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McGraduates or Globo Sapiens?

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Introduction

Faced with global environmental and financial crises, even the World Economic Forum (WEF) (2008: 5) has called for a “fundamental reboot” to create new, sustainable systems, including education. Education that serves business-as-usual futures can only re-produce **McGraduates**. I use this term to describe global ‘fast-education’ graduates who have been trained to serve convenience and profit, above personal, community and planetary health. In engineering, at worst this means Globally Portable engineers who will ‘do any job,’ as well as the popular, somewhat reformed model, Globally Competent engineers, who still do any job but do it ‘smarter’. Assuming sustainable futures are still possible; they will be created and maintained by *Globo sapiens*, wise global citizens whose education will be

based in a more ecologically responsible, less economically driven, peaceful and spiritually-oriented way of living. How do educators encourage such values in a tertiary education system which continues to apply and reward a ‘respond to the market’ discourse? I use a critical futures methodology, Causal Layered Analysis, in an Australian engineering education context, to show how guiding documents and the media can work against the deep changes we need in order to survive the 21st century. I hope these insights may be transferable, since a number of countries now recognise each other’s accredited engineering programmesⁱⁱ.

Causal Layered Analysis (CLA)

I use Causal Layered Analysis (Inayatullah, 1998) as a tool to explore some barriers and bridges to transformative education in engineering (Kelly, 2006; 2008). CLA uses four levels, *Litany*, *Systemic Causes*, *Discourse/Worldview* and *Myth/Metaphor*, to explore issuesⁱⁱⁱ. The *Litany* level is the popular media headlines, which oversimplify and exaggerate issues. The *Systemic Causes* level looks behind the headlines and identifies the causes of problems and their effects, using data to find practical responses, often at regulatory level. While the data are questioned, the questions are framed within the dominant paradigm and so do not question the assumptions. *Discourse* level analysis questions by asking who are the stakeholders and how do they view the issue? The fourth level, *Myth/Metaphor*, reveals the deep stories and archetypes behind how we think and what is driving us. Work at these deeper levels engages with and challenges paradigms. Using

“Sustainable futures will be created by Globo sapiens, wise global citizens whose education will have helped them to develop the skills and critical dispositions the “great transition” needs (Raskin et al. 2002).”

TABLE 1: Three CLA scenarios of engineering education

1) <i>Homo Economicus</i> or Globally Portable (still dominant)	
Litany:	'Bob the builder' does any job.
Systemic Causes:	Market demand, 'tight culture' of engineering
Discourse:	Serve the market – it will serve you; Teachers 'produce' 'products'; We 'deal with' the 'problem' of diversity;
Myth:	"Earth yields to the dominion of man" (sic); We do any job!
2) <i>Homo Globalis</i> or Globally Competent (emerging, reforming)	
Litany:	Global crises are business opportunities, cool solutions to hot problems;
Systemic Causes:	Detailed research describes problems, Creative industries solve them
Discourse:	Critical reflection: Why we are learning? Progressive, adapt to change; inclusive - make spaces to "include" the Other – avoid trouble, work smarter
Myth:	We manage 'Earth.com' - Techno-fix rules! We do the job better!
3) <i>Globo sapiens</i> or wise global citizens (preferred, transformative)	
Litany:	Earth is in danger, Engineers can be sustainageers
Systemic Causes:	Peak oil, climate change, scientific reports, cultural creatives, individuals and institutions want to make changes necessary for sustainability
Discourse:	Engineers want to make a difference. Changing society based on social wisdom <-> learning society. Culturally responsive; engineers do better jobs and do them differently, prevent more damage, repair
Myth:	Heal ourselves - heal the planet. We are different.

Source: Revised from Kelly, 2008: 156-8

CLA, I identified three scenarios of Australian engineering education (Table 1).

Against this background, I also use CLA to update progress in engineering education and ethos through the Australian Council of Engineering Deans' (ACED) report (Johnson et al. 2008) and a Special Advertising Report (SAR) (Cencigh-Abularo, 2008)^{iv}. These texts address the challenges facing engineering education through economy-driven variations on the globally portable or globally competent scenarios. Here are some examples to show how the leadership provided by guiding documents and the media can work against the deep changes we say we need. The ACED report's stated aim is

"To ensure that the engineering education sector across Australia's universities produces in a sustainable manner, a diverse supply of graduates with the appropriate attributes for professional practice and international relevance in the rapidly changing, competitive context of engineering in the 21st Century" (Johnston et al. 2007: 5).

