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Managing Private Institutions of Higher Learning

An interview with the Deputy Director General of the Department of Higher Education Management (Private Higher Education)

Munir Shuib & Shukran Abdul Rahman

Private Higher Education in Malaysia is an important component for nation building and has contributed enormously to the development of the country and its human capital. It acts as an important economic contributor to the country and provides employment opportunities for its citizens.

Today, Malaysia is witnessing the emergence of many new private institutions of higher learning comprising colleges, university colleges and universities. The country boasts 559 private institutions of higher learning including 11 universities, 11 university colleges, five foreign branch campuses and 532 colleges.

Private institutions of higher learning serve a key national asset to the country so much so that the government has given great attention to their development and performance. The Ministry of Higher Education, entrusted to look into this matter, has set up a special section called Private Institutions of Higher Learning Management Sector, which is placed under the Department of Higher Education. Its primary role is to develop the private higher education industry.

The Private Institutions of Higher Learning Management Section is headed by the Deputy Director General of Department of Higher Education Management (Private Higher Education Institutions) whose current incumbent is Professor Dr. Mahani Zainal Abidin, a professor at Department of Economics, University of Malaya. Specialising in Economic Development and Trade, Mahani was appointed a member of the National Economic Action Council (NEAC) during the country's economic downturn in 1998 and had later served as Head of Globalisation Consultancy Team in the council. Her successes in spearheading the country to assist

and solve various global economic changes convinced the government to further second her to the Ministry of Higher Education in 2004, serving in the current post.

As the Deputy Director General of the sector, Mahani oversees the management of private educational institutions which offer post secondary education programmes. This sector's major functions include regulating the educational services provided by private institutions of higher learning by ensuring that they provide quality academic programmes, practice good management system, enhance and develop their competitiveness, as well as ensuring the welfare of their students; regulating the pre-establishment stage of private institutions of higher learning, ensuring that they meet the minimum requirements for establishment and ascertaining that the programmes are approved by the National Board of Accreditation and encouraging private institutions of higher learning to adopt continuous improvement efforts so as to make them competitive and relevant in Malaysian and international markets.

The sector has two major divisions: Registration and Standard Division and Enforcement and Inspectorate Division. The Registration and Standard Division's functions are primarily to process the approval of the establishment of private institutions of higher learning, register the institutions and their teaching personnel, and verify and recommend to the government for the establishment of foreign branch campuses. The Enforcement and

> "Public institutions are limited in number" and "the future growth in higher education is going to be with the private institutions"

Inspectorate Division's functions are primarily to ensure that the private institutions adhere to the rules and regulations as stipulated by Act 555. In addition, the division deals with comments and queries from the public and beneficiaries of private institutions of higher learning through its Complaints and Inspection Unit.

As a continuous effort to improve private higher education in Malaysia, Mahani stated that Act 555 was being reviewed so as to meet current needs of higher education stakeholders, not only in Malaysia but the region as well. The review would allow private education programmes and services to be exported abroad, and promote their compliances to international standards. The review, according to her, "will strengthen the structure of private higher education institutions, which is expected to help them prepare to meet the increasing challenges in the industry".

The challenges confronting the Malaysian private higher education, according to Mahani, are both internal and external in nature. Internal challenges include low number of students in some of the private institutions and insufficient funds. External challenges include the fast

changing and dynamic nature of higher education industry and keen demands from job markets for skilled workforce. On top of these, there are international challenges. Neighbouring countries, for instance, are putting enormous effort to make themselves the hub of higher education in the region, thus forcing the local private higher education institutions to innovate to remain competitive.

Despite the numerous challenges, private institutions of higher learning, with the help of the sector, are expected to continue to provide access to higher education for many years to come complementing the role of public institutions of higher learning. As Mahani pointed out, "public institutions are limited in number" and "the future growth in higher education is going to be with the private institutions".

There is thus a need for positive and constructive engagements between the sector and the private higher education. The establishment of the sector is expected to play a vital role in addressing the issues and concerns of all the parties involved and ensuring that the emerging private education sector in Malaysia is effective, well managed and serves the national goals.

Academic Performance Among Malaysian Graduates: Before and After

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Introduction

Opportunities for a better education in our many public universities are ever increasing. Students who are given the chance to receive higher education in any public university in Malaysia are subsidised by the government and, therefore, are determined by national policies. As of 2001, the number of students enrolling for first degrees in public universities stood at 157,889 and the number of graduates produced that year was 32,924. It is well accepted that the quality of the graduates is often measured by their class degrees or the final grades earned which is commensurate with the Cumulative Grade Point Average (CGPA) achieved.

However, have we ever wondered at the number of our graduates who actually acquired academic value-added experiences in our public universities? In other words, how many of our students actually entered with a low academic performance but improved while in university to the point of becoming an excellent student? Does the level of achievement of a student before entering university more or less determine the level of achievement of the student while in university?

In pursuance of the study by Universiti Sains Malaysia for IPPTN, entitled 'Graduate Unemployment among Public Institutions of Higher Learning (PIHL)', the current paper aims to look at the relationship between the level of academic achievement of students before being accepted into a university (i.e. at the STPM, Diploma and Matriculation levels) and the CGPA achieved for their university degree.

The Method

The study employed the same data set gathered from a research survey carried out by IPPTN on graduates of PIHL who graduated in 2001 (for further details of the survey see Morshidi Sirat et al. 2004). A value-added approach using z-score analysis was used to study the academic achievement of students for a specified time period which was the pre to post-university period. Public university graduates with different entry qualification backgrounds were studied to measure the value-added among university graduates. Three different entrance qualifications were considered, namely the matriculation certificate, STPM and diplomas results.

For the purpose of the study, several assumptions need to be highlighted. Firstly, the determination of students' quality depends on their examination results used to enter the university. Pre-university academic achievements at STPM, matriculation and diploma levels are the bases for measuring students' academic standing or academic quality. Secondly, it is accepted that the achievement of a university student not only depends on innate abilities of the student (e.g., better mental ability or high I.Q.s as well as learning potentials) but also several other factors. These other influences, such as family background, friends, university system and the lecturers, however, are exempted in this study. Therefore, the study fully focuses on and explores only academic qualifications. Furthermore, the objective of this study is not to consider all the factors affecting the quality of students and the quality of graduates as such study requires a larger amount of data and longer time, particularly with regard to the input variables. The study also assumes that the element of education cost, as a factor, does not influence the academic achievements of students. Finally, it must be made clear that for this study, students with CGPAs that are below average are considered low achievers in their academic performance or below-average students. University students with CGPAs above the average score are considered high achievers or excellent students in their academic performance.

The Findings

Table 1 reveals that of the 542 respondents who entered university using their matriculation certificate, 51.8 percent were in the lower category of academic achievement while 48.2 percent were in the higher category of academic achievement when they were studying at matriculation level. As university students, 67.3 percent of the respondents with low academic achievement during matriculation continued to be classified in the low achievement category while only 32.7 percent managed to improve academically and were placed in the high achievement category.

It was also found that 9.4 percent of the respondents experienced value-added in their academic achievement. These were those who had low academic performance at the matriculation level but improved at university. In contrast, 24.9 percent of the respondents experienced value-subtraction in their academic achievement, meaning that almost a quarter of the students with good matriculation results did not do well once they entered university.

