Analysis of DEET data for funding models and student migration pattens using 3 dimensional spreadsheet modeling.

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Abstract:

This paper discusses and demonstrates various models for the analysis and distribution of resources as well as a model for the examination of student migration pattens. This management tool, then allows for a more equitable approach to the procedures of resource distribution, and allows other factors to be taken into account for funding models. These models are based on artificial data with the same statistical parameters as a real university population, and are extracted from DEET variables, so all institutions will be able to produce these models if required. Because of the variance of resources available to each institution, these analysis techniques and models are designed to work on any 3 dimensional spreadsheet package.

Introduction:

Today's educational institutions are becoming more corporate focused and discovering that they need to analyse information better Many lave limited resources to undertake such analysis. Universities are concerned with providing an environment of equity and service. The merging of the two concepts of business goals and educational goals may combine and produce benefits as well as conflict, perhaps at the same time.

In this educational flexible environment, there is a great need for accurate management information. This type of management information is useful for investigating the following areas,

- Student Equity . - *Examine the student distribution in regards to demographic factors, to ensure adequate resources are available.*

- Student Progression. - *Investigate the current trends in student progression by attendance patterns, to design subject scheduling on historic trends.*

- Course Planning. - *To examine the through put of students and their choice of elective's both within and outside the schools and faculties, to predict and manage educational resources, accessibility and time tabling*

- Course Marketing. - *To investigate the current demographics of student group profiles, with in elective streams, courses & geographical locations, to then formulate a marketing plan, based on historic market segmentation.*

- Key Performance Indicators. - *To ensure through statistical and qualitative measures that a consistent measure of student and teaching performances are maintained, and for the faculty / schools to be able plan for quality improvement and to engage in an implementation of quality assurance, through TQM policy and planning.*

- Enrolments. - *To investigate the current and historic pattens of student choice and progression.*

- Student Migration. - *To investigate movement of students between majors in a course and impacts on resource allocation.*

Data modeling, database management, management information systems, pattern recognition and cluster analysis are all tools that can be used to gather, store or analyse data. One of the most common suites of computer programs used today in the educational arena is Microsoft Office or Wordperfect Office. Both have word processing, spreadsheet and database computer programs and are relative inexpensive. The mathematical models within this paper are designed to work with off the shelf packages.

This paper examines various models of financial distribution, that will range from a simple model of a non weighted system of counting student places, to a complex model of activity based costing. These models will be driven from an artificial set of figures based on enrolments and funding, which have been statistical adjusted from a real university population. Standard DEET reporting variables will be used where ever possible, to create a common understanding and practical application of the models. However, as universities have the choice of adding special fields to their data submissions, other information may be required.

The university environment is not the same as an business environment. There are a different set of criteria / effects that impact on universities activities, than may not exist in other areas of business practice. To effectively model the university environment you need to use a finite modeling structure rather than and infinite modelling structure. One such method of modeling is a fuzzy logic granulated system. This treats the total values as absolutes, and that the contributing values have the freedom to move within structure as long as they don't change the absolute value. For instance if we have 35 students who wish to change from one subject to another, and the subjects are taught by different bodies, then they need to be removed from one and added to another. Thus analysis now requires an multi dimensional approach to allow for greater recognition of the patterns of movement between different schools and faculties, and other variables.

Although this paper doesn't deal directly with the conference theme of equity, management information systems especially in funding models and student migrations situations, can be equity focused, and give the decision maker a great amount of detailed information. The University of Technology Sydney, equity policy lists a number of focus areas for consideration. Some of these areas include people of non-english speaking backgrounds, people with disabilities, people from low socio-economic backgrounds, women in post-graduate and non-traditional areas of study, rural and isolated, etc. By locating various target groups, and then examining and comparing their performance through key performance indicators as well as quality measures managerial decisions can be explored and tested.

Simulations and Modeling.

Simulations and modeling are good ways to investigate data. For this exercise we used a ' Fuzzy Logic Granulated Finite Model '. The reason for choosing this type of model is because Universities do not exist in a infinite world, especially faculties and schools, which often have to operate within a limited range of resources, finances and number of students. The primary focus of this model, is not to examine the total outcomes, but rather to focus on the internal movements within the environment. As such, the total of the model always equals one, and the different variables are always values which add up to one.

An good example of a student data base is shown in figure 1. This then allows you to model many different situations. When the tools and methodologies of data mining / pattern recognition and clustering are used, which can then be stratified by various demographic variables, it is possible to analysis trends within student migration and also to generate funding models.

