UNIVERSITY - INDUSTRY PARTNERSHIP IN EDUCATION

UNIVERSITI MALAYSIA SARAWAK
UNIMAS

cAlm
Centre for Applied Learning & Multimedia

iNTRODUCTORY NOTES

Warmest greetings from CALM.

Volume 11 marks the first publication for the year 2008 for INSIGHT. With the beginning of the New Year, we are even more committed to deliver one of the most thought-provoking issues in teaching and learning: *university-industry partnership in education*.

Traditionally, education and industry have distinct roles to play in the development of society, the former as the cultivator of talents and minds and the latter as the developer of material wealth to fulfill the needs of the society. No matter how different they are in their specific roles, there are a number of ways that they are linked with each other. Industries need the universities to provide them with high quality labor resources and new achievements and results from research and knowledge innovations. On the other hand, universities need the industries to influence their curriculum design as in teaching contents and methods and research endeavors.

At his opening address of the Malaysian Education Summit 2004, the Prime Minister YAB Dato Seri Abdullah Ahmad Badawi emphasized "*the need to increase the links between academia and industry to ensure that our graduates are workforce ready and that any research undertaken is geared towards meeting the needs of the market. Institutions must take the initiative to update their courses and to increase industry placements by holding dialogues with the right parties.*" This call by our Prime Minister to high education institutes to seek partnership with the industries in their educational pursuits is both timely and necessary. This can also be perceived that the issue of university-industry partnership has moved high on the agenda of higher education policy.

Malaysia's fast paced moving economy and its ambition to become a major player in the global economy has certainly put education to the test. The setting up of numerous multinational companies in Malaysia has lead to a demand in local workforce who has the abilities to translate theories into practice, who can communicate fluently in any foreign language, who are competitive, who have good organizational skills and the like. Are the courses, in terms of theory and practice offered by our universities relevant to the needs of the labor market? Are our graduates up to the challenge?

Since the Malaysian Education Summit 2004, some universities have set up their respective centers which focus on creating partnership with the industries in the areas of training, research and dissemination of information. Other universities which have been continuously working with the industries through students' industrial attachment have also found some other ways to step up their relationship with the industries like staff training, company sponsored research chair or research center, faculty and student exchange among other things.

Nevertheless, one cannot put the onus on the universities solely. The industries are also urged to cooperate (and continue to cooperate) with the universities. It is vital that partnerships must be initiated by both sides. Of course, there will be some challenges and problems to be encountered along the way, whether operational or managerial. But these should not influence them not to pursue these endeavors, because the benefits and opportunities to be gained from these partnerships are significant to both partners, and to the society as a whole.

On behalf of INSIGHT, I would like to extend my thanks to those who contributed the articles for this issue. Your continuous support through your insightful views on issues regarding teaching and learning has continued to inspire us to work harder and be the best academics that we must be.

EDiTORIAL BOARD

WHAT's iNSIDE

University-Industry Smart Synergy Model to Enhance Employment of IT Graduates

text ● inspiration

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Since year 2000, much has been heard about unemployment among Information Technology (IT) graduates. Ironically, the United States governmental sources reported that five of the top fifteen growing occupational categories for 2004-20014 were IT-related. Moreover, the figure was projected to expand more than 38% annually (Borges-Mendez and Boisvert, 2006). What caused a mismatch between IT study program and the industry needs? What has caused this problem to surface?

Various reasons have been contributed to this dilemma. Among them was after leaving a university, many graduates had insufficient grasp of fundamental computing theory (Fernandez et al., 2006). They were also deficient in practical experience in utilizing current computer tools and languages.

As higher learning institutes began to add IT-related courses, they often did very little to link the program content to their potential industry counterpart. Consequently, the graduates were not adequately equipped with vital IT knowledge. The skills they possessed did not suit the industry needs. Such unpleasant realities emphasized the needs for well-expressed and smart connectivity between academia and the industry.

This article highlights strategies to abolish the misalignment between university and industry, thus eliminating needless dissatisfaction. This article proposes an innovative model of university-industry partnership called university-industry smart synergy model. The main idea is to blend the academic rigidity with industrial relevance. Bear in mind that in this joint venture the issue of academic quality assurance is central.

The summary of the model is illustrated in Figure 1. The university will provide professional education and industry-based research. The industry will benefit by having customized study program and competent prospective workforce. Market demand specification and financial funding are provided by the industry. They will help to enhance and develop the curriculum by certifying the study programme. The loop of the two arrows depicts continues processes.
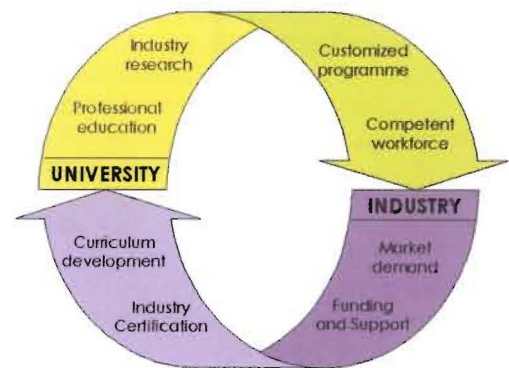
Figure 1: University-Industry Smart Synergy Model

First, I would like to draw your attention towards the above-mentioned partnership trends in the United States. In this country, mutual association between IT educational institutes and the industry has been remarkable. For instance, the University of Washington's Department of Computer Science and Engineering has a great bond with Boeing as their industrial partner (Harkins, 2006). Besides that, Accenture Ltd has become the official corporate sponsor that pumped up to USD $3 million to the School of Information Sciences and Technology, The Pennsylvania State University (Cameron et al., 2005).

For many years, Computer Science and IT education has been facing a mounting challenge in determining the level of relevancy of its content not to mention the increasingly complex languages and software. Recent trend stressed out the value of fluency with up-to-date programming tools in the job market. If the current industry

trend uses VB.NET or C# as the main programming language, then teach it to our undergraduates. If the open source applications are the contemporary trends, then expose them in our lecture theaters.

