7

Undergraduate Learning

Read this chapter if you would like the following issues addressed:

- What is expected from undergraduates in terms of learning?
- What approaches need to be taken in terms of study, particularly in terms of changes from secondary school patterns?
- How can you plan and manage your study time at university?

Albert Einstein once said,

"I never teach my pupils, I only attempt to provide the conditions in which they can learn".

To a large extent, this is the fundamental role of universities in the learning process – that is, to provide the conditions in which students can learn. It is not a university's role to teach students, and neither is it of benefit to students of university age to be taught. In a university, the assumption is made that students have reached a level of maturity where they can learn for themselves, albeit with a framework and guidance laid out by academic staff, and within a conducive learning environment. The role of the academics, therefore, is to provide that framework and guidance, and then to allow the students to learn for themselves.

One of the great ironies of being a university student, particularly at undergraduate level, is that one discovers that the good lecturers and educators in a university are generally outnumbered by the mediocre ones – good educators are a rarity at any level of education, but particularly so in universities. This tends to stem from a number of intrinsic characteristics of universities:

- Firstly, universities are places of learning, and staff are generally recruited primarily on their ability "to learn" – that is, to undertake research.
- Secondly, academic staff tend to have their professional performance criteria (and promotions) focused upon research, and tend to relegate undergraduate learning to

a background activity, instead of the foreground activity which it should be.

- Thirdly, and rather extraordinarily, in terms of allocating lecturers to subjects, universities often don't look for the best or most appropriate person for the task – rather, they tend to fill lecturing slots with available staff – sometimes, staff who know little or nothing about the field in which they find themselves lecturing.
- Finally, even if it were not the case that (for various reasons) universities misguidedly allocate undergraduate activities a secondary priority, there is still the fundamental issue that undergraduate students, like the academic staff, are there to learn for themselves.

To a large extent, one could argue that a good university has made the bulk of its contribution to undergraduate learning when it has developed a sound framework in which students can learn – that is, when the university has:

- Provided a description of the key subject areas and issues that need to be covered; why they need to be learnt; when they need to be learnt; how they are important to the outcomes of the overall study program, and so on.
- Explained to students the possible ways by which they can best learn the subject matter, and has provided background notes; recommended text books; on-line materials, etc.

- Established a set of supporting mechanisms, materials and tools, including tutorials and learning assignments.
- Provided supporting infrastructure (including laboratories, technical staff, equipment, etc.), and laboratory projects and assignments that aid in the learning process.
- Explained to students how they will be assessed in terms of what they have learnt and why the assessment is meaningful in the context of learning.

Over and above these basic provisions, one generally assumes, particularly if one is an undergraduate, that a university will provide lecturers who can bring all the above elements together, and provide leadership, motivation and inspiration. This element is of course fundamental to providing an outstanding tertiary education but, as previously noted, it is an all-too-rare phenomenon in universities. With this in mind, it is imperative for students to recognise that there are intrinsic shortcomings in the university learning process, and that even though students shouldn't blindly accept them, in practice they may still need to endure them and work around them as part of their maturation process.

The efforts that universities have made in recent years, in regard to improving learning in the tertiary education system, could be described as well-intentioned tinkering around the edges of tertiary education. In response to the age old adage that *"…those who can, do; those who can't teach, and those who can't do or teach conduct research into how others should do and teach…"* there has been an explosion of "experts" engaged to develop innumerable models on

learning and education at universities (pedagogy). Despite making university governors feel as though they are contributing to undergraduate learning, these endeavours (which are growing exponentially around the world) are essentially window dressing, adding little more than background noise and bureaucracy to the undergraduate learning process, rather than real advancements or paradigm shifts.

In the final analysis, the greatest (and arguably only) "pedagogical" contribution that a university can make to undergraduate learning is to recruit academic staff with a genuine passion for the learning process and a genuine commitment to undergraduate learning, as a first priority. Most of the other factors, into which educational (pedagogical) researchers devote considerable energies, tend to fall into place automatically if there is genuine passion and commitment. In the words of Clay P. Bedford (who was both an educator and corporate executive):

"You can teach a student a lesson for a day; but if you can teach him to learn by creating curiosity, he will continue the learning process as long as he lives"

The creation of curiosity in students, by academics, can only take place when there is genuine passion and commitment on the part of those academics – it is not something that can be enshrined in bureaucratic procedures or learning models fabricated by educational researchers. It needs to come from within the academics themselves. This is what separates the good educators from the mediocre ones, and it is something that has long been the subject of research on the part of educationalists.

Notwithstanding the fundamental role for lecturers to create curiosity and a desire for learning amongst their charges, students need to be prepared to provide academic staff with some latitude in terms of their performance – perhaps some staff will have difficulty with English; perhaps they are not intrinsically good communicators – there are many inadequacies which need to be tolerated by students. However, the one inadequacy that should neither be accepted nor tolerated by students is academic staff who treat undergraduate education as being of secondary importance to their other research duties.

Students need to come down hard on academics who shirk their undergraduate responsibilities because if they don't, then they can rest assured that universities will continue to allow poor educational practices to continue. Students therefore have a vital role to play in not only learning but improving the learning process for those who follow. It needs to be kept in mind that those students who feel that their undergraduate education is treated as being of secondary importance by the academic staff probably feel that way because their predecessor students didn't act to fix the problem earlier.

The only practical pathway to improved learning in universities can come from students using their voice to ensure that the various university governors (chancellery and council) hear loud and clear when students feel that academics do not have the commitment or passion required to conduct various subjects. Sometimes this can be achieved through completion of subject survey forms, but perhaps more effectively achieved by students coming together as a group, and placing their concerns on the record,

in writing, through formal correspondence with heads of departments, deans and chancellery. The more correspondence that these people get telling them that the process is unsatisfactory, the more likely they are to initiate progress.