Figure 1, Student Data Base

Student Id	Identifies the student for data integrity.
Course Code	Identifies the course, level of study and faculty.
Date of Birth	Identifies the age of the student.
Gender	Identifies the gender of the student.
Enrolment	Identifies if the student is a commencing or re enrolling student.
Date departed	Identifies the date the student finished with the university.
Attendance	Identifies the part time / full time or external.
Hecs Code	Identifies the funding sources and type of student.
Award	Identifies if the student was granted an award.
HSC / Cat B	Identifies if the student came from school or other entry scheme.
Subject No	Identifies the subject being studied.
AOU	Identifies the organisation unit key, which shows the school which teaches the subject.
Year Studied	Identifies the year the student was enrolled in that unit.
Semester Studied	Identifies the semester the student was enrolled in that unit.
Subject Mark	Identifies the mark awarded to the student in a specific subject.
Subject Grade	Identifies the grade awarded to the student in a specific subject.
Funding Weighting	Identifies the complexity weighting of the subject.
Enrolment	Identifies if the student was enrolled in a specific subject.

Indicator	
Eftsu.	Identifies the Effective Full Time Study Unit

Figure 2, a sample record in the student.

Student Id	89650599
Course Code	BM87
Date of Birth	18-01-1963
Gender	Male
Enrolment	Re Enrolling
Date departed	NA
Attendance	Part Time
Hecs Code	Liable Deferred
Award	NA
HSC / Cat B	Cat B
Subject No	21768
AOU	BB
Year Studied	1996
Semester Studied	1
Subject Mark	52
Subject Grade	P
Funding Weighting	1.4
Enrolment Indicator	Yes
Eftsu.	.025

Using Data Bases for Data Mining , Management Information and Management Intelligence.

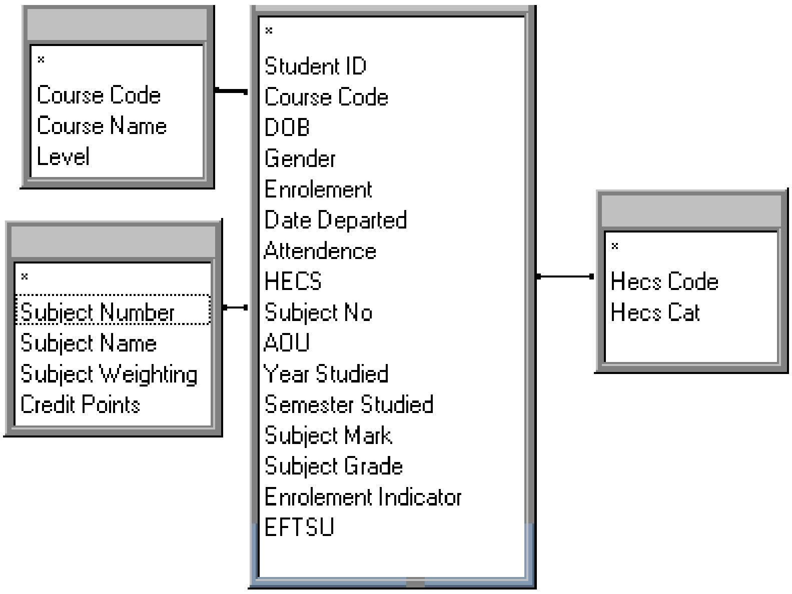
Data Mining is the exploration of data, within a database. Management Information is the provision of information that is relevant to managers in their decision making activities. Management Intelligence is the provision of intelligence information, on which to plan strategies and activities to bring about a desired outcome. The ability of all three either separately or combined to give accurate information is dependent on the quality and availability of the data. The warehousing of the data either in the design of the database or the methods of retrieval also help in gaining either insights or answers. There are several software packages available for this type of investigation, however these packages are often complex.

Another complication, is that for people who do not design and operate their own data gathering, but rather get it from an IT department are subject to other peoples priorities as system down times,computer network limitations and restrictions. It is also possible that the required information is in a certain form, but it is produced in another format from another section. To run this type of analysis for a faculty or school the lowest level of data needed is a student record for each subject they take. However, because of the enormity of university data, the reporting of management information is usually at a higher level, such as at a course, faculty or school level. It is also beyond the resources of most university management information units to be able to run specific models or simulations for each inquiry.

To solve these problems, it was decided to create a database from the university database and using an inquiry system. Cognos Power Play and Cognos Impromptu are used for support information. SPSS is used for the heavy duty statistical descriptions as well as clustering analysis and pattern recognition. Cognos Scenario is used for some statistical analysis and for data mining. Access and Excel are the real work horses in the operation. The Current data base is over 800,000 records in the main table, and is over 10 variables. Although not all variables are used in the present investigations, they are all relevant for future activities. The data is from the DEET - Student Load File which includes; Year of Record, Student Identification Number, Course Code, Academic Organisational Unit, Discipline Group Code, Work Experience in Industry Indicator, Semester of Study, EFTSU (Equivalent Full-Time Student Unit), Subject Unit and Unit of Study Completion Status.

The main table is supplemented with other support tables. For instance a Course Code table for with course code names. The Subject Name table, which holds subject numbers, subject name , weighting. A sample relationship database shown in figure 3.

Figure3, a sample relationship database.



Using 3 dimensional spread sheets.