The effort to align the university and industry is very important so that our students can match their programming competency with what the industry expects. This attempt is to align classroom teachings with the trends and current market needs of the industry. As a Computer Science and IT lecturer, ask yourself this question: "Do you want to teach industry- required subject, and if so, are you choosing the exact programming languages or software?"

I can clearly see that with lucid understanding of the industry needs, the faculty can create industry-driven course. With a pool of subject matter experts of professors and lecturers, the university can provide professional education. They could also assist to conduct industry-related research.

The main obstacle faced by our graduate is for them to graduate first as it takes three years or so to complete the degree. By the time the degree is earned, substantial changes have already taken place in the industry. The programming languages that they practiced in the first year might already have been obsolete. The software version might have been upgraded significantly. As a result, students would suffer the consequence due to the changes which was not reflected in the curriculum of the earned degree.

As Malaysia is rapidly growing in science and technology, unprecedented demand for better graduates has been created. The industry has often criticized that existing university curricula fell short to tackle the practical issues in computer-related industry. The industry expects that educational institutions to train their future employees with the latest technology. However, the nature of educational system of universities is different – we are not a skills training center. I think what we really need to do at the moment is to have the requirements of the industry assessed and analyzed. We may start with reviewing national employment rates and predictions of IT workforce. Then compare it with what we are currently offering our students.

As an academic, we have to admit that we cannot describe to our student the current and state-of-the-art practice in the industry. In this case, the industry representatives could be invited to the lecture hall to expose our students on the challenges of IT industry. Firm support from industry professionals and practitioners could help the students to better understand the current challenges of the industry (Harkins, 2006). Once in a while, the classes could also be held on-site with cooperating industry partner.

Industry-based certification is an important credential that is primarily valued by the employer (Hitchcock, 2007). At the Faculty of Computer Science and Information Technology (FCSIT) in UNIMAS, the first cohort of student has undergone a professional certification program *(3P -Program Pentauliahan Profesional)* during the 2006/2007 session. *Prestariang System Sdn Bhd* conducted the program.

Among the courses offered were Certified Application Developer (MCAD), and Certified Systems Engineer (MCSE) from Microsoft as well as Certified Network Associate (CCNA) from Cisco. The outcome of this program was impressive. The Managing Director of Microsoft Malaysia reported that the students who obtained Microsoft certification achieved a higher passing rate than the world average.

Another program that has been conducted in FCSIT was CampusConnect Programme, an initiative of Infosys Ltd. The author served as one of the faculty-level committee of this program. This year five FCSIT fresh graduates were

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sent to Mysore, India to attend a 4-month foundation program with this Indian IT giant. They were selected among the top 100 out of 313 candidates nationwide.

In return, the industry could also benefit from this smart symbiosis. They will have more competent workforce that will graduate from this customized program as this type of program is tailored based on the industry needs. To achieve this goal the university has to ensure that the most up-to-date technology that is being used in the industry should be accessible to both the students and faculty members.

I propose that each faculty in UNIMAS set up an Academe-Industry Committee. This special task force will have the responsibility to disseminate descriptive guidelines required by the industry before setting up new programs and courses. The industry will have the task to empower the academic-industry education and research community. Professional practitioners from the industry will have the responsibility to provide honest feedback to the university. This action is to ensure that the academic quality concerns are addressed.

In terms of academic research, this scholarly activity could prove useful and relevant to both academe and industry. The university will gain unique access to authentic data and environment, which normally are confidential. Thus will provide rich addition to computer science's body of knowledge. On the other hand, the industry will hold exclusive rights for the research outcomes for commercialisation activity.

The industry should understand the challenge in supporting the university to meet the rising challenges of advancing technology in computing. One of the constraints is that the university's computer labs are not as sophisticated and at par with the industry's. Hence, the industry can provide funding by setting up their labs at the university.

Through this smart affiliation, the university will gain significant professional practice and monetary resources. The university could provide effective and professional-level services of the professors and researchers (Pimentel et al., 2006). In addition, as the university offers internship for its counterpart, the industry could offer the university fellowship program. In this way, academia could gain precious hands-on experience from the industry.

The industry could have a wish list of features of the program that they desire and present it to the university. However, this does not mean that academic programs should compromise its integrity just for the sake of money. The university should take precautious action not to tailor their curriculum simply just to meet the narrowly focused needs of a few corporations.

Another way to crack this obstacle is besides longer industrial placement, the industry needs to help by providing real case studies and sample problems for students. The authentic industry projects and teamwork

will have a positive impact on students learning. They will learn managerial skills. The students could be asked to develop projects under apprenticeship-based supervision of professional instructors of the industry. Industry-related assignments and projects could help to keep the university program become more responsive to the industry requirements.

In a nutshell, to have the relevant and industry-responsive Computer Science and IT curricula, smart partnership with the industry is indispensable. Indeed we have to acknowledge that the nature of computing curricula is dynamic and ever-changing. Hence, sturdy teamwork between university and industry is important to manoeuvre this high-impact reciprocal contract. The road to perfect the marriage between university and industry is still a long one.

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n my article *"How Are Great Teachers Remembered: Eleven Attributes That Matter Most"* published in INSIGHT Volume No. 7, 2005, pp. 4-6, the participants of PGDTL* Cohort 3 highlighted eleven traits of their teachers or lecturers they most admired. The next Cohort 4 of PGDTL participants were given the opportunity to reflect individually their schooling or university experiences and then shared in their respective small groups, attributes or traits of their teachers or lecturers that they have most disliked.

text • inspiration

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The 'Ugly Dozen' of Attributes of Teachers Most Disliked

The 'Ugly Dozen'

The title of this article is adopted from Kay Burke's (2002) 'Dirty Dozen' of teacher's behaviors that can erode the classroom climate. The following 'Ugly Dozen' of attributes of teachers** most disliked consistently appeared in the list of each group:

1)   No mastery of content of subject taught: These teachers taught irrelevant things, even outdated or wrong information. They transmitted 'bookish' knowledge with no application to real experiences or scenarios and exhorted too many theories that seemed alien and unconnected to practical situations. Some of these 'incompetent' teachers spent their class time *'kelentonging'*, a colloquial term that refers to wasting time talking nonsense or unrelated matters to the subject like about their family, their past weekend, etc. Many just regurgitated stuff taken wholesale from textbook(s).