The dominant respond-to-the-market discourse is clear in the key words, "produces", "supply", "appropriate attributes for... rapidly changing, competitive context".

These terms frame the issues and their solutions. Even the title takes a backward step from the proactive *Changing the Culture* report (IEAust, 1996) to the reactive, "Addressing the Supply and Quality of Engineering Graduates for the New Century". The 2008 report's guiding metaphor is the planet as a no-limit marketplace, in which engineers are innovators, money makers and problem solvers. An alternative, such as the planet as a sustainable garden, would set limits. Work opportunities would abound, but in maintaining, repairing and healing the planet.

The style and content of SAR (Cencigh-Abularo, 2008), designed to attract students to engineering, do not help ACED's aim of "Increasing positive media coverage" (Johnson et al.: 102). The SAR's headline reduces engineers to invisible cogs in a profit-based, boom machine. "Getting the Job Done: ...from retrieving riches from beneath the earth to building mega-structures above it, engineers are the cogs ensuring Australia's boom continues" (Cencigh-Abularo, 2008). The metaphors are greed and consumption based, "immense appetite for engineers", "the world's appetite for commodities shows no sign of slowing" (ibid: 4). The main ride-the-boom discourse touts the rewards of life in the fast lane (money, travel, excitement) through headlines such as "Race to the sky... ASAP" (ibid: 5) which lauds building

skyscrapers in new markets. One feature exemplifies the popular globally competent discourse in which a university's graduates are "the complete package" of business skills and technical skills, who can go straight out and "market" ideas in "buoyant construction and engineering industries" (ibid: 3). Whatever the job, these engineers will no doubt do it smarter. But without a sound ethical basis, being able to manipulate the language and actions of inclusion and consultation can enable more efficient exploitation, as Sterling warned (2001: 94). Meanwhile the business-as-usual future they have been prepared to serve is unravelling.

"Education that serves business-as-usual futures can only re-produce McGraduates."

There is an alternative, healthy, 'wanting to make a difference' discourse struggling to grow. Many young engineers want to contribute to sustainable societies. This discourse has great potential to attract students and to inform curriculum changes. The ACED report acknowledges the "strong support for engineers taking a high profile in issues of sustainability and the impact of climate change" (Johnson et al. 2007: 12) but does not develop this as the core of a better vision.

How is My Research Useful?

Surviving the 21st century involves the emotional and intellectual challenge of transformation. I found that about 65 per cent of students engage with challenges to their attitudes, willingly or grudgingly. Around 25 per cent are "converts", who hate the process at the beginning but appreciate the benefits at the end. Problems lie mainly with the 10 per cent who 'resist' all the way. Of course, resisters are entitled to their resistings. The problem is that they are so "loud" and so certain in their resistance and criticism, that they claim disproportionate power and influence in classrooms and organisations. They and those they work with need to know that they do not speak for all students (or staff). They have to respect others' rights to change. Identifying and understanding the causes behind resistings helped me to respond constructively (Kelly, 2006; 2008). My imperfect but appropriate pedagogy encouraged stages of personal growth. Many students 'got connected' (to others and themselves), 'got respect', 'got insight', 'got inspired', 'got courage', 'got healed' and 'got transformation'. The findings helped me to identify six qualities of *Globo sapiens*. A wise global citizen:

- *has empathy with and sensitivity to other ways of being and knowing*; some students had to acknowledge that they had feelings before they could feel for others, other species and the environment;
- *has global consciousness*; thinking beyond ourselves and seeing ourselves as part of a global ecosystem;

- *is able to contemplate changes to their current way of life*; despite tsunamis of images and messages urging us to consume more, as part of an unquestioned, no-limit future;
- *is capable of trans-generational thinking, past and future*; understanding that we can learn from the past and the future in order to create a better present;
- *has courage*; to question those in power, to speak up, to live an ethical life;
- *is working towards healthier futures, from the personal to the spiritual*. This requires substantive knowledge and an emotional vocabulary, as well as the confidence to apply it.

A Transformative Pedagogy

Change is not just about "engineering engineers" (Jacobs, 2006; Dowd, 2009) but educating people - to face increasingly stressful ecological, social, political, economic and cultural contexts. I offer some foundational elements of a transformative pedagogy below. These do not replace essential technical skills and content, they underpin them.

