CONTENTS

Editorial Board Members

EDITORIAL

The central theme of higher educational reforms that occurred throughout the world in the past decade is mainly focussed upon the need for higher education institutions to achieve efficiency and effectiveness in its operations, while maintaining the quality of its educational delivery and research capability. The most controversial outcome of these reforms is that institutions are constantly challenged by their abilities to do more and more with less and less of the public funding allocated by the government. How the different higher education institutions confront these challenges in order to continue their noble role of generating and transmitting knowledge for the intellectual nourishment of society and its progress requires multi-faceted perspectives and approaches in analysis with regards to the scale and nature of the operational environment of the institutions concerned.

Institutional Research (IR), as we all know, is multi-faceted in terms of its ability to adopt and adapt theories and methodologies from other disciplines in order to provide the appropriate data, information and knowledge (and perhaps, wisdom) for executive decision support. Hence, in an IR journal, such as JIRSEA, it is not uncommon to have professionals from other disciplines contributing to debates on IR, thus adding to the diversity and richness of IR as a discipline. This diversity and richness is reflected in this series, in which the eight articles were written by professionals from various disciplines.

Effectiveness and quality in higher education management seem to represent the core of the discussion in these eight articles. These two critical attributes of higher education management were examined from the perspective of staff development, student educational outcomes in terms of entrepreneurship and performance, and process management in terms of facilitating student mobility, quality assurance, and the effective use of ICT in the delivery of education. These articles challenge conventional thinking and should be useful in providing relevant decision support to the appropriate areas of institutional change and improvement. However, the tools of assessment formulated from neo-Taylorism can only provide mechanistic indicative results. The critical drivers that promote high morale, harmony and aspirations to bring out the best of its members in an organisation come from the wisdom and divine intelligence of the leadership.

Articles for the next issue are not listed because we are expecting to cull over a hundred papers from the Third SEAAIR International Conference to be held in Bangkok in mid-October this year. Nevertheless, we appreciate receiving papers from those who wish us to consider their paper for publication in Volume 2 Number 2 of JIRSEA (expected to be out in April 2004).

We wish contributors and readers of this journal a joyful and rewarding year.

Best wishes,
Gan Che

INVESTORS IN PEOPLE, A STRATEGY TO IMPROVE EXISTING GOOD PRACTICE

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INTRODUCTION

Investors in People Standard

"You can take my factories, burn up my buildings, but give me my people and I will build the business right back again" (Henry Ford, 1863-1947).

This quotation from the 'Father of the American Motor Industry' reflects the spirit of the Investors in People (IIP) standard, currently the only international standard for people development. The standard was developed in the United Kingdom (UK) in 1992, from existing good business practice. Currently there are over 40000 organisations worldwide working with the Standard (Cox and Spires, 2002). Over 38% of employees in the UK work for organisations where the standard is being used. The standard is currently practised in 14 countries, and it was introduced in Malaysia in 2001. The standard is made up of 4 organisational principles for people development; commitment, planning, action and evaluation. Figure 1.1 defines the four principles of the IIP standard. These 4 principles are branched into 12 indicators, which are supported by 33 evidence requirements. To achieve the IIP standard all 33 evidence requirements must be fulfilled, thereby making the standard a comprehensive audit of the training and development people receive in an organisation. An example of an indicator and evidence requirement is shown in Table 1.1, whilst the full text of the IIP standard can be obtained from http://www.iip.co.uk.

International Medical University

The International Medical University (IMU) was officially launched in 1992, with the founding of its medical faculty. It has since grown from being a private medical college with 5 initial partner medical schools to become a university with 22 partner medical schools as well as running a twinning programme in pharmacy with the University of Strathclyde. IMU has always emphasized on training and development for its staff, due to the uniqueness of its academic programme which utilises innovative teaching and learning tools (Nadarajah et al., 2002). In line with its mission to have well-trained staff, IMU has made available several funds for its Training and Development (T&D) programmes. Besides contributing to the Human Resource Development Fund (Ministry of Manpower and Human Resource, Government of Malaysia), IMU has also created an in-house T&D Fund and an Academic Staff T&D fund. IMU is keen to achieve the IIP standard for several reasons. Firstly, studies have shown that organisations that have achieved the IIP standard show improved earnings, productivity and profitability (NOP World, 2001). Furthermore organisations with IIP have reported higher employee morale, improved retention rates, reduced absenteeism and identification with organisation beyond the confines of the job (Hillage and Moralee, 1996). IMU has undergone several other quality initiatives for its medical and pharmacy programmes (National Accreditation Board, Malaysian Medical Council and Malaysian Pharmacy Board) successfully and is currently undergoing ISO

9002 certification. As such, achieving the IIP standard would help to maintain the accreditation given by these quality initiatives (Lentell, 2001).

Concerns with IIP

Because the IIP standard evolved from existing good business practice in the UK, of concern was that some of the evidence requirements of IIP might not fit the local culture of an Asian nation like Malaysia. For example, the Employment Act of Malaysia (1955) does not tie in with an evidence requirement (4b) of the IIP standard which deals with equal opportunity. The employment act of Malaysia although adopted from the employment act of the United Kingdom had excluded the prohibition of using gender, age, race or religion in determining the employment of a person. Another concern is that since IIP is new to the Asian region, the issue of which body will conduct the accreditation and monitor the standard in this region has not been settled. Employers might also be concerned that staff would utilise the IIP standard as a means to generate a T&D wish-list, and request for courses that do not meet the organisations' objectives. Finally, experience has shown that to achieve the IIP standard much investment of time, effort and finances are required (Focus Central London, 2000), and there must be several key people in the organisation that are willing to champion the standard. Hence the sustainability of the process on achieving the standard is a matter of grave concern (Quayle and Murphy, 1999).

IMU has begun the process to meet the IIP standard, and has set a 2-year target to achieve the IIP standard in June 2004. The objective of this study is to gauge staff perception on T&D at IMU and design a fine-tuned survey form to help IIP planners formulate efficient strategies and processes to achieve the IIP standard.

METHODOLOGY

The survey form used in this study was modified from the IIP manual "How to become an Investor in People" (2001). There were 12 questions, in the survey form, relating to the 12 evidence requirements of the IIP standard, and each of these questions is linked to one of the 12 indicators of the IIP standard. The survey form was bilingual (English and Bahasa Malaysia) and required a Yes/ No/ Unsure answer. Staffs were not required to identify themselves but were given the option to state their department/designation and number of years of service in IMU. IMU staffs were briefed on the IIP standard prior to distribution of survey forms, which were distributed and collected from IMU staff in June 2002. The IMU staff number at that period was 160. 107 responses were received, hence the response rate to the survey was 66.8%. For the purpose of analysis, data with percentage of >66% for 'yes' is identified as areas of concern (IIP assessors use at least a 2/3 ratio to identify positive data, Angela Mulvey personal communication).

RESULTS

The results of the survey are shown in Table 3.1, 3.2, 3.3 and 3.4. The questions in table 3.1 are linked to the indicators for commitment. Over 70% of the staff felt that the organisation was supporting their development and about 87% of the staff felt encouraged to improve their own performance and other people's. However, only 33 % of the staff perceived that there was equal opportunity for all staff and 58% felt that their contribution was recognised.

The questions in table 3.2 are linked to the indicators for planning. Approximately 90% of the staff understood the organisation's aims and objectives, understood how T&D helps the organisation and knew how their performance would contribute to organisational success.

Table 3.3 has questions that were linked to the indicators for action. 82% of the staff felt that their managers supported their development. However nearly 60% felt they did not receive an effective induction to their job.

Finally table 3.4 has questions linked to the indicator for evaluation. More than 77% of the staff perceived that their development has improved the performance of the organisation and understood the impact of their development on organisational performance. Approximately 62% of the staff felt that the organisation has made improvements to development activities, whilst 33% of the staff felt otherwise.

DISCUSSION AND CONCLUSION

As the staff of an organisation is the people component of IIP, their perceptions and needs are crucial in achieving the IIP standard. The data collected from the preliminary survey forms indicate that IMU staff perceived strengths in organisational planning and evaluation, and identified some concerns in organisational commitment and actions. The data shows that more than 70% of the staff responded positively for 8 of the questions, while questions that reflected on equal opportunity and effective induction received the lowest positive response. Lack of feedback and improvements on developmental activities, can also be viewed as concerns as approximately 40% of the staff gave a negative response to questions related to these indicators.

Why did the staff in IMU respond positively to at least 8 of the questions in the preliminary survey? The answer might lie in what is viewed as the "Existing Good Practice" currently practised in this organisation. In April 2001, the organisation began discussions to produce a blueprint of the 10 year-IMU strategic plan (2002-2012). These discussions, were held over a 3 month period, with all staff invited to participate. Working groups were formed to address issues like financing, research, academic programmes and other university related activities. Importantly and uniquely, all these working groups consisted of a mix of staff (academic, non academic, professional, non-professional). The existence of a fluid management system in IMU, which makes it less bureaucratic and creates opportunities of bottom-up avenues/ideas is also seen as good practice. For example, IMU celebrated its 10th Anniversary this year, and staffs were given the opportunity to suggest possible events in which IMU would organise. As a consequence events like the National Health Sciences Debate, Staff Holiday in Chiang Mai and the IMU Charity Run were ideas that were generated by staff and successfully implemented this year.

The vision and mission statement of IMU is seen as a driving force for investment into training and development of staff and is viewed as an existing good practice. For example, IMU aims to be in the forefront of innovative medical teaching and has proven so by using a hybrid problem-based learning curriculum with introduction to clinical skills in the early years of medical education since its inception. As these teaching methods were relatively new to the region (in 1992), IMU has allocated ample resources for its academic staff to undergo T&D in the field of medical education. As an organisation with international links, IMU has ensured that all staffs are fluent in English. Administrative staffs who are not fluent with the language are given the opportunity to attend English lessons organised by IMU. When the staffs have completed the course, a small graduation ceremony is organised in which all administrative heads are invited to

attend. The T&D of IT skills is emphasised with the setting up of the IMU-IT centre with plenty of opportunities created for staff to attend in-house training courses.

The preliminary survey shows over 80% of the staff are positive of their managers' support in their T&D. This data might be reflective of the good practice of empowerment to the managers. The empowerment of selecting and approving T&D courses for staff is given to both the administrative heads and academic head (middle managers). This process allows staff to closely interact with their superiors on their T&D needs and see the link on how T&D of an individual can lead to better team and organisational performance.

Some concerns were identified from this preliminary survey e.g. the perceived lack of equal opportunity. There are several possible reasons for this perception. For example, applications by staff to attend a particular T&D session might be denied without feedback from the management. Another scenario would be the management using certain criteria (of which staff has not been informed) to select certain staff to attend some T&D courses. Staff not chosen might perceive inequality.

Importantly, whatever the scenario may be, the lack of communication and transparency on T&D selection criteria needs to be addressed. Furthermore, due to the nature of the business, the T&D courses in IMU tend to be academic heavy. This might be perceived by non-academic staff as lack of equal opportunity. Staff also perceived the lack of effective induction to their job as an area from concern. This is probably because IMU only introduced induction programmes for staff in February 2001, whilst the majority of IMU staff joined the organisation before this date. Approximately 40% of the staff felt that they did not receive appropriate feedback that made them feel that their contribution is recognised. The staff perception on this issue is useful 'feedback' for the organization which can now look for solutions on improving feedback to staff. The organisation has begun to look into this matter by organizing a performance appraisal workshop for all staff in 2002, as the strategy is to use the performance appraisal to give relevant feedback and non-monetary recognition.

Staffs were also concerned on whether the organisation is actually getting better at developing people. Staff perception on this issue might possibly improve in future, as there have been tremendous developments (2002) in the T&D policy of the university. Firstly, the Staff Development Committee was established with the University Provost as Chairperson. In addition, the human resource department coordinates a bottom-up T&D list, there is transparency via e-mail on available T&D courses, company policy of T&D courses and the list of staff who has attended T&D courses.

The survey form has been useful to gauge staff perception on T&D at IMU. Researchers have found that the motivation for, and perception of achieving IIP varies at different organizational levels of staff, this difference of perception could hinder the achievement of an IIP award (Douglas et al., 1999). As each question in the survey was related to an IIP evidence requirement, the data obtained could be used as a possible indicator to guide the organization to prepare for an IIP certification. Both the positive data and the areas of concern emphasise the need for continuous monitoring of staff perception within the 2 year preparation period for an IIP certification. The survey form itself could be redesigned to make it more anonymous, hence to encourage a better response rate. It should also encompass more evidence requirements (currently it is 12 out of 33) and modified to be more relevant to the IMU scenario.

A study by Focus Central London (2000) showed that of the organizations that have achieved the IIP award, only 2% have dropped out of the IIP process and 3% are reviewing their position, 90%

of the organizations are willing to undergo IIP reassessments every 3 years to maintain their award. Potential organizations for the IIP award should realize that IIP is about doing business better and not about doing better business (Focus Central London, 2000).

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Figure 1.1: The Four Principles of the IIP Standard

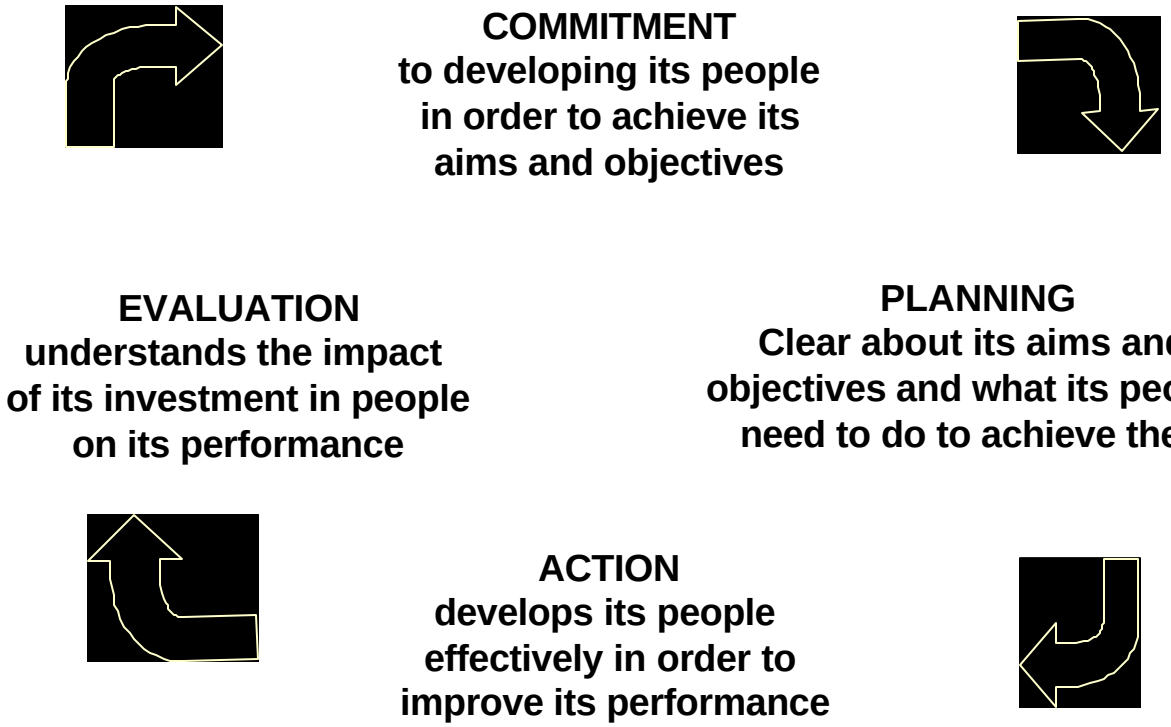

Table 1.1: Example of the IIP Standard for Indicator Number 2

Principle	Indicator	Evidence Requirement
Commitment	People are encouraged to improve their own and other people's performance	(a) People can give examples of how they have been encouraged to improve their own performance (b) People can give examples of how they have been encouraged to improve other people's performance

Table 3.1: Staff perception on Organisational Commitment for People Development

Indicator for Commitment	Yes (%)	No (%)	Unsure (%)
1. Is our organisation supporting your development?	71.96	26.16	1.86
2. Do you feel encouraged to improve your own performance and other people's?	87.85	12.15	-
3. Do you get feedback that makes you feel that your contribution at work is recognised?	58.89	40.19	0.93
4. Does everyone here have a chance to look at what development they need, whatever job they do or hours they work?	33.64	63.55	2.80

(%) is calculated using the following formula: n /107 x100%, where n=number of respondents to either yes, no or unsure.

Table 3.2: Staff perception on Organisational Planning for People Development

Indicator for Planning	Yes (%)	No (%)	Unsure (%)
5. Do you understand your organisations aims and objectives?	89.72	9.35	-
6. Do you understand how your own development helps you, your team and our organisation?	92.52	5.61	1.86
7. Do you understand how your performance contributes to our organisations success?	89.72	9.35	-

(%) is calculated using the following formula: n /107 x100%, where n=number of respondents to either yes, no or unsure.

Table 3.3: Staff perception on Organisational Action for People Development

Indicator for Action	Yes (%)	No (%)	Unsure (%)
8. Does you manager support your development?	82.24	11.21	6.54
9. Did you have an effective induction when you joined our organisation or did you have an effective induction if you changed to a different job here?	39.25	59.81	-

(%) is calculated using the following formula: n /107 x100%, where n=number of respondents to either yes, no or unsure.

Table 3.4: Staff perception on Organisational Evaluation for People Development

Indicator for Evaluation	Yes (%)	No (%)	Unsure (%)
10. Has your development improved the performance of our organisation?	77.57	14.95	7.47
11. Do you understand the impact that your development can have on performance?	83.17	14.02	2.80
12. Could you say what improvements our organisation has made to development activities?	62.62	33.65	3.74

(%) is calculated using the following formula: n /107 x100%, where n=number of respondents to either yes, no or unsure.

MBA STUDENTS AND ENTREPRENEURSHIP: AN AUSTRALIAN STUDY OF ENTREPRENEURIAL INTENTIONS AND ACTUALISATION

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INTRODUCTION

In an increasingly repressed economic environment such as that facing most countries today, where the 'new economy' is undergoing a distressing 'shake-out' and where the 'old economy' is experiencing severe business downturns and failures, there is a crying need for wealth *creation*, in addition to wealth preservation. Surviving businesses have to be sustained, and new ones created to fill the void left by failed ones. In addition to initiatives by government and industry, another catalyst in wealth creation is entrepreneurship. This is underscored by the fact that many universities have embarked upon entrepreneurship-related subjects in both their undergraduate as well as postgraduate programs. Whole programs have been structured on the notion of entrepreneurship, as has been the case with the Swinburne MBA. In fact, the strategic focus of some graduate schools has changed in the direction of entrepreneurship, as evidenced in the School's name; for instance, the Australian Graduate School of Entrepreneurship. Marketing efforts for those programs have touted the virtues and benefits of those programs for practising as well as nascent entrepreneurs.