From these results it could be inferred that a majority of those who entered a particular university with good matriculation results continued to maintain their good standing at university level, whereas those with low achievement at matriculation continued to show low performance at the university. Also, it must be highlighted that there were some students who did well in matriculation but failed to maintain their good academic performance once at university level.

As with the findings on respondents with matriculation entrance qualification, the majority of respondents with STPM entrance qualification were also in the category of low academic achievement prior to entering university. Table 2 shows that 58 percent of the 795 respondents were in the low academic performance level and 42 percent were in the high academic achievement category.

However, it is interesting to note that the majority of the students with a STPM background are in the category of high academic achievement at university level. Data from Table 2 reveals that 56.1 percent of the respondents are high achievers and only 43.9 percent are low achievers. The findings also reveal that almost 30 percent of these respondents demonstrated good academic achievement at both STPM and university levels.

From this it could be said that a greater number of respondents with STPM qualification acquired value-added in their academic performance. The results reveal that 26.3 percent of respondents experienced value-added and only 12.2 percent experienced value-subtraction in their academic performance.

The question next is how the graduates with a diploma entrance qualification fared when it came to having a value-added academic performance. Firstly, it must be noted that 51.2 percent of 205 respondents with diploma qualifications were in the category of low academic achievement at a diploma level before entering university as compared to 48.8 percent who were in the higher academic achievement category. From Table 3, it is found that 31.7 percent of the respondents with a diploma who achieved a good academic standing when at diploma level continued to maintain similar level of performance in the university. On the other hand, a total of 32.7 percent of the said respondents who had a low performance at the diploma level continued to peform below par at university level.

Data from Table 3 also shows that 18.5 percent of graduates who entered university on the basis of their diploma qualifications acquired value-added academic standing while 17.1 percent of the respondents acquired less value in their academic standing in the university.

Implications and Suggestions

This study has clearly shown that the majority of graduates in our local universities who achieved a weak performance in university, had already a low academic achievement at the pre-university level (be it matriculation or STPM). In other words, the majority of students who did not do well in pre-university examinations will continue to perform poorly when they enter university.

However, what is interesting from this study is the concept of value-added to academic standing obtained by the graduates produced. Regardless of entrance qualification, it is found that the number acquiring value-added is greater than those who experienced value-subtracted. The number acquiring value-added is most significant among those with STPM qualification.

This study suggests that there is still the possibility that a small percentage of students entering university with average results will

be able to improve their standing and graduate with good and excellent academic results. It would be interesting to conduct a specific study on students who obtained weak-to-excellent results to discover the factors that promoted this transformation. Universities and students committed to academic excellence would be able to work together to increase the percentage of students who have a value-added experience while in university.

Secondly, this study also suggests that appropriate measures need to be taken by universities to ensure that services provided to the students do not culminate merely in the issuance of a degree scroll, but also succeed in transforming the weak students at the pre-university level to excellent students in the university. Universities will need to re-evaluate their goals to produce graduates or who have undergone a radical change while in university culminating in achieving their optimum academic standing and quality of being.

Lastly, for all involved in this business of educating the masses, this study has demonstrated that it is not enough just to produce graduates; it is better to produce men and women who have learnt to learn and transform their lives.

References

Chapman, K. (1996). Entry qualifications, degree results and value-added in UK universities. Oxford Review of Education, Vol. 22, No. 3.

Morshidi Sirat et al. (2004). Masalah pengangguran di kalangan siswazah. Monograf 2/2004, Institut Penyelidikan Pendidikan Tinggi Negara, Universiti Sains Malaysia, Pulau Pinang.

Morshidi Sirat, Rosni Bakar, Lim Hock Eam, dan Mohamed Nasser Katib. (2004). Pencapaian akademik (konsep nilai ditambah) dan kebolehgunaan tenaga (employability) siswazah Institusi Pengajian Tinggi. Monograf 3/2004, Institut Penyelidikan Pendidikan Tinggi Negara, Universiti Sains Malaysia, Pulau Pinang.

Sanyal B. C. (1987). Graduate unemployment and education. In Psacharopoulos, G. (ed.) Economics of Education; Research and Studies, Pergamon Press.

Academic performance at matriculation level	Academic performance at university level		Total (%)
	High (%)	Low (%)	
High	126 (23.3)	135 (24.9)	261 (48.2)
Low	51 (9.4)	230 (42.4)	281 (51.8)
Total (%)	177 (32.7)	365 (67.3)	542 (100.0)

Table 1: Academic Performance of Graduates with Matriculation Entry Qualification

Academic performance at STPM level	Academic performance at university level		Total (%)
	High (%)	Low (%)	
High	237 (29.8)	97 (12.2)	334 (42.0)
Low	209 (26.3)	252 (31.7)	461 (58.0)
Total (%)	446 (56.1)	349 (43.9)	795 (100.0)

Table 2: Academic Performance of Graduates with STPM Entry Qualification

Academic performance at diploma level	Academic performance at university level		Total (%)
	High (%)	Low (%)	
High	65 (31.7)	35 (17.1)	100 (48.8)
Low	38 (18.5)	67 (32.7)	105 (51.2)
Total (%)	103 (50.2)	102 (49.8)	205 (100.0)

Table 3: Academic Performance of Graduates with Diploma Entry Qualification

A 'Chicken or Egg' Discourse: Do We Need Skills for Knowledge, or Knowledge for Skills?

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Introduction: Voice of Employers

This short paper suggests a paradigm shift in technical education that provides a new teaching-learning cycle for acquiring knowledge and skills required by engineering students in order to enhance the success of the industrialization process. This paper recommends the 'Start-at the-middle" (SAM) approach to provide non-traditional, inductive-based teaching-learning in engineering and technical education. The 'SAM' instructional designs emphasize skill development as more important for learning compared to the theory-based teaching orientation in engineering education.

The common expectation of stakeholders on educational outcomes is to have competent graduates who provide added value to the society and business organisations. In recent years however, unemployment issues and an increase in 'inappropriately-skilled' technical workforce have become a concern for many parties including governmental agencies, ministries, professional bodies, higher learning institutions, engineering employers and engineering students. There are numerous explanations made by different parties for this phenomenon, and among them is: graduates adapt poorly at the workplace due to the lack of employable skills such as communication facility, critical thinking and learning skills, and other important personal qualities.

In relation to this phenomenon, employers want a new kind of workers with a broad set of workplace skills and possess at least a strong foundation of basics that will facilitate learning on the job (Carnavale et al., 1989). According to Gow & Kember (1990) and Watkins and Hattie (1985), most students in most undergraduate courses have become increasingly superficial and lack depth in their orientation to learning. Industrial employers voice their concerns that the gulf between the university curriculum and the workplace expectations is becoming wider and acute. Mismatches occur. One of the ways to gain insight into this issue is to study the effectiveness of instructional practices being carried out at tertiary engineering faculties and workplaces.