1. *Integrate valuing and respecting diversity*
2. *Create environments which support cross-cultural, cross-gender communication.*
3. *Create an ethos that encourages trans-generational thinking*
4. *Scaffold learning*
5. *Show a human face* (Kelly, 2008: 37-39). Globally competent practitioners need a daunting array of skills and qualities, but how can we help others to grow if we aren't growing ourselves? (Badley, 2000).

Conclusion

Any future is likely to be radically different. Whichever future we are creating, graduates need a raft of diverse skills and human attributes including "...a sense of responsibility and transpersonal ethics" (Sterling, 2001: 22). Sustainable futures will be created by *Globo sapiens*, wise global citizens whose education will have helped them to develop the skills and critical dispositions the "great transition" needs (Raskin et al. 2002).

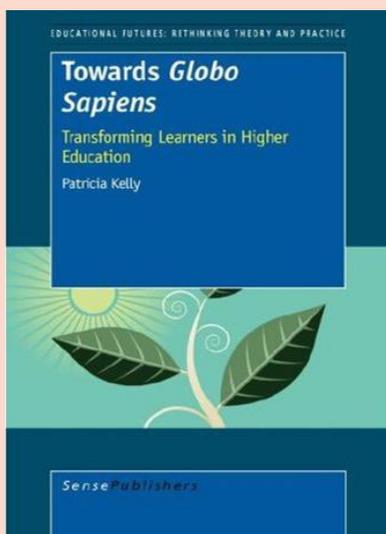
Note:

This paper is revised and abridged from: Kelly, P. (forthcoming). Engineering, a civilizing influence? Futures, (Elsevier) 'Global Mindset Change' special edition.

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Endnote:

ⁱ According to Wikipedia http://en.wikipedia.org/wiki/Homo_economicus, Persky (1995) traces the term Homo economicus to Pareto (1906). It has since been used in multiple ways in various disciplines.

Homo globalis is another neo-latin term, with no clear authorship. Globo sapiens is an adaptation of the longer term Globo persona sapiens, from Finnish futurist Pentti Malaska (1997). His term refers to transhumans who are the end product of a process by which new humans and non-humans would combine into a superior and wiser, hybrid internet progenitor. My use and the qualities I identify, are human-based only.

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ⁱⁱ "Graduates of accredited programmes in any of the signatory countries are recognised by the other signatory countries as having met the academic requirements for entry to the practice of engineering." Retrieved from http://www.engc.org.uk/international/international_agreements/washington_accord.aspx

ⁱⁱⁱ For detailed explanations and examples of CLA in action see Inayatullah, S. and Gidley, J. (Eds.) (2004), *Causal layered analysis reader*. Tamsui, Taiwan: Tamkang University.

^{iv} The detailed CLA of these texts is available in the full paper.

Cross Disciplinary Approaches in Collaborative Research for a Sustainable Society

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Introduction

Scientific advancement and modern development are obviously closely linked. Most progress has come from scientific research that resulted from basic research approaches, usually within single disciplines. The traditional role of research was thus to contribute to the advancement of development by generating knowledge with technological applications such as new information technologies, biotechnology and transport and energy-transforming technologies. In many cases, relevant research issues of great social importance such as environment, community well-being, cultural and natural heritage remain neglected because they have little commercial potential. However, the demand for integrated and cross disciplinary research has become increasingly important in recent years (Wasson and Dovers, 2005). Cross disciplinary research or integrative research arises from the widespread recognition that important societal questions and problems can no longer be adequately addressed within a single discipline and in fact, demand multidisciplinary and interdisciplinary conceptualisation and research solutions (Gibbons et al. 1994; Johnston, 1998). This approach is a consequence of the emergence of the multiple problems of modern development, particularly in relation to sustainable development issues.

This paper highlights some of the integrative and cross disciplinary approaches to research and development in the context of pursuing a sustainable society. This article reviews types of cross collaborative research used in knowledge production and a need for a research network that works closely together to identify, nurture and maintain *multi-, inter-* and possibly *trans-*disciplinary research interest.

Defining Cross Disciplinary Research

There are many different terms used by researchers to describe collaboration processes within mono-discipline research teams with colleagues from other disciplines. Major terms often used are 'multidisciplinary', 'interdisciplinary' and 'transdisciplinary' research. These terms are often used interchangeably although they can mean different things within the research community.

In order to define and understand what is meant by cross disciplinary research, Table 1 below summarises the definitions of other forms of research collaboration in knowledge production. The main differences between the definitions of the concepts are the intensity of cooperation, integration of disciplines and the involvement of non-academic fields.