Given the nexus between the needs for entrepreneurship for wealth creation and a proliferation of academic subjects and programs professing to cater towards satisfying those needs, these developments beg the question:
'Do such academic programs

- ?? express what entrepreneurship education really is or should be (especially in terms of the curriculum);
- ?? provide the support or wherewithal for actualising entrepreneurship for both the practising as well as nascent entrepreneur, in terms of the operational and referral knowledge, attitude and orientation, skills, experience (direct or vicarious), opportunity to actualise, and reflection on practice;
- ?? acknowledge the motivation of students for following such a program;
- ?? assess the likelihood of students actualising their entrepreneurial intent;
- ?? define how such a program should be taught (aspects such as pedagogy, resourcing, content structuring); and
- ?? perform post-program evaluation to ascertain the effects of maturation and residual effects of such an educational program?'

A broad-spectrum question such as this, needs to be asked to ensure accountability on the part of the education provider as well as assure value for money and goal realisation for the student-client

of that provider. Thus, a case can be made in universities for research to be conducted within this context with a view to providing some of the answers to that question. The present researchers took that route.

OBJECTIVES OF THE STUDY

The objectives of the study were set as the following:

- ?? to study the motivations of the students for enrolling into the MBA program
- ?? to establish MBA students' self-perceptions of personal attributes from an entrepreneurial perspective
- ?? to ascertain Swinburne MBA students' perceptions of the key attributes of an entrepreneur
- ?? to explore the entrepreneurial intentions entertained by MBA students
- ?? to establish the state of MBA students' preparedness for exercising their entrepreneurial intentions
- ?? to explore the likelihood of the MBA students actualising their entrepreneurial intentions

The objectives of the study were achieved through a process that began with a review of relevant literature which, in turn, helped to inform the other stages, namely, developing a conceptual framework to guide the study, designing the research processes, gathering and interpreting the data, and interpreting the findings in the direction of the objectives.

LITERATURE REVIEW

The extant literature on entrepreneurship and entrepreneurship education is quite wide in scope. The literature is replete with works on, among other things, the nature of entrepreneurship, entrepreneurial roles and tasks, how entrepreneurship can be developed and entrepreneurial characteristics and potential. In line with the intent of this study, reported below is a selection of works related to entrepreneurship and education.

Lankard (1991) indicated that Educational Institutions have a responsibility to include in the curriculum techniques for helping students develop entrepreneurial skills so that they will not be among the 45% or so small US businesses that fail within the first year. Lankard presented a number of characteristics of entrepreneurs that could be attributed to vocational education as follows:

- ?? Most entrepreneurs are action oriented people who believe that working smart and hard is the key to success.
- ?? A significant proportion of them were enterprising adolescents, earning money through babysitting, paper routes etc.
- ?? They often come from families where one or both parents have owned their business.

Lankard (1991) further suggested some curriculum changes in terms of vocational and technical education in the US in order to produce entrepreneurial graduates. These included:

- ?? emphasis on business planning, computer applications, managing capital/cash flow, marketing skills and accounting skills;
- ?? promotion of the involvement of vocational program instructors in any business management instruction initiatives across all program areas; and
- ?? emphasis on opportunities for entrepreneurship education strategies including the special needs of targeted populations and the promotion of vocational equity for all students.

Louw *et al.* (1997) attempted to assess the entrepreneurial characteristics of undergraduate students enrolled at a South African University. Their key findings included the following:

- ?? Third year Business Management respondents scored higher on awareness of the importance of entrepreneurship in comparison to first and second year respondents.
- ?? Business Management respondents scored higher mean values than Pharmacy respondents, indicating a higher level of entrepreneurial awareness amongst Business Management students.
- ?? The mean score of the respondents was relatively low with respect to risk-taking, suggesting risk aversion despite the importance of risk taking in entrepreneurial activities.
- ?? No significant differences in responses were noted between genders.

Drnovsek and Glas (2001) undertook an analysis of entrepreneurial intentions of nascent entrepreneurs enrolled within the Master of Science entrepreneurship and the MBA program at a Slovenian University. The broad findings of their study can be summarised as follows:

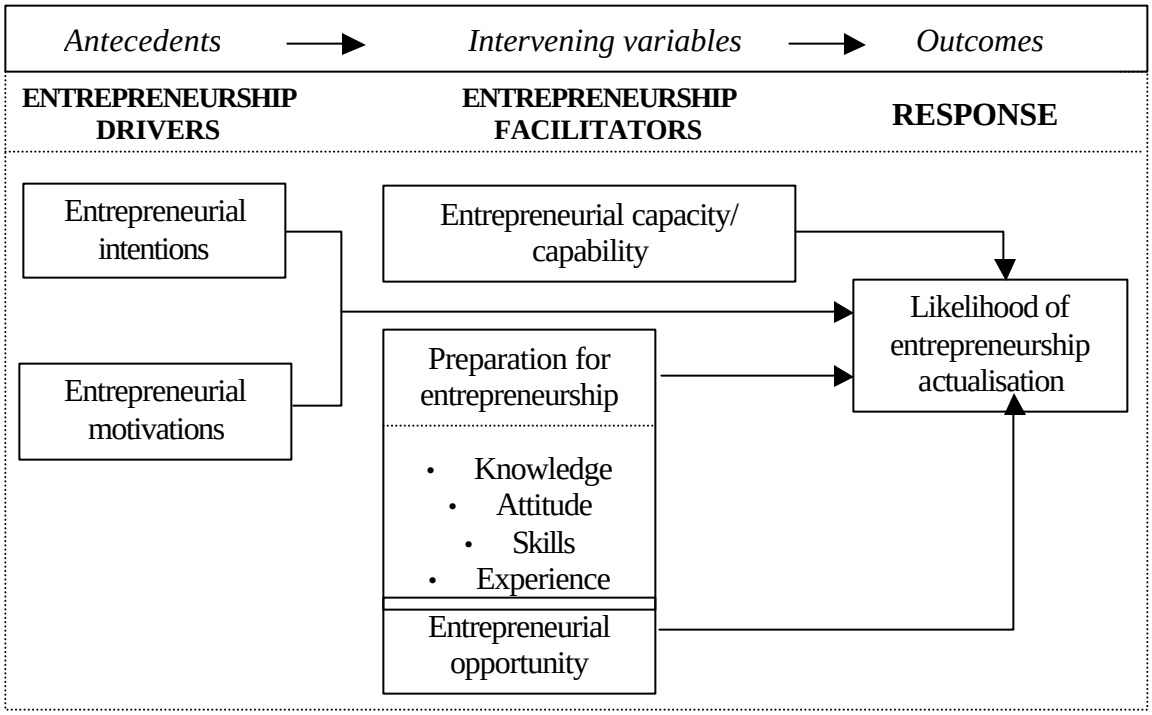
- ?? Graduate students in Master of Science program in entrepreneurship were more likely on average to start up a new firm than the MBA graduates.
- ?? Graduate students with longer working experience are on average more likely to start up a new firm.
- ?? Graduate students of entrepreneurship do not score higher on self-perceived entrepreneurial self-efficacy than MBA students.

Ducheneaut (2001) appeared to have reached some conclusions in terms of infusion of entrepreneurship curriculum in Higher Education. Ducheneaut (2001) indicated that the university should recognise that the decisive moments in terms of entrepreneurship are mostly in the past and that each student does not have the same potential to be an entrepreneur. He therefore concluded that it was not probably useful for most university academic programs to provide mandatory in-depth teaching on entrepreneurship. Ducheneaut (2001) went on to suggest that universities, in order to have the greatest impact, must detect somehow the potential entrepreneur before channelling such students into the entrepreneurship courses.

CONCEPTUAL FRAMEWORK AND METHODOLOGY

To guide the present study, aspects relevant to the successful actualisation of entrepreneurship were juxtaposed in a linear progression from antecedent to intervening variables in the pursuit of the outcome, namely, the likelihood of actualisation of the entrepreneurship intention among MBA students (see Figure 1). The antecedent variables were deemed to be the entrepreneurship drivers, the intervening variables comprised those that facilitated entrepreneurship, and the outcomes were the response in the form of the likelihood of actualisation of the entrepreneurial intention.

Figure 1: Conceptual Framework To Guide This Study



The conceptual framework was used to develop the research design and measures, as described below.

Drnovsek and Glas (2001) made the case that there has already developed a body of research on the entrepreneurial intentions of students. They cited the work of researchers such as Kruger, Reilley and Carsrud (2000), who explored competing models of entrepreneurial intentions among senior university students. Significant earlier works in the 1990s include

- ?? investigation by Autio *et al.* (1997) into university students' intent approach to studying entrepreneurial events in an international setting;
- ?? De Noble, Jung and Ehrlich's (1999) attempt to build a measure of self-efficacy, relating it to entrepreneurial action among university students;
- ?? Kruger's (1993) investigation on the impact of prior entrepreneurial exposure on university students' perceptions of the feasibility and desirability of new ventures;
- ?? Mueller and Thomas's (1999) comparative study on university students of locus of control and innovativeness;
- ?? Reynold's (1995) discovery of a pool of nascent entrepreneurs among university students; and
- ?? study by Simon *et al.* (1999) of how individuals among university students pursuing an MBA qualification made decisions to start new businesses.

This body of research has developed because graduate and postgraduate students constitute a key source of nascent entrepreneurs who would end up as intrapraneurs or as owners of their own or family businesses. Liles (1974) stated that the 25-44 year age-range is the most likely period when most people start a business. Since a significant number of graduate and postgraduate students fall in that age group, it may be assumed that some among them would be strongly experiencing entrepreneurial inclinations and intentions. Hence, members of this group, as

represented in the AGSE, were deemed fertile for investigation for the purposes of the present study and formed the population from which the sample for the research was drawn.

Research design

Students in all three stages of the Swinburne Master of Business Administration (Swinburne MBA) were surveyed using a questionnaire developed for the purpose. The study had several intentions. However, the present paper focuses on attempting to answer only the following questions:

1. What are the demographic and other characteristics of the Swinburne MBA student?
2. What are the key personal attributes of MBA students as perceived by the students themselves?
3. How do Swinburne MBA students conceive of an entrepreneur?
4. What entrepreneurial intentions did these students entertain?
5. To what extent did they feel prepared for exercising their entrepreneurial intentions?
6. What likelihood did these students have of actualising their entrepreneurial intentions?
7. What were the motivations for these students to enrol into the MBA program?

Measures

Respondents were requested to provide demographic and other data, such as age, gender, prior education, stage of the MBA program currently enrolled, enrolment status, present employment status, marital status, working experience, prior entrepreneurial experience and whether they had relatives, friends or acquaintances who were entrepreneurs. The last two items were also interspersed elsewhere where relevant to the measures described below.

The development of a scale to measure respondents' perceptions of their own 'entrepreneurial propensity' necessitated perusing the literature to identify and isolate key personal attributes relating to entrepreneurship and being entrepreneurial. Forty-eight items were finally selected; of these, three were rephrased and randomly placed among the others, so as to provide a check for accuracy and reliability of the responses. Respondents were asked to indicate the degree of their agreement with these statements about themselves, selecting from a five-point scale that included a category of 'Don't know'.

Many sources in the related literature provided items to draw up a list of characteristics of an entrepreneur. The work of Roessl (1994), for instance, proved quite useful in this regard, as did that of Ducheneaut (2001, p. 134). Tallies were made of the frequencies of appearance of these adjectives or descriptive phrases in the definitions of 'entrepreneur' in the works that were perused. The top eight of these characteristics were selected for inclusion. Respondents were requested to tick as many of the eight characteristics that they believed applied to an 'entrepreneur'.

Students' entrepreneurial intentions were conceived as pertaining to both starting up a new business and behaving as an intrapreneur. Students were asked to score items comprising elements of both these 'states' on a four-point Likert-type scale, with choices ranging from 'Strongly disagree' (1) to 'Strongly agree' (4).

Respondents were also asked their views on the state of their preparedness for undertaking new business initiatives. Twenty-two items relating to aspects such as knowledge, attitude/orientation, skills, relevant experience, opportunity and personal networks that the related literature indicated were important in being entrepreneurial were included in this measure. Respondents were asked

to indicate on a four-point scale how strongly they agreed or disagreed with these statements about themselves.

Likelihood of exercising entrepreneurial intentions was measured on a two-item scale, where the items asked for the respondents' views on the likelihood of starting a new business or of contributing ideas towards the diversification of an existing business being greater than 50%.

Related literature was perused to develop a list of reasons why students opt to follow a program of study such as the MBA. Respondents were presented a list of fourteen motivations for undertaking the MBA program of study. Each item was phrased as a benefit of studying the MBA program. Respondents were asked to indicate, on a five-point scale, how important that 'benefit' was for them. The options ranged from 'Not at all important' (1) to 'Extremely important' (5).

The sample

The data analysed in this paper was obtained from postgraduate students following the Swinburne MBA in the second semester of 2002. Students in Stage 1, Stage 2 and Stage 3 comprised the sample from the population of 'entrepreneurial' students in the Australian Graduate School of Entrepreneurship. At the time of this writing, fifty-three completed questionnaires had been subjected to analysis, and the remainder will be added, as they are received, to this data pool for further analysis to be reported elsewhere.

Data gathering procedure

So as not to disrupt the normal class study, questionnaires were distributed at the beginning of class, when the rationale for the research was briefly explained. The questionnaires were distributed to students in a self-addressed envelope. Students were told that the completed questionnaires in the sealed envelopes could be returned via their lecturers, in the mail, or they could be left at the Australian Graduate School of Entrepreneurship reception desk. It was recommended that students find a suitable time when they could complete responding to the questionnaire in one sitting. They were assured that the survey was confidential and did not capture any identifying information regarding any student. They were also told that subsequent reports based on this analysis would only present aggregated data in statistical form without identifying individual responses.

Participation in the survey was entirely voluntary.

MBA STUDENTS SURVEY RESULTS

In addition to an analysis of the demographic characteristics of the sample, other aspects related to the research question were explored and are reported below.

Student characteristics

Table 1 specifies the respondent characteristics in terms of the MBA Student Survey. It shows that 56% of the respondents were males and this is close to the figure in the total population of MBA students (approximately 61%). In terms of highest previous qualification, Table 1 is interesting. Traditionally, Bachelor of Business or Commerce graduates enter the MBA programs but this is not the case now, since Table 1 shows a mix of Bachelor's graduates drawn from Arts, Science, Engineering and, of course, Business/Commerce disciplines. Nearly 8% of the MBA respondents had already completed a Masters Degree. Just over 30% of the entering students lack

the normal qualifications for entry into the MBA program; that is, their highest qualification is secondary schooling or TAFE education. Presumably they have been admitted under the recognition of prior learning criteria based on life and industrial experiences. Table 1 also shows that three stages of the MBA program are reasonably represented in the sample.

Table 1: MBA Respondent Characteristics

Variable	Items	Percentage
Gender	Male	55.8
	Female	44.2
Prior education	Secondary School	9.4
	TAFE	20.8
	Bachelor – Arts	7.5
	Bachelor – Science	15.1
	Bachelor – Engineering	7.5
	Bachelor – Business/Commerce	24.5
	Bachelor – Other	7.5
	Master	7.5
Stage of program	1st	28.3
	2nd	37.7
	final	34.0
Enrolment status (a)	International	32.1
	Local	67.9
Enrolment status (b)	Self funded	75.7
	Employer sponsored	17.0
	Scholarship	7.5
Enrolment status (c)	Part time study	50.0
	Full time study	50.0
Present employment status	Full time	49.1
	Part time	11.3
	Unemployed/between jobs	39.6
Marital status	Single	43.4
	Married (No Children)	20.8
	Married (With Children)	30.2
	Divorced/Separated	3.8
	Other	1.9
Working experience	Never worked	44.2
	< 5 years	21.2
	5 – 10 years	30.8
	> 10 years	3.8
Owned a business/* been self-employed	Parents	50.9
	Partner/Spouse	17.0
	Brother/Sister	26.4
	Other Relatives	34.0
	Friends	43.4
	None	22.6
No. of businesses owned by respondent	None	79.2
	One	17.0
	> One	3.8

* *Note: Total adds to > 100% due to multiple responses.*

In terms of enrolment status, it is noted that 32% of the respondents were international students. This again is very close to the total population of MBA students where nearly 29% are

international students. Interestingly, over 75% of the MBA respondents were self-funded in terms of financing the programme. Half of the respondents were undertaking full time study and this figure is high relative to the total population of MBA students (approximately 25%). But the over representation of full time students is understandable to some degree since they are on campus during business hours and therefore more likely to complete and return the survey questionnaires.

Table 1 reveals that over 60% of the MBA students were in paid employment (either full time or part time) during the course of their studies. This suggests some pressure on students to support themselves via employment during their studies. In terms of marital relationships, over 43% of the respondents were single, with the balance being married or divorced/separated. Significantly, just over 30% of the students were married with children, suggesting significant family responsibilities. A relatively large proportion of the respondents (44%) had never worked.

Nearly 51% of the respondents had parents who either owned their business or were self-employed. Some 17% of the respondents' partner or spouse were either self-employed or in their own business. Over 26% had siblings in a similar position of employment. Indeed only 23% of the respondents did not know someone (such as relatives or friends) who owned their own business or were self-employed. About 17% of the respondents owned one business with nearly 4% owning more than one business. Such characteristics may be important precursors to being entrepreneurial and, hence, may constitute important findings in terms of the case studies MBA program.

Entrepreneurial characteristics

The respondents were asked to indicate what characteristics they perceived to be present in an entrepreneur. More than one selection was possible in terms of their response.

Table 2: Entrepreneurial characteristics

Characteristic	Respondents* regarding it as entrepreneurial (%)
Motivated to achieve his/her idea	92.5
Good network/contacts	75.5
Confident in their success	75.5
Open and willing to learn	73.6
Shows great persistence	67.9
Responsible	62.3
Takes risk with others' money	26.4
Answerable only to themselves	9.4

* *Figures add to >100% due to multiple responses*

Table 2 specifies the characteristics regarded as important in terms of an entrepreneur. Nearly all the respondents (approximately 93%) felt that entrepreneurs were motivated to achieve their idea. Over three-quarters of the respondents also felt that an entrepreneur had to have a good network or contacts and should be confident about their own success. Nearly 74% felt that an entrepreneur should also be open and willing to learn – an important finding in terms of Universities offering MBA and similar programs. Only a minority of the respondents felt that

risk taking with others' money (26%) and being answerable to themselves (9%) were important characteristics of an entrepreneur.