Literature Review

Researches in science and engineering education reveal that the mismatch of curriculum and competency requirements at the workplace become worse because of mismatches of teaching-learning processes in academic institutions, especially in engineering education. Felder and Silverman (1988) report that these mismatches exist between common learning styles of most engineering students and traditional teaching styles of most engineering professors. Solomonides and Button (1994) also report there is often discordance between what learners think learning is and what teachers think learning is. Anderson (1991) and Felder (1988) report that teaching styles and student learning styles happen in opposite sides. Engineering students prefer active, inductive learning while professors prefer teaching styles that are reflective and deductive. Traditional engineering instruction tends to be heavily oriented toward intuitive individuals, emphasising theory and mathematical modeling over experimentation and practical applications in most courses. In addition, most engineering instruction is overwhelmingly verbal, emphasizing written explanations and mathematical formulations of physical phenomena over demonstrations and visual illustrations (Felder & Brent, 2005). Felder, et al. (2000) asserts if learners understand their preferences better, they can capitalize more on the strengths of their preferred styles and work at building their capabilities in their less preferred styles.

Why 'Start-at the-Middle' (SAM) Approach for Engineering Education?

In reality, the learning domain continuum is associated with multi-facet dimensions as shown in Figure 1. The diagram indicates that there are three distinguished hierarchical levels of learning structures in engineering learning.

This model corresponds with the Engineering Professors' Conference (EPC) Taxonomy (Sparkes, 1989) model. Learning commences with the acquisition of fundamental knowledge, then followed by 'Know-how', 'Skill' and finally 'Understanding'. Using this taxonomy, it is noted that the 'doing' (specialization) dimensions (Know-how & Skill) are embedded within the learning chain between knowledge (acquisition) and understanding (integration) continuum.

My research on learning styles of engineering students from three Private Higher Education Institutions (PHEIs) and engineers from 18 engineering organizations, interestingly show the distribution pattern results between local and foreign students are identical. See Table 1. In addition, for both the undergraduates and engineers samples, their dominant learning styles are also identical and they incline towards the dimensions: active, sensing, visual and sequential. The data shows that students tend to be active and

sensing learners while professors tend to be reflective and intuitive learners. Active experimenters are pragmatic people. They want to do something with the information in the external world. Sensors like facts, data and experimentation, solving problems by standard methods and dislike "surprise", and patient with details and do not like complication. On the other hand, intuitive individuals prefer principles, theories, and innovation, dislike repetition, and are bored by details but welcome complications (Felder & Silverman, 1988).

Based on the implications of this result, it is worth discussing the effectiveness of the traditional teaching approach of engineering educators. As can be seen in Figure 2, the anti-clockwise learning cycle illustrates the traditional way of engineering teaching. This learning direction is in opposite direction to that of the styles preferred by the engineering students as well as engineers as indicated by the study above.

Why does 'SAM' appear to be effective for engineering education? Let us ponder at some daily examples. How does a child learn to ride a bicycle, play video games, or swim in a pool? Do we begin by coaching s/he with the theoretical knowledge, or more often, do we demonstrate how to perform the tasks?

Engineering classes in this era of democratisation of education

comprise diverse learners and involve many abstract concepts. As engineering mainly deals with the psychomotor skill learning aspects, an inductive approach (clockwise) that incorporates more hands-on experiential learning activities instead of verbal delivery of theoretical ideas through deductive (anti-clockwise) approach is recommended for engineering educators. In traditional engineering teaching, long hours of lectures are conducted due to the notion of teaching that perceives that students must first fully understand underlying theoretical concepts before they are able to carry out coursework that involves high level thinking (such as analysis and design works). However, as illustrated in Figure 3 based on the EPC taxonomy, engineering learning phases of 'know-how' or 'skills' may occur without the need to undergo the phase of 'understanding' (lecture) first since through practices, theories emerge during the interplay process along the learning cycles. In other words, engineering learning can be seen as a form of theorizing practices as a more effective way to acquire expert knowledge and skills.

Concluding Remarks

In conclusion, learning could be considered a 'chicken and egg' discourse. Nevertheless, engineering lecturers may find it more effective if they constantly recognize the appropriate
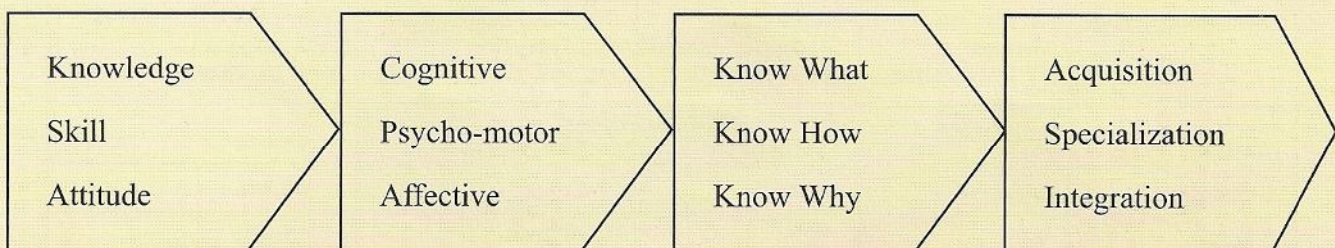
Knowledge	Cognitive	Know What	Acquisition
Skill	Psycho-motor	Know How	Specialization
Attitude	Affective	Know Why	Integration

Figure 1: Learning Domains and their Continuum

entry points, and hence the use of 'Start-at the-Middle' approach to conduct hands-on and practical work to allow students to learn skill practices (learning by working) instead of depending heavily on the lecture. Knowledge and skills acquisition (theory and practice) interplay in a learning continuum process whereby an individual is continuously assimilating and accommodating information from the surrounding objects at different learning contexts. However, the quest to identify which one should come first is not important. Instead, identifying the 'middle' points and emphasising active participation with hands-on practice in the learning cycle of a particular topic area is crucial. As teaching is an art as well as science, the time to inject skill practices varies according to the nature of the courses, facilities and students' group characteristics. Ultimately, the outcome-based learning, which was implemented by the National Accrediting Board since July 2004 and the newly announced Malaysian Quality Framework (MQF), would help to address the employability and 'inappropriately-skilled' issues. The 'SAM' philosophy could be a notion of experiential learning, which is worth exploring to support the development of community colleges and continuing education in engineering. Sophocles said, "One must learn by doing things; for though you think you know it, you have no certainty until you try".

References

Anderson, M.R. (1991). Characterization of the graduate career change women in engineering: Recruitment and retention. "Proceedings ASEE/IEEE Frontiers in Education Conference, IEEE, New York, pp. 248.

Carnavale, Anthony, Leila, J. Gainer, and Amm, S. Meltzer. (1989). Workplace basics: The skill employers want. Alexandria, VA: U.S. Department of Labor Employment and Training Administration and American Society for Training and Development.

Felder, R. M. and Silverman, L. K. (1988). Learning and teaching styles in engineering education. Engineering Journal, 78 (8), pp. 674-681.

Felder, R. M., Woods, D. R., Stice, J. E, and Rugarcia, A. (2000). The future of engineering education II. teaching methods that work. Chemical Engineering Education, 34(1), 26-39.

Felder, R.M., and Brent, R. (2005). Understanding student differences. Journal of Engineering Education, 94(1), pp. 57-72.