The models use 3 dimensional spread sheets to explore the data. Excel, Quarto Pro and Lotus 123 are all electronic spread sheet programs. The latest versions of these spread sheets have the ability to work in a 3D (three dimensional) capacity. Traditional spread sheets use only a 2D (two dimensional) formulas such as sums or total's, etc. For instance Total could either be the sum of all cells across (rows) or down (columns). In 3D you have an extra dimension, so you now have across (rows), down (columns) and depth (work sheets). In the image below (figure 4) you can see an example of a 3d spread sheet. By designing your 1st work sheet, and then copying that design to the other work sheets, it is then possible to use formulas in all three dimensions. This is process is made easier, if all the cells line up.

If we look at out example below, we can use the 3 following formulas.

1. Totaling the numbers of students, enrolled in a Weighting (1) across all courses, that are being taught by the school BB, which is 109. [=SUM(B3:D3)]

2. Totaling the numbers of students, enrolled in course B001, across all weightings, are being taught by the school BB, which is 392. [=SUM(B3:B5)]

3. Totaling the number of students, enrolled in course B001, enrolled in a Weighting (1), across all schools, which is 1023. [=SUM(BA:BE!B2)]

Figure 4, sample worksheet.

Book1

	A	B	C	D	E	F
1						
2	Wt	B001	B002	B003	total	
3	1	23	43	43	109	
4	1.1	324	54	98	476	
5	1.2	45	23	67	135	
6	total	392	120	208		
7						

BB / BC / BD / BE / Total / Sheet

Some student funding models:

Head Count Models.

Head count models and weighted head count models use a student sitting on the seat in each class as being the base calculation unit. The student is counted separately for each subject that they are enrolled in. So an average semester enrolment of 6 units means that that student is counted 6 times over that semester. The total number of students is then divided into the total dollars allocated for that type of student. Once a student dollar value is assigned for that student class, then the money is redistributed by either administration organisation unit or by course code. This process can be used as a straight funding model, or it can be adjusted by weighting to add in a equity or resources model.

The following table describes 8 different models for either AOU or CC. In the following graphs, each model is compared on the same funding data so the various funding results can be compared. These models have been created on a basis of

$20,000,000 budget to the schools after the university and faculty have taken there share out.

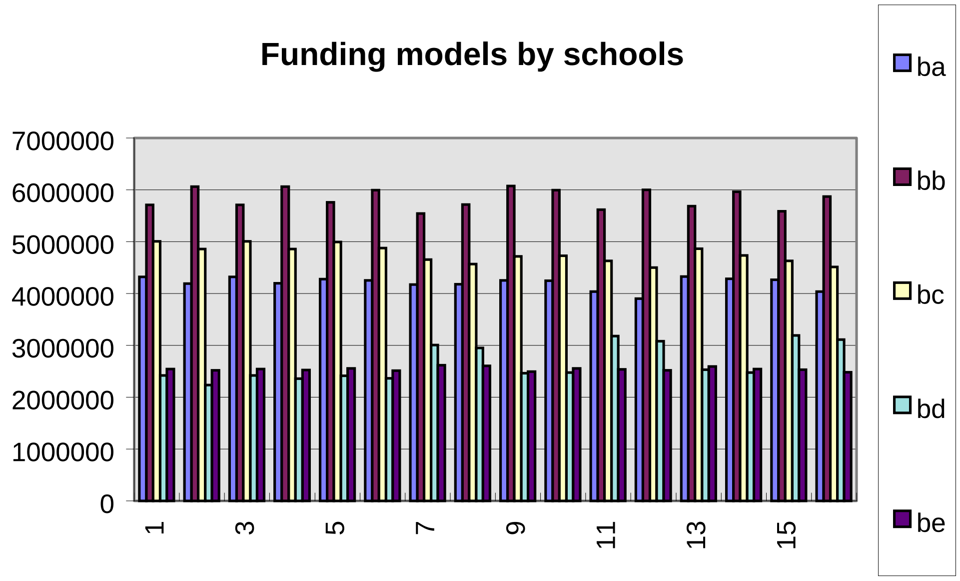
Figure 5, headcount funding models.

Mode1	AOU Data	Course Code Data
1 & 9	Total Allocation / Head Count AOU	Total Allocation / Head Count AOU
2 & 10	Total Allocation / Eftsu Value AOU	Total Allocation / Eftsu Value AOU
3 & 11	Total Allocation / Weighted Head Count AOU	Total Allocation / Weighted Head Count AOU
4 & 12	Total Allocation / Weftsu Value AOU	Total Allocation / Weftsu Value AOU
5 & 13	Total Allocation / Head Count AOU divided up by Level.	Total Allocation / Head Count AOU divided up by Level.
6 & 14	Total Allocation / Eftsu Value AOU divided up by Level.	Total Allocation / Eftsu Value AOU divided up by Level.
7 & 15	Total Allocation / Weighted Head Count AOU divided up by Level.	Total Allocation / Weighted Head Count AOU divided up by Level.
8 & 16	Total Allocation / Weftsu Value AOU divided up by Level.	Total Allocation / Weftsu Value AOU divided up by Level.