From an undergraduate student perspective, therefore, the university learning process ultimately imposes upon them the additional burden of leaving behind a legacy for those who follow. This burden is imposed upon students because of the fact that universities are operationally different to secondary schools in the sense that there is no independent, external group specifically instigated to look out for students' educational interests and welfare. In a university, it is the students who ultimately have the responsibility of calling a university to account when academics fail to deliver commitment and passion in their roles.

In recognising the intrinsic shortcomings of learning in the university system, there is also the need for students to recognise that any changes will be slow in coming and that there will be practical learning realities to deal with long before any changes become apparent. Therefore, the first thing that students need to do when they arrive at university is to steel themselves to learn despite the lecturers and not necessarily because of them – every now and then, a lecturer will capture the imaginations of students, and inspire and motivate – but, and this is a big but, if students see this as pivotal to learning in an undergraduate program then they may be disappointed with what lies ahead. The practical reality of university undergraduate learning is that many academics will treat it as a process without passion. This has profound implications for undergraduate students and the way that they learn in the university

environment. Importantly, it means that in many instances students will need to develop curiosity, passion and enthusiasm by themselves – not an easy task, but an important one if students are to mature and develop through their degree. And, those students who can self-motivate; who can develop curiosity, passion and enthusiasm, without relying upon others, certainly have the qualities necessary for success and leadership in later professional life.

In the remainder of this chapter we deal with the practicalities, emotions and politics of the university learning process in the context of undergraduate study. Specifically we examine the following issues:

- Time allocation / planning for learning.
- Expectations and reality.
- Learning *vs* Marks.
- Group/team based learning.
- Laboratory learning.
- Coping with inconsistency.
- Bad educational practices in lecturers and how to manage them.

We begin this examination by recognising the fundamental challenge of the learning process, well encapsulated in the words of Thomas Szasz (scholar and controversial psychiatrist):

"Every act of conscious learning requires the willingness to suffer an injury to one's self-esteem. That is why young children, before they are aware of their own self-importance, learn so easily"

This is a very important point in regard to university learning at an undergraduate level, because it comes at a time when students are making the transition from adolescence to adulthood; and when they are in the process of developing their self-esteem and self-importance. Winston Churchill, perhaps more succinctly, summarised the problem by stating,

"I am always ready to learn although I do not always like being taught".

In other words, learning can be an uncomfortable process because it requires that mistakes be made, and lessons learnt from them – we are therefore taught by our own embarrassment – sometimes by a perceived lowering of esteem in the minds of others, and sometimes by damage to our own egos – sometimes spurred on to create internal changes within ourselves in order to avoid further embarrassment. In the words of Oliver Wendell Holmes,

"Man's mind, once stretched by a new idea, never regains its original dimensions".

The only simplistic pathway around the painful art of learning is one which is unfortunately practised by many university students – perhaps even the majority – that is, rote learning without developing maturity or true understanding. To quote Kurt Vonnegut,

"Beware of the man who works hard to learn something, learns it, and finds himself no wiser than before".

Many students seek learning without seeking wisdom, and this is an intrinsic shortcoming in attitude – ironically, one which

could be readily corrected in the presence of academic staff with a profound commitment to the learning process.

Anatole France (1844-1924), who was awarded the Nobel Prize for literature in 1921, went further and made the important connection between learning and self-awareness, when he observed:

"An education isn't how much you have committed to memory, or even how much you know. It's being able to differentiate between what you know and what you don't".

France's observations are a contextualised version of Shakespeare's, *"this above all: to thine own self be true"*, and highlight the nexus between learning, wisdom and self-awareness. These are all interrelated entities. There are many people who go through the university system, often to Doctoral level, and yet fail to ever meet the true mark of an educated person, because they gain neither wisdom nor self-awareness during the course of the process – because they are unable to differentiate between what they know and what they don't know.

One could brush aside all the (above) phrases as cheap slogans but for the fact that, as one matures, one realises that they are not only profoundly accurate but profoundly important for those who undertake undergraduate degrees in universities. They underpin everything that students should be seeking to achieve in terms of learning within the university environment – specifically that genuine learning is:

- A journey to wisdom through self-awareness and towards an understanding of one's own capabilities, strengths and limitations.

- Difficult, painful and often damaging to one's self-esteem.
- Not a simple quest for scholastic grades.
- Not about rote learning or memorisation.

Until a student develops into this mature mindset, undergraduate study will be little more than an expedient, process-driven pathway to a piece of paper that can be used to acquire a professional position. As a practical methodology, such an approach, based upon *"what can I get away with?"*, rather than *"what am I actually learning?"* may yield short term success. In some cases such an expedient process may even yield better scholastic results than genuine learning. In the long term, however, those who attempt it generally come to realise, perhaps too late in life, the flaws in their approach, and the years of golden opportunity for genuine learning and self-awareness that have been lost.

In the university system, one often comes across people who return to undergraduate study long after they have retired – not because of a desire to get a degree that will lead to short term employment – but to acquire wisdom through genuine learning. Sometimes this occurs decades after they have passed through the same system by taking the expedient shortcuts.

As previously noted, one of the impediments to genuine learning on the part of the students comes from the academics themselves. When undergraduate learning is relegated to secondary importance, it is not possible for academics to inspire others because they themselves lack inspiration. In such cases, academics tend to find their own easy way out of the process. To this end, they create

subjects and teach in them in much the same way as a teacher would in a secondary school. This is indeed an easy way out because neither the academics nor the students have to extend themselves; to endure damage to their own egos or to ask themselves the important question "what are we actually learning from being here?".