MBA students entrepreneurial intentions

Table 3 specifies the mean agreement of the MBA respondents towards certain entrepreneurial intentions over the next triennium. The agreement was measured on a four point Likert scale (1 = strongly disagree, 4 = strongly agree). It reveals a relatively higher degree of tendency for students to take responsibility for their own ideas and decisions and be prepared to work under pressure over the next three years. But students are less likely to develop new methods of production or start their own business over the next three years. This appears to be suggesting that many of the students are likely to either continue in their current organizational employment or seek such a position after MBA graduation, at least in the short term.

Table 3: MBA students' entrepreneurial intentions over the next triennium

Intention	Mean agreement
Develop new business ideas	3.17
Develop new methods of production	2.43
Identify new markets	2.87
Take calculated risks	3.08
Take responsibility for ideas/decisions	3.60
Work under pressure and conflict	3.34
Develop innovative plan and present it to potential investors	2.82
Start own business	2.47
Present to senior management a business idea or plan to diversify existing business	2.77

Personal attributes of MBA students

An analysis was undertaken of the mean agreement of the MBA student respondents to certain personal attributes related to entrepreneurship. It reveals that the top ten personal attributes of MBA students in descending order of strength are as follows:

- ?? I do not give up easily (3.58).
- ?? I believe that my organization should focus on customers and the needs (3.52).
- ?? I get bored with routine and doing the same thing over and over again (3.46).
- ?? I get along well with all kinds of people, from managers to lower order employees (3.45).
- ?? I cherished the prospect of building financial security (3.4).
- ?? I always learn from my mistakes and from new experiences (3.35).
- ?? I understand the principles of accounting such as Balance Sheets, Cash Flows and PNL Statements (3.35).
- ?? I am willing to make sacrifices (3.33).
- ?? I work on things until they are done or solved (3.33).
- ?? I have high levels of stamina and energy (3.32).

A profile of the MBA students' strengths seems to be characterized by: tenacity, customer orientation, boredom with routine, gregariousness, desire for financial security, continuous learning, familiarity with financial accounting, making sacrifices, working to completion and physical endurance.

A list of personal attributes that were the weakest in terms of the MBA student's perceptions was also drawn up. As expected, the responses to the two items that were included in the personal attribute schedule as a cross check on questionnaire items asking for respondents' present employment status and number of businesses owned to date were responded to in a similar manner to the earlier questions. That is, they were responded with a disagree rating. Apart from that, the MBA students also *disagreed* that they

- were willing to invest and possibly lose their life savings in the venture (2.04)
- were impatient to grow their business (2.32)
- were rarely get up tight in stressful situations (2.35)
- were not too happy in their last work position (2.48)
- had the necessary experience to run their own business (2.54)
- ignore the judgment of others when they really believed in something (2.55)
- were willing to put their work before their family and friends (2.63)
- did not get uptight about the consequences of their decisions (2.69)

Preparedness for new business initiatives

Table 4 specifies the mean agreement of the MBA students to certain statements concerning their current level of preparedness for new business initiatives. It reveals that only in 3 out of the 22 statements given in Table 4 are the mean agreement scores at or above 3, that is, where the MBA students agree with the statement. The three areas where students appear to be reasonably prepared in terms of taking new business initiatives are as follows:

- I know someone else who established his or her own business (3.19).
- I like to look at things in a fresh light (3.17).
- I can persuade others to see my viewpoint (3.08).

Of the remaining 19, items, the seven items that had mean agreement closest to 'disagree' are also shown in Table 4. Apart from not having any entrepreneurial experience, the respondents indicated that they

- had not developed a new product,
- had identified new market segments and developed strategies to pursue them
- were unable to advise others on how to start a new business
- had analysed the feasibility of a new business

The fact that Table 4 does not show a great degree of preparedness of the responding MBA students to new business initiatives should not be surprising. This is probably due to the fact that these students have enrolled in the MBA program presumably to improve the level of preparedness to undertake or manage business ventures in the future.

Likelihood of actualising entrepreneurship intention

Respondents were also investigated as to whether they would profess intrapreneurial as opposed to entrepreneurial tendencies. Table 5 shows the MBA students' perceived probability of actualizing their entrepreneurship intentions. It shows that the students are much more likely to be intrapreneurial (contributing their ideas towards the diversification of an existing business) than to being entrepreneurial (starting a new business). Albeit this was a crude measure, the statistical testing of the two areas listed in Table 5 suggests that the mean likelihood difference is significant ($t = 3.01$, p is less than 0.01).

Table 4: Preparedness of MBA students for new business initiatives

State of my current preparedness	Mean agreement
	(*Agree*)
I know someone else who established his or her own business.	3.19
I like to look at things in a fresh light.	3.17
I can persuade others to see my viewpoint.	3.08
	(*Disagree*)
I have been self-employed.	1.96
I have been involved in a new business since its inception.	2.11
I have participated in the establishment of a new business.	2.19
I have developed a new product.	2.23
I have identified new market segments and developed strategies to pursue them.	2.28
I am able to advise others on how to start a new business.	2.38
I have analysed the feasibility of a new business.	2.40

Table 5: Likelihood of actualizing the entrepreneurship intention for MBA students

Actualising the entrepreneurship intention	Mean agreement
The likelihood of my starting a new business is greater than 50 per cent.	2.51
The likelihood of my contributing ideas towards the diversification of an existing business is more than 50 per cent.	3.00

Relative importance for enrolling in MBA program

An analysis was also performed on the mean importance placed by the respondents on reasons for enrolling in their MBA program. It reveals that the top three reasons for enrolling in the MBA enrolment were that it would

- ?? Provide me an opportunity to improve myself personally (3.57).
- ?? Allow me to increase my career options (3.56).
- ?? Develop my management knowledge/technical skills (3.56).

However, the three least important reasons for enrolling in the MBA were that the program would

- ?? Help me start my own business (2.62).
- ?? Enable me to help my present/future employing organization to diversify its business (3.09).

?? Provide an opportunity for quicker advancement in my current/future employment (3.15).

These findings indicate that, perhaps, entrepreneurship is not the item of the greatest importance or motivation for MBA students in undertaking the program.

DISCUSSION AND CONCLUSIONS

Looking at the outcome of the study, namely, the likelihood of actualising the entrepreneurial intention, Table 5 showed that respondents were more likely to exhibit intrapreneurial rather than entrepreneurial behaviour. This needs to be understood in terms of the entrepreneurship drivers, namely entrepreneurial intentions and motivations. Table 3 reveals that, over the next triennium, students would exercise responsibility for ideas/decisions and be prepared to work under pressure and conflict, develop new business ideas and take calculated risks. The relationship of these findings to the respondents' perceptions of entrepreneurial characteristics, as shown in Table 2, needs further investigation.

The Louw et al. (1997) study indicated risk aversion by Business Management students. However, this study found that although the majority of the MBA students did not support 'risk taking with others' money', it was likely that they were prepared to 'take calculated risks'. This may be reflecting the greater maturity of the MBA students relative to the undergraduates surveyed by Louw et al. (1997) or alternatively the MBA students were perhaps more entrepreneurially inclined. The resolution of such a hypothesis will require further and more comparative study.

It was the researchers' assumption also that the respondents' motivations for enrolling into the MBA program would be indicative of their entrepreneurial intentions. Hence, they postulated that students enrolled into the MBA program at the Australian Graduate School of Entrepreneurship because they wanted to actualise an entrepreneurial intention. The analysis indicated that respondents pursued the MBA for the opportunity for self-improvement, to increase their career options and to develop their management knowledge/technical skills.

The MBA program helping them to start their own business, enabling them to help their present/future-employing organisation to diversify its business or fast tracking their advancement in their present/future employment (three key indicators of entrepreneurial intent) did not appear to be significant reasons for studying the MBA. This finding seems to be in line with the findings of Drnovsek and Glas (2001), who found that while 53 per cent of graduate students will start some form of a private business in the future, only 25 per cent of MBA students planned to do that. The implications for MBA programs in general, and for the MBA program at the Australian Graduate School of Entrepreneurship, in particular, may be to detect, when enrolling, students with high entrepreneurial potential and awareness and channel them into a specialist entrepreneurship program such as the Master of Entrepreneurship and Innovation (MEI) program, and to structure the MBA program in line with the avowed reasons why students enrolled in that program in the first place.

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STUDENT PERFORMANCE IN AN MBA PROGRAM: AGE, GENDER, COUNTRY OF RESIDENCE AND PERCEPTIONS

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INTRODUCTION

The importance of management education for society deserves in-depth research and studies for it is vital to a nation's economic development (Rivera-Camino and Gomez-Mejia, 2002). Most universities agree that their prestige as an institution depends on the quality of their teaching and student learning.

Assessment is a means of becoming familiar with students, the quality of their learning and helping them learn. It is a way of reporting on their progress and a way of making decisions about their learning.

Assessment, known as measurement, is also about teaching and is viewed as being the servant of good teaching (Ramsden, 1995). Although the focus of assessment is learning, most would agree that learning and teaching as they relate to assessment are intertwined. McKenna and Williams (1997) and McMurray (2002) suggest that academics should consider redesigning the methodology of business education courses to include more innovative teaching-learning approaches. Postgraduate students such as Master of Business Administration (MBA) students demand to be challenged through curriculum relevance. The relevance issue at the postgraduate level is handled by simulating real-life business situations (Cunliffe, Forray and Knights, 2002) experiences, curriculum and assessment.

The ways in which a student is assessed or student performance is measured is an important factor in any educational system. Many of the previous Australasian studies of student performance including those by Dobson, Sharma and Haydon (1996) and Dobson and Sharma (1999) have focussed on undergraduate student populations. However, fewer studies are conducted at the post-graduate level and in particular MBA students, which in many cases can form a School's major fee paying program.

Assessment and its accompanying feedback constitute an important organisational and individual resource by providing information about the system's current state compared to some standard. Traditionally, assessment and feedback were considered to improve a person's performance however recent studies suggest that feedback may have variable effects on performance (Kluger and DeNisi, 1996) because most moderating conditions of feedback interventions are not clearly understood hence there is a need for continued studies on assessment and feedback (Kuchinke, 2001). In an academic context, feedback is predominantly related to student performance and consists of formative evaluative statements such as graded assessment. These assessments are

aggregated into a final grade and are reflective summative evaluative statements of a student's effectiveness of their study behaviour.

Individuals use different sources of performance feedback of which the most frequent and important feedback on performance source is their own self-evaluation (Hanser and Muchinsky, 1978) and then that of the instructor and the least important and useful from student classmates (Kuchinke, 2001).

The following research questions were raised in this study; Do the demographic variables of age, gender and country of residence influence student performance in an MBA program? What are Australian and International student perceptions of MBA assessment?

OVERVIEW of the LITERATURE

Dobson and Sharma (1994) gave prominence to the study of student progress in the Australasian region in terms of higher education. They defined one Student Progress Unit (SPU) as being generated by the successful completion of subjects weighed at one equivalent full time student unit. Dobson and Sharma (1994) study focussed on relative student performance by gender and found that women invariably outperform men.

Dobson, Sharma and Haydon (1996) reported on a national study of student performance. They studied relative student performance nationally for 1993-94 and found that, overall, for students with prior TAFE qualifications, performance was on par with a range of other students including school leavers. Again this study was focussed at the undergraduate level and hence was limited in scope in terms of covering postgraduate education.

Dobson and Sharma (1999) examined the relationship between student performance and the cost of failure of Australian students. They found that the public cost of failure for Australian higher education students was just over a quarter of a billion Australian dollars and over one third of a billion dollars when the quantifiable private cost of failure was included. These very high costs provide cogent reasons for pursuing on-going institutional research in higher education student progress.

The University of Technology – Sydney (http://www.uts.edu.au/about/facts/stperf.html) indicate the following broad outcomes in terms of student performance:

?? Pass rates were slightly higher for postgraduate students than undergraduate.
?? Postgraduates also achieved higher rates of distinction grades.

Felder, Felder and Dietz (2002) examined the effects of the Myers – Briggs type indicator on Engineering Students' performance. The findings can be summarised as follows:

?? Intuitors performed significantly better than sensors in courses with a high level of abstract content and the contrary were observed in courses of a more practical nature.
?? Thinkers consistently outperformed feelers in the relatively impersonal environment of the Engineering curriculum, and feelers were more likely to drop out of the curriculum even if they were doing well academically.
?? Faced with the heavy time demands of the curriculum and the corresponding need to manage their time carefully, judger's consistently out-performed perceivers.

?? Extroverts reacted more positively than introverts when first confronted with the requirement that they work in groups on homework.

Borg and Stranahan (2002) undertook a study of student performance with respect to race and gender. They found that African-Americans when taken together as a group did not perform as well in upper level economics as members of other races, although women as a group perform no differently from men as a group. They also found that female introverts, non-black introverts, non-black judging, male sensing/judging, non-black sensing/judging and non-black intuitive/thinkers Keirsey-Bates indicator subgroups performed significantly better than other personality types.

James, McInnis and Devlin (2002) in a recent submission to the Australian Higher Education Review indicate a need to monitor academic standards across universities at all levels. They observed that staff had difficulty in explaining how standards of degrees can be fathomed and were unable to point with confidence to formal processes for monitoring university standards, particularly against external reference points. James, McInnis and Devlin (2002) also note that moderation processes are almost non-existent and the involvement of external examiners is normally restricted to postgraduate level (and even then usually for research degrees such as doctorates).

METHODOLOGY

Existing University MBA program student record databases containing student final grades and marks from 1999 to 2001 were statistically analyzed using SPSS descriptive statistics in the form of means and test of proportions. The sample consisted of 583 MBA students. The study compared the mean marks of 583 MBA students by gender, age and country of residence (Australians versus International students).
The statistical data were complemented by semi-structured interviews, which contained open-ended questions relating to student perceptions of strengths, and weaknesses of subject assessments and how assessment could be improved in order to maintain academic standards and fairness.
Twelve MBA students who had either just completed the program or were enrolled in the last semester of the program were interviewed to uncover valuable data in order to monitor the environment for cues related to the School's goals.

The12 interviews consisted of six Australian and six International students and were conducted in either face-to-face, telephone, or email modes. The qualitative data was subjected to theme category analysis that involved identifying the major themes and patterns common to the Australian group and the International group. This analysis allowed comparisons to be made between the two groups. The next step in the theme category analysis involved formulating the overall picture by relating the themes and categories generated by the two groups.

COMPARATIVE ANALYSIS OF STUDENT PERFORMANCE

This study compared the mean marks of 583 MBA students by gender and country of origin (Australians versus International Students). It was found that Australian female students (76.3%) had a significantly higher mean mark than their male Australian counterparts (74.7%) with the differences in mean marks being highly significant ($t = 2.75$, p is less than 0.01). In a similar way female International students (72%) had a nearly 4% student performance advantage over their International male counterparts (69.3%) with the difference in mean mark being statistically

significant (t = 1.98, p is less than 0.05). Further female Australian students (76.3%) out-performed their International female counterparts by 6% with the difference in mean mark being highly significant (t = 3.15, p is less than 0.001). The Australian male students (74.7%) out-performed their male International counterparts (69.3%) by nearly 8% with the difference being highly significant (t=8.39, p is less than 0.001) as shown in Table 1.

Table 1: Mean Mark of MBA Students by Gender

Category	Male	Female
Australian	74.70%	76.30%
International	69.30%	72.00%

Source: Authors

It is noted that at the top end of exam results, female students as a whole again out-performed their male counterparts in the MBA program. More specifically nearly 16% of the female students achieved the result of high distinction whereas the corresponding figure for male students was approximately 13%. Test of proportion indicates that this difference in proportion of higher results was highly significant (z = 112, p is less than 0.001). At the top end of marks again even higher difference was noted in terms of Australian versus International students with respect to proportion of students with high distinctions. In particular, nearly 18% of Australian students achieved a high distinction in their subject results (on the average) whereas only 8% of International students achieved such a result. The difference between mean proportions of Australian and International students achieving a high distinction results was highly significant (z = 399, p is less than 0.001). Comparison of proportions of higher passes (credit or distinction or high distinction) in terms of Australian or International students again emphasise the superiority of the Australian MBA students. In particular 85% of Australian students achieved a credit or higher result whereas only 68% of International students achieved such higher passes. This difference in proportion of higher passes was highly significant (z =543, p is less than 0.001).

Age appeared to be a factor in terms of MBA student performance. Overall the proportion of high distinctions given in the MBA program was 13.7% as shown in Table 2.

Table 2: Percentage of High Distinctions by Age

Category	% High Distinction
< 30 years old	10.75%
At or above 30 years	16.10%
All students	13.70%

Source: Authors

The younger students experienced 10.75% of high distinctions in their subject results. However, older students (those at or above 30 years) obtained 16.1% high distinctions. This observed difference in proportion of high distinctions by age was highly significant (z = 252, p is less than 0.001).

As expected in a higher degree program, a majority of students achieved higher passes. Indeed the only exception is the subject "project and resource management" where only 34% of students had higher passes. Indeed this is the subject with the highest failure rate as well (34%). As

previously identified, a major variable is the segmentation of performance by country of origin (Australian versus International). Accordingly students undertaking project and resource management were subdivided according to their country of origin. It was found that International students enrolled in this subject achieved a mean mark of 45.6% with a standard deviation of 17.9 (n = 18). However, Australian students enjoy nearly a 34% higher mean mark than International students (mean mark was 60.9 with a standard deviation of 23.1). Statistical testing indicates that in the subject project and resource management, Australian students have a significantly greater mean mark than their International counterparts ($t = 2.18$, p is less than 0.05).

One major difference between Australian and International students is the mastery of the English language. One could hypothesise that Australian student's superiority in terms of mean marks may emerge from their better reading and writing skills in English. It is noted that all courses are offered in English within the MBA program at the case study University. One way of testing this hypothesis is to compare and contrast mean results achieved by Australian and International students in a qualitative subject such as the "entrepreneurial organisation and innovative managerial mind" and more quantitative subjects such as "financial data and decision making". It is noted that the International students certainly performed better in "financial data decision making" (mean mark was 67.8%), in comparison to the more qualitative subject of the "entrepreneurial organisation and innovative managerial mind" (mean mark of 64.97%). Indeed the difference in the mean marks for the two subjects for International students was statistically significant ($t = 1.88$, p is less than 0.05). Although this appears to suggest that the quantitative factor is a consideration for International students, similar analysis with respect to Australian students reveals the same general trend as noted for International students in the two subjects. In particular, Australian students achieved a higher average mark in financial data and decision making (mean mark 76.2%) in comparison to the entrepreneurial organisation and innovative managerial mind (70.6%) with the difference in mean mark being highly significant ($t = 3.10$, p is less than 0.001). It is further noted that Australian students' conclusively out-performed International students in both the qualitative and more quantitative subjects examined in this analysis.