- Head Count AOU = the sum of Student Id clustered by AOU.
- Weighted Head Count AOU = Student Id * enrolled subject weighting clustered by AOU.
- Eftsu Value AOU = sum of student Eftsu clustered by AOU.
- Weftsu Value AOU = sum of student Eftsu * enrolled subject weight clustered by AOU.
- Level = postgrad or undergrad
- Total Allocation = money allocated by university.
- Student $ Value = Total Allocation divided by count of Student Id.
- Postgrad Student $ Value = money allocated by university from postgrad sources.
- Undergrad Student $ Value = money allocated by university from undergrad sources.
- AOU Allocation = Student $ Value clustered by AOU

As can be seen in the following graphs the distribution varies for schools under different models. The first graph is a comparison of the income allocated by each model grouped schools.

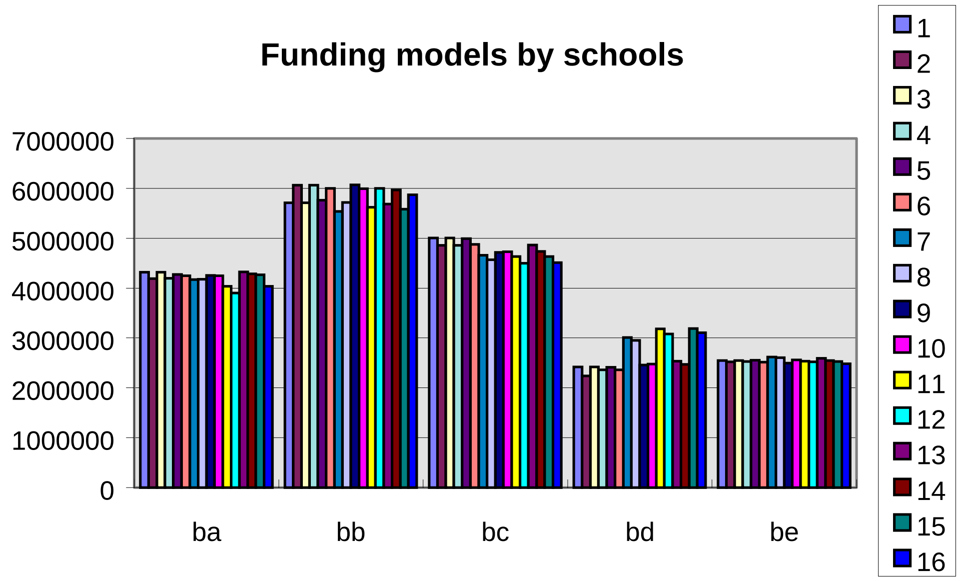
Figure 6, grouped by models.



Comparison graph of models by schools.

The next graph shows the same data as the preceding graph, but is displayed with a schools grouping. So each school is able to examine the various effects that each type of model has on their school.

Figure 7, grouped by schools.



Weighting's can be based on equity issues, or the amount of resources used to teach an subject. At UTS we use the Blake funding model. This uses the subject focus and amount of resources used to teach the unit, and is defined by the level of teaching as described in the following table.

An example of an weighting's distribution is shown in the following tables. These tables show the actual head count distribution as well as the redistribution based on weighting's criteria. The first table shows the distribution that uses the criteria of students enrolled in that subject and allocated by the school teaching that unit. The table after that shows the data from the same source but extracted by different criteria.

Figure 8, weighting's by school aou.

AOU	BA		BB		BC		BD		BE	
Wt	UG	PG	UG	PG	UG	PG	UG	PG	UG	PG
.2	100		277		245			12	33	
1	2128		4231	1	1398		1629	2	3	
1.1	3882		1515	2678	5597	1	396		2750	1
1.4	1	506	4	158	3	1376	13	611	3	1046
1.6	850		914		63		382		4	2
1.7			30				558		584	1
1.8		34								
1.9							1			
2.0		12		21		10		55		4
2.3		6	54	28		10	26	14		
3			27		3		509	2		

Figure 9, weighting's by course aou.

CC	BA		BB		BC		BD		BE	
	UG	PG	UG	PG	UG	PG	UG	PG	UG	PG
.2	100		227		245				33	
1	1969		4056		1329		1625	2	3	
1.1	3846		1476		5062		395		2618	
1.4		434		2449	2		13	608	2	993
1.6	843		912		3	1354	382		4	4
1.7			30				556		584	
1.8		31								
1.9							1			
2.0		12		21		10		55		4
2.3		6	54	28		20	26	14		
3			27		3		509			

The allocation of funds is performed through the same methods for each model, and only the student numbers change for each model. The difference between School AOU and Course AOU, is that the codes allows allocation to fund specific courses. These models have the ability to be used for 'what if' funding cases, which are based on raising or lowering funding allocations and student head counts. This allows the decision makers to be able to have contingency plans for funding variations

Activity Based Costing Models.