Gow, L. and Kember, D. (1990). Does higher education promote independent learning? Higher Education, 19, 307-322.

Solomonides, I. P., and Button, B. L. (1994). Improving the quality of student learning: A system approach. Engineering Science and Education Journal, June 1994, 3 (3), pp. 131.

Sparkes, J. J. (1989). Quality in engineering education. Engineering Professors' Conference Occasional Papers No. 1, July 1989.

Watkins, D. A., and Hattie, J. (1990). Individual and contextual differences in the approaches to learning of Australian secondary students. Educational Psychology, 10, 333-342.

Table 1: Preferred Learning Styles for Engineering Students, Engineering Academia, and Engineers

Personality Style	Faculty Staff Abroad (12 universities)	Engineering Students Abroad (12 universities)	Engineering Students in Malaysia (n=140, three PHEIs)	Workplace Engineers in Malaysia (n=118, 18 organisations)
Active	45%	64%	62.9%	61.0%
Sensing	41%	63%	63.6%	70.3%
Visual	94%	82%	89.3%	95.8%
Sequential	44%	60%	64.3%	50.8%

The Teaching-Learning Cycles in Engineering

Supervise
Practice
Experience

New Approach

Consultation
Experiment
Doing

Demonstrate
Observe
Reflection

Body

Mind

Conceptualization
Listen
Teach

Traditional
Approach
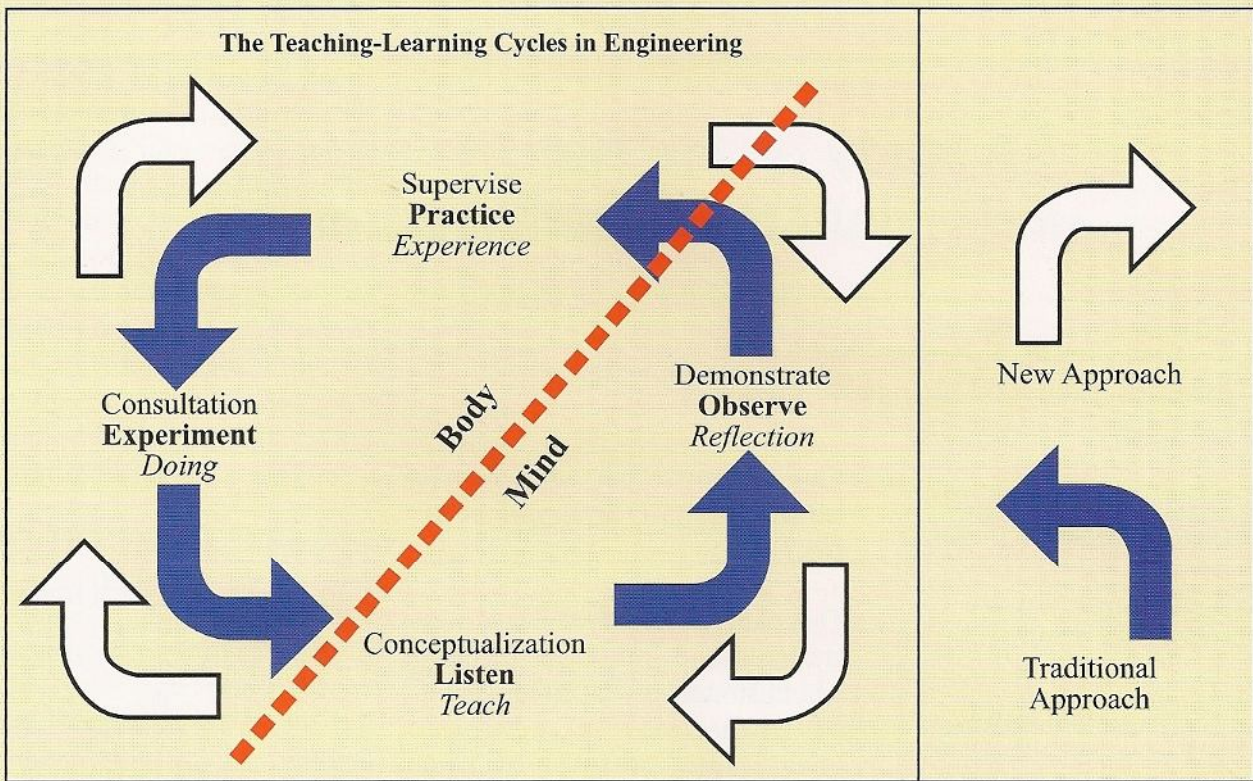
Figure 2: The Conventional and Newly Recommended Teaching-Learning Cycles

Engineering Learning

A = Knowledge
B = Know-How
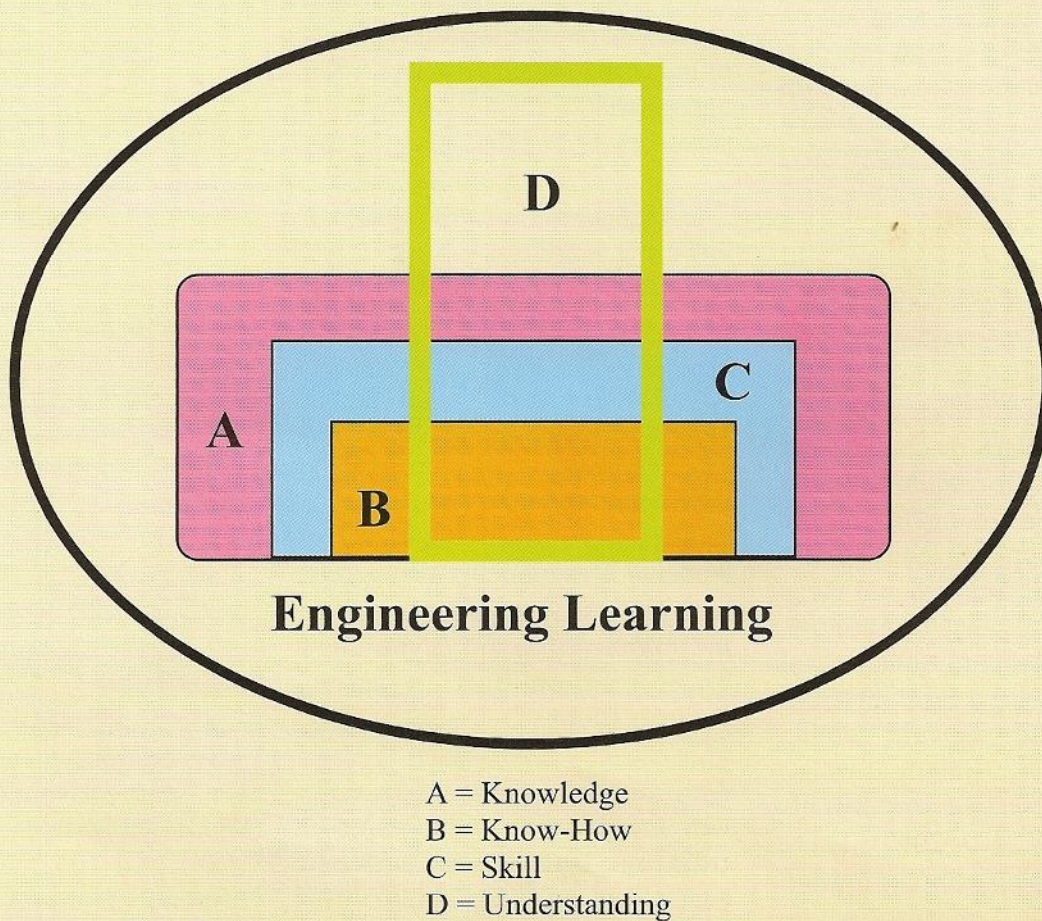C = Skill
D = Understanding