It is all too easy for students to fall into the comfort of "taught" subjects, where all they have to do is memorise and perhaps rearrange a few equations in an exam – these sorts of learning approaches yield high marks with minimal work; minimal damage to the ego, and abrogate the need for self-reflection. The challenge for students, when they encounter such subjects and lectures, is to find ways to go above and beyond the simple prescriptive subject matter to get to deeper level understanding – and this is not an easy task. Just for starters, such an approach requires a significant time allocation – and one which may students simply don't have available. To this end, we commence our examination of the practicalities of the learning process by looking at this basic issue.

(i) Time Allocation / Planning for Learning

Planning for time allocation and learning in undergraduate study is something that few students actually do. This is unfortunate because the planning is really a trivial exercise but one which will reveal some startling insights into challenges and time restrictions that need to be addressed right from the first day of university study.

In the modern world, many university students are also employees, holding down part-time jobs while they study.

Although this is not a new phenomenon of itself, the proportion of students working while studying has increased over recent decades. Work, regardless of its nature, provides opportunities for students to broaden their horizons; improve their people and negotiation skills; develop responsibility, and so on. However, the harsh reality is that most modern undergraduate courses are designed to be full-time courses in the true sense – that is, they are designed without considering an allocation for other significant duties such as outside work. Accommodating learning and work is therefore a difficult task and it is an issue that needs to be tackled early on.

Most students would be aware that the learning process in the latter years of secondary study is more complex than it is in the earlier years. Fundamentally, this is because attending classes is one thing – actually learning is another. In a university undergraduate program this distinction is even more pronounced. In fact, lectures are effectively an adjunct to a learning process which needs to be driven by the student. Simply attending lectures; writing notes and then cramming, through rote learning, a few days before exams, is not a good way of learning, even though it is undoubtedly a technique practised by many students – if not the majority.

In a university, the notions of private or group study are perhaps the most important aspects of the learning process, and both of these are time consuming activities that need to be considered. They are also activities which require self-discipline on the part of students and hence are the ones most difficult to cultivate.

In a university, all undergraduate students will be made aware of their tangible (formal) time commitments in the context of lectures, tutorials, laboratories, and so on. These are the most straightforward to time manage because they have fixed start and end points. It is the private and group study elements that require planning, and although this does not need to be done exhaustively, it is something which should be considered in terms of a typical undergraduate week which, realistically, only has approximately 112 waking hours available for study, travel and recreation.

Table 7.1 shows the typical activities that need to be considered in an undergraduate workload (and, indeed, an overall undergraduate life).

In Table 7.1, Subject 1 contains only seven formal hours per week. However, for this subject, the hidden workload is approximately 16 hours per week. In total, therefore, 23 working hours per week are required just for a single subject. Many students in the Australian university system undertake four subjects per semester, and so can have a potential maximum workload of 92 hours per week during peak periods. Of course, most subjects don't run laboratory sessions or tutorials every week so, realistically, a four subject load probably averages out at around 60 – 80 hours per week. Also, one needs to consider that the first lecture in a subject is generally introductory in nature and doesn't require significant revision.

Item	*Sub-Activities*	*Hours/Week*	
		Formal	*Hidden*
Subject 1	Lectures	3	
	Preparation for Lectures		3
	Review of Lectures		6
	Tutorials	1	
	Preparation for Tutorials		1
	Tutorial Assignments/Projects		2
	Laboratory	3	
	Preparation for Laboratory		1
	Report Writing for Laboratory		3
:	:		
Subject N	Lectures		
	Preparation for Lectures		
	Review of Lectures		
	Tutorials		
	Preparation for Tutorials		
	Tutorial Assignments/Projects		
	Laboratory		
	Preparation for Laboratory		
	Report Writing for Laboratory		
Travel	To/From University		
	To/From Work		
Work			
Recreation	Sport		
	Social		
Total			

Table 7.1 – Typical Undergraduate Work/Lifestyle Load

The problem here should be self-evident – if one adds travel, work and recreation to a typical four subject workload

it will exceed the typical waking hours in a given week. Students can tackle this problem by cutting back on recreation or sleep but, more commonly, they cut back on the hidden workload which, ironically, is where all the real learning is supposed to take place. The end result is that undergraduates discover (belatedly) that they have no choice but to merely attend lectures and tutorials, then cram for exams by rote learning a few days (or hours) before the examinations. The "hidden" workload, as its name suggests, remains invisible until examinations become a looming figure in the mindset. Ironically, this should be the single most important aspect of planning for undergraduate workload.

The other (hidden) aspect of planning an undergraduate workload/life that needs to be considered is the issue of recreation. It is pointless for students to delude themselves that they will study for long hours, without considering that they will need recreation. Recreation, as the name suggests, provides an opportunity for renewal – where students can divorce themselves from their studies for a period each week so that they can tackle issues with a clear perspective – this has learning benefits and it also, self-evidently, is an important part of life for those at university. Recreation therefore needs to be included in planning for study because it is an aid to study.

Another hidden element of workload is travel. Students can spend more than two hours per day travelling to and from university; looking for parking spaces, and so on. This can

take up ten percent of the available waking hours in a given week and needs to be considered.

In tackling the overall problem, the simplest way to plan the university study workload is to download the details of all the subjects that will be taken in a given semester (or year) and develop a table (such as that in 7.1). Typically, this should contain formal and hidden commitments for each subject, plus recreation, travel, etc.

On the first draft, it may become apparent that the total number of hours that will be required to undertake full-time study; maintain a part-time job; travel and have recreational time will well exceed the number of waking hours in a week. The question then is what needs to be cut back?