Activity Based Costing (ABC) models are a growing investigation tool in educational budgeting. The paper called Costing faculty activities and courses by McKenna, Harris and Smith, gives a good break down of the ABC model and how it can be applied to universities. I have tried not so much to explain the underlying reasons for the models, but rather demonstrate an application of a spread sheet model for looking at the different outcomes caused by the various the inputs. In Appendix 1, there is a example of a spread sheet ABC, with a few underlying assumptions. For this model it is assumed that the University takes 40% of all income generated from student enrolments and provides library services, teaching facilities, insurances coverage, etc; each tutorial has a class size limit of 30 students, and then a 2^{nd} tutorial is given, that the salary break down for an academic is 40% teaching, 40% research and 20% administration. The model doesn't allow any changes due to grade of teacher, other than salary differences.

To create this model, as obtained from a university financial reporting system, into percentages. In the following table is a break down of the proportion of expenditure in each area. The percentages in bold, are the percentage of actual expenditure of the total faculty expenditure on that line item, ie the bold rows equal 100%. The non bold percentages underneath in right justification, is the percentage breakdowns for that specific area. For the ABC model, wage details are inserted instead of percentage spent.

Figure 10. percentage costs spent by faculty & schools.

	BA	BB	BF	BL	BM	FAC
Academic Sallies ft	**22%**	**24%**	**25%**	**12%**	**9%**	**8%**
Sallies	89%	89%	87%	88%	89%	84%
Oncost / other	11%	11%	13%	12%	11%	16%
Academic Sallies pt	**21%**	**40%**	**12%**	**9%**	**14%**	**4%**
Sallies	89%	88%	81%	78%	89%	70%
Oncost / other	11%	12%	19%	22%	11%	30%
Support Sallies	**9%**	**8%**	**9%**	**7%**	**4%**	**63%**
sallies	72%	82%	76%	81%	58%	62%
Over time	3%	0%	0%	4%	0%	15%
Oncost	11%	11%	11%	11%	12%	10%
Other	14%	7%	13%	4%	30%	13%
Travel	**20%**	**14%**	**21%**	**9%**	**4%**	**32%**
Travel actual	48%	49%	55%	28%	43%	59%
Conferences	17%	21%	14%	11%	54%	9%
Substances / other	55%	30%	31%	61%	3%	32%
Plant & Equipment	**8%**	**6%**	**18%**	**8%**	**10%**	**50%**
Computer Hard	84%	79%	47%	72%	89%	14%
Computer Soft	12%	13%	49%	0%	9%	12%
Furniture	3%	3%	2%	8%	0%	10%
Other	1%	5%	2%	20%	2%	64%
Staff Recruitment	**0%**	**16%**	**46%**	**10%**	**5%**	**23%**
Advertising	0%	100%	65%	100%	100%	88%
Interview	0%	0%	0%	0%	0%	12%
Relocation	0%	0%	35%	0%	0%	0%
Supplies	**6%**	**10%**	**13%**	**8%**	**7%**	**56%**
Advertising	5%	0%	20%	6%	2%	4%
Book & Pub	3%	0%	7%	0%	10%	1%
Comp Maint	1%	0%	0%	0%	0%	1%
Fee's / Subs	1%	1%	5%	1%	0%	1%
Courier	1%	1%	1%	1%	2%	1%
Hospitality	1%	0%	0%	2%	0%	4%
Motor Vechile	10%	0%	6%	8%	10%	6%
Postage	2%	3%	2%	8%	4%	4%
Printing	28%	37%	19%	24%	23%	7%
Repairs	1%	0%	0%	1%	1%	2%
Stationary / Office	11%	7%	5%	5%	6%	2%
Telephone	15%	13%	11%	11%	20%	6%
Transfer of expenditure	4%	10%	8%	7%	1%	55%
Consultants	0%	9%	3%	9%	0%	1%
Tax	3%	0%	1%	2%	1%	1%
Other / surplus	14%	19%	12%	15%	20%	4%

If we were to demonstrate a single area of expenditure, the following table is an example of staffing. The table shows the FTE staff for each school and the faculty, defined by academic and general staff.

Figure 11, FTE staff loads.

		ACADEMIC					GENERAL				
		A	B	C	D	E	1-3	4-5	6-7	8-9	10+
BA	FT	0	15	4	3	2	0	1	2	0	0
BA	FT F	0	0	.6	0	0	.86	.86	0	0	0
BA	CAS	0	0	0	0	0	.32	.29	0	0	0
BB	FT	1	12	7	6	1	2	1	1	0	0
BB	FT F	0	.5	0	0	0	1	1.	.4	.5	0
BB	CAS	0	0	0	0	0	.43	.9	.37	.15	0
BC	FT	3	8	9	7	3	0	3	1	0	0
BC	FT F	0	0	0	0	0	0	0	.9	0	0
BC	CAS	0	0	0	0	0	.01	1.2	.37	.13	0
BD	FT	1	5	9	2	0	1	3	2	0	0
BD	FT F	0	3.1	0	0	0	.6	0	0	0	0
BD	CAS	0	0	0	0	0	3.4	.31	.29	.12	0
BE	FT	2	9	2	1	1	1	0	1	0	0
BE	FT F	.5	.5	0	0	0	0	.8	0	0	0
BE	CAS	0	0	0	0	0	1	.62	0	0	0
FAC	FT	0	0	1	1	1	1	15	9	3	2
FAC	FT F	0	0	0	0	0	0	1	1.3	0	0
FAC	CAS	14	48	0	0	0	4.1	1.7	.12	0	0

After reducing the income by all the various activities, I then generate a table, which gives an indication of break even points.