2)   Ineffective teaching skills: Teaching sessions were often boring and there was no employment of variety or flexibility of teaching strategies. These teachers lectured in a didactic fashion, droning and carrying on until the end of the class. There was no attempt to connect the contents to the experiences of the students so that it could become meaningful and interesting. Students were expected to receive and absorb the teacher's constructed meanings of the lesson contents and there was no opportunity for students' use of meta-cognition and constructivist thoughts. Students were not made to be involved in the lesson, whether physically or more importantly, mentally. Ineffective teaching skills, blended with poor mastery of content, sometimes 'complicated' the teacher's attempt to teach/clarify and led instead to misunderstanding or more confusion among the students. McLaughlin & Mandin (2001) aptly term such a session as 'Lecturalgia' or painful lecture.

3)   Deficient communication skills: These teachers often have poor communication skills. Many employed authoritarian style of managing and dominating the class. Some even talked to himself/herself or made no attempt for eye contact with students. Poor language proficiency and ineffective presentation skills and use of body language impeded students' motivation and interest to participate in the class and its learning. Some dug their hands into their pockets, thereby losing an important tool for gesture variety. Others failed to use their voice effectively.

Rice, Stewart and Hujber (2000) have often reminded that being an effective communicator is an essential component of being an effective instructor.

4)   Arrogance: Teachers who were most disliked were usually arrogant, snobbish, egoistic, inflexible or unfriendly. These teachers made students feel that they were second-class citizens in the school and demanded absolute obedience and subservience. Sociability and interaction with students were seen as marring their 'standards'. What might make a big difference to the learning environment is respect. If teachers don't feel that their students have equal value to themselves, then they won't teach them much. In understanding their roles, teachers ought to remember that it is more important to guide students to effective learning that it is to show the students that they know it all.

5)   Biased and prejudiced: These teachers were also perceived by the students to be biased and often demonstrate behaviours of prejudice, racism and double standards. These teachers meted out rewards and punishments according to their

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* PGDTL - Postgraduate Diploma in Teaching and Learning.

** The term 'teacher' is employed to denote anyone who has a formal responsibility to teach and train others, hence includes lecturers in tertiary institutions.

criteria of who were their favourites and who were not. Often, these teachers discriminated against the lower-ability students. If students perceive that the teacher is treating them unjustly, they may then label the teacher as "unfair" or "the enemy". The seeds of insurrection may then be planted, causing a small behaviour incident to escalate into a major discipline problem (Burke, 2002). Nothing escapes the students' attention. Many teachers might not be aware that their subtle and blatant ways of interaction with the students send signals of such discrimination. It is remarkable how many people remember an incident from school in which they were treated unjustly. These incidents often become a "defining moment" in shaping their own character (ibid., 2002).

6)   Aggressive teachers: Teachers were disliked when they were too aggressive, practiced physical punishment, shouted at students and bad/short-tempered. These teachers made the students feel threatened, insecure and very fearful. Participation of students in such class became almost nil as each tended to be on their guard in case they 'provoked' the teacher and incurred his/her wrath or became the object of the teacher's sarcasm or anger. Students need to feel safe and secure in their school environment in order to have a sense of belonging and self-worth.

7)   De-motivating: In their verbal and/or non-verbal behaviour, these teachers had been perceived as de-motivating. The words or gestures they used put down students and made them 'loose face' or loose self-esteem. Derogatory terms made students want to be anywhere else except in the class. In such situations, students 'shut down' and tended to be defensive. Students can "read between the lines" and sense a negative, punitive or condescending tone of voice (Burke, 2002). A teacher's clenched fist, set jaw, quizzical look or threatening stance can speak more loudly than any words (Burke, 2002). Students can also "read" the teacher's expectation of their capability and become victims of such self-fulfilling prophecy. Rosenthal & Jacobson's 'Pygmalion in the Classroom' (2003) demonstrated that teachers' expectations strongly influence students' performances and accomplishment.

8)   Over-Emotional: These teachers were also viewed as insane, too emotional or "losing it" where their behaviors were erratic, often not consistent. Often times, their responses to certain incidents seemed irrational and exaggerated. Students became fearful and apprehensive as what of their behaviours or actions would be the triggering stimuli for the next explosive response. These teachers' outbursts set a bad example for the students (Burke, 2002).

9)   Unable to understand students' problems: These teachers put themselves high on the pedestal and detached from the students. They made no attempt to relate with the students and forge a close understanding of students' difficulties. Listening to students had not been important to them.

10)   Abusive: These teachers were seen by the students to abuse their powers or positions of responsibility. 'Cakap tak serupa bikin' or 'do as I say, don't do as I do" seems to be a general description. The 'teacher' title allowed them to do as they please, even 'get away with murder'. Besides physical abuse, unwarranted verbal abuse was a constant instrument of these teachers. Publicly humiliating, insulting, reprimanding or embarrassing students did not help them to learn from their mistakes. Instead it made the students 'loose face' in front of their peers and could make them try harder not to get caught and caused them to devise clever ways to get revenge on whomever embarrassed them (Burke, 2002). Oft-times, students' feelings have been hurt by sarcastic put-downs thinly veiled as humor.

11)   Absent from class: These teachers played truant and often did not attend their classes. In the universities, they were hard to find and often played the disappearing act. Many would come to class a few minutes late and leave many minutes early. There were times when students, upon reaching the lecture venue, saw a paper stuck outside the door to announce that the class has been cancelled or postponed.

12)   No self-discipline: A lack of self-discipline was manifested in poor punctuality, random distribution of marks in examination scripts or project papers and sense of bad/inappropriate dressing.

These twelve attributes can be grouped into the following three domains of pedagogical content knowledge, communication skills and personal characteristics:

Pedagogical content knowledge:

1.   Do not know content, no mastery.
2.   Teaching skills not effective

Communication skills:

3.   No interaction with students.

Personal characteristics:

4.   Arrogant.
5.   Biased.
6.   Too aggressive.
7.   De-motivating.
8.   Emotional.
9.   Do not understand students' problems.
10.   Abuse power/duty.
11.   Absent from class.
12.   No self-discipline.