COMPARATIVE ANALYSIS OF STUDENT PERCEPTIONS

The Australian students perception of the strengths of the subject assessments was that the range of assessment was utilised a wide range of different communication techniques appropriate for the particular discipline and that the use of continuous assessment, whilst taxing, provided benefits and individual growth. They believed that the variety of assessment was strength in that it allowed the student to excel in their own area of assessment expertise. Further, group assessment and presentations together with good feedback were also seen as strengths.

In the area of improvement the Australian students believed that greater emphasis should be given to individual assignments and that presentations should carry a lower percentage of the final mark. There was a general consensus that the grading of assessments was biased towards International students. A further comment was that there appeared to be no system to stop students from submitting similar assignments for different subjects.

As far as suggestions that would improve the assessment environment, Australian students believed that presentations should continue to be part of the assessment, but should include some education and training on the skills required. With regard to group work they believe that the composition of the groups should extend throughout the course. Finally, feedback on assignments should be more explicit.

In general, International students perceived the main strengths of the subject assessments lay in the fact that the type of assessment i.e. the range from presentations through group assignments, individual assignments and examinations created a complete learning environment. This was enhanced by the availability of appropriate feedback from the lecturers. On the contrary, weaknesses included the perception that assessment was culturally biased although admitting that this could be due mainly to language difficulties.

International students believed that assessment could be improved through the mix of part-time (mainly Australian) and full-time (International students) being included in the same classes. In addition, the lack of consistency in marking, and the perceived bias of lecturers towards assignments submitted by International students were sighted as areas that could be improved. On the question of what suggestions could be made to improve the assessment environment, they believe that assignments should be 'single blind' marked and that there should be more peer assessment to encourage student participation. It should be noted that this runs contrary to the literature and perhaps could be explained by differences in culture as most of the research is based on Western values.

CONCLUSION

The study confirmed that the demographic variables of age, gender and country of residence influence student performance in the MBA program. These variables emerged as potent predictors of student's academic performance and to a lesser extent, their perceptions of performance assessment.

Performance evaluation is essential to goal attainment particularly in an academic environment where learning is the goal and the absence of it would create haphazard and random action.

The general conclusion from this study is that both the International and Australian students have similar perceptions of the academic assessment of higher degree programs. However, the implication for the academic unit is for more careful understanding of the cultural and practical language challenges presented, especially by International students. Addressing the issue of students submitting a similar assignment for different subjects resulted in policy recommendations to amend the academic unit's official assessment cover page to include a signed statement that the submission is an original piece of work. Each submission is to include the signed document.

The findings are to be viewed with caution, as other variables and influences on student performance not examined in this study play important roles. Future studies would benefit by conducting similar studies simultaneously across multiple academic institutions.

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ARTICULATION AND CREDIT TRANSFER ACROSS THE COLLEGE AND UNIVERSITY TERTIARY EDUCATION SECTORS: A STUDY OF RELATIVE PERFORMANCE AND RELATED ISSUES

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INTRODUCTION

Historically, the Australian higher education and vocational education have been divided into universities and TAFE. In 1987, the Federal government released the first "green paper" titled "Higher Education, A Policy Discussion Paper" pushing for a "Unified National System". This was followed by the "white paper" in 1988.

The government's White paper put forward the principles of credit transfer policy. Some of the relevant principles articulated were:

- ?? Enable automatic transfer of credit if subjects were comparable between the receiving and the originating institutes
- ?? The receiving institute are to ensure that maximum possible credit is granted
- ?? The awarding institutions are to set a minimum proportion of work that must be completed
- ?? Publication and distribution of such information to enable students to get information easily (White Paper, pp 36-38)

This led the Australian Vice-Chancellors' Committee (AVCC) to set up a pilot project to establish a nationwide credit transfer system in 1992.

Ng and Sharma (1993) outline a number of reasons for the interest in credit transfer:

- ?? Savings made by not teaching the same material twice
- ?? Providing a variety of pathways
- ?? Reduce the high wastage of human resources
- ?? Provide opportunity for higher education graduates to reverse articulate into TAFE courses

As Ng and Sharma show, the benefits to all the stakeholders (e.g. students, universities and government) can be quite substantial.

Sommerlad, Duke and McDonald (1998) show that a number of approaches for fostering collaboration between TAFE and higher education sectors. They argue that institutions could be positioned as tending towards one of the four positions, namely, amalgamation, partnership, association or separation. Wheelahan (2000) states that the amalgamation approach is "represented by the five major dual sector universities. Dual sector universities could be defined as those universities that have both the TAFE and the higher education divisions – both divisions are said to co-exist within one institution (Wheelahan (2000), 15). Partnership and association

approaches also exist – the main difference between the two being that "partnership…sees blurring occurring between the sectors, whereas the (association) approach attempts to maintain distinct boundaries between the two (Wheelahan (2000), 15).

Universities have established different arrangements to allow students to move between sectors. Some of the arrangements identified by Wheelahan (2000) are learning pathways, dual awards, nested programs and integrated awards. Learning pathways are "standardised and formal arrangements for students to transfer between courses … pathways may link sequentially two courses from either the same or different disciplines"(Wheelahan (2000), 18).

In a dual award, two courses from different sectors are combined into a single accredited course. Normally, a student would start the course with most of the studies being taken in the TAFE division. In the final two years of the four year course, the emphasis shifts to the higher education division.

This study compares the performance of students who are enrolled as dual award students, with the students who enrol in higher education courses via 'standardised learning pathways' and the students who enrol in higher education courses after completing secondary school.

METHODOLOGY

Data was obtained from the University Student Administration System. Invalid data such as Enter Scores with zero values were excluded. Calculations of Student Progress Units (SPUs) also excluded students who had withdrawn from the subject before the census dates.

Students entering higher education course via standardized learning pathways were identified by the admission code (13) recorded on the student information system. School leavers were also identified by their admission code (12). Dual Award students were identified by the course codes.

SPU was calculated as

SPU= EFTSUs with Pass or better Grade/Enrolled EFTSUs

Where EFTSU = Equivalent Fulltime Student Unit.

Mean marks obtained by the students were calculated as a second measure of the student performance. Same statistical tests were performed on both the SPU and the mean mark.

SPSS was used to calculate the required statistics.

LITERATURE REVIEW

Dobson and Sharma (1994) gave prominence to the study of student progress in the Australasian region in terms of higher education. They defined one Student Progress Unit (SPU) as being generated by the successful completion of subjects weighed at one equivalent full time student unit. Dobson and Sharma (1994) study focussed on relative student performance by gender and found that women invariably outperform men.
Burns (1994) undertook a study of student performance in the Accounting degree at an Australian university. In particular it compared the performance of TAFE Experience Students with other

undergraduate Accounting students and came to the conclusion that 'ex-TAFE students perform academically at about the same level as their colleagues' (Burns, 1994, p.25). This paper is somewhat similar to the Burns (1994) study but in fact goes beyond that study in that it considers more than one program and also segments TAFE students according to those in fully articulated Degree/Diploma programs and other TAFE students. Further this study uses the more (now) accepted measure of student performance in Australasia, namely, the SPU.

Dobson, Sharma and Haydon (1996) reported on a national study of student performance. They studied relative student performance for 1993-94 and found that overall, nationally, students with prior TAFE qualifications performed on par with a range of other students including school leavers. Again this study did not distinguish between fully articulated Degree/Diploma courses from other TAFE transfers and hence was limited in scope from the present study.

Dobson and Sharma (1999) examined the relationship between student performance and the cost of failure of Australian students. They found that the public cost of failure for Australian higher education students was just over a quarter of a billion Australian dollars and over one third of a billion dollars when the quantifiable private cost of failure was included. These very high costs provide cogent reasons for pursuing on-going institutional research into student performance in higher education.

COMPARISON OF STUDENT PERFORMANCE

Study of Student Progress Unit

Before turning to detailed examination of relative output of Student Progress Units for dual sector, some comments on overall student progress by age and gender at this regional university campus. It was found that the younger students (those below 22 years of age) experienced about two per cent lower student progress rate (0.824) than older students (0.843) but the difference was not statistically significant ($t=1.41$, $p>0.05$). However, overall the female students (0.854) experienced significantly better progress rate than males (0.807, $t=3.78$,$p<0.01$) at the case study institution. This finding is consistent with the Dobson and Sharma (1994) study that established that women invariably outperform men in Australian higher education.

Turning now to dual award program, our attention shall initially focus on some broad student performance analysis (as measured by SPU) before proceeding to detailed comparisons at the program level. Unlike the overall situation, dual award program younger students (less than 22 years old) had a greater SPU (0.823) than their older colleagues (0.715) but the over 15% student performance advantage of younger dual awardees was not statistically significant ($t=1.21$,$P>0.05$). However, as per the overall situation, female dual awardees (0.828) outperformed their male counterparts (0.797) but the nearly 4 % superiority factor was not statistically significant ($t=0.59$, $P>0.05$). Dual sector student performance (0.813) was lower than that of others enrolled at this regional university (0.83) but the nearly two per cent difference in mean SPU was not statistically significant ($t=0.81$,$P>0.05$). The dual awardees (0.813) did not perform as well as other students transferring from TAFE to higher education (0.897) but the over ten per cent difference in performance was not statistically significant ($t=1.57$, $P>0.05$).

Student performance can and does vary by program and so it is interesting to focus on dual awardees performance in terms of SPU at the program level. Accounting program dual awardees (0.823) outperformed other students enrolled in dual sector programs (0.796) but the over three per cent superior performance was not statistically significant ($t=0.54$, $P>0.05$). Marketing dual

awardees (0.75) under-performed relative to other dual sector students (0.817) but this nine per cent difference in performance was not statistically significant (t=1.44,P>0.05). Social Science program students (0.693) under-performed relative to dual awardees (0.823) and the nearly 19 per cent difference in SPU was highly significant (t=2.46, P<0.01). Students enrolled in Tourism programs (0.865) outperformed dual awardees (0.757) and the 14 per cent performance difference was highly significant (t=2.69, P<0.01). Marketing students (0.786) only marginally outperformed dual award accounting students (0.782) but the 0.5 % performance difference was not statistically significant (t=0.05, P>0.05). Tourism students (0.858) outperformed accounting dual awardees (0.782) but the nearly ten per cent difference was not statistically significant (t=1.22, P>0.05). Tourism students also outperformed marketing dual awardees (0.786) but the nine per cent difference was not statistically significant (t=1.12, P>0.05). Accounting dual awardees (0.782) slightly outperformed Social Science students (0.778) but the small difference in SPU was not statistically significant (t=0.04, P>0.05).

In the State of Victoria where this case study university is located, students undertaking matriculation or equivalent studies are assigned an ENTER score by the Victorian Tertiary Admissions Centre (VTAC) ranging downwards from 99.9. A VTAC ENTER of 99.9 implies that the student is in the top 01% of the secondary school graduating cohort. Students were divided into four groups according to their ENTER scores including those with low scores (<=25), lower middle (26 to 50), upper middle (51-75) and high (>75), that is, according to quartiles. Only 0.4% was in the low quartile, 14.7% in lower middle, 69.6% in upper middle and 15.4% in the top quartile. The skewed distribution to the right for the ENTER scores is expected since the university mainly recruits at the top end but for equity and related reasons needs to take some students at the lower end of the VTAC score range.

The mean SPU outcome tends to increase as one moves from the low (.696) to the lower middle (.814), upper middle (.817) and the top quartile of ENTER scores (.905). However, statistical testing of the student progress outcomes of these four groups suggests no significant difference between the mean SPU of the low or lower middle group (t=1.52, P>0.05) or indeed lower middle and upper middle entry score quartile groups (t=0.15, P>0.05). Indeed statistically significant results were only obtained between the three lower quartiles and the top entry score quartile. In particular, the mean SPU of the lowest quartile ENTER score (0.696) was significantly below that of the highest quartile (0.905, t=2.29, P<0.05); the differences in mean SPU between the lower middle quartile (0.814) and the top quartile was highly significant (t=4.95, P<0.001); similarly the differences in mean student progress between the upper middle (0.817) and top quartile was highly significant (t=4.90, P<0.001).

Mean Examination Marks

The SPU is a crude measure of student performance that does not distinguish between the different grades assigned to students; but nevertheless it is an important one that is monitored by the national Australian Government since it provides an effective measure of subject pass rates. Accordingly, the study of student performance using a finer measure in terms of university assessment (mean marks) may be prove useful.

Turning firstly to the effects of student final year high school grading on undergraduate student performance (again using the four quartiles for entry scores) revealed a progressively higher mean university mark as one moves from the lowest quartile (mean mark= 52.9%) to lower middle quartile (56%), upper middle (58.1%) and top quartile (68.7%). However, statistical testing indicates no significant difference between the mean mark of the lowest and lower middle quartiles (t=0.57, P>0.05); but the differences in mean mark between the lower middle and upper

middle quartiles were statistically significant (t= 1.69, P<0.05); off course as per SPU all the three lower quartiles experienced significantly lower mean marks to the top quartile of VTAC ENTER scores establishing their superiority in terms of student performance.

Since a major emphasis in this study is the performance of students in dual sector programs, it is useful to consider whether mean marks vary according to young (< 22 years old) and older group of students (those at or above 22 years of age). In the dual award Tourism degree program the younger age group (Mean mark= 60.4%) had a over 23% advantage in assessment score in comparison to the older group (49%) but the differences in means was not statistically significant (t=1.58, P>0.05). Similarly, the dual sector Marketing degree younger students (57.1%) enjoyed 18% better mean mark than the older students (48.3%) but again the difference in student performance was not statistically significant (t= 0.96, P>0.05). But this trend is reversed in the dual award Accounting course where the older student population (61.5%) had a 6% superior mean mark than their younger counterparts (57.9%) although the mean difference was not statistically significant (t= 0.27, P>0.05). Finally in the dual award Social Science program the younger students (49.3%) enjoyed a 12% superior mean examination result in comparison to the older group (43.9%) but again the difference was not statistically significant (t= 0.3, P>0.05).

As previously established by Dobson and Sharma (1994) gender differences in terms of higher education student performance can be marked. Accordingly attention now focuses on possible gender differences in student performance within dual award programs. In the Tourism dual award program female students (60.4%) enjoyed a 4 % better mean mark than their male colleagues (58.1%) but the difference was not statistically significant (t=0.6, P>0.05). In Marketing dual award degree studies the female students (59%) had a 12% superiority in mean mark over male counterparts (52.6%) although the difference was not statistically significant (t= .91, P>0.05). In a similar way the Accounting dual award program reveals female students (62.5%) holding 10% performance advantage over their male colleagues (56.6%) but again the difference was not statistically significant (t= 0.88, P>0.05). It is difficult to draw any meaningful conclusion in terms of gender difference in performance within the Social Science dual award program since there were only three male students enrolled in this degree studies. For students enrolled in all university programs female students (61.5%) enjoyed a superiority factor of 7% in terms of performance over their male colleagues (57.5%) with the observed difference in mean being highly significant (t=4.7, p<0.001).

Attention is now turned to some overall comparison of mean marks achieved by the three broad groups of students, namely, dual award, TAFE transfers and other students (mainly school leavers). It was found that female other students (62.1%) had a 8% performance advantage over dual award female students (57.4%) with the differences in mean marks being statistically significant (t= 2.3, P>0.05). Similarly female TAFE transfer students (60%) experienced a nearly five per cent superior performance relative to dual award female students (57.4%) but the difference in mean was not statistically significant (t=0.7, P>0.05). Similar results were obtained with male students though none of the differences were statistically significant. In total, other students (59.6%) enjoyed a nearly five per cent student performance advantage over dual awardees (56.9%) with the difference in mean marks being statistically significant (t= 1.9, P<0.05). In total the TAFE entrants (60.6%) outperformed the dual sector students (56.9%) by 6% but the difference in means was not statistically significant (t= 1.2, P>0.05). There was a very small difference in overall performance of TAFE transfer and other students (the latter had 1.6% performance advantage) but was not statistically significant (t = 0.3, P>0.05).

Detailed comparisons were made between dual award and other students at the subject level without revealing statistically significant results except in four cases. In Marketing

Communications the dual awardees (65.5%) outperformed others (60.8%) by nearly 8% with the difference in mean marks being statistically significant ($t=1.9$, $P<0.05$). Similarly in Science, Technology and the Society the dual award students (52.4%) outperformed the others (40.3%) by a very wide margin of 30% with the differences in mean marks being highly significant ($t= 3.8$, $p<0.001$). In Human Resources Management the results were reversed with other students (65.5%) outperforming dual awardees (59.3%) by over 10% with the difference in means being highly significant ($t= 4.6$, $P<0.001$). Finally in Tourism Destination Management the other students (67.3%) experienced over 6% better performance than the dual awardees (63.3%) with the observed difference in mean being highly significant ($t= 2.5$, $P<0.01$).

Yet another factor that may be important in terms of student performance is the regional source of the students. This organisation is like a regional degree granting University College, being a Division of a larger University that is headquartered in an inner suburb of a megapolis. Students were divided into two regions - one adjoining the location of this University Division and the other being the residual group. Overall the Local area students (71%) out-performed students from outside the local area (57.6%) with the difference in mean mark being highly significant ($t= 4.7$, $P<0.001$). Similarly the local dual award students (58.4%) achieved a higher mean mark than those emanating from other geographical regions (55.9%), but the difference in means was not statistically significant ($t= 0.8$, $P>0.05$). The local students transferring from other TAFE programs (62.2%) out-performed the TAFE transfers from outside the local area (58.7%) with the differences in mean being highly significant ($t= 3.4$, $P<0.001$). Finally other students from within the local area (62%) also generated a greater mean score than those from outside the region (57.8%) with the difference in mean marks being highly significant ($t=4.5$, $P<0.001$).

CONCLUSION

Overall, students older than 22 years had a better SPU than the younger students. However, for the Dual Award courses the younger students performed better than the older students. If one looks at the mean marks obtained by the group, the students for the three Dual Award courses, the younger students had a higher mean mark. However, for Accounting Dual Award, the reverse was true – the older students had a higher mean.

Gender seems to determine both the SPU and the mean marks obtained by the different groups. The female students had a better SPU than males for the overall sample. Similarly, the female Dual Awardees had a better SPU then the male students. For all the Dual Award courses, the mean mark for the female students was higher than that of the male students. For the overall population, the female students had a higher mean than the male students. So both the SPU and the mean marks confirm that the females perform better than their male counterparts. This finding confirms the findings of Dobson and Sharma (1994).