The data required for the model is, the wage of the academic, how many hours that person spends in face to face lecturing, how many hours that person is in face to face tutoring, when does a tutorial size require another tutor, the student income generated which is defined by HECS code and academic level, the breakdown of job time allocation between teaching and researching and administration, number of weeks in the teaching semester, oncost for wages, a break down of expenditure items and their overall percentage of total school budget, total number of employment hours per year, etc.

The model shown in appendix 1, can be used in three ways. The 1st is to use it as a graphing model to look at the number of students required to break even. In the following graphs you will notice various examples of just how, by varying tute sizes, academic level, etc, it is possible to plan for future growth and current resource allocations. It also shows the viability of how many large units you need cross subsidise the smaller specialised units often needed for their community and academic value, but which do not receive the enrolments to make them financial viable within their own right.

The 2nd way to use the model is to use it like a ‘what if’ model and by entering the student numbers, you can see the break even points.

The 3rd way to use the model is to use it with total staff budget and total units taught, to examine the income needed from student enrolments to cover a staffing requirements and resources allocation. Hence the model is able to be used to examine an single subject or used to examine the requirements for an school or faculty. The following 3 graphs are examples of some of the results that can be generated from an activity based costing model.

Figure 12a, shows the break even points for an assoc lecture for tutorial numbers.

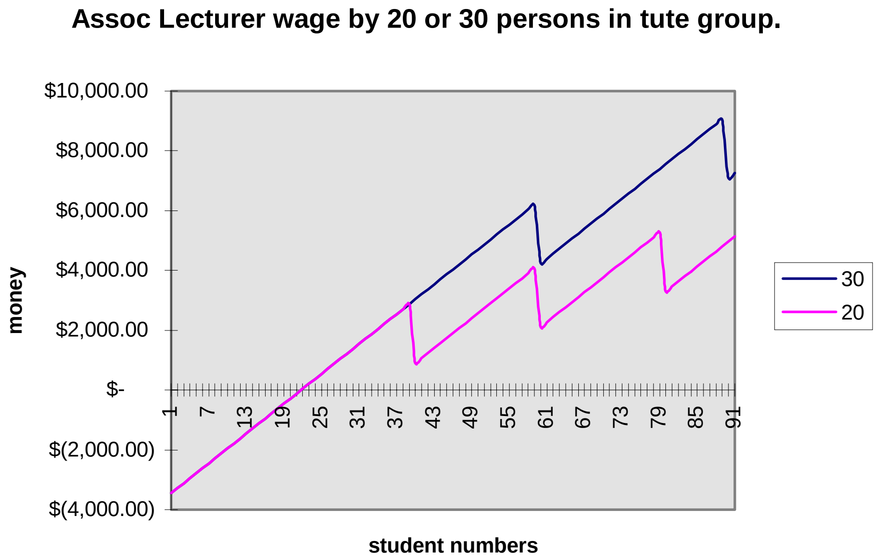


Figure 12b, shows the break even points for level of academic, ie an professor needs 70 students to break even under while an assoc lecture needs 26 students, using common assumptions for each academic level.

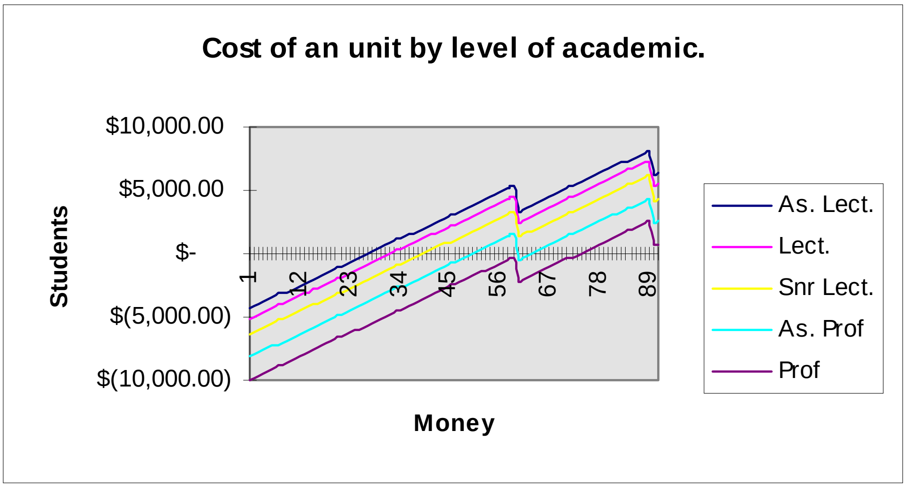
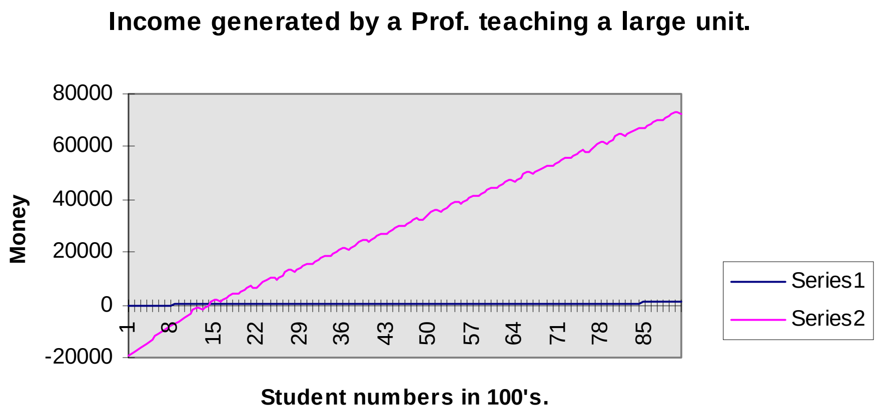