To commence with, it is infeasible and unsustainable to expect to cut back on sleeping hours as part of a sensible workload plan – this may work for a few days but, in the long term, will be self-defeating because it is difficult for people to learn when they are tired. This means that, one way or another, the 112 waking hour week is probably the most sustainable model that can be accommodated, and hence thoughts need to turn to what else is expendable to make the model work in a meaningful way.

By way of background, students need to understand that attending lectures without having completed preliminary reading on the topics to be covered is all but worthless. Ironically, many students are afraid to miss lectures, and feel guilty for having done so, but will think nothing of attending

lectures without preparation. The reality of lectures is that they simply move too fast for unprepared students to absorb all the information at the time that it is presented – particularly when new ideas or theories are put forward. Lecturing is not about teaching – it is about presenting frameworks and boundaries in which students can learn. After a few minutes, therefore, unprepared students attending lectures generally find themselves falling further and further behind until, by the end of the lecture, they have lost track of the entire session – they leave confused, frustrated and tired – ironically to move on to the next lecture where the process repeats.

The moral here is that preparation for lectures is not expendable – if anything, when there is a choice to be made, students may achieve a better learning outcome by spending the lecture period learning for themselves, rather than attending a lecture for which they have not prepared. The only drawback with this approach is that students may end up neither attending the lecture nor undertaking private study, leading to their academic demise.

The second point about lectures is that they are not an end in themselves. Students should not leave a lecture having felt that it is the completion of the learning process – it is only the beginning. A lecture without follow up reinforcement study is as worthless as a lecture attended without preparation. So, follow up study is not expendable in the workload planning either.

The same sorts of issues apply to tutorials and laboratories. Attending either without preliminary work

negates the benefits. In the case of laboratory sessions, these are generally a compulsory part of various university subjects, so neither the preparation or the attendance are expendable in the workload. In the case of tutorials, attending without preparation, in anticipation of magic learning dust descending from the heavens, is equally fanciful – so, it may be that the formal tutorials are more expendable than the time required for preparation.

Where does all this leave the workload model? Well, in essence, the result is that the following items are potentially expendable:

- Outside work.
- Formal lectures.
- Formal tutorials.

The remainder (preparation; private study; recreation, etc.) are either non-expendable or unavoidable (such as travel). In general, students should be less concerned about attending lectures (particularly if they are non-compulsory) than they should be about the importance of private and group learning.

One of the benefits of group learning is that there is scope to accommodate the limitations in time that arise when one goes through the planning process. It may be that one student can miss a lecture provided another colleague attends to see if any important information is presented that needs to be considered in the context of a subject.

At the conclusion of this simple weekly workload planning process, there are several possible outcomes:

- There is sufficient time in a given week to undertake the prescribed subjects.
- There is insufficient time to complete the program of study, given the spread of time commitments, and the inability to balance the workload.

It is naive for students to believe that they can get by with an unsustainable weekly workload, and then cram all their learning into the last few days before exams. The reality is that students who attempt to do so fall further and further behind; become more frustrated and stressed – with the subsequent result that their study performance is affected – leading to more frustration; further lagging, and a downward spiral. And, at the end of all this, even if they succeed in terms of scholastic results, there is still the issue of "what have I actually learnt?" to be considered. So, if the outcome of the weekly workload planning process simply doesn't add up, students should consider:

- Reducing or eliminating outside commitments, such as work.
- Reducing the number of subjects studies in a given semester.

The latter option is one that students, by nature, tend to be loathe to do, because it inevitably extends the time taken to complete a degree. However, if the first option is not possible, then the latter should be considered because it provides better

learning outcomes (and time outcomes) than failing subjects and repeating an entire year.

On the assumption that the weekly workload is sustainable, students should then consider a semester-based workload schedule. Again, this is a straightforward exercise which simply requires that students backward schedule their activities from the time of their exams. Table 7.2 shows a typical series of events for a semester based upon 12 weeks of lectures. The point to note about Table 7.2 is that it provides for several revision periods, backward scheduled from the time of the exams. These revisions should be over and above those carried out each week in respect to the materials covered in lectures. On top of this, one has to consider that in the final weeks of semester there will also be projects that need to be submitted while attempting to simultaneously revise work covered in lectures.

A typical 12 week semester therefore provides little margin for lapses in study, and each week needs to have study and revision outcomes. It is important, however, to keep the planning of weekly and semester based workloads and milestones in context. The planning data in Tables 7.1 and 7.2 should be used as a guide for study – not to create a minute by minute prescription of undergraduate life, with no latitude for variation. The objective of such planning is so that students can commence their university studies in full cognisance of the demands that will be placed upon them, and in light of the fixed end points (examination dates) from which study planning needs to be backward scheduled.

Semester Week	***Item***	***Milestone/Outcome***
1		
2		
3		
4		
5		
6		
7		
8		
9		
10		
11		1st Cut Revision for Subject 1 Completed 1st Cut Revision for Subject 2 Completed Final Project for Subject 1 submitted
12		1st Cut Revision for Subject 3 Completed 1st Cut Revision for Subject 4 Completed Final Project for Subject 3 Submitted
13	Revision Week	2nd Cut Revision for Subject 1 Completed 2nd Cut Revision for Subject 2 Completed 2nd Cut Revision for Subject 3 Completed 2nd Cut Revision for Subject 4 Completed
14	Exam for Subject 1 Exam for Subject 2	Final Revision for Subject 1 Final Revision for Subject 2
15	Exam for Subject 3 Exam for Subject 4	Final Revision for Subject 3 Final Revision for Subject 4

Table 7.2 – Semester Based Study Milestones/Schedule

(ii) Expectations and Reality

An important part of the learning and maturation process for university students comes in the form of reconciling expectations with reality. One important concern that many students have is whether or not they will pass a given subject (or achieve high grades) if they put in a substantial effort – at the back of every student's mind is the question of whether or not all the work that goes into a subject is worth the effort. The answer to this question is that in the majority of cases, students who put in effort for a subject feel that they receive a just reward for that effort. Whatever shortcomings the university system may have, underlying the core educational structure is a basic method of assessment that tends to reward effort. It is therefore unusual for a student to put substantial effort into a subject and not be rewarded by a fair mark.