As would be expected, the mean mark increases with the increase in Enter Scores. The most significant difference is between the lower middle Enter category and the highest Enter category. Similar effect is obtained with the other measure, the Student Progress Unit. SPU tends to increase with Enter category.

The Dual Awardees had a lower SPU than all other students. Similarly, the mean mark for the "Other" students was higher than the mean mark for the Dual Award students. Comparison of the Dual Awardees with the TAFE articulants show that the Dual Awardees did not perform as well as the TAFE articulants in terms of the mean marks obtained by the students.

Comparison of courses within Dual Award programs shows that there are differences in performance of the student within the different courses. Analysis shows that the Marketing Dual Award students under performed other Dual Award students. Tourism Dual Award students were the top performers followed by the Accounting Dual Awards.

It was observed that the students living in the local area, that is, close to the campus performed better than students from other areas of the city. Both the Dual Award students and the other students observed this result. It may be speculated that the local students find the location of regional campus convenient and therefore, the high achieving students do not travel to universities located closer to the city while the students from other areas only attend the campus if they are unsuccessful in obtaining a place at the metropolitan universities. Current work in progress suggests that students withdrawing from courses at the regional university cite the location of the campus as one of the main reasons for withdrawing from the course. Further work needs to done to identify if there is any difference between the local and other withdrawing students. One may expect that students from other areas to that of the location of the campus is an incentive to withdraw from the course but the local students may not find that the location of the campus is an issue.

FUTURE DIRECTIONS

This exploratory study provides some answers to how the Dual Award students perform in relation to the students who enter university after completing the final year of secondary school and those students who enter universities after completing a TAFE course. As this study was carried out at a relatively small regional campus, it would be interesting to compare the performance of the Dual Award students based at the main campus of the university. Factors such as different entry criteria, different levels of student support at the two campuses and differences in student socio-economic factors could be considered.

It is interesting to note that the students living close to the regional campus perform better than the students living outside the local area. One may ask whether the students living close to the main campus perform better than students coming from outer areas of Melbourne. This could be done by comparing the performances of students between the two campuses and the students' home location.

As mentioned earlier there are differences in performances between different courses. One of the reasons may be that there are different entry requirements for different courses or in fact the courses would be attracting students with different levels of educational attainment. Future research could focus on this to explore the reasons for the differences between courses.

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INSTITUTIONAL RESPONSES TO QUALITY ASSURANCE IN AUSTRALIAN HIGHER EDUCATION

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INTRODUCTION: GOVERNMENTAL DIRECTIONS AND QUALITY IN AUSTRALIAN HIGHER EDUCATION

Since coming to power in 1996, the Howard Liberal-National coalition government has pursued a policy of changing the funding arrangements for Australian Higher Education (hereafter AHE). This change has manifested as an approximately $2 billion reduction in direct federal funding and an emphasis on the development of institutional alternative funding sources, primarily through tuition fees for foreign nationals. (McMahon, L. Sim, M. Smart, D. 2002) In contrast, the quality assurance measures established by the preceding Labour administrations have not been subject to a radical change of direction, but rather have been built on in a fashion of relative continuity.

As noted by McMahon *et al.* (2002), the simultaneous process of altering the funding arrangements and seeking greater quality outcomes has inbuilt and possibly irreconcilable tensions. These tensions have been identified with alarm in some quarters. One example is the Australian Senate's Employment, Workplace Relations, Small Business and Education References Committee, which chose to entitle its 2001 study of AHE, "Universities in Crisis". Considine *et al*. (2001) found that Australia's performance in higher education was slipping compared with that of comparable nations and that the reduction in funding was the main cause. Key indicators such as student to teaching staff ratios have demonstrated the rapid rate of decline in AHE standards in the Howard period (McMahon, L. Sim, M. Smart, D. 2002, pp.50-52).

The newly appointed Education Minister Nelson has instigated a comprehensive review of AHE, publishing *Higher Education at the Crossroads: An Overview Paper* (Nelson, 2002a), as the first part of the ongoing process. This has been followed by a further six discussion papers on the key policy matters in AHE (Nelson, 2002 b; c; d; e; f; g). The stated purpose of the review is to ensure that Australia's higher education institutions are best placed to contribute to the nation's future. The government also instigated a Productivity Commission international comparative study of the resourcing of higher education institutions and the management of those resources; *"University Resourcing: Australia in an International Context"* (Report not as yet available).

Nelson's activities in reviewing AHE have indicated his willingness to depart from the previous direction of Howard Government AHE policy, but as McMahon *et al.* observed, his commissioning further reports when the root cause is clearly under-funding seems pointless (2002, p.52). That said, ministerial change cannot be dismissed as not at least offering a future prospect of a substantial re-think of AHE policy. Nelson is a relatively young minister from the progressive wing of the Liberal party. This contrasts with his predecessor, Kemp, who is from the

conservative wing of the Liberal party. Also Kemp, as a former academic, seemed to have personal agendas in his AHE policy outlook. Nelson, as a former GP, has no such agendas and has exhibited some sympathy for the problems besetting the AHE sector.

AN OVERVIEW OF THE QUALITY INSTRUMENTS IN AUSTRALIAN HIGHER EDUCATION

Defining quality and identifying quality outcomes is problematic across all fields of management, as has been recognised since Deming first advanced quality as a key management concern in the late 1940s (see Deming, 1982). While this is so in the production of tangibles, it is all the more so in the production of the intangibles which comprise most public goods, including education. Whereas a quality examination of tangibles can focus more on outcomes than processes, the quality examination of intangibles tends to focus more on processes than outcomes. This is acknowledged in current discussions of outcomes in AHE (Nelson 2002b, 129).

In examining quality in AHE it has been argued that quality has a chameleon like nature (Vidovich, 2000), changing to suit the background environment. Lindsay also outlines the problems of quality identification in AHE:

> *Quality in higher education is a nebulous notion. Its attributes are complex and intangible. Despite vigorous efforts to define it in terms that are more susceptible to measurement, it remains highly resistant to assessment by means other than judgements that reflect personal values as much as professional standards.* (Lindsay, 1994, p.56)

Quality in these and other perspectives of AHE is largely a subjective rather than objective view based mainly on processes rather than outcomes, as in the philosophy of Hume it exists in 'the mind that contemplates them.'

Never-the-less harder definitions of quality have had to be generated to advance discussions of quality in AHE, for example:

> *…systematic management and assessment procedures adopted by a university to monitor performance and to ensure achievement of quality outputs or improved quality. Quality assurance aims to give stakeholders confidence about the management of quality and the outcomes achieved. Most commonly at the national level, quality assurance is the responsibility of a specialist government agency, and less commonly, the responsibility of an agency established by the universities.* (Senate, 2001, p174)

External forces such as the globalised competition for students and research resources also drive the quality process:

> *Internationally there is a strong move towards having rigorous, internationally recognised higher education quality assurance processes. Foreign governments and institutions considering education relationships with Australia, and families considering personal education investment must have confidence in the quality of Australian universities and in the quality and reputation of Australian degrees.* DETYA, 2001.

This drives up the stakes in the difficult process of quality management in AHE, all the more so in the light of the Howard Government's shift to greater emphasis on the sector raising considerable funding from international student fees. A clear causal relationship exists as high quality standards are required to attract international students and equally that revenue from international students is essential to fund quality standards. As Considine *et al.* (2001, p20) found, international student graduations increased by 729.2% from 1990 to 1999. This compares with an

increase of 107.3% for local students in the same period. Without the seven fold relative increase in international full fee payers the quality of AHE would be unsustainable, indeed the viability of much of the AHE sector would be unsustainable. A crisis in quality in AHE would lead to a collapse in international student numbers that in turn would lead to a possibly intractable crisis in AHE. Certainly many AHE institutions would cease to be viable in the face of such a crisis.

The focus on quality in AHE spans three decades and three changes of federal administration. In the late 1970s the Fraser Liberal-National Coalition Government promoted the self-monitoring of performance and measures for the first meaningful cross-institutional comparisons to be held in Australia's atomistic AHE system. In the early 1980s the Fraser Government expanded these measures to include increased public accountability, efficiency and effectiveness, in line with the rest of the public sector. The Hawke Government continued to build on this trend and introduced system-wide studies from the mid-1980s. These included discipline reviews to determine standards and quality benchmarks, on a non-binding and no-penalty basis.

In the late 1980s Hawke Government Minister Dawkins administered significant structural changes to AHE, removing the binary divide between universities and other AHE entities. Although there have been some amalgamations and separations of institutions since Dawkins' period, the contemporary make-up of the AHE sector is the largely as it was established by the early 1990s.

Dawkins' restructuring had the purpose, since realized, of greatly expanding AHE participation rates. To fund this expansion Dawkins altered the funding arrangements for AHE, primarily through the introduction of a local graduate tax system, the Higher Education Contribution Scheme (HECS) and fees for overseas students. Prior to the Dawkins funding changes 90% of AHE was government funded. The level of government funding was declining gradually under the Labour administration of Keating with the balance being taken up by the new HECS and fee based funding arrangements. However the Howard Government funding arrangements have led to a dramatic decline of over 6.9% per student between 1995 and 1999. (Considine *et al.* 2001 p24).

CURRENT GOVERNMENT DIRECTIONS IN QUALITY AND AUSTRALIAN HIGHER EDUCATION POLICY

The Keating Government's *Higher Education: Quality and Diversity in the 1990s* (Commonwealth Government, 1991) set the quality agenda on which current quality directions are founded and started the system of mandatory adherence to quality processes in AHE. Three rounds of voluntary self-assessment under the quality umbrella were conducted between 1993 and 1995. This initiative acted as a means of encouraging critical self-examination in AHE institutions and acted as a spur for a quality centric management approach. In 1998, the Howard Government moved to establish quality improvement as a key criterion in annual funding rounds with AHE entities (see DETYA, 1999, Harman, G. Meek, V. 2000). This was followed by the establishment of *Quality Assurance and Improvement Plans* as a mandatory requirement, published annually by the DETYA and open to public and media scrutiny (Skilbeck, M. Connell, H. 2000). The trend from the Dawkins' years into the Kemp years was for the voluntary quality measures to transform into mandatory quality measures.

The *Quality Assurance and Improvement Plans* laid the basis for the development of Australian Universities' Quality Agency (AUQA) and set the further directions for the Howard Government's quality directions in AHE. In agreement with State Education Ministers, from 1999 the *National Protocols for Higher Education Approval Processes* created the formal means

for the establishment of AUQA in March 2000. AUQA has since then been operating as an independent, publicly reporting and accountable national agency and commenced quality audits in 2001 on a five yearly basis.

AUQA is a quality watchdog agency and does not have the power to directly harm institutions transgressing on a quality basis. However a negative AUQA report would undoubtedly attract the interest of the Federal Minister and the relevant State/Territory Minister and lead to negative implications through other means. Also negative AUQA reports, as they are public, would harm the marketing image of an institution and cause problems with enrolments and therefore per student based funding, especially if there was a negative impact in international fee payer student recruitment.

While AUQA is technically independent, operating as a not-for-profit company funded by the Federal Minister, the six State and two Territory Ministers via the Ministerial Council on a joint basis, it cannot escape the gravity of federal funding and policy hegemony in AHE.

Before the ministerial re-shuffle, a leaked Cabinet document revealed that Minister Kemp found the problems of quality revolved around funding and he therefore recommended deregulating admissions and fees, which would increase the capacity of AHE to charge up front fees for local as well as international students (Senate, 2001, Appendix 4, Leaked Cabinet Submission Proposals For Reform In Higher Education Minister: The Hon Dr David Kemp MP Minister for Education, Training and Youth Affairs). The Senate Committee agreed with Minister Kemp that under-funding was a key quality problem, but recommended the restoration of government rather than fees based funding. (Senate, 2001, Recommendation One).

As mentioned earlier, the replacement of Kemp by Nelson as Minister signals at least a partial change in policy direction by the Howard Government. Nelson has initiated a series of issue papers; Higher Education at the Crossroads: An Overview Paper *(Nelson 2002a)*; Striving for Quality: learning, teaching and scholarship *(Nelson 2002b);* Setting Firm Foundations: Financing Australian Higher Education *(Nelson 2002c);* Varieties Of Excellence: Diversity, Specialisation And Regional Engagement. *(Nelson 2002d);* Achieving Equitable And Appropriate Outcomes: Indigenous Australians In Higher Education *(Nelson 2002e);* Meeting The Challenges: The Governance And Management Of Universities *(Nelson 2002f);* Varieties Of Learning: The Interface Between Higher Education And Vocational Education And Training *(Nelson 2002g). Nelson's initiatives have received a lukewarm response from the Australian Vice-Chancellors' Committee (AVCC, see for example AVCC, 2002), various institutions including Edith Cowan University (see below) and a negative response from the National Tertiary Education Union (NTEU, see for example, NTEU, 2002).*

Unless, as Minister, Nelson can secure a Cabinet win in the long-term budget process to re-establish public funding for AHE, the temptation is to see his flurry of policy activity as being akin to Macbeth's observation of a tale told by an idiot, "…full of sound and fury, signifying nothing."

CASE STUDY OF AN INSTITUTIONAL RESPONSE: EDITH COWAN UNIVERSITY

Edith Cowan University (hereafter ECU) was the formed as part of the Dawkins' restructure of Higher Education, in the early 1990s. The university was formed 10 years ago from a College of Advanced Education and as such is often referred to a as a new university. In the rarefied

atmosphere of higher education in Australia these "New Universities" are often "looked down on" as lacking the history, prestige and research history of the older more establish Universities. One thing that the new universities such as ECU do lack is a substantial capital base, which has been built up by the longer standing Universities. As such there is little flexibility in the budget of these new universities, which are forced to compete on the same footing as the more established universities.

In the last 12 months the quality agenda has permeated ECU's culture on two levels; firstly specifically targeting the quality of Teaching and Learning and secondly a more generalised the quality ECU's functions across the organisation. The focus on the quality of teaching and learning has been precipitated by not only the AUQA review but also by the Nelson Review. Quality is now part of the ECU's culture affecting everything for the development of a new strategic plan down to how individuals annual planning and review cycle.

One of the interesting out flows of the Nelson Review is the banding together of the "new universities" into a lobby group which calls itself the "New Generation Universities". ECU was one of the few universities that responded to the Crossroads paper and all of the ensuing discussion papers. ECU's response to the Nelson discussion paper on "Striving for Quality: Learning, Teaching and Scholarship" highlighted the difficulties that this agenda posed to the universities that fall into the "New Generation" category.

According to ECU (2002b) the 'Striving for Quality" paper failed to grapple with some of the issues associated providing quality teaching and learning in an increasing diversified sector. Universities such as ECU that have chosen to focus more closely on researching, developing and transmitting knowledge associated with the professional services sector of the economy are disadvantaged by systems, policies and funding models that continue to be based on traditional views of teaching, scholarship and research.

ECU highlighted in its response that to strive for quality in teaching, learning and scholarship is difficult in environment of declining Commonwealth resourcing of universities; increasing student-staff ratios, greater requirements for formal accountability; an increasing need to 're-tool' the sector in the light of rapidly changing technologies; an expectation of greater attention to entrepreneurial activity in addition to research output; and declining relativities with respect to reward structures outside the Australian higher education sector.

The contradiction in the Commonwealth Government's expectations in relation to quality in all areas of teaching and learning and the current funding system which focuses on the research out put of universities was highlighted by ECU in their response. The current system particularly disadvantages universities such as ECU that focus on teaching and learning not just research.

The Nelson review of higher education coincided with ECU's strategic planning cycle and the impact of the issues raised by Nelson in relation to the quality of Teaching and Learning is reflected to some extent in ECU's draft strategic plan. According to ECU's 2003 – 2007 Strategic Plan the mission of the University is

"To provide, within a diverse and dynamic learning environment, university education of recognised ***quality****, especially for those people employed in, or seeking employment in, the service professions"* (ECU 2002a).

Of the five strategic priorities that are outlined in the plan quality in teach is emphasised as ECU strives to position itself as a national leader in the education of the knowledge based service

professions. Through the implementation of the Strategic Plan it is considered that ECU will be recognised for the quality of its teaching and its learning opportunities in those fields.

To achieve this positioning as a provider of quality teaching and learning ECU will have to strengthen its enterprise and the resource base to enhance its capacity to deliver high quality teaching, learning, research and services in the context of an increasingly challenging and competitive environment.

As part of this focus on the quality of Teaching and Learning at ECU the university is currently implementing a Unit and Teaching Evaluation (UEI/TEI) instrument with the aim of improving the quality of teaching and learning at Edith Cowan University.

This policy is to be viewed as part of the University's continuing commitment to the development of appropriate policies and practices that promote improvement in teaching and learning. The emphasis of the policy is on self-evaluation and improvement by the School.

Unit and Teaching Evaluation survey is to be completed by students of ECU's 1500 units. The survey will be carried out at the end of every semester and the information gathered will be used to improvement and development of unit. The information will also be used in relation to the teaching effectiveness of staff and innovative practices being trialled within the units (ECU, 2002c). The Unit and Teaching Evaluation process will also be applied to units delivered externally and those taught offshore.

In the late 1980's the then Minister for Higher Education Dawkins, as mentioned above, undertook the restructuring of Higher Education the out flow of which was increased interest in the quality of Higher Education and the need for a further quality assurance and recognition mechanisms. From this the Committee for Quality Assurance in Higher Education (CQAHE) was set up to carry out audits. These audits where based on the areas of teaching, research and community service, and the assessment was said to be based half on the institution's achievement of its objectives and half on the ambitiousness of the objectives themselves (Woodhouse, 2001).

Thought a quality function previously existed at ECU the current move have at ECU was sparked by the impending AUQA audit of the University to be undertaken in 2003/4. According to David Woodhouse (2001), Chairman of AUQA, his organisation's intentions differ from the previous CQAHE quality audits in that AUQA's intent is to enable institutions and agencies to demonstrate accountability through improvement and will set outcomes within the context of a total effectiveness audits. AUQA will be undertaking quality audits which entail the systematic and independent determination whether the organisation has planned arrangements that are suitable to achieve its objectives; whether the actual quality activities conform to the planned arrangements; and whether the arrangements are being implemented effectively.

The previous CQAHE assessments of ECU focused on the *quality assurance systems* in place and it is mooted that the old CQAHE reports will be one of the starting points of the AUQA audits (ECU 2002d). Under the CQAHE assessment ECU received less than flattering feedback and this has been the basis for the Quality @ ECU initiative.

Overriding Goal for Quality at ECU is that by 2006, ECU will perform as well as or better than other universities against National Quality Award Frameworks. This overriding goal for quality is supported by three sets of objectives, strategies and performance indicators for managing quality at ECU.