Figure 12c, this figure shows that for the current set of assumptions that a professor teaching a large unit, would need 135 students to break even.



Combination Model.

A further extension of the model, would be to cover costs with an ABC model, and then distribute the remainder of the model through a weighted head count model. This would then ensure that the faculty and schools costs were covered, and the remaining monies be distributed by an head count model.

Student Migration:

Student migration is the study of a student's movements across years and between courses, subjects and faculties. With universities becoming more like commercial enterprises, and the growing diversity of the educational market, it is important to better understand the study patterns of the students. In any budgeting model that is based on student choice, cost benefit analysis or activity based costing, with the distribution of resources based on actual numbers in the classrooms and the facilities designated for that teaching, it is important to gain an understanding of the students profile.

An example of some student migrations investigated have been directed towards gains and leakages of students from one teaching body to another. A movement of 1000 student places with a non weighted model may mean redistribution of staff and resources. Another use is the diagnosis of technical support requirements. eg the amount of computer labs required per subject, and the growth rate over the last 5 years.

Student migration is an important part of management information for any university. Student migration is defined as the statistical and behaviour pattern investigation of students through analysis of there migration through their desired course of study. In our present educational environment, we allow students a greater flexibility in choosing their path and progression of study.

Below are two different samples of analysis. The top graph is an sample analysis of gender by campus. This gives data for planning of transport, resources, canteen services, etc. The 2nd graph is an sample analysis of the most frequent study progression patterns. Each student has graduated has the number of subjects they studied each semester counted, and coded into an alphabetical classification system. These are then clustered, counted and graphed. This gives information about the academic progression rate, and the time tabling of electives.

Figure 13a.

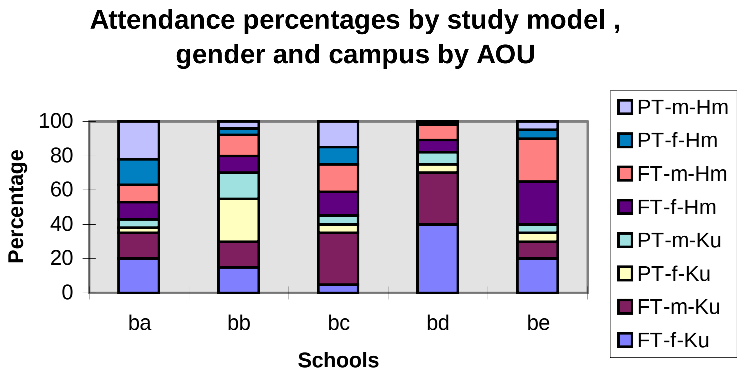
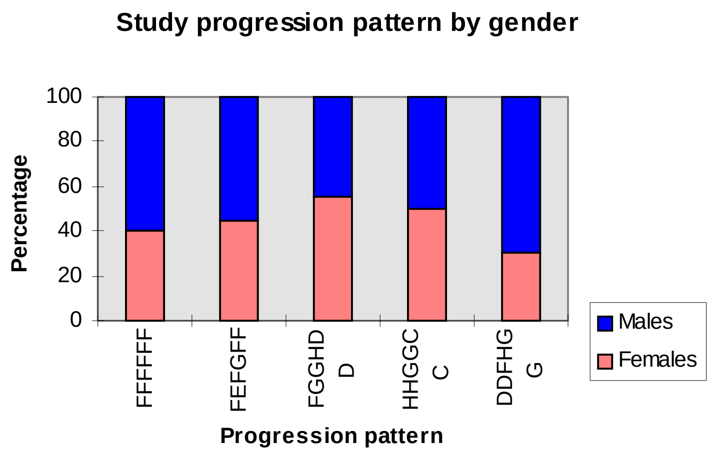


Figure 13b.



