that there was common knowledge that was applied, all the group members discussed the same issues, but they all come at these issues from different view points. The respondent explained it thus,

> *The science person would say, ‘”I don’t care how you use it, I just want to know how you build it, the theory behind it, how you do analysis of performance and correctness for all sorts of things. But what you do with it I don’t care.” Whereas the more applied computer person will say “I don’t care how you build it I just want to know how you use it.” So I was anticipating that there’d be a lot of tensions between these two groups. And there’s the third group, the systems people who say “I don’t care very much about what you’re doing with it, I just want it as simple as possible so that I can put it behind me and get on with something more interesting.” But as it happens the computer scientists didn’t turn up and they didn’t put their input in until very late on after someone else had taken over the SIG leadership, the system people were bending over backwards to be accommodating and every now and then they’d put their foot down and say “No, we have to have this stuff this way otherwise we’ll walk out of this process.” For the BITS systems people it didn’t really cause any problems, the compute science people could have been worse. The end result is that for a 13 week semester we ended up wit about 15-16 weeks work. Everyone wanted their bit in, and we really couldn’t squash it all*

> *down. So we tried to work through consensus, and only things that two or more people were wanting included would be. The rest became supplementary material.*

Identify and Emphasise Process

One respondent argued that in preparing a unit lecturers get too stuck in content and assessing it, whereas there should be more emphasis placed on thinking about how to assess process. This respondent discussed his following of the Action Research model and that his experience of involvement in the SIG groups was that the SIG Group notion is new to all the staff and they have not fully accepted the idea of becoming a learning community where there is collaboration and cooperation. The respondent felt that,

> *It was something that was "thrust at us", something that was an external thing, and when something is thrust on us as an external thing people tend to focus on ticking boxes and outcomes rather than on something that's intrinsically-driven which you tend to be more engaged with at that process level. It's something you 'have' to do. Its not like "I'm inviting you to think about this and contribute to this process" It's more of a "You shall". In a lot of the SIG groups originally there were a lot of fear-driven arguments ("Gee, I'd better push my unit or a bit of content now or else they'll make me redundant and I'll have to go"). People in the SIG Groups focus on content and on their little bits and what was there. I didn't witness much discussion about meta-learning/higher objectives nor discussion around "Well what activities would be best to engage students in actually learning about this, or about how to integrate the other campuses (esp. o/s ones) to engage fully as collaborators, rather than somebody for whom we'd say "We will develop all the content and send it off to you."*

The respondent concluded by saying that the following three things were "thrust on people" in the process of developing the common core unit structure:

The new degrees;
Not a lot of reflective practice on what it means to be a SIG Group;
No space for people to say "do I want to engage in this, how do I fit into this?"

Considering Student Needs

Several respondents thought it extremely important for SIG Group members when preparing a subject for delivery in relation to development of core unit(s) to take close account of the range and variety of students and their needs.

One respondent explained that in terms of designing the objectives for a subject she looks first at what attributes and skill sets she would like to see her students have as at the end of the semester. The respondent acknowledged that most of the units taught at her campus were quite practically oriented and that the students were primarily interested in employment outcomes. With this in mind the respondent considered the skill-sets that would match to those sorts of practical considerations, and she would look for the practical attributes she would like the students to gain and then try to write the objectives to match that. The attributes would be specific and the material would match to those and the assessment as well, because the assessment was really about checking that those objectives had been met.

Respondents generally agreed that SIG groups are very wide-ranging in that the common core units were previously taught across multiple campuses, and they intended to come up with one that was common by taking the best of all approaches. Several respondents took issue with the idea of taking this approach and recalled that there were arguments within some of the SIG groups about which of the various approached would take priority, that is, trying to agree which approach is the most important when not everyone agrees on the same choice approach.

These respondents concern came down to the problem that taking a single approach and establishing a common core of units ignores the variety of backgrounds of the students. As one respondent complained, “It’s all very well to have a common core, but they’re not common students. They’re coming from different backgrounds. The campuses have different cultures, different cohorts of students in terms of background.”

Designing by Committee

Another issue raised by a significant number of SIG Group respondents, but not discussed at depth, was that designing (anything) by committee creates the danger of the “lowest common denominator” approach resulting. Several respondents implied that this occurred in some of the core units. As one respondent put it, “When you make units common across campuses you make huge compromises.”

Time Enough to Prepare a Course for Delivery

A handful of respondents felt strongly that when the SIG Groups were formed the lecturers got together and decided on content. This process demanded some give and take. Some lecturers prefer more theoretical approach, others a more practical one.

One respondent commented that each lecturer in her SIG Group prepared three lectures each from the core subject and wrote those. The respondent described the hurried nature of the process as,

> *A very 'fresh' preparation, I wrote lecture slides on a Sunday night for a Monday delivery, based on the textbook (not the best book, but ok). Someone else wrote slides based on the agreed content (SIG meeting) of the weekly topic, which closely followed the structure of the textbook. Preparing slides for a lecture the following day is not ideal, and by then we were all so bored by and fed up with the material.*