?? Objective 1 - People and Quality

Scholars and support staff will adopt best practice quality principles.

?? Objective 2 - Professionalism in Management
Scholarship and support outcomes will be achieved and improved through formalised planning and review processes.

?? Objective 3 - Excellence in Enterprise
ECU's capacity to achieve its mission of providing university education will be dramatically improved (ECU, 2002d).

The Quality at ECU initiative is bases on a continuous improvement cycle of 4 principles: Plan, Do, Review and Improve.

1. Plan

ECU Strategic Plan 5 year outlook
?? Operational plans at Faculty, Centre and university-wide level - 3 year outlook
?? Individual work plans (Management for Performance)
?? Everyone has an opportunity to contribute to strategy development, planning and resource alignment

Alignment
Our activities and resources are aligned with our planning objectives

2. Do

?? Clarify your role in quality enhancement
?? Agree standards
?? Implement policies
?? Document processes

Proximity
Quality is the responsibility of the individual doing the task

3. Review

?? Improve processes, products and services
?? Use feedback from the reviews to identify opportunities for improvement

Feedback
ECU used the information from the reviews to improve our planning

4. Improve

?? Employ a range of formal and informal review processes
?? Access external expertise in formal reviews
?? Use data, indicators and benchmarks to inform reviews
?? Monitor outcomes against planned objectives

Externality
ECU engages outside expertise in the formal review process (ECU, 2002d)

The Quality at ECU process not any applies to Teaching and Learning but all the activities of the university and its staff. The Plan-Do-Review-Improve cycle is to be part of each individual's daily lives at ECU through out all levels throughout the organisation.

The cost of Quality at ECU across the organisation has yet to be identified or measured. Nor have any benefits to ECU besides compliance with AUQA audit been identified to ascertain if

Quality at ECU has any other benefits to the university in areas such as image, student numbers or income.

CONCLUSION: WILL YOU JOIN THE DANCE?

Will you, won't you, will you, won't you, will you join the dance? (L. Carroll, *Alice in Wonderland)*

Although the Australian constitution sets education as being a matter for the States, the iron grip the Federal government has over AHE funding and consequently policy means that Federal hegemony remains unchallenged. This is despite a current political landscape where all six state and both territory governments are governed by Labour administrations. Changes to AHE arise through ministerial replacement, bureaux redirection and through the influence of peak bodies such as the AVCC and the NTEU. Minister Nelson has shown a disposition to alter the direction of his predecessors, but a radical departure has not been forthcoming nor can one be expected.

In terms of institutional responses, there is little choice but to join the dance according to the tune that the Federal government chooses. This can require considerable resource reallocation within institutions, shifting more resources into management systems designed to meet the requirements of quality expectations at the expense of already stressed teaching and research resources. The case study of ECU indicates both positives and negatives. On the positive side, ECU is using the AUQA and *Crossroads* policy initiatives as a spur to implement change. On the negative side, raising the resources for this purpose in an institution that is new and resource poor is a considerable burden.

Many of the quality problems in AHE can be attributed to the Howard Government's funding reductions and quality measures, no matter how well intentioned or structured, cannot redress this problem. Flowing from Deming's (1982) pioneering work, it is true of quality generally that a poorly resourced production process will result in a poor product. It is also true that once a perception takes hold that a product is of poor quality, altering that perception is an onerous task even where the quality of the product is palpably of high quality. This is the risk facing Australia's concerns with quality in AHE.

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EFFECTIVE AND EFFICIENT USE OF ICT IN PROVISION OF HIGHER EDUCATION

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INTRODUCTION

As the first decade of browser access to the World Wide Web closes information and communications technology (ICT) has become a staple in the educational diet of developed countries. The efficacy of ICT in higher education is however still a matter of contention. There are now numerous relative evaluative studies (Kulick and Kulick, 1986 & 1991 provide a summary; also Web-Based Education Commission, 2000) but many of evaluative studies relate only to individual instances of the use of ICT. In some cases these evaluations have been undertaken by parties with a vested interest such as the person responsible for an ICT innovation (see for example Allen *et al*, 2001; Boles, 1999; Lockyer *et al.*, 1999; and Tapper, 1997).

This paper draws on a national investigation of the effectiveness of the use of ICT in flexible provision of higher education in Australia (Ling, Arger *et al*, 2001) The effectiveness of models of flexible provision of higher education) and upon the emerging conventions concerning ways in which ICT can be used effectively and efficiently in the provision of higher education (Inglis, Ling and Joosten, 2002). There has been available for several years evidence that the use of ICT in education does not generally detract from learning outcomes (Kulick and Kulick, 1986 and 1991). Evidence is now available that ICT can contribute to efficiency in provision of higher education including cost-efficiency (Ling, Arger *et al.*, 2001). The paper identifies critical decisions that need to be made when employing ICT in provision of education and provides some guidelines for the effective and efficient use of ICT.

THE EFFECTIVE USE OF ICT

Evidence from an Australian Study

This paper draws on an investigation of the effectiveness of models of flexible provision of higher education in Australia (Ling, Arger *et al*, 2001). The study grew out of a concern about the effectiveness of flexible provision initiatives in affording study choices to students, particularly those in non-metropolitan regions of Australia. The ten cases of flexible provision chosen for close investigation were ones that provide higher education programs for students in non-metropolitan regions of Australia.

The research questions were framed as:

?? Are differing models of flexible provision of higher education apparent in Australia?
?? Are models identified effective in the provision of higher education?

The latter question includes the concept of cost effectiveness.

This paper focuses on those aspects of the study of flexible provision of higher education in Australia that relate to utilisation of information and communication technologies (ICT) and on consequences for practice.

Research Genre

The investigation involved the identification and description of cases of flexible provision of higher education. The descriptions utilise both qualitative and quantitative data.

Each university in Australia was invited to indicate policies of the university directed at flexible provision of higher education. For each policy they were requested to provide a rationale and an example or examples of practice. Two broad categories and six strategies of flexible provision of higher education were distinguished on the basis of literature and responses to the survey.

1. *Provision Affording Access and Convenience:*
   Moving time and place of study to suit the learner.
   Removing fixed time and place constraints.
   Removing entry requirements.

2. *Provision accommodating learning preferences:*
   Providing alternative entry and exit points.
   Accommodating learning style, pace and collaborative learning preferences.
   Accommodating content and assessment preferences.

Case Studies

The effectiveness of models of flexible provision of higher education was explored in the investigation through case studies. The case study reports constitute descriptions of the context of the case, policies relevant to the case, practices, student participation, learning outcomes and cost effectiveness.

Ten cases were selected. The ten cases cover the notional models of flexible provision identified in the initial survey of universities. Seven of the ten case involved use of ICT though in none of the cases studied was the tuition entirely reliant on ICT. A summary of findings was developed for each case. The ICT approaches adopted may be divided into three categories:

- Those associated with the provision of learning resources
- Those focusing on computer-mediated communication
- Those that involved a combination of resources and communications.

EMERGING GOOD PRACTICE

Self-Contained Learning Resources

Print-based distance education materials have traditionally been design as self-contained learning packages. They are usually presented in a form that makes the intended learning outcomes explicit, provides some learning resources involving both information and structured learning activities, provide reference to other resources and providing for progressive self-assessment. Likewise ICT-based educational resources that may be presented through the Internet, on CDROM or on Video CD, can adopt the same approach. ICT materials have added advantages of being able to hyperlink materials, being able to search large Internet databases for additional pertinent material, and being able to provide instant response to progressive testing.

The guided study approach adopted in distance education addresses some of the challenges of educating students off-campus. It makes learning objectives clear and helps to focus the learner on the intended outcomes. It can be framed to include learning activities and can give feedback. The materials may break up the learning activities into a sequence of learning tasks, each tested

and providing a response to learners. This sits well with cognitive theories from the behaviourists to Gagne (1974).

There are, however, further challenges in the design of self-contained learning resources. The design needs to predict the learning needs, backgrounds, and responses of the students. This suggests either that the student cohort needs to be controlled to give reasonable consistency or that the materials need to allow for alternative pathways for different users, or both. It also suggests that design should be informed by an analysis of learner needs, preferences, prior experiences, and behaviours with similar materials. This might be addressed by testing assumptions on which the design is based (for example [1] the prior knowledge and skills of intended learners and [2] assumptions about how learners will behave with the materials). Design that takes these elements into account can go some way towards compatibility with constructivist understandings of learning (Scheurman, 1998). Using ICT the packaging of learning materials can be tailored to the individual learner's needs by using appropriate file and folder structures and linking. The path of students can be controlled or advised in accordance with responses to self-testing or formal testing. Using an electronic medium, materials that are not pertinent to the particular student need not be visible to that student.

Inglis *et al.* (2002) suggest that the design process should ensure that:

- The intended learning outcomes are explicit;
- The materials are logically and transparently structured;
- Alternative starting points, pathways, and end points are offered;
- Each segment of the program incorporates an element of self-assessment;
- The materials are attractive and easy to navigate.

Education and training software provides structures suitable for the distribution of educational materials. Such systems, however, can be used simply to convey information, which if combined with assessment that simply tests recognition and recall of facts do not push students beyond the lowest levels of cognition (Bloom, 1956; Biggs, 1999)

To lift learners to higher cognitive or skill levels requires thoughtful instructional design and possibly the use of multimedia materials such as simulations. This requires greater investment of time in design, development and evaluation of materials.

Inglis *et al.* (2002) suggest that self-contained learning packages are most suited to situations where:

- The potential market for a new course is large
- Flexibility with regard to time, place and pace is of prime importance
- The characteristics of the learners in the target group are known or can be readily ascertained
- Materials can be trialled during the design and development phases
- Learners in the target group have other learning materials and facilities on which they can draw.

USING COMPUTER-MEDIATED COMMUNICATION

Laurillard (1993) suggests that learning and teaching at the higher education level involves working with sophisticated concepts at least some of which are not amenable to simple transfer of information. It involves interchange between teacher and learner where the learner commences with a naive understanding and the teacher contributes an expert view. To progress not only that

the learner is able to access the teacher's understanding but that the teacher is able to access the various understandings of the learners in order to provide appropriate assistance. This involves an exchange and places emphasis on two-way communication. If we allow that students can also learn from interactions with other students then multi-way communications are needed.

An alternative approach to using packaged self-instructional materials is to use computers to facilitate online discussion and conversation, as well as provision of information. Computer-mediated communication was originally limited to text but it can now include sound, graphics and video.

In fact the communication may be:

- One-to-one — allowing the communication to be directed to the needs of the individual;
- One-to-many — allowing economy of communication to the instigator of the communication;
- Many too many — allowing multiple participants to contribute to or to audit the communication.

The possibilities for communication using ICT are many including asynchronous forms, which give flexibility in the time of learning as well as the place of learning, such as:

- E-mail;
- Announcements or electronic notice boards
- Commercial conferencing software
- and synchronous communications such as:
- Web-based conferencing systems;
- Internet Relay Chat
- Video conferencing.

Synchronous communications reduces time flexibility but it may generate spontaneity and give greater sense of presence especially if it has audio and video components.

Using the communications component of ICT allows teachers to respond to the varying and changing needs, abilities and understandings of individual learners as well as widening teaching resources by facilitating interaction between students.

One of the drawbacks to use of computer-mediated communications, which was frequently commented upon by respondents to the Australian study (Ling, Arger *et al.,* 2001), is its capacity to increase academic workloads. Teachers reported that responding to student emails and electronic discussion increased the time they spent on teaching at the expense of their time on research and publication, their evenings and their weekends.

Inglis *et al.,* (2002) suggest that learners can be encouraged to seek responses from fellow students in the first instance through email or discussion. The teacher then monitors interactions between learners and intervenes only occasionally, 'for example to counter misconceptions, to motivate and stimulate learning, or change direction or open new paths for consideration.' Another possibility is to provide a databank of responses to frequently asked questions, a process, which could be automated. Inglis *et al.* (2002) suggest the use of computer-mediated communication is most suited to situations where:

- The potential market for a new course is small
- There is a need to respond to the emerging needs of the learner, for instance where the prior understandings, characteristics and learning needs of the learners is not known

- ?? The subject matter or the level at which it is pitched arise from the needs and interests of the particular cohort of students
- ?? Responses to individual learners can be provided economically, perhaps by reserving tutor responses until after peer responses are received, posting responses to frequently asked questions, or drawing common responses from a prepared item bank.

Students need to be made aware of the requirements for using the means of communication selected as well as the protocols to be employed.

COMBINING APPROACHES

Integrated learning management systems such as LearningSpace, TopClass, FirstClass, WebCT and Blackboard allow for the combining of the presentation of learning resources, teacher-learner and learner-leaner communications, and assessment. They offer the advantages of both a resource-based approach and a communicative approach but are also susceptible to the potential disadvantages of each.

The combined approach allows self-instructional materials to be used to:

- ?? Present a concept and provide access to related learning resources
- ?? Initiate learning experiences appropriate to the skills, knowledge, attitudes and propensities which students are expected to develop
- ?? Provide simulations of learning situations too expensive, inconvenient or hazardous to provide otherwise

It allows computer-mediated communication to be used to:

- ?? Introduce learning materials to the particular learners and explain their purposes and procedures
- ?? Monitor students' development of concepts and skills, and to adjust the presentation of a course accordingly
- ?? Respond to learner concerns arising from the materials
- ?? Support learning through peer interaction
- ?? Update or supplement materials.

Inglis *et al*. (2002) suggest that the simple presentation of information is not likely to be the optimal approach. Approaches likely to be favoured are those that:

- ?? Make objectives explicit
- ?? Involve the learner in a process she/he sees as relevant to her/his learning needs
- ?? Involve the learners in making decisions and undertaking actions
- ?? Can be monitored by a learning facilitator
- ?? Allow intervention and interaction between participants.

THE EFFICIENT USE OF ICT

Evidence from Australian Study

The Australian study into the effectiveness of flexible provision of higher education also investigated cost effectiveness (Ling, Arger *et al.,* 2001). Aspects of the findings are pertinent here. Cost effectiveness was addressed in this Australian study by separately considering effectiveness and costliness. A picture of cost effectiveness of flexible provision of higher education emerged from the case studies.

Flexible provision in most of the cases surveyed, most of which made use of ICT, made marginal additional demands on infrastructure costs. Additional costs were due in part to the innovative status of the projects investigated, which thus involved establishment costs. In most cases there was some additional demand on support services.

The outstanding issue, which distinguished cost effective from costly approaches, was in demands on staff time. For institutions with established off-campus or multi-modal arrangements and which made allowance for design and development demands in staff workloads, flexible provision was not costly, though even in these institutions communication with students was increasingly demanding on academic staff time.

For institutions without a background in off-campus education, initiatives placed extra demands on staff time that were not necessarily reflected in additional budget allocations and were satisfied in part at the cost of time spent on research and/or by staff working longer hours. For these latter institutions the scale of operation of flexible provision using ICT was generally small. For these institutions there may be opportunities for adoption of more economical procedures with increases in the scale of operation.

Tensions in a achieving Cost Effectiveness

As labour costs are likely to account for more than 75% of total costs this is the area that offers the best potential for reducing costliness. The question is whether costliness can be reduced while maintaining or improving educational effectiveness. Economizing on labour costs can be achieved in ICT-based education by limiting teacher and learner interaction or at least by limiting the teaching labour component of teacher and learner interactions.

Limiting teacher-learner interactions is problematic. Whether we concerned with understanding, skills, or attitudes, learning effectiveness is likely to be enhanced by the teacher having an awareness of the circumstances, interests, needs and aptitudes of individual learners not only initially but on an on-going basis and selecting the best methods of moving the learner toward a desired outcome accordingly.

To a point good instructional design of learning resources can anticipate the circumstances of students such as the likely range and levels of existing knowledge and skills of students. It may be possible to be possible to investigate alternative conceptualizations of a phenomenon entertained by students, both initially and as they progress, and to design materials accordingly. (Phenomenographic research can assist in this process. See Prosser and Trigwell, 1997).

Inglis *et al.* (2002) suggest that creating an appropriate learning environment may be assisted in the development of learning materials by:

- Calling upon instructional designers as well as expert teachers in the design of learning materials
- Careful trialling of materials during design and development phases.
- Offering alternative starting points, pathways, and end points

Nevertheless, not all the circumstances of students can be anticipated so communication and interaction are required to effectively respond to learning needs. In addition to cater for various preferences in learning style and for motivational reasons communication opportunities are important.

Economies of Scale

One hope of investment in ICT-based learning resources and infrastructure is that the scale of operation can be increased economically (Ling, Arger *et al*., 2001).

To a point economies of scale can be obtained by extending use of ICT infrastructure including the use of a learning management system across numerous courses. Opportunities for economies of scale are limited by the limitations of infrastructure, including computer network servers, administrative and technical support staffing, which require duplication or extension as load increases. They are also limited by any student-teacher interactions. Costs of marketing may add to unit cost after a point. The effect is likely to be initial economies as enrolments grow from small numbers to larger but the decrease in unit cost is likely to level out until an additional investment in infrastructure opens new opportunities to expand the scale of operations economically. The pattern of change is represented Figure 1 below.

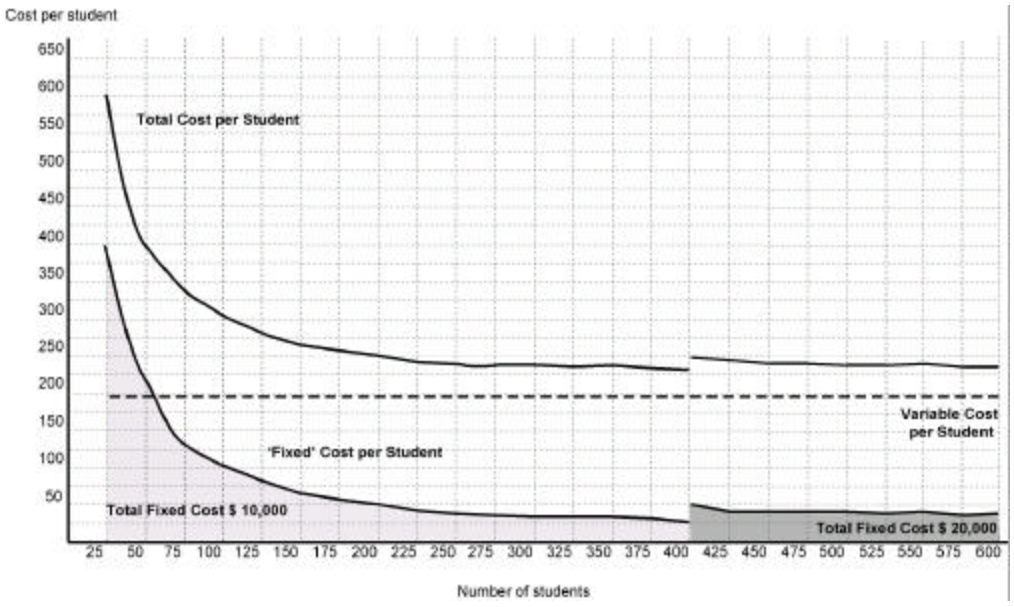

Figure 1: The influence of student numbers on cost per student

CONCLUSION

What constitutes effective and efficient use of ICT in support of learning in higher education depends upon:

- ?? What is to be achieved – intended learning outcomes;
- ?? With whom it is to be achieved – that is the nature of the student cohort; and
- ?? A theoretical position on what is likely to support learning in the circumstances.