Computing Hardware.

We are using a pent. 300 computer with 2 x 2 gb hard disk drives, and 64 mb of internal memory. This is a stand alone dedicated system for data analysis. An dedicated laser printer.

Sources Consulted.

AAIR 1990 AAIR Proceedings,

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Appendix 12. Activity Based Costing Spread Sheet.

		hrs					weeks			hecs	$ 274.00		
Wages	$ 85,752.00	1820	$ 47.12		lecture hrs	2	16	32		40%	$ 109.60		
Academic	$ 34,300.80	728	$ 47.12		tute hrs	2	16	32		tot	$ 164.40		
F to F	$ 18,092.73	384								20%	$ 32.88		
Other	$ 16,208.07	344									$ 131.52		
Res	$ 34,300.80	728	$ 47.12										
Admin	$ 7,485.00	364	$ 20.56										
	Teaching	Research	Admin	Sub Tot Staff	$ to Schools	Mns Support	Mns Travel	Mns Plant	Mns Req	Mns Supp	Sub Tot Exp	Sub Tot Rem	Total
wages	$ 3,015.45	$ 756.00	$ 394.75	$ 4,166.20		8%	14%	6%	16%	10%			
oncosts	$ 331.70	$ 83.16	$ 43.42	$ 458.28									
total	$ 3,347.15	$ 839.16	$ 438.17	$ 4,624.49	$ 131.52	$ 10.52	$ 18.41	$ 7.89	$ 21.04	$ 13.15	$ 71.02	$ 60.50	$ (4,563.99)
1	$ 3,347.15	$ 839.16	$ 438.17	$ 4,624.49	$ 131.52	$ 10.52	$ 18.41	$ 7.89	$ 21.04	$ 12.15	$ 70.02	$ 61.50	$ (4,562.99)
2	$ 1,673.58	$ 419.58	$ 219.09	$ 2,312.24	$ 263.04	$ 21.04	$ 36.83	$ 15.78	$ 42.09	$ 26.30	$ 142.04	$ 121.00	$ (2,191.25)
3	$ 1,115.72	$ 279.72	$ 146.06	$ 1,541.50	$ 394.56	$ 31.56	$ 55.24	$ 23.67	$ 63.13	$ 39.46	$ 213.06	$ 181.50	$ (1,360.00)
4	$ 836.79	$ 209.79	$ 109.54	$ 1,156.12	$ 526.08	$ 42.09	$ 73.65	$ 31.56	$ 84.17	$ 52.61	$ 284.08	$ 242.00	$ (914.13)
5	$ 669.43	$ 167.83	$ 87.63	$ 924.90	$ 657.60	$ 52.61	$ 92.06	$ 39.46	$ 105.22	$ 65.76	$ 355.10	$ 302.50	$ (622.40)
6	$ 557.86	$ 139.86	$ 73.03	$ 770.75	$ 789.12	$ 63.13	$ 110.48	$ 47.35	$ 126.26	$ 78.91	$ 426.12	$ 363.00	$ (407.75)
7	$ 478.16	$ 119.88	$ 62.60	$ 660.64	$ 920.64	$ 73.65	$ 128.89	$ 55.24	$ 147.30	$ 92.06	$ 497.15	$ 423.49	$ (237.15)
8	$ 418.39	$ 104.90	$ 54.77	$ 578.06	$ 1,052.16	$ 84.17	$ 147.30	$ 63.13	$ 168.35	$ 105.22	$ 568.17	$ 483.99	$ (94.07)
9	$ 371.91	$ 93.24	$ 48.69	$ 513.83	$ 1,183.68	$ 94.69	$ 165.72	$ 71.02	$ 189.39	$ 118.37	$ 639.19	$ 544.49	$ 30.66
10	$ 334.72	$ 83.92	$ 43.82	$ 462.45	$ 1,315.20	$ 105.22	$ 184.13	$ 78.91	$ 210.43	$ 131.52	$ 710.21	$ 604.99	$ 142.54
15	$ 223.14	$ 55.94	$ 29.21	$ 308.30	$ 1,972.80	$ 157.82	$ 276.19	$ 118.37	$ 315.65	$ 197.28	$ 1,065.31	$ 907.49	$ 599.19
20	$ 167.36	$ 41.96	$ 21.91	$ 231.22	$ 2,630.40	$ 210.43	$ 368.26	$ 157.82	$ 420.86	$ 263.04	$ 1,420.42	$ 1,209.98	$ 978.76
25	$ 133.89	$ 33.57	$ 17.53	$ 184.98	$ 3,288.00	$ 263.04	$ 460.32	$ 197.28	$ 526.08	$ 328.80	$ 1,775.52	$ 1,512.48	$ 1,327.50
30	$ 111.57	$ 27.97	$ 14.61	$ 154.15	$ 3,945.60	$ 315.65	$ 552.38	$ 236.74	$ 631.30	$ 394.56	$ 2,130.62	$ 1,814.98	$ 1,660.83