THE UGLY DOZEN OF TEACHER ATTRIBUTES

Anecdotal evidence from my past students showed that they would perform well in subjects of teachers they have liked whereas in subjects of teachers they have disliked, their performance would be dismal. It was as if the low performance is a statement of 'protest'.

Besides the common concern of instructor's competence and the quality of instruction in the classroom, the human elements of teaching such as communication skills, personality and appearance have been picked out as important attributes of teachers.

Student Evaluation of Teaching

Numerous studies have been written on the merits and drawbacks of student evaluation of teaching. McKeachie (1990) notes that evaluating teachers has been thoroughly studied since the late 1920s, and concludes that "despite faculty doubts about the ability of students to appreciate good teaching, the research evidence indicates that students are generally good judges." (p. 6). Hobson and Talbot (2001) review research on the reliability and validity of student evaluations and conclude that well-developed student evaluations with adequate reliability and validity data may provide some of the best measures of teaching effectiveness.

These young lecturers cum participants in the PGDTL course were asked to reflect on their past teachers/lecturers and select one who they had most disliked. As this task is retrospective, the influence of "halo effect", that is, the tendency to give overly positive or negative ratings to many items on the basis of one (or a few) strongly liked or disliked characteristic(s), is minimized.

> One can study endlessly the theory of violin playing or of golf playing, but becoming good at either depends mostly on practice. A skill is something that is learned by doing. An element in teaching that is not a skill and hence can be learned is knowledge of a subject. In teaching, subject competence or mastery of its content is the foundation for everything else. A foundation is not a building, but without a foundation, no building is possible.

Conclusion

Some people look back at their primary and secondary schooling and identify an extremely demanding teacher (whom they disliked at the time) as the one who made the biggest contribution to their educational development. However, the 'Ugly Dozen' refers to teachers who were disliked for their 'deficiencies'.

I echo Hardison's (1982) view that teaching is a skill, rather than as an art or a science. Hence, it resembles music and sports. One can study endlessly the theory of violin playing or of golf playing, but becoming good at either depends mostly on practice. A skill is something that is learned by doing. An element in teaching that is not a skill and hence can be learned is knowledge of a subject. In teaching, subject competence or mastery of its content is the foundation for everything else. A foundation is not a building, but without a foundation, no building is possible. In addition to guaranteeing the honesty of the teaching and learning transactions that go on in the classroom, subject competence strengthens the self-confidence, and hence the authority, of the teacher.

Many of the skills and the human elements of teaching cannot be imparted in "how-to" courses. Tact, compassion, courtesy, fairness and the like can be summarized in a few sentences but take a lifetime to learn. They are applied differently by equally successful teachers and differently by the same teacher from one situation to another.

What our students look for in us teachers is not greatness but sturdier qualities that can be delivered regularly: reliability, responsibility, kindness, and competence. Competence is more important than charisma. Students generally respond well to considerate treatment and rational planning.

The two articles of attributes of teachers, one on those who have been fondly remembered and liked and the other on those most disliked, serve as a guide to lecturers who desire to improve their teaching effectiveness in the university. One can emulate the positive traits and work to avoid the negative ones.

I am indebted to my father for living , but to my teacher for living well. Alexander the Great.

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Do Our Students Meet Industry Demands?: Feedback on FCSIT Students

text • inspiration
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Industrial training is an essential part of the Faculty of Computer Science and Information Technology (FCSIT) bachelor degree program as well as the professional growth process. It enables the students to apply theory into practice and also carries 8 credits towards the completion of the bachelor degree.

Industrial training aims at familiarizing students with the practical work assignments that are significant especially from the viewpoint of professional studies as well as developing the students´ professional know-how and application of knowledge and skills in the workplace.

There were 21 software engineering students who underwent industrial training in 2006. The following are the outcomes of this exercise:

a. All software engineering students passed their industrial training session.

b. As a whole, all organizations were satisfied with students' performance and work during their industrial attachment.

c. They were given 3(Average) to 5(Excellent) in all the assessment criteria.

d. Those who have been given an outstanding performance (43 %) by their respective organizations were the folowing:

Student's Name	Organizations
Farrah Adlien Bt Mohd Sohod (11911)	FTMM, KUITTHO
Lim Mei Kuan (12255)	National Semiconductor Sdn Bhd
Nor Faradila Bt Makseri (12571)	CICTS, UNIMAS
Tan Bee Lay (11111)	CICTS, UNIMAS
Norul Ainoor Bt Saiful Bahar (10738)	Sapura Technology Berhad
Lane Marianeh Duis (11481)	Telekom Malaysia Berhad, Sabah
Lau Hooi Bian (12192)	Intel Technology Sdn Bhd
Lau Siew Ling(11530)	Intel Technology Sdn Bhd
John Dalton Anak Peter Ah-Came	NetInc Technologies Sdn Bhd

Below are some of the comments given by the supervisors about these students:

" From the brief experience working with her, I found that she is dependable, pro-active, hardworking trainee. She is very commited in her work and willing to work even after office hours. What I really like about her is that she understand things very fast and her willingness to learn new things without being too dependent on her supervisor. I'm actually impressesed that she managed to successfully finished a challenging task, considering short time given to her. With her great attitude and high aptitude I'm certainly sure she has a successful career in front of her" - CICTS, UNIMAS

"The student has shown good understanding and ability to carry out work instructions. Besides that she has also shown that she is able to assimilate with working environments." - FTMM, KUITTHO

e. However, some students showed unsatisfactory progress (9 %). The following are some of the comments from their supervisors which reflect their unsatisfactory performance.

"He has shown his dedication and his ability during his industrial training in this division. However in order for him to improve further, he must improve on his communication skills, the ability to express his ideas and a bit of grooming"- Telekom

"Found out that this trainee check in late for work. Task given not finish even though already reminded a few times." – E-Genting

Based on the report from the supervisor in the organisation, (see the following figures), the students' performance ranged from 3 (average) to 5 (excellent) in technical competency, ability to design a system, component, or process to meet desired needs, organizational skills and knowledge of current IT trends.