Effectiveness of higher education programs, if one comes from a constructivist or other phenomenological-based understanding of learning is dependent upon the opportunity for teachers to respond to initial and changing student learning needs. While these may be anticipated to some extent, in complex learning situations it is likely to require opportunities for on going interaction between teacher and student and possibly between students. With small student numbers it may be efficient to minimize investment in the development of learning resources and to rely on interaction between teachers and students. For large scale operation there is a tension between effectiveness and efficiency – in the sense of limiting costliness. Effectiveness requires

both investment costs in the careful design and development of educational resources and (if one takes a constructivist view of learning) operating costs arising from the need to provide opportunities for ongoing teacher-student interaction.

The more clearly defined and uniform the intended learning outcomes – the less the scope for individuality and initiative – the more feasible it is to anticipate learner requirements and hence to design materials and assessment that require little further interaction between teachers and students. While initial investigation, design and development costs may be high, opportunities will then exist for economies of scale. The design, development and assessment process is easier to deal with if the cognitive and skill outcomes intended are of low order. The expressed aim of higher education programs, however, often refers to or implies higher order outcomes and scope for individuality and creativity. This makes design of materials and assessment of attainment, with limited interaction with students, challenging.

There are, however, opportunities for cost efficiency even where ongoing teacher and student interaction is provided for. High-cost teacher inputs can be limited to the design and development phase and low-cost teacher inputs used for the delivery and assessment phase. Student-student interaction can be encouraged before resorting to teacher-student interaction. Standard responses to frequently asked questions can be prepared.

The Australian study referred to in this paper indicates that higher education providers with experience in large-scale off-campus tuition have made both effective and efficient use of ICT. Their approaches may assist others.

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INCREASING THE EFFECTIVENESS OF PROBLEM BASED LEARNING: ONLINE POSSIBILITIES

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INTRODUCTION

PBL was introduced to Malaysia in the late 80s and was first implemented by the Universiti Sains Malaysia (USM) for their second year undergraduate medical students. The International Medical University (IMU) started implementing PBL in 1992. This educational strategy fits in with the educational philosophy of the IMU which is to promote life long learning among its students and to achieve a more student centred approach to learning in medicine. The main objectives of the PBL sessions at the IMU are to integrate topics and subjects, promote self-directed learning, to enable students to work in groups, to measure and retain knowledge and to communicate effectively. This fits in with the general views on PBL.

The IMU has encouraged the use of IT for teaching and learning among its faculty and students and continuously puts aside funds to provide adequate IT infrastructure as well as for the development of content for the medical and clinical students. In addition, it is developing an online distance learning program for nursing sciences and has conceptualized and begun work on a virtual medical university.

It is thus not surprising that the possibility of implementing parts of PBL online has been brought up a few times in the last three years informally. This study was then designed to determine not only whether PBL was presently effective but also in what way and what might the reaction should the IMU decide to implement part of the PBL online.

RESEARCH METHODOLOGY

The objective of the study was to determine the effectiveness of PBL at the IMU and to gauge the response by faculty and students towards enhancing the effectiveness of the PBL via online discussions. Data was collected from students via a questionnaire specifically designed for the study. In addition, some of the Medical Science faculty members who were also PBL facilitators were interviewed to gather their perceptions relating to the effectiveness of the PBL sessions. The questionnaire was constructed based on information obtained from the literature review. It was further improved following comments from the IMU Research Committee. The questionnaire was next piloted with ten students from two senior batches of the medical students to be sampled at the IMU.

It was noted that in the pilot, the students took about 20 minutes to fill up the questionnaire at the end of which a discussion was held with the respondents with the purpose of improving the study in general and the questionnaire in particular. The students were asked which items in the questionnaire were ambiguous and to suggest items they would add given the objectives of the study. The best way to administer the questionnaire so as to obtain the maximum number of respondents was also discussed.

With the various suggestions received from the respondents of the pilot studies, the questionnaire was modified to ensure clarity. A few more items were added so that the objectives of the research would be better addressed. The questionnaires were then administered to the students who had just finished one plenary and were waiting for the next plenary to begin. These were students in their fourth semester of the IMU medical curriculum.

The questionnaire comprises two types of questions. The first type is designed to obtain information related to the student's personal particulars such as semester intake, ownership of a PC, Internet access, access to e-mail and their computer literacy skills. In addition, items to determine their preferred method of learning and their preferred learning resource were also asked. In addition, further information on PBL sessions were obtained such as whether or not PBL had met the course objectives such as in helping them to enhance their problem solving skills, presentation and communication skills, as well as in the development of critical thinking skills. Questions on whether the sessions allowed them to apply basic sciences to clinical situations and whether the PBL sessions had enabled them to work as a team were also included. In addition, their perceptions on the qualities of a good facilitator were also sought.

Another part of the questionnaire included items designed to obtain information related to the possibility of online discussions as a way to supplement face-to-face PBL sessions. The questionnaire included a scenario to give the students an idea of how the online PBL sessions might be implemented. Motivating factors that would make the students favourable to the idea of participating in online PBL sessions were also asked. The data collected was then analyzed using the Statistical Package for Social Science (SPSS).

LITERATURE REVIEW

PBL as a mode of instruction is understood to be one by which students identify issues raised by specific problems to help develop underlying concepts and principles (Spencer & Jordan, 1999). The PBL mode of learning may be described as one of the most significant developments in education. It was first implemented in McMaster University, Canada in the 60s and soon after four other medical schools in other parts of the world adapted its model to meet their own needs and expectations. From its origins at McMaster University, the use of PBL has spread to universities in several parts of the world and has been adapted to suit their respective curricula.

PBL is consistent with the current philosophical view of higher learning particularly constructivism. There are three primary constructivist principles according to Savery and Duffy (1995). These are that understanding comes from our interaction with the environment, cognitive conflict stimulates learning and that knowledge evolves through social negotiation and evaluation of the viability of individual understanding. In addition, the PBL form of instructional strategy seems to fit with the current psychological precepts of learning (Norman & Schmidt, 1992). In the field of medical education it is believed that there are differences in the effects of PBL as compared with the more traditional lecture based curricula (Wolfram & Herzig, 1999). Wolfram and Herzig had also found that PBL students are better prepared to apply basic science concepts in clinical settings. In addition, graduates of the PBL curricula may retain knowledge over a longer period of time as stated by Eisenstaedt, Barry and Glanz (1990). In addition, students who are products of PBL are found to be better prepared for life long learning (Shin, Haaynes & Johnston, 1993).

One of the essential ingredients as stated by Albanese (2000) of the PBL sessions is cooperative learning (CL). CL situations are situations where individuals perceive they can reach their goals if and only when other group members do so. The small group format in PBL sessions fits in with

this. Qin, Johnson and Johnson (1995) found that in cooperative efforts learners exchanged ideas and corrected each others faults more frequently and effectively than those who competed against others. This closely describes the mode of PBL sessions held at the IMU.

Faculty members at the IMU are continually trying to improve the effectiveness and the quality of PBLs in both its medical and clinical schools. An earlier survey conducted at the IMU found that only 65 % of the 419 students who responded felt that PBL was useful and had acknowledged that the benefits of PBL include promoting teamwork, stimulating thought, enhancing communication and presentation skills (Nadarajah, Ponnudurai and Chen, 2002). Thus, one of the possible areas for exploration in order to improve the quality, enhance cooperative learning and perhaps facilitation is to conduct some of the PBL discussions online. Much has been said about the value of online discussions, especially among students in higher learning institutions. At the IMU, the possibility of PBL being conducted online has been informally brought up for discussion from time to time. No decision has been made as to whether to implement it but the scarcity of space as student numbers go up has prompted the need to look into PBL online.

Online discussions, much like face-to-face discussions can be designed in such a way as to promote a more student-centred learning environment. Moderated discussions comprising a small group of individuals can be conducted online. It can be designed to meet the social and some of the educational aspects of small group learning like reasoning, problem solving and group leadership. As Prendergast (1998 & 1999) stated learners who share knowledge can link their learning with their experience and help their peers become active learners by contributing to group learning, develop the ability for team work and communicate effectively. This seems to be very much in agreement with the IMU objectives for PBL.

This study at the IMU was conducted in order to find out what the students thought about face-to-face PBL and whether having PBL sessions online would increase the effectiveness of our PBL system, as perceived by the students and the faculty.

SURVEY AMONG STUDENTS

A total of 125 out of a total of 142 fourth semester medical students at the IMU responded to the questionnaire. The response rate was 88.03 %. The students were asked to respond to a set of three questions to determine their IT profile. It was found that the majority, that is, 80.5 % of the students surveyed had a personal computer (PC) at home. And, 67.7 % of the students have Internet access at home and 99.2 % or 124 out of the 125 students who responded have an e-mail account. This particular group of students are IT savvy or computer literate (see Table 1). It is expected that IT savvy students will tend to favour the use of the computer, at least for part of their learning activities.

TABLE 1: Availability of PC and Internet Facilities at Home

	Yes n (%)	No n (%)	Total n (%)
Do you have a PC at home?	99 (80.5)	24 (19.5)	123 (100)
Do you have Internet access at home	84 (67.7)	39 (31.5)	124 (100)
Do you have an e-mail account?	124 (99.2)	1 (0.8)	125 (100)

TABLE 2: Evaluation of PBL by Students

	Strongly Disagree n (%)	Disagree n (%)	Agree n (%)	Strongly Agree n (%)
a. The PBL cases met course objectives	-	17 (13.8)	97 (78.9)	9 (7.3)
b. The PBL cases were relevant to the week's study	-	21 (17.1)	93 (75.6)	9 (7.3)
c. The PBL cases stimulated me to find out more	-	28 (23.0)	82 (67.2)	12 (9.8)
d. The PBL cases helped me to develop my critical thinking abilities	1 (0.8)	38 (30.4)	77 (61.6)	9 (7.2)
e. The PBL cases taught me how to apply basic sciences in clinical situations	2 (1.6)	49 (39.2)	66 (52.8)	8 (6.4)
f. PBL helped to enhance my problem-solving skills	2 (1.6)	44 (35.8)	68 (55.3)	8 (6.5)
g. PBL helped me to improve my communication skills	2 (1.6)	25 (20.2)	88 (71.0)	9 (7.3)
h. PBL helped me to improve my presentation skills	1 (0.8)	31 (24.8)	83 (66.4)	10 (8.0)
i. PBL taught me how to work in a team	3 (2.4)	42 (33.9)	73 (58.9)	6 (4.8)
j. Every member in my PBL group contributed to the discussions	18(14.5)	56 (45.2)	44 (35.5)	5 (4.0)
k. PBL has helped me to retain what I learn longer	5 (4.0)	41 (33.1)	76 (61.3)	2 (1.6)
l. PBL has taught me how to learn independently	4 (3.2)	35 (28)	78 (62.4)	8 (6.4)
m. There is enough time given for the PBL sessions	9 (7.2)	20 (16)	83 (66.4)	12 (9.6)
n. The PBL sessions are well-facilitated	16 (12.9)	44 (35.2)	60 (48.0)	3 (2.4)
o. The facilitator guided my learning	13 (10.6)	36 (29.3)	67 (54.5)	6 (4.9)
p. The facilitator taught me	11 (8.8)	51 (44.0)	49 (42.2)	4 (3.4)
q. The facilitator met my expectations	16 (13.2)	47 (38.8)	54 (44.6)	3 (2.5)
r. The facilitator is well-prepared	16 (13.0)	51 (41.5)	50 (40.7)	5 (4.1)

Students were asked to evaluate the PBL based on their experience at the IMU. The respondents have had at least three semesters of PBL sessions. The questionnaire was administered in the second month of the fourth semester. It is expected that they would be able to give a more qualified feedback compared to students in the earlier batches.

Based on the findings (see Table 2), it appears that the respondents in general had rated the effectiveness of PBL at the IMU quite highly on many accounts. Over 80 % of the respondents agreed or strongly agreed to the following about PBL at the IMU:

- The PBL cases met course objectives (86.2 %)
- The PBL cases were relevant to the week's study (82.9 %)

More than 70 % of the respondents agreed or strongly agreed to the following about PBL at the IMU:

- PBL helped me to improve my communication skills (78.3 %)
- The PBL cases stimulated me to find out more (77.0 %)
- PBL helped me to improve my presentation skills (74.4 %)

More than 60 % of the respondents agreed or strongly agreed to the following about PBL at the IMU:

- The PBL cases helped me to develop my critical thinking abilities (68.8 %)
- PBL taught me how to work in a team (63.7 %)
- PBL has helped me to retain what I learn longer (62.9 %)
- PBL helped to enhance my problem-solving skills (61.8 %)

On whether PBL had cases taught them how to apply basic sciences in clinical situations, 59.2 % of those who responded had either Agreed or Strongly Agreed with the statement.

On the facilitation of PBL, 50.4 % of the respondents agreed or strongly agreed that the PBL sessions were well-facilitated. Out of the total, 59.4 % felt that the facilitator had guided the learning. And, 45.6 % felt their facilitators had taught them. Only 47.1 % of the respondents felt that the PBL at IMU had met their expectations. However, the group felt that less than half, that is, 44.8 % of the facilitators were well-prepared for their sessions. And, less than half, that is 39.5 % of the group felt that every member in their respective PBL groups had contributed to the discussions.

On the whole, the feedback to the above statements was generally positive. However, the more important question is whether the %ages should be higher. For example, shouldn't all students, that is, 100 % of them achieve critical thinking abilities or know how to work in a team? Or, shouldn't all students be contributing to the PBL discussions? And, if so, would having part of the PBL discussions online to complement face-to-face discussions help to increase the %age to most, if not all, the statements in Table 2?

In asking students on how they felt about PBL being online, the following scenario was placed before the items so that students clearly understood what PBL online meant.

> "Imagine you are attending a face-to-face PBL. You arrive for PBL1, read the trigger, select a leader and discuss the learning issues. You then go to the library and look up the various learning issues and report back at the PBL2 session. You go through your learning issues and discuss them. In some cases there has not been any critical analysis that has gone into discussing the learning issues because of the time factor and the need to assimilate the information quickly by your colleagues. There is no time for reflection.
>
> Imagine another scenario where you can also have your PBL online. This online PBL session will not replace your face-to-face PBL sessions. The online session will be conducted in an asynchronous manner (threaded online discussions). This is an online threaded discussion where postings or messages are not done in real time. It simply means that when a student types and sends a message to the discussion group, their PBL peers can respond at a later time. Members of the same PBL group will be able to view each other's online postings and respond accordingly. The facilitator moderates the discussions. All members of the PBL group read the trigger and the learning issues are posted by each student at PBL1 online. At the end of the session at some appointed time (perhaps 2-3 days later) the facilitator goes through the learning issues, organizes and summarizes the issues and posts them online at the end of PBL1 week. The PBL will be conducted over two weekends.

Tasks involved for the student:

1. You post your discussion about your learning issue
2. Give a critical analysis of somebody else's discussion. For instance, what certain words mean, whether what has been discussed is related to the trigger, what has been left out etc. The facilitator will then give his/her feedback at the end of PBL2.

This scenario gives the student time to go away, digest the topic and ask the relevant questions: Why? What? How? When? And Where?

The students also are able to go back to various learning issues discussed online throughout the semester and re-look at topics or issues they have not understood. At the same time the student has a record of the discussions and comments from his/her peers."

Table 3 is a summary of students' responses to online discussions for PBL. Only 37.4 % of the respondents agreed or strongly agreed that online PBL discussions would be a good addition to the current face-to-face discussions. A total of 26 % felt (agreed or strongly agreed) that online discussions in PBL would improve student participation. Almost 40 %, that is, only 39.9 % of the respondents believe (agreed or strongly agreed) that PBL online will result in improved facilitator guidance. And, 39.8 % of the group could either agree or strongly agreed that PBL online would be more effective in meeting PBL objectives. These findings seem to imply that the IMU should be cautious in introducing PBL online because the majority of the students would still prefer to have face-to-face PBL sessions. On the other hand, if PBL online is believed to be able to increase the effectiveness of PBL, the benefits of having PBL online to complement existing face-to-face PBL sessions need to be well-promoted with the students buying the idea. And, motivating factors will need to be in place to ensure that online discussions will, indeed, succeed and that they will increase the effectiveness of the PBL discussions.

TABLE 3: Student's Response to Online Discussions

	Strongly Disagree n (%)	Disagree n (%)	Agree n (%)	Strongly Agree n (%)
a. a good addition to current face-to-face PBL sessions	19 (15.4)	58 (47.2)	37 (30.1)	9 (7.3)
b. improve student participation	30 (24.4)	61 (49.6)	26 (21.1)	6 (4.9)
c. result in improved facilitator guidance	23 (18.7)	51 (41.5)	43 (35.0)	6 (4.9)
d. more effective in meeting PBL objectives	17 (13.8)	57 (46.3)	42 (34.1)	7 (5.7)

All but seven students responded to the question on how often they would like the PBL to be online. Among those who responded, 45 students indicated that PBL should not be online at all. Forty-five students (38.1 %) had indicated that they would not like to have any online PBL discussions (see Table 4). The remaining students, that is, 61.9 % expressed that PBL discussions can be online from as infrequent as once a month (16.1 %) to as frequent as once a week (22 %). Another 23.7 % said they would like to have PBL online twice a month. These are summarized in Table 4.