Cross-disciplinary Approach and Sustainability

The aim of sustainable development is to overcome the separation between society and the biophysical environment, and between ecological, social and economic dimensions of development (World Commission on Environment and Development, 1990). In a sustainable society, all present and future generations are healthy and they have their basic needs met, have fair and equitable access to resources and a decent quality of life while the biological diverse ecosystems on which the society depends are conserved. Thus, in a sustainable society, environmental protection, economic objectives and social justice belong to a common framework. Achieving sustainable development requires the involvement of diverse areas of expertise and of wide stakeholder interests, including participants from scientists, civil society, the private sector and public agencies.

TABLE 1: Definitions of types of research mode

Research Mode	Description
Disciplinary	Project that takes place within the bounds of a single, currently recognised academic discipline.
Multidisciplinary	Several different academic disciplines researching one theme or problem but with multiple disciplinary goals. Participants exchange knowledge, but do not aim to cross subject boundaries to create new knowledge and theory. The research process progresses as parallel disciplinary efforts without integration but usually with the aim to compare results.
Participatory	Academic researches and non-academic participants working together to solve a problem. The participants exchange knowledge, but the focus is not on the integration of the different knowledge cultures to create new knowledge.
Interdisciplinary	Several unrelated academic disciplines (involved) in a way that forces them to cross subject boundaries to create new knowledge and theory and solve a common research goal.
Transdisciplinary	Projects that both integrate academic research from different unrelated disciplines and non-academic participants, such as government policy makers, managers of private industries and the public, to research a common goal and create new knowledge and theory. Transdisciplinarity with a participatory approach.

Most decisions about sustainability issues involve scientific information about the biophysical system, along with human values and benefits. Thus, to understand current issues or to predict sustainability outcomes requires an identification of the characteristics of resilient systems and it needs dynamical relationships between knowledge production, policy formation and decision making (Wasson and Unerdal, 2002). Many of the challenging issues in developing countries such as water, energy and waste management are those that occur at the interfaces between disciplines and therefore require integrative research and synthesis. Multi- and inter- trans-disciplinary research is needed within natural science and social science and humanities, and engineering and medical sciences working together to understand earth and human systems; or across research domains to deal with complex dimensions of sustainability issues.

“Future research require researchers and university administrators’ ability to cross the boundaries of departments and faculties, and appreciate the need to have research leaders who can visualise and conceptualise the complex issues involved, and at the same time, be able to attract the appropriate talents from various disciplines to work as a team.”

Collaborative Research for Sustainability

In several developed countries, there are high level strategies that have an integrated and collaborative research approach to sustainable development (Hilden, 2007). The same can be argued for developing countries although in truth, this approach is a more recent phenomenon and, for some Malaysian universities, the collaborative research approaches are in the process of being institutionalised. Increasingly, there is a trend among funding agencies having multiple disciplines collaborate on a research project because they believe this approach will result in greater insight and creativity for researchers attempting to solve complex problems. This interconnectivity between disciplines and the resultant insights into problem solving is appreciated, unfortunately academic departments have not been set up to facilitate interdisciplinary research in the most supportive and effective ways possible. In Universiti Kebangsaan Malaysia (UKM), a more problem oriented approach in the form of integrative research is being promoted rigorously since 2007. Consequently, multi, inter and transdisciplinary research approaches are increasingly introduced, for instance in developmental projects. Collaborative research is not

something new and has been initiated from the late 1990s but it has taken nearly ten years before it is now broadly acknowledged in Malaysia.

Challenges for University Research

Responding to the requirements of multidisciplinary and trans-disciplinary research poses great challenges to research institutions particularly research centres and institutes in universities. Universities have traditionally been organised in a disciplinary way, with broader units encompassing similar disciplines, grouped in faculties. As a consequence, multidisciplinary research institutes seldom receive full acknowledgement as part of university education because the right to grant Masters and PhD degrees is still reserved for the traditional faculties. Although the scenario has changed in Malaysian universities, the situation is still noticeably unchanged in some other developing countries.

In addition, promotion, tenure and salary decisions are evaluated on scholarly contribution to the field of expertise, especially based on, publication history with single author publications ranked the highest (Hart, 2000). Furthermore, a pervasive attitude that has existed in most university cultures, that is, researchers should remain loyal or true to their original discipline is another hindrance to collaborative research. In many instances, researchers are encouraged to work within their original disciplinary paradigm and use the methods and knowledge gained during their initial education and training experiences. Many times, departments do not view the use of alternative paradigms and methods of enquiry favourably.