Technical Competency

Ability to design a system, component, or process to meet desired needs

Organizational Skills

Knowledge of Current IT Trends
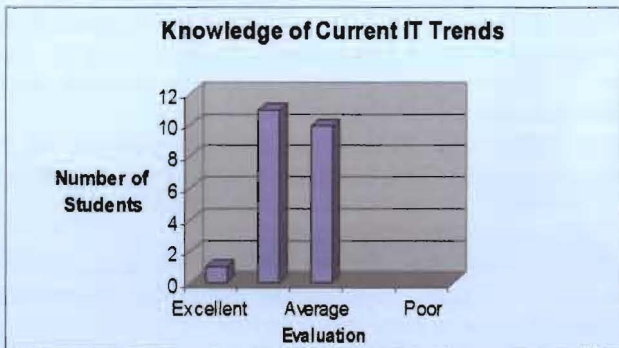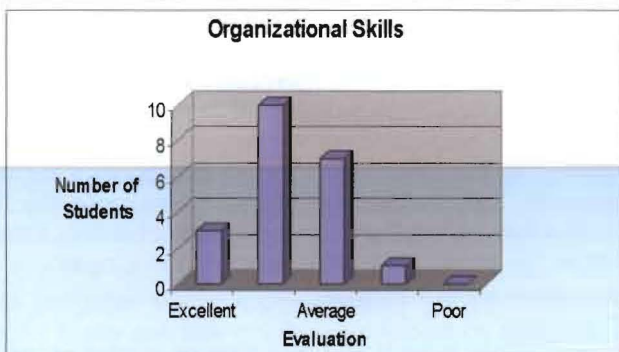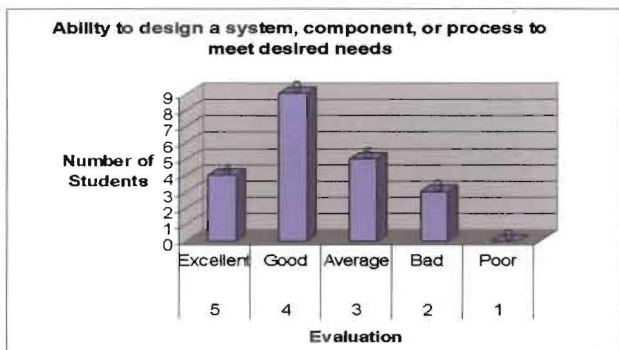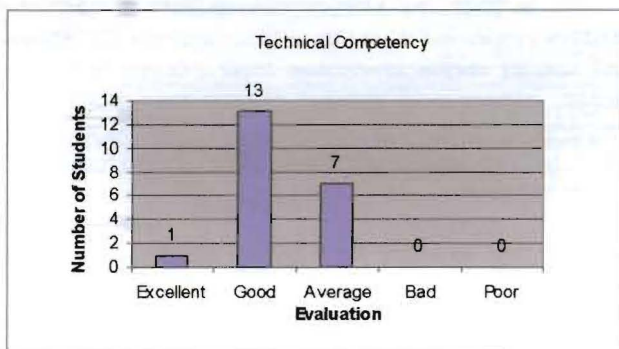
In terms of soft skills which refer to relation with colleagues (overall impressions towards trainee, attitude, professionalism) and communication (both oral and written), the students performance also ranged from 3 (Average) to 5 (Excellent). It is worthy to note that most students scored excellent in 'relation with colleagues."

Relation With Colleagues

Communication Ability -Oral & Written
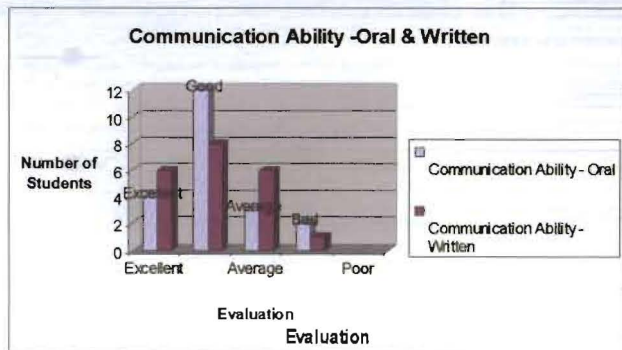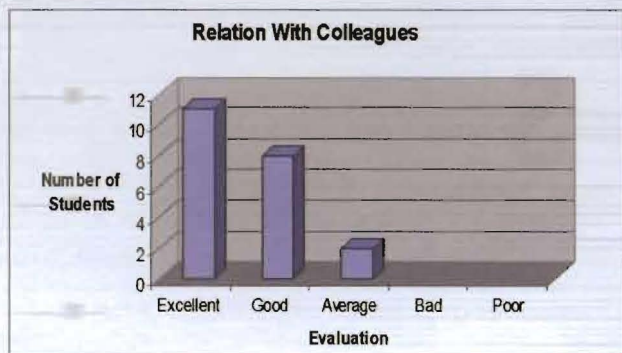
Thirty students have been offered jobs by the organization where they underwent industrial training with condition that they first complete their studies in UNIMAS. Among these students, 24% have been employed and are currently holding various position in these companies. They were:

1. Wendy Primus - NEXUS Resort Karambunai

2. Phillomeana ak Limbang - Bhgn Teknologi Maklumat & Komunikasi, Kementerian Pelajaran Malaysia

3. Sugathi a/p Kaliappan - QubeConnect Sdn Bhd

4. Khairul Fazariah Yusof - Commerce Dot Com Sdn Bhd.

5. Noor Hazirah Bt Mohd Noor - Scan Associates Berhad

In conclusion, our students' performance during the industrial attachment have been satisfactory.

The Free Trade of Knowledge

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Since the inception of the idea that knowledge can be confined to a fixed locale, universities have been seen as a place that produce knowledgeable people. Tagged with the label "Graduates", they are actually conferred with an honor for having completed a series of learning goals while in the university. Once all goals have been completed, then they are allowed to proudly proclaim themselves as products of so and so university.