Figure 3: The Engineering Learning Continuum

A Study on the Effectiveness of Industrial Attachment Programme

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A model of professional competence has been proposed by Cheetham and Chivers (1996). At the core of the model are four core components of professional competence. These are functional competence, personal or behavioural competence, knowledge or cognitive competence and values or ethical competence. Industrial attachment programme is an important component in the training of undergraduates. The programme exposes students to the real job situation and helps them develop core competencies that are increasingly important for graduates.

Arthur D. Little Plc (1998), as in Mohd Shariff et al. (2000), found that most of the graduates from Malaysian higher education institutions have high technical know-how but lack the aspects that make them well rounded. Seven attributes were identified as the important aspects that make graduates well rounded and these consist of technical know-how, communication and behavioural skills, analytical and critical thinking, practical aptitude, solution synthesis ability, lifelong learning capacity and entrepreneurial skills (Mohd Shariff et al. 2000). There is a growing awareness among educators that it is important to increase students' participation in the learning process and to provide skill-based education as well as one based on academic achievements (Humpreys et al. 1997).

This paper presents feedback from students and industrial training administrators on the effectiveness of industrial attachment programme. A total of nine respondents who administered the industrial attachment programme at their respective institutions (USM, UKM, UPM, UNITEN and UTP) were asked to indicate their agreement on statements pertaining to industrial attachment (IA). Their agreements to these statements are summarised in Table 1.

The highest agreements were for 'Students acquire new skills while on IA' followed by 'My institution has done its best in preparing students for IA'. The lowest agreement was for 'IA does not enhance students' capability' and this is consistent with the highest agreement given pertaining to acquisition of new skills by students. Respondents also agreed with the statement 'Supervisors in the organisation are given clear guidelines on how to assess students on IA'.

An interesting observation made here is in relation to the period of training, interaction between supervisors in the organisation with lecturers and the review of industrial training by the senate of the university. All items pertaining to these aspects secured low agreement. Respondents disagreed that eight weeks is sufficient for meaningful industrial attachment suggesting that a longer period is necessary.

A total of 600 questionnaires were administered to predominantly engineering students in six universities. A total of 346 completed questionnaires were returned. 65 respondents were from KUTKM, 68 from UKM, 40 from UNITEN, 26 from UPM, 40 from USM and 107 from UTP. The respondents from UTP comprised 66 information technology students and 41 engineering students.

> The programme exposes students to the real job situation and helps them develop core competencies that are increasingly important for graduates

The student respondents were asked to indicate their agreement to statements describing their industrial attachment experiences. Their responses are summarised in Table 2. The respondents strongly agree on the statement 'Students are able to acquire new skills in the industry' followed by 'Students give the best effort to gain knowledge and experience during Industrial Training'.

The lowest agreement is for 'The institutions decide on the training experiences that students should undergo'. The statements 'Supervisors are given clear guidelines on how to assess the students on industrial attachment' and 'The contact between the

> The findings identified areas of opportunities to enhance the effectiveness of industrial attachment

university and the company pertaining to the students on attachment is sufficient' also scored among the lowest agreement, confirming the observation made earlier.

The findings identified areas of opportunities to enhance the effectiveness of industrial attachment. These include a closer work relationship between institutions and organisations pertaining to industrial attachment, clearer expectations on industrial attachment by all parties involved through specially prepared documents and dissemination of information.

Table 1: Perception on industrial attachment (As it is now)

No	Statements	Mean	S. Dev.
1	Students acquire new skills while on IA	4.56	.52
2	My institution has done its best in preparing students for IA	4.50	.75
3	Supervisors in the organisation are given clear guidelines on how to access students on IA	4.33	.86
4	Generally the students are keen to contribute to the organisation	4.33	.50
5	My institution secured good cooperation from the IA supervisor in the organisation	4.33	.70
6	Relationships established through the implementation of the IA led to collaborative activities between my institution and the industry	4.22	.66
7	Students are able to adapt to the working environment	4.11	.60
8	Students have the right attitude towards IA	4.00	.70
9	My institution provides sufficient guidelines for the company to supervise students on IA	4.00	.70
10	There is sufficient interaction between the supervisors in the organisation and the lecturer to ensure quality of student training	3.67	.86
11	IA practices are regularly reviewed by the Senate of my institution	3.22	.97
12	Eight weeks is sufficient for a student to undergo a meaningful IA	2.00	1.00
13	IA does not enhance students' capability	1.67	1.00

Scale used: 1=Strongly disagree 2=Disagree 3=Neither agree nor disagree 4=Agree 5=Strongly agree

Table 2: Agreement on Statements Pertaining to Industrial Attachment Experience

No	Statements	Mean	S. Dev.
1	Students are able to acquire new skills in industry	4.23	.67
2	Students give the best effort to gain knowledge and experience during industrial training	4.22	.67
3	Students are able to adapt to the working environment	4.18	.63
4	Students are able to complete the work assigned to them by organisation successfully	4.12	.69
5	Students have the right perception and clear objectives towards industrial training	4.06	.74
6	Students have very high motivation	4.03	.73
7	Generally the students are keen to contribute to the organisation	4.05	.72
8	Generally the students have good communication skills	4.01	.71
9	The industrial attachment students are well briefed by their institution	3.89	.88
10	The university provides sufficient guidelines for the company to supervise the students	3.93	.84
11	The knowledge that students possess are relevant to their industrial training	3.86	.98
12	The company has done its best in providing students with the necessary work exposure	3.87	.95
13	Plan of work during industrial training was prepared by the industry	3.84	.98
14	The contact between the university and the company pertaining to the students on attachment is sufficient	3.86	.86
15	Supervisors are given clear guidelines on how to assess the students on industrial attachment	3.80	.94
16	The institutions decide on the training experiences that students should undergo	3.15	1.15

Scale used: 1=Strongly disagree 2=Disagree 3=Neither agree nor disagree 4=Agree 5=Strongly agree

References

Cheetham, G. and Chivers, G. (1996). Towards a holistic model of professional competencies. Journal of European Industrial Training, Vol. 20(5), pp.20-30.

Humpreys, P., Greenan, K., and Mc Ilven, H. (1997). Developing work-based transferable skills in a university environment. Journal of European Industrial Training, Vol. 21 (2), pp. 63-69.

Mohd. Sharif, A., Abdul Mutalib, M.I., and Ahmad Fadzil, M.H. (2000). Students industrial internship programme at University Teknologi Petronas (UTP), Malaysia. Paper presented at International Conferences on Engineering Education, ICCE 2000, Taipei, Taiwan, August 14-18th, 2000.