Despite these concerns, many scholars suggest that collaborative approach is now more prominent in university research (Endersby, 1996; Smith and Katz, 2000). Research in fields of natural science, education and technology frequently require access to resources, comparative data and funding. All of these requirements are most easily secured via collaborative research. Indeed, academics involved in collaborative research have been found to be very successful in accessing resources which has in turn enabled them to realise the epistemic goals of sciences more effectively than scientists outside the university environment, thus creating a research environment in which collaboration is now the norm (Wray, 2002).

Traditional Approach in University Research

University research traditionally has always been initiated by the need to advance knowledge in disciplinary based issues and to support the teaching and training in the respective disciplines. For this reason, most of the research activities conducted by Malaysian academics fall under the following purposes:

- Discipline driven – extension of academic training which is related to the research carried out during the Master and Doctoral programme;
- Knowledge advancement driven – short-term and long term research activities to strengthen knowledge-based for the glory to the discipline;

- Curriculum driven – usually to support teaching and training needs, particularly for relatively new fields; and
- Peer group oriented – several academics within the same disciplinary base work for a common goal in the areas of common issues or problems or frontier research.

Even though the need for disciplinary-based research is crucial for the advancement of knowledge to fill gaps and to explore frontier domain, the purpose is becoming less obvious for solving current societal, economic and environmental issues related to sustainable development. Disciplinary based approach in problem solving has been seen as one of the obstacles to implement multi-sector solutions. So much so that academics with their *mono* disciplinary knowledge have been seen as no longer relevant to the need of the society.

Shifting Paradigm towards Future Research

A current and future major societal issue such as environmental degradation, sustainable resource utilisation, climate change and socio-economic development of local community has always been associated with multiple sector issues and require cross disciplinary solution. In responding to these cases, the need for multi-, inter- and/or trans-disciplinary approaches in research has become more pertinent. University academics have inevitably shifted their paradigm toward research idea taking into consideration the following scenarios:

- Approach – should be cutting edge research for cross cutting issues;
- Purpose – emphasis toward problem solving that is multi-dimensional, scale and level;
- Drivers – shifts from specific research problems to national priorities, development targets and global commitments;
- Direction – priority should be given to the present and future research needs;
- Requirement – understanding stakeholders' needs; understanding researchers' capacities and capabilities; and understanding interconnectedness and inter-linkages of research issues and their solutions.

Future research cannot be carried out purely by a single disciplinary group. There is a need to build a team or teams of multi-disciplinary components which is/are complementary in providing their knowledge or information for common goals. Future research require researchers and university administrators' ability to cross the boundaries of departments and faculties, and appreciate the need to have research leaders who can visualise and conceptualise the complex issues involved, and at the same time, be able to attract the appropriate talents from various disciplines to work as a team. Some of the possible challenges, one might anticipate for these research leaders and their team are likely to be on how to bridge their collectives disciplines, the balancing act between individual inputs and teamwork, openness to develop new approaches and methodology, strategic mainstreaming of individual contribution and system barriers, and flexible funding and support system.

The success of cross disciplinary research is likely to depend mainly on the ability to maintain the shared value and cohesiveness of the research team rather than the actual research activities *per se*.

Concluding Remarks

Universities have an essential role to play in promoting research that supports efforts to ensure that economic growth and sustainable development reinforce each other. In addition, universities have a key role in providing education and training that equip the qualified workforce with the necessary competences to fully develop and exploit sustainability.

Research into sustainable development must include short term decision support projects and long-term visionary conceptual projects and has to tackle problems of a global and regional nature. It has to promote inter-and trans disciplinary approaches involving social and natural sciences and bridges the gap between science, policy making and implementation. Universities should contribute through multi, inter and trans disciplinary research by involving academia, industry and policy makers to advance the development of a sustainable society.

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Catering for Adult Learners through the Transformation of Higher Education

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Introduction

A ten year research (1996-2006) conducted in the United States on American adults returning to school identifies several reasons, the primary being to equip themselves with knowledge and skills needed for their careers and better prospects (Aslanian, 2007). In a developing country like Malaysia, the prime reason adult learners are making a comeback to school is similar. In 1991, the Prime Minister of Malaysia announced "Vision 2020". It is a blueprint that serves to direct the country to the aspired status of a fully developed nature by the year 2020. Envisaged in the blueprint is what was coined as k-economy, an economy which is based on knowledge. K-workers and of late, 'Human Capital' were identified as the greatest asset which could easily elevate the k-economy. This in turn, has brought back many adults to continue their education (Mazanah, 2001). In the context of this article, 'adult learners' refers to adults who pursue their studies in higher education institution (HEI) while at the same time play several other roles such as a parent, spouse and an employee (Hazadiah and Faizah, 2006; Rogers, 2002; Knowles, 1990). This definition opens to various interpretations of the adult learning challenges and strategies whilst juggling several responsibilities at the same time.