This distinction has long since determined the academic worth of a person. I use the word academic worth because one's worth may not be totally dependent on the level of one's education but on a collection of factors such as intellectual maturity, social skills, tacit knowledge and hands-on abilities.

The universities feed an endless supply of graduates to an eager client – the industry. Demands of the industry have continued to rise in recent years due to demand from the population for goods and services. In tandem with such demands, industry players have stepped up efforts to continuously maintain an edge over their respective competitors. The need to remain ahead of the game has spawned programs for continual staff training.

Providing education to current staff members is a strategic initiative taken by large organizations. It could be as simple as a weekly meeting between staff of a certain grade or an in-house training session but the goal is the same - our people have to be smarter than our competitors' people.

The need to have in-house training has propelled the use of e-learning systems. Acting as disseminators of information, such systems are the key element of success for in-house training in big corporations such as Microsoft, IBM or Dell (to name a few). They are easy to setup, maintain and allow access to every member of the organization as long as the Internet is present.

Systems are easy to setup but good quality content is hard to come by. This is the golden goose, lying in wait, that universities must be willing to grab.

In 2001, the Massachusetts Institute of Technology (MIT) announced their Open CourseWare (OCW) initiative. MIT would make available their course notes, lectures notes, exams and various course resources for free to anyone who has the capability to download them. As of 2007, MIT has made available 1800 course for free via their OCW initiative.

The industry has been quick in grabbing this chance. Who doesn't want to train their employees to be as good if not on par with MIT graduates? We are not talking snippets or quotes of MIT professors but whole courses offered for download to anyone who wants to learn. To date, MIT averages 1 million hits on its OCW website with Asia contributing the 2nd highest number of users (21%).

In this light, knowledge itself has now become a commodity of trade. By giving out its materials and resources in such manner, MIT has cemented itself as an institution that not only wins the popular vote among learners the world over but also the most recognized brand name among its peers.

They have gone beyond the excuse of intellectual property, picketed by insecure lecturers who chose to keep their knowledge to themselves, and moved forward as an institution that believes all knowledge researched, thought off and conceptualized on its university grounds belong to the university. And in the original sense of a university they collectively chose to educate the masses for free with no thought of creed, social barriers, language (OCW is translated into various languages), country borders or monetary gain.

What then is our stand as an institution of higher learning in Malaysia? In a time where learners have the means to choose what and where they want to learn, what value-added service can we provide to the 26 million citizens of Malaysia? Are we willing to tutor society with knowledge that is Malaysian-centric or will society be left to turn their eyes and ears to information that is available (for free) from another nation?

Since the OCW initiative, other notable Ivy League institutes have made the move to provide free course material over the Internet. I can now take part in a medical course offered by Harvard, engineering at MIT, economics from Carnegie Mellon and English literature at Oxford all for the price of an ice mocha using the free wireless at Starbucks. Wouldn't you do the same?
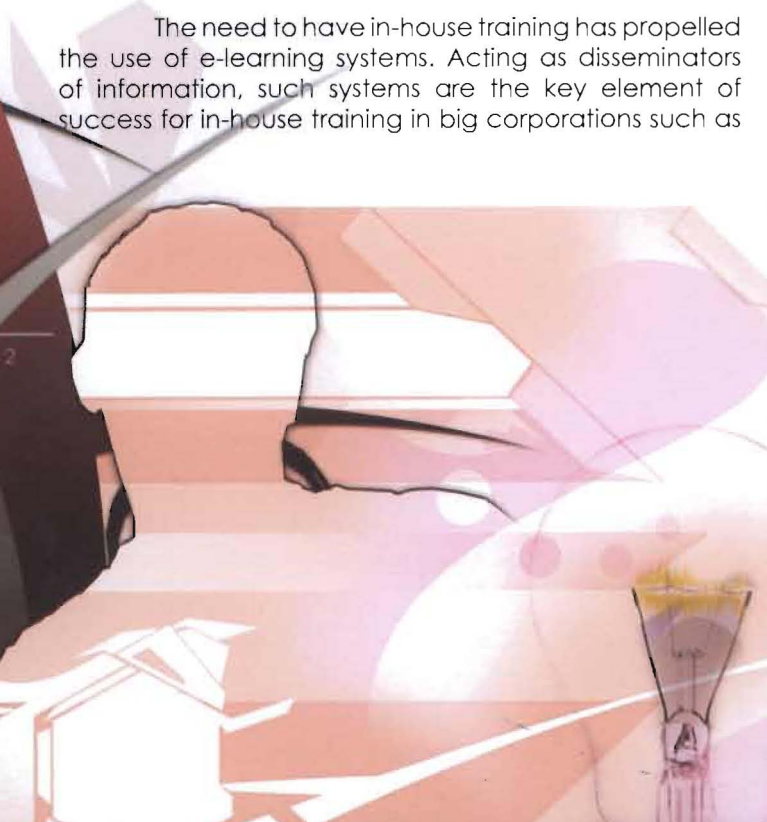
UNIMAS and X-FAB:
Partners in Microelectronics Education

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On 24 August 2007, Universiti Malaysia Sarawak (UNIMAS) and X-FAB Sdn Bhd signed a Memorandum of Agreement (MoA) to establish teaching and research collaboration in the field of Microelectronics. The memorandum was signed by UNIMAS Vice Chancellor, Professor Datuk Dr. Abdul Rashid Abdullah and X-FAB Chief Financial Officer, Mr Stephen Chin Yuen Chien.