At the heart of the effort versus reward issue, one needs to understand that academics do not intentionally design subjects such that they are intractable – most academics have a good understanding of what is or is not possible from a cohort of students studying a subject after having completed prerequisites. So, there is an underlying principle that the very fact that a student is present in a particular subject means that there should be a good probability of them achieving a positive result – provided that they put sufficient work into the subject.

The question many students ask is "what constitutes sufficient work?". This question is usually encapsulated in the

request to know how many "hours" constitute sufficient work. The answer to this question obviously varies from subject to subject and university to university but there are in fact numerical guides as to how much work is required for a particular subject. Each university has a system of measuring the contribution of a particular subject towards an overall outcome – say a Bachelor's degree. This system, which is used internationally in various forms, is known as a credit point system. Each subject within a course is allocated a certain number of credit points and the total course requires that students receive a minimum number of credit points to graduate. Normally the credit points correlate to the work required to complete a particular subject. For example, in some Australian universities, students complete four subjects per semester, each with a value of 12.5 credit points – this means that if they pass all their subjects they earn a total of 100 credit points a year – 400 credit points may lead to a Bachelor's qualification.

As a rule of thumb, the credit point system correlates directly to the minimum working hour input required for a subject each week. So, for example, a 12.5 credit point subject would typically require a minimum of 12.5 hours per week (including lectures, tutorials, laboratory and private study) to achieve a bare pass mark. Higher grades would require an investment of greater effort. A 25 credit point subject would require 25 hours per week of study, and so on.

The reality of university life, however, tends to be a little more complex in the sense that academics are humans, and

humans each have their own perceptions of requirements, even when those requirements are laid down in syllabi. In a university, the sheer size of the organisation means that sometimes there is a lack of communication between academics and subject convenors. The end result of this can be a collection of real subject workloads which, when added together, are too heavy for students to manage. If each academic treats his/her subject as being the one of greatest importance, which often happens, then it stands to reason that the consequences for students will be an excessive workload which is poor for learning outcomes and can lead to unnecessary stress.

There are two things that can come out of the realities of the university learning process. The first is that students can put in the prescribed amount of work and not meet a lecturer's requirements – because the lecturer's requirements are well in excess of what was intended when the subject was designed. The second is that the scale of work can be so overwhelming that students simply give up. Neither of these are acceptable outcomes and so it is important that students learn to work together as a group, so that if the workload for a particular subject becomes disproportionately high, in the view of the entire group, then students can collectively and formally raise their concerns with the head of department or faculty dean. This sort of collective action needs to be taken as quickly as possible so that corrections can be made before it is too late. Complaining about subjects after examination results are released may be cathartic but it is generally not helpful to the

students who have been done an injustice by an unfair workload.

It is also the case that not all students learn at the same rate. This is not necessarily just because of differing intelligence levels but also because of the different ways that people have of learning. Each individual has their own unique method for learning and their own learning rate. Humans also mature at different rates, and although most students enter their first year of university study at similar ages, not all students have the same level of maturity – not all students have the same levels of organisational and planning skills, and not all students have the same learning habits. For this reason, students working in groups have a good way of assessing their own performance relative to others during the course of a semester – they can track their relative progress and make corrections, where possible, before it is too late.

The first year of university study provides one of the most difficult sets of challenges because it effectively pits students with different levels of maturity up against each other. It is in first year that one sees the greatest variations in student maturity. Some students feel that they cannot keep up with pack leaders and become despondent – this can, however, be ameliorated if students keep in mind that what they are experiencing is not necessarily a lack of ability or intelligence but perhaps a different level of maturity to the pack leaders. As students progress through an undergraduate course, the level of maturity tends to even out and the

differences that are apparent in first year are less apparent in later years.

In the first year of a university program, therefore, students will have to come to terms with their own performance; their limitations, and so on. All students would naturally like to achieve high scores in all subjects but, in first year, there are many reasons why this may not be possible. A good set of questions for students to ask themselves, in assessing how they are fairing, is the following:

- How is my performance relative to that of my colleagues?
- Am I putting in sufficient work into each subject and how is my work input relative to that of my colleagues?
- Does the subject have a fair workload in the collective opinions of myself and my colleagues?
- How well organised am I relative to my colleagues?
- What is the best result that I can realistically aim for in this subject?

These are all important questions that need to be answered, early on in the university study process – they go to the heart of whether students need to change their study patterns or whether they need to reassess their expectations in the light of the reality of their relative performance. In setting expectations, one needs to be careful – aiming for the moon

may get one on top of the garage roof but aiming for the garage roof may not even get one off the ground. Aiming for stars that are completely out of reach may frustrate and confound rather than inspire. Levels need to be set that will challenge and extend one's capabilities rather than just demoralise.

All students undertaking university studies should be able to assess the expectations and realities of their subjects within the first three or four weeks of study in a given semester. This should enable them to set realistic targets for their subjects and to plan their times and study patterns accordingly.

(iii) Learning vs Marks

It needs to be kept in mind that universities are not fundamentally intended as places where students can collect grades as they would postage stamps. The purpose of a university is to facilitate learning, and the grades/marks that are issued to students are intended as a guide to help students assess their own learning performance. Although universities the world over do have a culture of encouraging students to engage in a competition to achieve the largest number of high subject scores, this does not necessarily aid the deep level learning process.