Arthur D. Little Plc (1998). Universiti Teknologi Petronas Academic Master Plan Report.

Applications of Mobile Technologies in Competency and Skills Education

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Introduction

A focus on workplace performance has taken centre stage in the global competition for economic success. Educators are expected to contribute to solutions to improve graduates' entry level competencies and skills and their relevance to the workplace. If educators are to obtain direct evidence of competencies and skills, a concomitant increase in testing activity and time will be required. If, for example, it is necessary to collect 50 competencies across 150 students, how will students be assessed, data recorded and reports be prepared?

It will be shown that mobile technologies can provide a means to accomplish improved results in the management of these data. New benefits previously not possible using existing ICT, are made possible using mobile technologies. This paper describes a mobile-based systems model developed by researchers at Institute FRIS (First Robotics Industrial Science) to capture and manage skills and competencies data on a handheld mobile device.

FRIS's research objective was to determine the technical and pedagogical usability of mobile technologies to manage and assess competencies and skills in occupational training. The mobile occupational skills learning management project was started in 2003 at FRIS, Penang. At that time mobile PDA technologies lacked wireless features, cameras, large memories, hand phone features and an ability to play back video and audio. WiFi and 3G were not in wide spread use in 2002.

Mobile based systems model

FRIS researchers reviewed developments and future forecasts of mobile technologies. A systems model was developed for managing occupational and learning data (so called SKILLS). This model was designed to take advantage of new features forecast to appear on the market during the research and development period. This SKILLS model outlined features then not available in ICT systems. A diagram of this model is presented in Figure1.

The SKILLS model has several key target design features, namely:

- Organises occupational tasks and learning management in a mobile device.
- Access to occupational task lists for target occupations on a mobile device.
- Access to trainee information, biodata, assigned learning outcomes and current performance assessments on a mobile.
- Links occupational tasks to learning modules, assessments and trainees.
- Access linked lecture plans and instructional resources on a mobile device.
- Assesses each performance based on a set of common performance criteria.
- Assesses performance on a five, three or two interval weighted scale.
- Automatically records rater's initials and dates of skills assessments.
- Access to a trainee's competency learning curve assessments with dates.
- Produces instant skills records and other reports.
- Stores multimedia video, images and audio records in a trainee's records.
- Stores up to 4 years of lecture notes on a 1 GB memory stick. (4 GB now available)
- Stores Power Point presentations with audio.
- Saves time and costs in the collection of performance data in class, laboratory, workshop, workplace and elsewhere.
- Displays convenience and ease of use to access performance records of a trainee.
- Operates in a LAN based environment and have on and off site Internet accessibility.
- Access to data from many servers with many databases.
- No requirement for keyboard entry.
- Connects PDA to an LCD projector or PC screen for full screen presentation

The development of the model

During a two-year development period FRIS carried out on-site studies at SHRDC (Selangor Human Resource Development Center) which conducts industrial training, for a wide variety of clients including multinational companies, using a CBT (Competencies Based Training) model. Here, the SKILLS model for management of competencies and assessment of skills was introduced.

Interviews were conducted to obtain user feedback. Users cited the advantage of SKILLS as the ease of use and saving of time to capture and record assessments. Typically courses contain 100 or more competencies. Competencies assessments were obtained in a number of ways, including in-class instructor assessments, completed in-lab activities with required end results and question and answer sessions with individual trainees. Trainees equipped with mobiles and specialized software can beam their answers to the instructor where they are compiled to produce a summary result. Feedback obtained from SHRDC staff was used to modify the data management design.

Based on these and other inputs, several changes were introduced, after SKILLS had undergone six months of field trials. Based on the field trials, SKILLS was modified, to include the following features:

- Assesses performance based on tasks - skills criteria sets.
- Sorts learning modules into common sets.
- Allows soft or generic to specific skills - learning module continuum.
- Enters criteria for a competency checklist as: 'can', 'cannot' or 'not assessed'.
- Views and enters performance criteria on PDA

SKILLS version two is now in use at SHRDC. So far no new feedback has been obtained. A second six-month field trial is being conducted and will be reported on when resulting data has been reviewed.

Future Research and Development

Future mobile technical developments are expected to include: WiMax accessibility, continued merger of hand phone and PDA features, terrestrial TV, wider area access to wireless broadband services, improved graphics user interfaces and decreased cost of mobile devices of all kinds. It is expected that these developments will result in a greatly increased population of users. Additional technical features now appearing include larger screens or mini projection systems, larger memory sticks of 4GB or more, special components such as GPS for mapping and location applications, RFID applications, external sensors, use of mobile systems for payment and other applications too numerous to mention.

Pedagogically, rapid progress is being made in the development of learning objectives and their repositories. In Canada the repositories include: CAREO, Cancore, POOL, BELLE and others. R&D is continuing to further develop SKILLS Learning Management System to enable selection and aggregation of selected learning objects into SKILLS Learning Modules. Additional Meta data descriptions for learning modules and their content will be added to ensure compliance for LO exchange with learning object repositories.

Technical and pedagogical features of PDA applications are forming the bases for mobile delivery of learning in the workplace and elsewhere. We expect lower costs of mobile devices to open up this global market. This will be followed by large increases in the availability of learning content to suit all kinds of learners. R&D at SHRDC and at FRIS will continue as new technical and pedagogical user features appear.
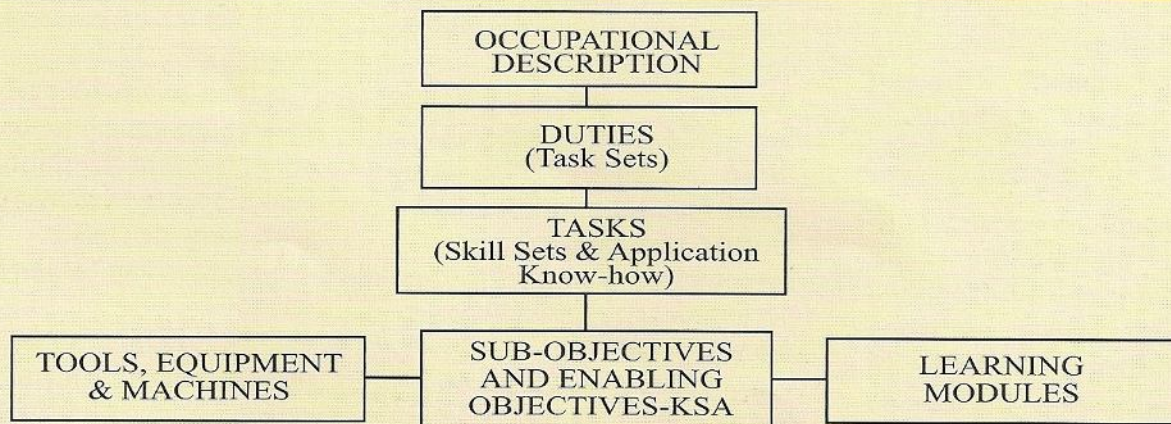
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          ┌───────────────────────┐
          │    OCCUPATIONAL       │
          │    DESCRIPTION        │
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          │      DUTIES           │
          │    (Task Sets)        │
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          │      TASKS            │
          │ (Skill Sets & Application│
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│ TOOLS, EQUIPMENT │ │ SUB-OBJECTIVES   │ │   LEARNING       │
│  & MACHINES      │ │ AND ENABLING     │ │   MODULES        │
│                  │ │ OBJECTIVES-KSA   │ │                  │
└──────────────────┘ └──────────────────┘ └──────────────────┘
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Figure 1: Job Oriented Descriptors Model

An Old Student Remembers Changes

Mohammad Haji Salleh, National Laureate
School of Humanities
Universiti Sains Malaysia

I went to the University of Singapore in 1965 and the University of Malaya in 1968. Forty years have changed not only the buildings on campus but the very perceived functions of education, the rhythm of the universities and the nuances of its meaning in society. And lest we forget we must hurry to add that the society that pays and considers itself client has equally changed.