Under this agreement, X-FAB staff will undergo a 17-month program in Microelectronics in UNIMAS. This program aims to provide an opportunity for X-FAB staff to broaden their knowledge and skills in this field. On the other hand, UNIMAS will provide qualified lecturers, adequate teaching facilities and materials, and other necessities required to conduct the program smoothly and efficiently. The program comprises 9 modules and a project. Upon completion of the modules and a project, the participants will be granted a Graduate Diploma in Microelectronics by UNIMAS. The following are the modules that the participants will take:

1. PGM 5012: Semiconductor Physics
2. PGM 5022: Advance Microelectronics
3. PGM 5032: Device Physics
4. PGM 5043: Digital IC Design
5. PGM 5053: Analogue IC Design
6. PGM 5063: Semiconductor Fabrication (I)
7. PGM 5073: Semiconductor Fabrication (II)
8. PGM 5083: Reliability and Packaging
9. PGM 5093: Project

Seventeen X-FAB staff had registered in the program which commenced on 11 August 2007. There are few challenges faced by UNIMAS lecturers in teaching X-FAB staff. However, UNIMAS lecturers see the challenges as something that can improve their teaching and learning skills if they are addressed well. They are the following:

a. X-FAB staffs are interested in topics that are related to the developmental stage of their lives.

b. X-FAB staffs are interested in knowledge that can be immediately applied.

c. X-FAB staffs are interested in knowledge and ideas that they can use to solve problems they face in their work environment.

# Centre for Academic Information Services : E-Journal Portal

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UNIMAS, through the Centre for Academic Information Services provides many resources to get you started on your information seeking journey.

The E-Journal Portal is the simplest way to locate Online Journals. To start using the E-Journal Portal, log on to our homepage, www.cais.unimas.my . Users may have noticed the recent change in the layout of our homepage since early this year. This change has been made in order to make the resources more visible to users and faster information access.

Next step is to choose E-Journal from the list of links listed. The E-Journal Portal page will open in a new browser.
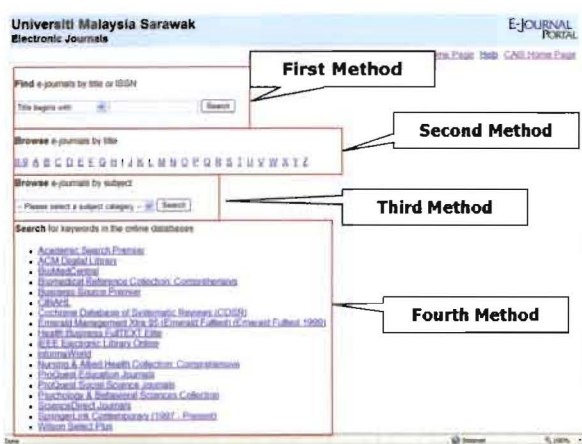
There are four ways in which a user can search for an e-journal as depicted in the screen shot above. Users can use the search box, browse title of the journals, and browse journals by subject category and search for keywords within the online databases.

The first method allows user to key in the full journal title, the first few words of the title or the ISSN number.

The second method takes users to the list of e-journals arranged in alphabetical order.

The third method allows users to see e-journals pertaining to the selected subject only.

The last method is to select a specific database to search in. The databases are listed on the main page and clicking on a database link will open the database search page in a separate window.

Search for keywords in the online databases

- Academic Search Premier
- ACM Digital Library
- BioMedCentral
- Biomedical Reference Collection: Comprehensive
- Business Source Premier
- CINAHL
- Cochrane Database of Systematic Reviews (CDSR)
- Emerald Management Xtra 95 (Emerald Fulltext) (Emerald Fulltext 1999)
- Health Business FullTEXT Elite
- IEEE Electronic Library Online
- InformaWorld
- Nursing & Allied Health Collection: Comprehensive
- ProQuest Education Journals
- ProQuest Social Science Journals
- Psychology & Behavioral Sciences Collection
- ScienceDirect Journals
- SpringerLink Contemporary (1997 - Present)
- Wilson Select Plus

Using the first method as an example, below is a demonstration on how a search is executed by the portal.

Type in keyword(s) in the search box. Setting the search parameter to 'Title begins with' will harvest all journals with title beginning with the word 'Film'.

Universiti Malaysia Sarawak
Electronic Journals

Find e-journals by title or ISSN

| Title begins with | Film | Search |

The e-journal names are listed alphabetically. Clicking onto the database link will open a new window revealing the e-journal's page depending on which database the journal resides in.

0-9 A B C D E F G H I J K L M N O P Q R S T U V W X Y Z

| Title begins with | | Search |

| - Please select a subject category - | Search |

6 records retrieved for the search: **Title begins with "Film"**

Film comment (0015-119X)
from 01/11/2002 to present in Academic Search Premier

Film criticism (0163-5069)
from 01/01/1995 to present in Wilson Select Plus

Film history (New York, N.Y.) (0892-2160)
from 01/05/2004 to present in Wilson Select Plus

Film quarterly (0015-1386)
from Spring 2001 to present in University of California Press Journals

Film studies (1469-0314)
from 01/06/2006 to present in Wilson Select Plus

Films in review (0015-1688)
from 01/01/1990 to 30/09/1996 in Academic Search Premier
from 01/01/1997 to 01/01/1997 in Wilson Select Plus

Click on desired year of publication and it will further reveal available issues.
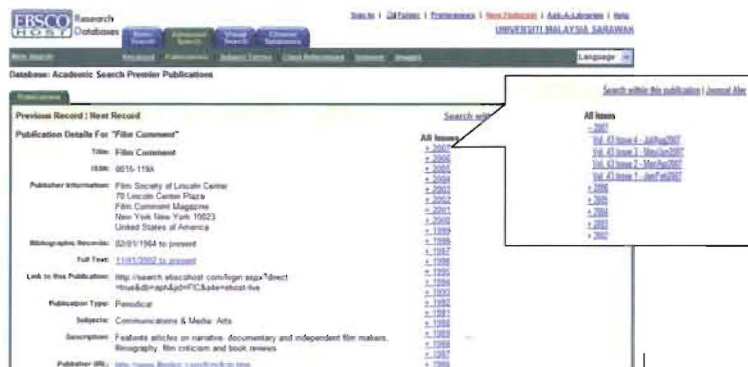
Browse the content of the issue and clicking on a PDF file link will open the article in a separate window.

Users can then save the PDF file and continue their search. If you need assistance, please contact Huzaimah Abdul Rani at ext 3835 or email arhuzaimah@cais.unimas.my.

University-Industry Collaboration in Teaching and Learning through Industrial Training Program

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A review on university-industry collaboration from *IEEE Explore* Database (http://ieeexplore.ieee.org) shows that it has brought various impacts on university teaching and learning (T&L). Table 1 shows some of the studies done on the impact of university-industry collaboration in T&L in some countries.