Students need to be aware that all grading schemes have limitations; inaccuracies and intrinsic inequities that are difficult to remove. For example, students often leave

examinations realising that, through the luck of the draw, some subject areas which they haven't studied have been given a greater prominence than they thought – or vice versa. Although there is an underlying systematic process in subject assessment, one should not over-analyse the minutiae of subject results themselves – is a student who gets 97.3% for a subject smarter than one who gets 97.2%? Or perhaps 96.2%? Or even 94.2%? The answer to this question is not simple – it depends upon whether the students all studied the exact same material, or each had a different emphasis – or whether there were subjective elements in the assessment – there are many reasons to consider. Realistically, two students within a ten percent band should be treated as having achieved similar outcomes, given the limitations of the overall assessment processes in various subjects.

The most important result to consider, however, is the one that students generally consider the least – that is, "what have I actually learnt by doing this subject?" If the answer to this question is that a student has memorised numerous equations and other material and has been able to cipher it out on an examination paper, then perhaps that student has learnt very little, even if they have achieved a high subject score. Conversely, if a student has carefully considered what the objectives of the subject are; what the key issues are and how to intelligently apply various principles then, perhaps, even if he/she hasn't achieved a high subject score, that student has actually had a better learning outcome.

The point here is for students to be driven by the need to achieve wisdom not results borne out of rote learning. And, the temptation will always be there for students to take the easy way out – the rote learning approach – the most expedient path to high subject results; an easy degree and employment. This sort of pragmatic but shallow approach is both understandable and forgivable when academics provide a subject and assessment structure that encourages it. The argument against taking this approach is much harder to sell – because it requires students to consider how they will look back on their undergraduate education years or decades later – did they just ticket-punch their way through the process or did they seek to get the best possible experience out of three or four years of their lives?

(iv) Group/Team Based Learning

Group or team based learning is not just a way of making life easier for students, it is perhaps one of the single most important tools that students should deploy for learning. There are numerous advantages to learning in a group of peers, including:

- The learning workload can be shared, and barriers to learning more quickly removed than in isolated learning – something which appears to be an intractable problem to an individual working in isolation, can often be resolved in

minutes or seconds by another individual in the group – so learning efficiency is much greater.

- Each member of a learning group will have different strengths and weaknesses – in a group, if these are recognised and used, then the whole becomes much greater than the sum of the parts.
- Students working in a group can set up their own relative metrics to see how well they are going against their peers. This provides an ongoing, constant stream of feedback which allows students to correct problems – this is far more effective than waiting for poorly prepared assignments to come back with bad grades (the other form of feedback).
- Students are often intimidated by lecturers and are afraid to ask questions for fear of being seen as foolish – in a peer group there is much less reluctance for students to air their concerns – students can be blunt with each other (*"…I just don't understand anything the lecturer said about…"*).
- When a university doesn't live up to its expectations, and does not provide academics who perform well, a group of students is far better placed to formally complain to a head of department or dean – an individual complaint can be brushed off as an isolated incident but a

group complaint is viewed as a far more serious problem.

In the longer term, forming a network of peers and friends is something that will stay with the student for a lifetime, so it has far more value than just providing short term solutions to learning problems. Working in a group also teaches students about human dynamics in a team – some members will not pull their weight; some will try to dominate; some will try to carry all the burden, and so on. Learning how to manage this situation is an important part of becoming a professional and a vital part of becoming a leader.

(v) Laboratory Learning

Depending upon the course of study undertaken in a university, there will be subjects that contain a component of laboratory work. Laboratory work is critical to students learning to differentiate fact from fiction, and learning to understand the limitations of theories. It is also critical to students learning how to be systematic; rigorous and scrupulously honest with themselves.

In the early years, laboratory experiments tend to be carefully structured by those who design them – they tend to be single dimensional experiments where students have to measure parameters (X, Y, etc.) and see the physical relationship between them in the context of what is presented in theory. Those that design such experiments generally ensure that other extraneous factors are removed from the

experiments so that students can focus on the relationship between theory and practice, and also upon the sources of experimental error (*How accurate are the instruments? What is the resistance of the leads? Etc*.). Laboratory work in earlier years also tends to be prescriptive – constructed like a recipe where students simply follow the instructions in order to achieve outcomes.

As students progress, the experiments become less structured and other dimensions come into play – there are no longer simple correlations between what is measured in the laboratory and what is suggested in theory – students have to determine all the other extraneous dimensions; how to conduct controlled experiments, and so on. Ultimately, students need to learn how to design their own experiments; evaluate results and determine when and why theory and practice don't match. In latter years, there is more knowledge involved in determining why theory and practice don't match than there is in the experiments themselves.

The development of laboratory work should mirror the increasing maturity of the students. Students need to recognise that life isn't as straightforward as it is made to appear in secondary school experiments – there are many factors to consider. When theory and practice don't match, it is no longer sufficient to brush this off with speculation (such as "instrument error"; "noise", etc.) – there needs to be some physical proof as to how various factors cause inconsistencies between theory and practice – perhaps the theory itself is

flawed – perhaps the experiments have been badly designed or even incorrectly performed.

Laboratory work is one of the most important aspects of learning, particularly in the fields of science and engineering because it forces students to face reality – here are the experimental facts – here are the theories – they don't match – why?