With so many changes, inside and outside the campus, it is indeed hard to even begin to note down my amorphous and quite undefined feelings.

The physical sense of the campuses is more crowded now, as the student numbers grew. In the late 1960's where there were a thousand odd students, while now the public universities have an average of 25,000. Now we are told there are more than 600 colleges and universities. When I went to Singapore there were two shared ones there and one in Kuala Lumpur.

A student was then a special breed of animal, if not from a middle class family. He was chosen to be trained and educated to serve his society. A student could not help feel that he was there for some serious social functions. Thus they demonstrated to show their commitment - sometimes against or for the government, against the American or Japanese establishments and companies. And when a group of landless farmers cleared a piece of land in Selangor and were driven out of the plot they wrote poems and threw their boisterous support behind them. When one of the poor Baling peasants died eating the gadung tubers the whole issue of poverty in the country was uncovered and all the universities saw their students in the streets; and by the end of the day a few hundred in detention.

This is a practice in expression, in democratic statement of belief on practical and social issues, and a general statement that students were a responsible and meaningful part of their society. They also helped voice its worries and anger.

We not only felt chosen but also responsible - not least because we too came from a less well-to-do background, and were at the same time swept along by the post-1968 Paris student rebellion.

We also felt in those years that there were only a few of us. Moreover in these pre-AUCU years, there was still some freedom to say things and it was considered an important element in the upbringing of young citizens.

A student was educated to be critical in his thought, daring to speak and demonstrate his beliefs. He was not a machine memorising pages of notes and books, but was also a thinking human being. It was the business of the university to educate and not merely to train. If he could think critically he would be quite prepared to solve problems in his prospective occupations and tasks. These are the graduates that are now at the top of the administration, business and artistic communities of the country. They also became thinkers, executers, prime ministers and opposition party members or officials of the NGO's. I feel that the student of the 2000 has a narrower sense of studentship, for his world is limited by the "Akujanji" and his social commitment has very little chance to fully develop.

To be socially conscious is also to be critically conscious. We need thinking, committed and sensitive young people for the future. For we need to compete with other young people from other countries of the world as we are rudely swept along by globalisation. Only a thinking people may be able to build a great country. And not otherwise.

> A student could not help feel that he was there for some serious social functions

Key Performance Indicators (KPIs) for Governance of Public Universities in Malaysia

Noraini Mohamad Yusof & Melissa Darlyne Chow

The National Higher Education Research Institute (IPPTN) together with the Asian Centre of Research on University Learning and Teaching (ACRULeT), Universiti Teknologi MARA, organised a workshop on "Key Performance Indicators (KPIs) for Governance of Public Universities in Malaysia" from 28 to 31 May 2006, at the Grand Plaza Parkroyal Hotel, Penang.

The workshop is a follow-up from the workshop held from 22 to 25 March 2006 at Colmar Tropicale, Bukit Tinggi Resort, Pahang. It was organised by ACRULeT, Faculty of Education of UiTM together with IPPTN and the Department of Higher Education Management for Institutions of Higher Learning (JP IPT).

The workshop aimed to obtain data related to KPIs and administrative management practices from the administrative support and academic groups of Public Institutions of Higher Learning (PIHL) in Malaysia and the preparation of the instrument process.

The workshop was attended by IPPTN's director, Professor Morshidi Sirat as the research facilitator and a research team comprising Professor Dr. Hazadiah Mohamad Dahan as the project leader and assisted by eight other researchers from UiTM, UKM and JP IPT, as well as three research assistants.

The workshop was held to discuss the study of instrument construction, that is the preparation of the questionnaire for each group according to the category of positions, such as Vice-Chancellor, Registrar, Bursary and Dean. The construction of instruments also involved a discussion on the checklist and interview questions. The research team was divided into smaller groups to discuss interview questions for each category of position.

On the last day of the workshop, the research team fine tuned the instruments for the interview questions of each group according to the respective positions. Each member then presented their work. The research team also discussed procedures and data collection arrangement for the KPI study in Universiti Malaysia Sabah and Universiti Malaysia Sarawak. For the data collection procedure, the method for the interview process was spelled out by Dr. Chan Yuen Fook as the Assistant Project Leader.

It is hoped that from the findings of this study, suitable KPIs can be identified to measure the performance of the administrative groups of PIHL in Malaysia.

Partcipants of the 'Key Performance Indicators (KPIs) for Governance of Public Universities in Malaysia' workshop

Revisiting IPPTN's Roles and Functions

Noraini Mohamad Yusof & Melissa Darlyne Chow

Earlier in the year the National Higher Education Research Institute (IPPTN) organized a workshop to determine its vision for the next five years, i.e., 2006 until 2010.

Held at the City Bayview Hotel in Langkawi from 20 to 22 January 2006, the workshop aimed to re-visit IPPTN's roles and functions in higher education, in line with the Ministry of Higher Education's (KPT) wish to make IPPTN an authoritative research institute at national and international levels.

The workshop was chaired by the director of IPPTN, Professor Morshidi Sirat, and attended by the Director General of the Department of Higher Education Management (JP IPT), Y. Bhg. Dato' Professor Dr. Hassan Said, Head Assistant Director of JP IPT, Rosli Harun and IPPTN's associate research fellows.

Y. Bhg. Dato' Hassan delivered his speech entitled "The Development and Changes in the Ministry of Higher Education Malaysia and its Implications on IPPTN" in which he discussed IPPTN's roles and strategies.

The roles which are expected to be carried out by the institute include to implement projects identified by JP IPT (top down) as well as to conduct contractual research and to act as a think tank (bottom up). Y. Bhg. Dato' Hassan also stressed that it is important for IPPTN to look at issues at the global level, to help increase Malaysian Higher Education's competitiveness, develop its niche, and to contribute toward the maintainance of excellence with regard to human capital development in Malaysia's higher education institutions.

In order to achieve these roles, IPPTN must strategize effectively involving various aspects, including capability building and research clustering.

The three day workshop concluded with a proposal outlining IPPTN's vision, mission, objectives and action plan, which was then presented at the National Council for Higher Education (MPTN).