Table 1. Impact of University-Industry Collaboration on Subject/Area by Country

Country	Impact on Subject/Area	Authors
Malaysia	Nanoelectronic	Zakariah *et al.* (2004)
	Microelectronic	Ahmad and Sulaiman (2000)
Japan	Power system engineering	Iwamoto (2007)
	Information security	Matsuura (2005)
Italy	Photonics and optoelectronics	Docchio and Sansoni (2007)
Slovakia	Microelectronics	Donoval (2001)

Issues pertaining to university-industry collaborations are complex and diverse. These issues are summarized in Table 2. On examining the literatures, it is found that researchers have put the most emphasis in studying the issue on partnership policy.

Table 2. Issues Related to University-Industry Collaboration

Issue	Authors
Technological convergence	Romero (2007)
Trust factor	Santoro and Saparito (2006)
Knowledge transfer	Santoro and Bierly (2006)
Intelectual property protection	Yi and Jung (2005)
Innovation policy	Pechter (2002)
Partnership policy	Wen and Kobayashi (2000)
Information and expertise sharing	Barnes et al. (2000)

Recognizing the potential and promising results from university-industry collaboration have prompted some universities in Malaysia to establish centers for research and development (R&D) as well as industrial training purposes. The list of the centers and their respective universities is shown in Table 3.

Table 3. Centres in Some Universities in Malaysia

University	Center
Universiti Malaya (UM)	Centre for Industrial Training and Relations (CITRA)
Univ. Teknikal Malaysia Melaka (UTeM)	University-Industry Centre (UNIC)
Univ. Teknologi MARA (UiTM)	UiTM-Industry Linkages Centre (UILC)
Univ. Malaysia Terengganu (UMT)	University-Industry Linkage Centre (UILC)
Univ. Industri Selangor (UNISEL)	Centre for University-Industry Collaboration (CUIC)

In UNIMAS, one of the approaches to promote university-industry collaboration is through the students' industrial training program. Currently, each respective faculty handles and manages the program. The following discussion describes how the Faculty of Computer Science and Information Technology (FCSIT) conducts the industrial training program of its students.

The industrial training program is an essential component of the Bachelor of Computer Science and Information Technology degree. FCIST students are required to undergo the industrial training program irrespective of previous work experience or training programs attended. Credits earned from other subjects and/or training programs as well as work experience do not count as industrial training credits.

The FCSIT identifies several areas deemed appropriate and suitable for students who are and will be undergoing the industrial training

positions
in the industry in
areas of information systems,
software engineering, internetworking
technologies, computational science, and
multimedia computing. Table 4 shows the number of
students who underwent industrial training from 2004 to 2007.

program. For instance, one area where students should be given training is in application development. This includes activities such as analysis and design, programming, product development, system specification and maintenance, setting up and design of computer networks, and configuration of hardware and troubleshooting of hardware and software.

The fundamental purpose of industrial training is to prepare students for employment in their chosen discipline upon completion of their undergraduate study. The objectives of industrial training program are:

- To introduce students to IT experience and knowledge which are not taught in the classrooms but which are required in the industry.
- To apply CS and IT knowledge taught in the classroom in real industrial situation.
- To use the experience gained during the attachment period for classroom discussions.
- To gain first-hand experience of working in IT industries.
- To expose students to various aspects of professional practices, responsibilities and ethics.
- To prepare the students for future employment.

To achieve these, university studies should be enhanced by the opportunity to relate academic and professional aspects of computer science (CS) and information technology (IT) disciplines. Hence, the industry are encouraged to play an active role in developing their expertise by ensuring that the students are given the appropriate training.

Since 2004, FCSIT students have been placed for short-term

Table 4. Number of Industrial Training Students (2004-2007)

Year	Number of Students
2007	49
2006	150
2005	68
2004	77

In 2007, the industrial training period was from 10 July until 23 November. As shown in Table 5, FCIST students from various study programs underwent their attachment in both the government and private sectors. Majority of the students (32) underwent industrial training in the private sectors.

Table 5. Number of Students Based on Study Programs and Sectors

Study Program	Sector		No. of Students
	Government	Private	
Software Engineering	3	10	13
Network Computing	3	9	12
Information System	7	3	10
Computational Science	2	7	9
Multimedia Computing	2	3	5
TOTAL	17	32	49

Comments from the industrial training supervisors were also gathered and analyzed. Selected positive and negative comments on our students are shown in Table 6.

Table 6. Industrial Training Supervisors' Comments on Students

Student	Comments
Positive Comments	
A	"... has a problem solving skill, able to generate ideas, especially in problem solving."
B	".... she has good communication and social skill. Her contribution in the Helpdesk has been significant."
C	"... she has management skills and be able to present herself in a very confident way. She is good, hardworking and has confidence..."
D	"... she has shown keen interest and willing to learn new stuffs. She is a fast learner and has helped the company in the real life project."
E	"This student understands instructions well, completes tasks in neat and systematic ways."
F	"This student can communicate well."
Negative Comments	
G	"... he needs more exposures on computer hardware knowledge and communication skills."
H	"This student needs more experience."
I	".. she has lack of self-confidence."
J	"... she needs to improve communication skills."
K	"... he needs problem solving skills. Needs to improve on html, database and Unix. He has a difficulty to work on the task assigned because this student has no Perl Scripting knowledge."

The foregoing discussion describes the industrial training program at the FCSIT, UNIMAS. So far, the faculty is pleased with the students' performance during their industrial attachment. However, the faculty believes that process and quality of conducting the industrial training program still needs extensive effort and improvement to achieve the expected T & L outcomes. The present practice in UNIMAS is that each respective faculty appoints a coordinator to run its industrial training program. One suggestion is to centralize the management of industrial training program i.e. at the university level. The university appoints an Industrial Liaison Officer (ILO) who will act as the single point of contact (SPoC) to liaise with the industry. He or she will assist the faculty industrial training coordinator.

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PGDTL Convocation Dec 2007