Unfortunately, the reality of undergraduate life is that many students will simply fudge experimental results to make them match with theory – in the expectation that this will give them better grades. This, however, undermines the entire purpose of the laboratory learning exercise and, as most academic staff are astute enough to know when results have been embellished, the fudging of laboratory outcomes is largely self-defeating. Perhaps the best way of countering the need to fudge results is to ask the fundamental question – "*What am I actually learning here? Theory and practice don't match – it is part of my learning to understand why – not just to falsify results to get the answers I think the academic staff want*". Those students that develop a mature approach will find that laboratory work is far less stressful and that their learning is far deeper and more profound. There is far more to be learnt by performing experiments incorrectly; recognising that the results are flawed, and understanding why, than there is in getting the experiments right the first time. It is a painful part of the learning process.

Getting experiments wrong, then fudging results to make them look right isn't learning at all – it is inculcating

fraudulent practices and self-deception. Ironically, such traits, once they are inculcated can go through to later professional life, where the stakes are much, much greater, and the fall from grace far more profound. Better then, to make one's own life easier by taking note, early in life, Shakespeare's line "*this above all: to thine own self be true*".

(vi) Coping with Inconsistency

A consequence of becoming an adult and maturing is the recognition that the world simply doesn't work the way that people think it should. The world is full of anomalies, prejudices, and blatant unfairness, and despite being elite places of learning, universities are little different.

Academics are not endowed by their creator with some all-encompassing wisdom, and suffer from the same human problems as those found in any other organisation. To this end, it should therefore not be surprising that sometimes academics can be unreasonable, or perhaps expect standards and performances that they could not achieve themselves – sometimes putting forth double standards for professionalism and integrity. The fact that all of these traits are bad doesn't mean that they don't exist – it does mean that students will need to work around them in one way or another. The world is full of inconsistencies, and university is as good a place as any to learn to deal with them. Typical inconsistencies that students can encounter may include:

- Two different academics tackling particular issues in contradictory ways, and then each blaming students for not adhering to their method.
- Academics treating their subject as more important than others with the consequence of placing an unfair workload on students.
- Academics employing subjective assessment techniques, and then allowing their own opinions and prejudices to bias the subject results for students.
- Academics expecting students to apply passion and commitment to their subject when they themselves have neither passion nor commitment to it.

Students are entitled to be treated fairly, without prejudice, and given a supportive educational environment. Nonetheless, they will inevitably encounter problems and need to develop ways and means of dealing with them – it is one thing to say that something isn't fair or isn't right, but another thing altogether to do something about it.

(vii) Bad Educational Practices in Lecturers and How to Manage Them

It has already been noted that those students who learn despite their educators learn far more than those who learn because of them. This, however, does not excuse poor

practices amongst academic staff and it is the students that ultimately need to deal with these. As has previously been observed, universities do not have an independent "parents" group looking out for the interests of students – this is one reason why educational practices in universities are sometimes poorer than those found in secondary schools. Clearly, it is not sensible for universities to have such groups because their students are already adults, and should be capable of looking out for their own interests. Hence, when bad educational practices arise, it is left to the students to do something about them. Again, it needs to be stated that the reasons many students encounter poor educational practices is because their predecessors chose to do nothing about them when they were there – so the buck ultimately stops with the current crop of students to leave a positive legacy for their successors.

Students may encounter many problems as individuals – perhaps discrimination; personal unfair treatment, victimisation, and so on. Generally, there are formal mechanisms and procedures within the university for dealing with these serious issues, and students should not be intimidated in any way from using such tools to stop bad behaviour. The broader range of issues that students will encounter relate to general educational practices:

- Poor lecturing technique – poor communications skills.
- Poor lecturing facilities.
- Unreasonable subject workloads.

- Unreasonable subject expectations in terms of learning.
- Unreasonable degree of difficulty in the subject.
- Indifferent or uncaring lecturing staff.
- Lecturing staff who are themselves ignorant of the subjects in which they lecture.
- Tedious/dull subjects.

Taking the last point first, one needs to understand that the university learning environment is not intended to be a circus or an arcade game – there is no requirement that everything presented to students is exciting and entertaining. Indeed, in many areas of undergraduate study, students will have to accept that they need to cover materials which, although tedious or dull, are fundamental to learning and form the basis of other subjects which may be far more interesting. Students need to be mature enough to understand and accept this, otherwise continued complaining may lead to little more than watering down of the degree to avoid important but otherwise uninteresting materials. It is unlikely that any degree program in any field will ultimately have a collection of subjects which are all individually exciting and stimulating.

The fact that subject materials are dry and uninspiring does not mean that lecturing staff have to be the same – and, if it is the case that lecturing staff don't project enthusiasm, then students have a legitimate reason for grievance.

The other issues in the list are all, to varying degrees, also legitimate reasons for complaint on the part of students. Poor lecturing techniques and poor communications skills, for example, are common complaints – sometimes not arising of themselves. In other words, students often complain of poor communications skills in a lecturer not solely because of the communication but more likely because the lecturer does not have the skills or passion to get his/her message out.

The other frequent complaint of students is about subjects being "too difficult" or "too much work". Students who wish to lobby a university for change based upon this argument need to consider their argument carefully before proceeding. Some subjects are inherently difficult – the fact that they are so does not mean that they should be removed from the curriculum or even watered down. At some stage, students need to accept that a particular subject is fundamental to the learning outcomes of a degree and that they need to consider it thus. The alternative is that the university could respond to student concerns and water down the course to the extent that it neither challenges the students nor meets the learning requirements of the degree program. Similarly, when students complain that a subject is "too much work" they need to be certain that they differentiate between the actual workload and an attitude of, *"I can't be bothered doing this much work for one subject because the other subjects have less work…"*

In both cases there are shades of grey – sometimes subjects are indeed made unnecessarily difficult by lecturers

who do not fully understand the subject matter themselves. In those cases the difficulty of the subject arises from a lack of competent academic leadership. Sometimes, academics also impose unrealistic workloads because they have a disregard for other subject commitments – again, this shows a lack of competent academic leadership. But, beware the temptation to challenge the subjects that are intentionally placed into courses to challenge the students – for it is these subjects that provide the most significant opportunities for pushing the boundaries and extending learning and analytical abilities.