TABLE 4: Frequency of PBL Online

	Frequency (n=118)	%
Once a month	19	16.1
Twice a month	28	23.7
Every week	26	22.0
Not at all	45	38.1
Total	118	100

TABLE 5: Motivating Factors for PBL Online

	Least Important N (%)	Somewhat Important N (%)	Important N (%)	Most Important N (%)
a. part of continuous assessment	32 (26.9)	37 (31.1)	31 (26.1)	19 (16.0)
b. availability on the Internet	22 (18.5)	33 (27.7)	41(34.5)	23(19.3)
c. interesting discussion taking place	10(8.3)	26 (21.7)	59 (49.2)	25 (20.8)
d.active participation from your peer group	9(7.6)	57 (46.3)	42 (34.1)	7 (5.7)
e. allows flexibility	6 (5.0)	20 (16.8)	67 (56.3)	26 (21.8)

Table 5 comprise the motivating factors for PBL online. Students were asked to rate each of the five factors based on the order of importance on a four-point Likert scale, that is, from least important to most important The responses to the question would help determine the primary factors that would motivate students to accept online discussions in addition to their current face-to-face discussions. Based on the table above, the order of importance (based on the combined %age of the important and very important categories) from high to low are as follows:

- Allows flexibility (78.1 %)
- Interesting discussion taking place (70.0 %)
- Availability on the Internet (53.8 %)
- Part of continuous assessment (42.1 %)
- Active participation from peer group (39.8 %)

It is interesting to note that there were 119 respondents to this question. In contrast, 45 out of 118 students who had responded to the previous item had stated that PBL discussions should not be online. Yet, in this item, students seem to indicate that they would go online provided certain motivating factors were present (see Table 5).

INTERVIEWS WITH FACULTY

Four senior faculty members were interviewed to obtain their initial perceptions of online discussions in supplementing the current face-to-face PBL discussions. Only one was opposed to

the idea. However, they generally cautioned that PBL sessions could include online discussions if the objective was to complement the regular face-to-face sessions. There are a few advantages in doing this. For example, online discussions will improve the written skill of students although not their verbal communication. Online activities are a good approach to building up self-confidence among students although it will require facilitators to spend more time online to moderate or to provide input in guiding the discussions. Hence, the IMU's objectives in having PBL play a significant role can be met whereby students can become better communicators, at least in writing. These opinions of these four faculty members may not be representative of the whole medical faculty but can be considered to be the opinion of some of the group

CONCLUSION

The more important question is, "Would online PBL sessions help increase the effectiveness of PBL sessions at the IMU?" Online teaching may help improve the quality of PBL sessions in so far as they allow all the students to participate in the discussion groups. Although majority of students feel that the PBL sessions enable them to acquire presentation skills, critical thinking skills, communication skills there are still some students who feel that they have not acquired these skills. Perhaps these students have a particular 'mind set' or learning style that may be addressed by online education. Online sessions would enable the shy students to come out of their shells and take part in an interactive environment where they are heard.

The results indicate that while 45 from the total of 125 students had not wanted to have any PBL online discussions, 119 seem to want online PBL sessions to support face-to-face discussions should motivating factors be present. It is thus necessary to repeat the study with other batches of students and to ask them to carefully consider the questions as it would have a great implication on their future method of studying and learning.

Why this perception amongst our students? Having PBL sessions online is a dramatic change in the university's current curriculum and one of the reasons why the students may have this perception is that they have difficulty to embrace change. On personal communication with some of the students they feel 'unsure' of tackling something new but they feel that they would be more open to online possibilities if there was good facilitation.

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DEVELOPMENT OF THE INTERACTIVE LEARNING MODULAR UNIT AT THE INTERNATIONAL MEDICAL UNIVERSITY: A PROBLEM-BASED MODULE FOR THE VIRTUAL MEDICAL UNIVERSITY

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INTRODUCTION

The introduction of the Web has impacted significantly on education. Educators today, from pre-school to graduate school, are re-thinking the nature of teaching and learning, and of schooling, as a result of the vast amount of accessible information in the Web with its multimedia and interactive capabilities. A shift in the education paradigm from teacher to student and from teaching to learning is inevitable. In parallel with the changes brought about by the Web, the traditional instructive paradigm is slowly being replaced by constructivism.

Advances in ICT saw the proliferation of online (web-based) learning as a mode of curriculum delivery in many academic institutions (Bannan & Milheim, 1996; Parson, 1997). The growth is essentially exponential and future cohorts of students will be educated in a context where a considerable time is spent on-line (Fyvie et al, 1997). Developing online learning is no longer a novel idea. The real challenge for e-learning is not in the use of technology to deliver the material but in using the technology to build on what we know about managing learners – and how learners manage themselves.

The initial attempt to introduce the concept of interactive computer-based learning at the International Medical University (IMU) led to the development of the Online Learning Interactive System (OLIS). OLIS delivers part of the IMU curriculum in the form of Fixed Learning Modules (FLMs), study guides and self-assessment. Mainly due to the lack of suitable interactive materials, OLIS relied heavily on the existing presentations produced for the Fixed Learning Modules (FLMs). This had led OLIS to become a source of knowledge rather than a guide in the learning process. Besides its low degree of interactivity, the 'failure' of OLIS is also associated with a "readiness" problem amongst faculty to go on-line. An evaluation report on OLIS shows low utilization of OLIS by teachers and students in spite of heavy intellectual investment in the system and its knowledge content. To achieve a higher degree of responsiveness, the Interactive Learning Modular Unit (ILMU) system is being build alike to replace OLIS.

This paper discusses the approach in the development of ILMU at the International Medical University and its concept.

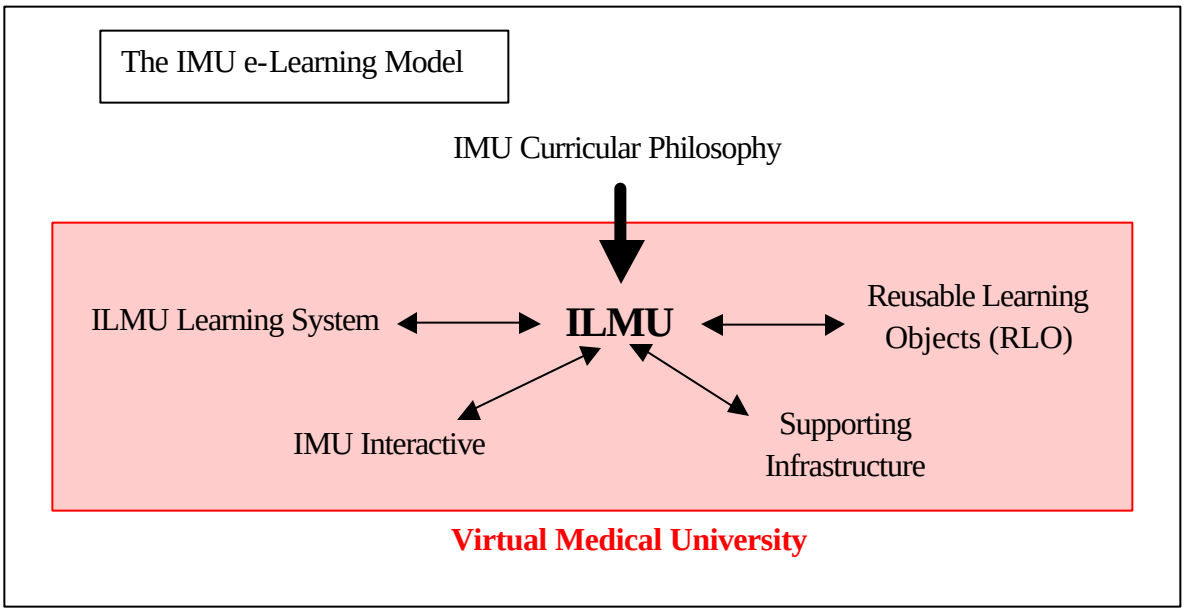
DEVELOPMENTAL STRATEGY FOR E-LEARNING

There are basically three components in e-learning – technology, content and pedagogy, and either technology drives the content or the pedagogy and content drive the technology. The latter approach is adopted by the IMU as a developmental strategy, to build an institutional

infrastructure for e-learning that is acceptable and consistent with the established pedagogical process and this involves a new acculturation process as well as technological adaptation.

Central to the on-line learning at the IMU is the Interactive Learning Modular Unit (ILMU), an interactive problem-based module with multimedia capabilities. In the construction of ILMU, the curricular philosophy and the ILMU Learning System interact to provide the framework upon which the modules are developed, reflecting the driving force of pedagogy in its development. The ILMU Learning System (Figure 1) is an application currently being developed by the Office of the Chief Knowledge Officer (CKO) to provide an interactive portal for ILMU. The second part of the approach, the institutional infrastructure needed to support e-learning, is to link ILMU to the other delivery modes of the curriculum consistent with the curriculum map of the IMU's medical education program such as the medical museum, the e-library and the CSU. These developmental strategies for ILMU form the framework for the Virtual Medical University (VMU) project of the IMU.

Figure 1: The IMU e-Learning Model



DEVELOPMENT OF ILMU

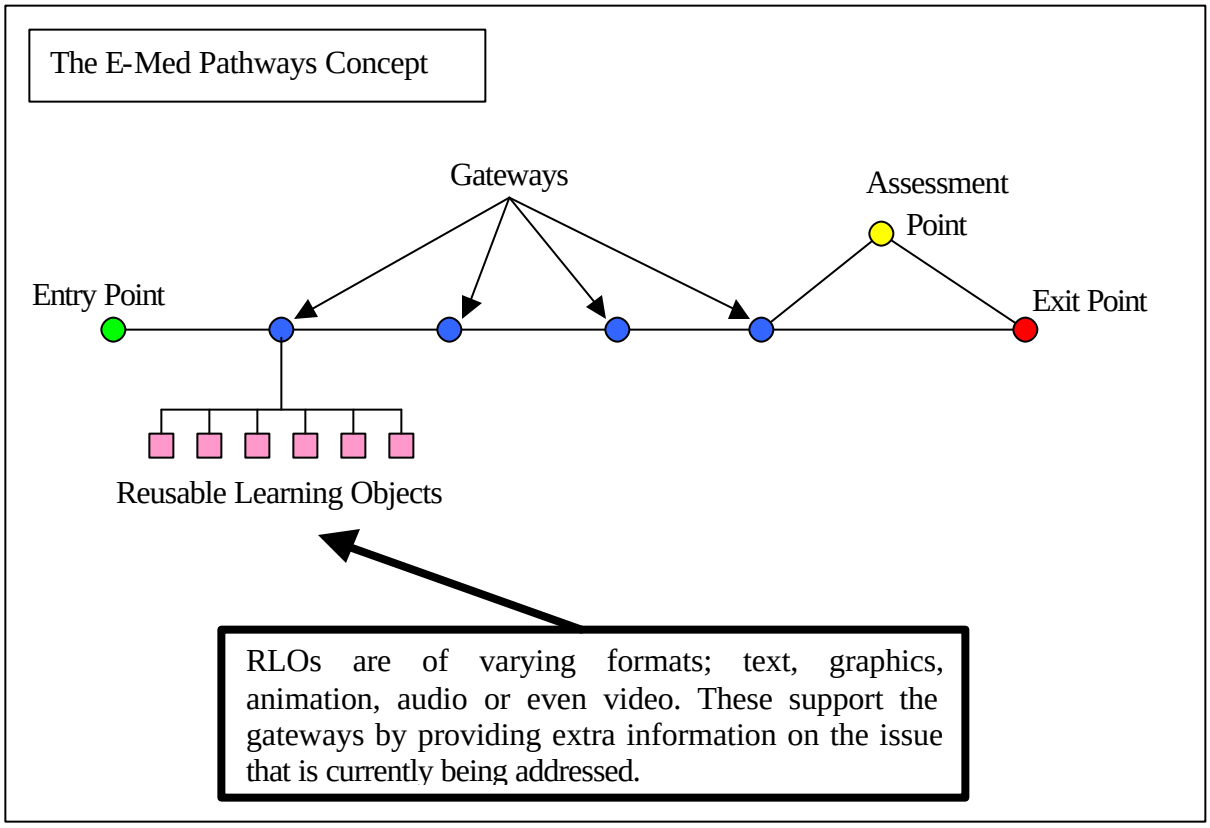
The International Medical University (IMU) was established in 1992 as the International Medical College in partnership with several partner medical schools (PMSs) overseas. Students complete their pre-clinical training at the IMU and then proceed to either the IMU Clinical School or one of the PMSs to complete their clinical training. This two-tier arrangement provides a challenge to IMU to produce a curriculum that will meet the requirements of all the PMSs. One of the statements of the IMU curricular philosophy is self-directed learning and this has proven to be a key factor contributing to the success of the IMU medical sciences curriculum. E-learning is an excellent vehicle for self-directed learning.

In the development of ILMU, the curricular philosophy and the pedagogy of on-line learning remain the driving force. This is achieved by the e-med pathways, the ILMU Learning System and the institutional hardware.

THE E-MED PATHWAYS

The e-med pathway is a network of gateways comprising modules driven by particular clinical triggers, supported by Reusable Learning Objects (RLOs). It guides the students through their learning activities (see Figure 2).

Figure 2: E-Med Pathways Concept



RLOs as bits of useful information is fast gaining notion in place of texts. They could take the form of a video-clip, animated diagram or text of specific contents. In ILMU, RLOs provide the materials to support the particular trigger, allowing the student to manage their learning activities and assessments through the RLOs.

An ILMU prototype on Infertility was developed based on the e-Med Pathways. The Entry Point describes "a 30 year old woman who has been unable to conceive. She has been married for 3 years". This is followed by a linear series of Gateways which addresses the clinical history, the physical examination, investigation and management of the woman. Each Gateway is supported by 4-5 RLOs which can be hyperlinked to other RLOs or ILMU cases. Interactivity is developed using FLASH animation technology. There are several formative assessments at strategic locations in the e-med pathway and at the Exit Point. The assessments at the Exit Point provide an indication of the learning and immediate feedback is given for the MCQs. If the outcome

achieved is not satisfactory (less than 65 %), the student will be re-directed back to the Entry Point of the e-Med Pathways.

ILMU LEARNING SYSTEM

The ILMU Learning System (ILMU-LS) is the backend application that supports not only ILMU or the RLO Bank, but also the entire Virtual Medical University System. ILMU is build to be web-enabled and is supported by a database system that allows all information, both students and staff, to be housed within the server infrastructure of the University. Part of the ILMU-LS is the Content Management System that supports and manages the ILMU cases and the RLOs itself, and the Student Management System, that includes various services such as the Student Portfolio and other online learning tools that will allow the students to study ILMU online.

The ILMU-LS also incorporates an administrative system that allows for student tracking and performance evaluation system, including the basic administrative functions in the running of the VMU.

Another major feature of the ILMU-LS is the Medical Online Formative Assessment (MOFA). Though ILMU has its own formative assessment system, MOFA allows students to extract questions of varying format from a database and attempt these questions and graded online. This is an important feature of the ILMU-LS.

The ILMU-LS also connects directly with the IMU Interactive, which is the University's online conferencing solution that allows students to communicate with each other, and with faculty using various modalities, from the basic online discussion rooms to the more sophisticated online real-time conferencing facilities.

One last notable feature is the ILMU Curriculum Map, which is an animated site map of the entire ILMU system which allows greater navigation for the user, i.e. the student.

NETWORK, SERVER AND HARDWARE INFRASTRUCTURE

In order to support ILMU, the University will be upgrading its ICT infrastructure. A comprehensive ICT Blueprint that is being developed as part of the E-Strategy of the University accommodates a robust server and network expansion plan that will support ILMU both in its Bukit Jalil campus as well as the Clinical School in Seremban.

The upgrading of networking capabilities within the University, including the research activities into the use of wireless networking will allow the use of ILMU and RLOs within the University Local Area Network. At the same time, the University will also upgrade its connections between its two campuses to further enhance communications and to promote efficient support for the implementation of e-Learning for the students.

As for the facilities made available for students, three designated E-Learning Labs have been created in Bukit Jalil and a fourth E-Learning Lab in Seremban. These labs are equipped with Pentium 4 computers that will allow the students to access the VMU platform. Computing facilities are also being planned and upgraded for the library as well as the Medical Museum and the Clinical Skills Unit, which in fact will be connected to the Digital Clinical Skills that is currently being developed by the IMU Digital Recording Studio.

DISCUSSION AND CONCLUSION

The Interactive Learning Modular Unit is developed with interactive, dynamic content and a user-friendly navigational system. Interaction challenges the students' learning process. The emphasis in ILMU is on creating an environment that will promote individual and social interactions involving higher order cognitive processes for the students during their reconstruction of the relevant "chunks" of knowledge, similar to what was proposed by Berge (1995). This is achieved by the E-med pathways, the RLOs, the navigation "box" and the chat function provided by the ILMU-LS. In the adoption of our developmental strategy, the approach was through technological adaptation to the IMU pedagogical process. Although technology does not drive the content, technology can be the bottleneck of materials delivery, hence limiting the content (Downes 1998).

ILMU is aimed at developing active learning and this is supported by the interactive RLOs. The "challenge" is achieved through problem-solving and interaction, a concept that is used in problem based learning. The use of RLOs as "building blocks" to construct an answer is a key feature in ILMU. It addresses the pedagogical issues of online learning and allows students to learn through discovery. The monitoring and tracking of the students' usage of ILMU provide feedback for quality improvement of ILMU. The link to other delivery modes of the curriculum such as the medical museum, digital library and the CSU extends ILMU beyond the "classroom" environment. In essence, ILMU is a dynamic learning tool which allows the students to manoeuvre and manages their own learning and progress. The ILMU-LS at the same time provides the "check and balances" for data management and interaction. As pointed out by Corderoy and Lefoe (1997) the success of online learning depends to some a great extent on the instructional objectives. The ILMU curriculum map is a novel tool designed for this purpose to provide a clear location of all the 64 cases proposed for the medical sciences curriculum.

The implementation of ILMU by a process of engagement from the planning, through confirmation and testing as well as application process by both the faculty and student groups aims to achieve a new culture of e-learning that is integral to the whole teaching-learning process. The approach of empowerment has in some way addressed the concern by many institution developing online materials regarding faculty scepticism and conversion (Levenburg & Major, 1998; Botsch, 2000). Faculty participation is vital. The engagement was initially difficult mainly because of the compound problems of additional workload and uncertainty. The establishment of the Office of the Chief Knowledge Officer to oversee e-learning and knowledge management at the IMU was a positive step towards creating an e-learning environment. A series of faculty workshops and seminars on the pedagogy of e-learning and on the ILMU structure were held. The engagement was finally established by faculty participation in the development of the various VMU applications (medical online formative assessment, *i*-PBL, *i*-lecture, image bank, the medical museum, digital clinical skills and the digital library). The VMU Project is now an exciting challenge to many faculty members. ILMU is central the Virtual Medical University Project of the IMU which aims to deliver the IMU curriculum through the ILMU Learning System to campuses in developing countries that are links to Clinical Schools attached to teaching hospitals in the host country and leading to an IMU degree or the home country degree.

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