The Corporatization of PIHL: A Proposal Preparation

Nor Azreen Zainul & Melissa Darlyne Chow

The National Higher Education Research Institute (IPPTN) has been given the mandate to prepare a proposal for the implementation of the corporatization of public institutions of higher learning (PIHL). The proposal will become the basis to reconsider the steps that can be taken by the Ministry of Higher Education (KPT) to implement the corporatization of IPTA. A workshop on the proposal preparation for the corporatization of IPTA was held at the Equatorial Hotel, Penang, on 13 and 14 February 2006.

The workshop was led by Professor Haji Ibrahim Haji Che Omar, an Associate Research Fellow of IPPTN, and was attended by 15 PIHL officers. Dr. Ismail Jamaludin, the Governance Director of the Department of Higher Education Management, KPT, was also present to oversee and provide relevant information on the management of the ministry and the central government pertaining to the issue of the corporatization of the PIHL.

Workshop participants were divided into two groups with specific tasks to explore regarding the relevant aspects of the proposal. The first group discussed the legal aspect of the ministry, the power of the University Board of Directors, the management of PIHL, personnel management, the development of human capital, and service and retirement schemes. The second group focused on the aspect of power and financial management, the generating of financial resources, research, development and student affairs.

Also discussed in the workshop was the corporatization model that could be used by PIHL for short, medium and long terms. The proposal was presented to the Department of Higher Education Management, KPT, two weeks after the workshop.

A Model for Malaysian Public Universities

Noraini Mohamad Yusof & Melissa Darlyne Chow

DEEP IN DISCUSSION: (From left) Professor Omar Farouk Sheikh Ahmad, Professor Dato' Dzulkifli Abdul Razak and Datin Masrah Hj. Abidin at the workshop.

The Department of Higher Education Management (JP IPT) and the Ministry of Higher Education (KPT) Malaysia have requested the help of the National Higher Education Research Institute (IPPTN) to study and subsequently to recommend a model for Malaysian public universities. The workshop was a joint effort between IPPTN, Universiti Sains Malaysia (USM) and JP IPT, and was held from 21 to 23 April 2006, at the Equatorial Hotel, Penang.

Fifty-six participants comprising academicians and administrative personels from various public institutions of higher learning and KPT attended the three-day workshop. Professor Omar Farouk Sheikh Ahmad, from Hiroshima City University was invited to present a paper entitled *Reorganization and Restructuring of University: The Japanese Experience.*

The aims of the workshop were to look for and identify a suitable model for Malaysian public universities in the future; to study and devise a university governance system in Malaysia vis-à-vis the administrative system, the student entry system, the university's organisational structure, human resource management and other pertinent management elements; to study the method and the model for university funding; to produce a suitable model for academic programmes; as well as to assess preliminary legal implications from the suggested model.

The workshop was officiated by the Vice-Chancellor of USM, Y Bhg. Professor Dato' Dzulkifli Abdul Razak. The Vice-Chancellor opened the discussion with a thought provoking paper entitled *Model of Malaysian Universities: Devil's Advocate.* The participants then were briefed on several key issues regarding current and future developments in higher education. They then worked with members of the workshop committee in five separate groups to deliberate and discuss related issues. Among the views expressed during the discussion was that there should be a role differentiation among various categories of universities in Malaysia and that it would be more desirable to have a variety of interrelated models for the various universities. The outcome of the discussions was then compiled by IPPTN and subsequently presented to the JP IPT.

Second Announcement: Call for Participation

**International Higher Education Policy Research and Management Forum 2006
(The USM Penang HE Forum)
Higher Education in the Asia Pacific and Networked Society**

Date: 8 - 11 November 2006
Venue: Dewan Persidangan Universiti, Universiti Sains Malaysia, Penang, MALAYSIA.

KEYNOTE SPEAKERS

Professor Barry M. Harper
Faculty of Education, University of Wollongong, Australia
Title: ICT and Emerging Technologies of Learning in Teacher Education

Professor Futao Huang
Research Institute for Higher Education (RIHE),
Hiroshima University, Japan
Title: New Challenges for Undergraduate Curriculum Development in a New Era

Associate Professor Peter Kell
Faculty of Education, University of Wollongong, Australia
Title: Internationalisation, National Development and Markets: Key Dilemmas in Leadership in Higher Education

Professor Ambigapathy Pandian
School of Humanities, Universiti Sains Malaysia, Malaysia
Title: Literacy Outlook: Realities and Critical Encounters with English Language in Malaysia

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CAPSTRANS
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SOCIAL TRANSFORMATION STUDIES

THEMES
The following are some of the themes that have been identified for The USM Penang HE Forum:
- Interconnected knowledge and research: research policy and directions and the dilemmas for Australia, Malaysia and other partners in the Asia Pacific.
- Connecting with the environment: higher education, the environment and sustaining sustainability.
- Networking and linking to broader knowledge community: links of lifelong learning, "second chance" learning in adult education.
- Maintaining the standard of higher education in the Asia Pacific: quality assurance of transnational education.
- Interconnecting global communities: ICT and emerging technologies of learning.
- Interconnections and global diversity: intercultural implications emerging from internationalisation for teaching/research.
- Governance and leadership in higher education.
- Professionalism in teaching and leadership.
- Gender and inclusion in higher education research in the Asia Pacific
- Networks, funding, resourcing and the governance of higher education in the Asia Pacific: Private exchange or public goods? Public corporation of private enterprises?

For more information please contact:
Forum Chairperson: Professor Morshidi Sirat
Tel: 604-6590534 / 6534090 **Fax**: 604-6590532
URL: http://www.usm.my/Hed.Forum
Email: morshidi@usm.my, morshidi2000@yahoo.com

Guidelines on Submission of Manuscripts

1. Manuscripts should be written in English, typed using Times New Roman 12 point font, and double spaced on only one side of A4 size paper with ample left and right margins on Microsoft Word.
2. The length of the manuscripts should not exceed 1000 words. An abstract of about 150 words should be included.
3. Authors are responsible for obtaining permission to use any published material. The publisher shall not be held responsible for the use of such material.
4. Citations in the text should include the author's last name and date of publication, e.g. (Ashton, 2001). If quotations are used, page numbers should be indicated, e.g. (Ashton, 2001:30).
5. Endnotes may be used.
6. Include tables and figures within the text. Number tables and figures consecutively.
7. The reference list should be arranged in alphabetical order and should include only works cited in the text.

Examples:

Yule, G. (1996), Pragmatics. Oxford: Oxford University Press. Wolfe, R.N. & Johnson, S.D. (1995). Personality as a predictor of college performance. Educational and Psychological Measurement, 2., 177-185.
Watkins, D. (1998). A cross-cultural look at perceptions of good teaching: Asia and the West. In J.J.F. Forest (Ed.), University teaching: International perspectives. New York: Garland.

8. All submissions should include a cover page containing the title, name of author(s), designation, affiliation, mailing/E-mail address and telephone/fax number. A brief biographical note of the author(s) should also be included.
9. Manuscripts submitted must not be those already published or those which have been offered for publication elsewhere.
10. Manuscripts received will be acknowledged but not returned.
11. Submission of a manuscript will mean that the author agrees to transfer copyright of his/her article to the publisher if and when the article is published. Authors who wish to send their articles to be published else-where should seek the written agreement of the publisher.
12. Manuscripts may be sent via e-mail attachment or via post together with the diskette.

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