Overall, the items on the above list all have differing degrees of seriousness, and the opinions of an individual student on any of them, in general, will not lead to a significant response from the university. But, while one student saying a lecture theatre is unsatisfactory may have no response, all students collectively stating that the theatre is unsatisfactory and they will not attend the lectures until a new venue is found will almost certainly get an immediate response.

In taking such actions, of course, students need to keep in mind what is or is not possible. It may be, for example, that a university has a run down set of facilities but it is pointless complaining to a lecturer in the hope that he can rebuild the entire campus by the end of semester. So the expectations have to be reasonable and consistent with the authority and influence of the person to whom they are put. If students are subjected to a bad lecture theatre, and there are other

alternatives, it would not be unreasonable for the students to request that their lectures be shifted to a new venue.

The same reasoning applies to all the issues that students have to deal with. The basic questions that need to be answered before students voice their concerns are:

(a) What is the level of authority and influence of the person to whom we are addressing issues?

(b) What specific outcomes do we want from the university in responding to our complaint?

(c) What timeframes are involved in getting the required outcomes?

(d) How practical are the outcomes we are seeking?

So, for example, if students are dissatisfied with the English language skills of a lecturer, and the lecturer only has English as a second language, in answering the above questions we would conclude:

- *Authority* - there is no point discussing such an issue with the lecturer himself/herself because he/she does not have the power to improve their skills overnight. The issue has to be raised with a person who has the authority to replace the lecturer concerned.
- *Specific outcomes* - the outcome we would seek would be a replacement of the lecturer.

- *Timing of outcomes* - the timeframe would be immediate (realistically a week) in order to avoid further disruption to the subject.
- *Practicality of outcomes* - the university has a responsibility to provide a lecturer with good English language skills and they should have more than one person capable of taking a particular subject in a faculty.

All of the problems noted earlier can be tackled on the basis of the above approach. Before commencing, however, it needs to be reiterated that students need to be sure that what they perceive to be problems are actually problems.

If, for example, an individual student is dissatisfied with a lecturer and the remainder are happy with the same lecturer, is this a problem or is it simply the case that the dissatisfied student has a different approach to learning?

In general, when many students collectively consider an issue and all independently conclude that there is a problem, then there is a legitimate case for taking the matter further. In the first instance, students can consider talking directly to a lecturer, through a small representative group. However, if the issues pertain to the actions or behaviour of that lecturer then this is clearly unwise, and the matter needs to be taken further up the tree to a course convenor or head of department or dean or vice chancellor.

In general, students should seek meetings with the above people as quickly as possible after a problem is recognised, and outline, in writing:

- The specific issues to be addressed.
- The specific actions that they would like the university to take to address the issues

It is no good students simply going to university management and talking in vague terms about dissatisfaction with lectures and the fact that they don't like various lecturers – managers want to know what specific problems need to be addressed and what students would specifically see as a solution to those problems.

Whatever the nature or scale of the problem to be addressed, students should not be intimidated from working their way up the university management tree to get a resolution. However, the more senior the level they attempt to address their problems, the more likely they are to be brushed off by personal assistants or secretaries whose job it is to prevent people gaining access to senior staff. Again, students should neither be intimidated nor deterred from such action because it is common practice in all large organisations. Students need to be direct, clear and determined. If for example, a secretary tells them that a dean or vice chancellor is busy, rather than walking away, students should ask when that staff member will be available to meet with them, and insist on making an appointment. In all likelihood, an

appointment will be given and students will have an opportunity to voice their opinions.

Students should also be aware that in most universities they will have representatives at various levels – faculty boards, academic board, university council, etc. Students should learn who their representatives are and keep in contact with them. Where possible they should provide written instructions for issues to be formally raised at the various forums, so that issues don't get swept under the carpet. The moral of all this is that when students are genuinely dissatisfied with their treatment, they should not accept "no" for an answer – that is another important part of the learning process, and an important part of the legacy that they will leave behind because it will prevent the university from degenerating into bad practices that damage future students.

In closing this chapter on learning, we end with the words of one who was quoted at the beginning, Albert Einstein, who once profoundly said that:

"Wisdom is not a product of schooling but of the lifelong attempt to acquire it."

And, what better place to begin the lifelong attempt to acquiring wisdom than at university?

Chapter 7 Summary:

(i) *Universities are not places of teaching – they are places of learning, and learning is something that needs to come from within the individual and from the group of colleagues with which that individual surrounds himself/herself.*

(ii) *Universities are generally not filled with great educators and students need to work around the shortcomings of the system to cope with it – in particular, group based learning is critical.*

(iii) *Universities do not have a "parents' group looking after the interests of the students – in a university, it is the students who need to take on the role of the "parents" group, not only to ensure their own studies progress well but also to leave behind a positive legacy for those students who follow.*

(iv) *A critical element to beginning university learning is to plan and schedule a learning program for each subject – although this does not have to be overly prescriptive, it will reveal the balances that students will need to make between formal and informal study; recreation; travel and outside work.*

(v) *The development of wisdom, through self-awareness, and an understanding of individual strengths, weaknesses, potentials and limitations is one of the most important attributes of university learning.*

(vi) *Laboratory learning is critical to many undergraduate programs and students should endeavour to maximise the benefits they gain from laboratory based learning*

(vii) *When students are dissatisfied with various aspects of what is provided in the learning environment, they should not be intimidated from dealing with them and, indeed, dealing with such problems in a professional way is an integral part of the learning process.*