Developed countries such as America and Japan, to mention a few, have a high capacity for innovation and adopt global strategies in international markets. Hence, they require a workforce equipped with multiple intelligences to translate their business models and offerings to international marketplaces. These include verbal intelligence, problem solving skills and ability to offer cross-border perspectives and solutions, cross-cultural intelligence and environmental intelligence which would enable the workforce to adapt to change. A similar observation is made by the Ewing Marion Kauffman Foundation, (2007 as cited in 21st Century Skills, Education and Competitiveness, 2008) when they claim that "fuelling creativity, innovation and adaptability that are the hallmarks of competitive, high-growth and emerging industries requires a highly skilled, creative and nimble workforce" (www.21stcenturyskills.org/documents/21st_century_skills_education_and_competitiveness_guide.pdf)

Malaysian Higher Education and the Ministry of Higher Education (MoHE) Strategic Plan

Ninth Malaysia Plan places emphasis on Human Capital. In order to be relevant with the market demand for the 21st century which requires "...a highly skilled, creative and nimble workforce" (ibid), it is paramount for higher education institutions to produce "holistic, knowledgeable and highly skilled, flexible and creative as well as imbued with positive work ethics and spiritual values" human capital

(Ninth Malaysia Plan 2006–2010), 2005: 248). The inclusive culture in providing training and knowledge premised on research innovations, collaborations with companies as well as global partners is seen as a platform to realise the concept of lifelong learning which could meet the needs of the 21st century such as creativity and innovation both at work and at home.

Datuk Dr. Zulkefli A. Hassan, the Secretary-General of the MoHE states that in fulfilling the needs of the workforce and preparing Malaysians to meet the global challenges in the 21st century, quality, competitiveness, creativity, and innovation must be emphasised. Consequently, in producing competitive graduates who will meet the 21st century market, Malaysian higher education undergoes a transformation agenda which aims at producing human capital. Seven strategic thrusts have been outlined by the MoHE to materialise the transformation in the higher education system (National Higher Education Action Plan, 2007-2010). They are:

1. Widening access and enhancing equity
2. Improving the quality of teaching and learning
3. Enhancing research and innovation
4. Strengthening institutions of higher education
5. Intensifying internationalisation
6. Enculturation of lifelong learning
7. Reinforcing the Higher Education Ministry's delivery system

However, it is quite well documented in the literature that adult learners encounter various difficulties while pursuing their studies (Wisker, 2001; Habibah, 2006; Faizah, Nur Hashima and Fatin Aliana, 2008). If left untreated, this scenario may hamper the aspiration of the government to materialise the Ninth Malaysia Plan regardless of the outlined strategic thrusts. Basically, the challenges faced are due to their characteristics as adult learners.

Challenges Facing Adult Learners

There are three main challenges faced by adult learners. First is the physical and material or situational challenge. According to Cross (1981, cited in Silva, Cahalan and Lacierno-Paquet, 1998), situational challenges are those related to one's situation at the time. Hillage and Aston (2001) claim situational challenges include "barriers which prevent adult learners from taking up learning opportunities even if they wanted to" and referred them as physical and material challenges. Finance and time constraints such as transportation, childcare, books and difficulties in getting time off work are some of the situational challenges. Generally, lack of financial support prevents the working class from participating in higher education. According to the American Association of State Colleges and Universities (2006) a number of adult

learners particularly those with low economic background tend to fail their adult education programmes or drop out of their studies due to financial constraints. This is not uncommon in Malaysian higher education too. Sustaining adult learners' participation in higher education is one of the bigger challenges in the transformation of higher education in Malaysia. This is compounded by the practices of many financial aid programmes which are designed to support only traditional students financially. For instance, the Malaysian government education loan programme by the National Higher Education Fund Corporation (PTPTN) has been designed primarily to finance traditional students through undergraduate programmes. This forces adult learners to seek financial help from institutions which levy high interest rates, and which drain their financial resources.

A study conducted on a local university by Hazadiah and Jamiah (2006) reveals that the university displays many tributes of a traditional university whose traditional students are better provided for in terms of on-campus accommodation, and transport facilities in the system. The absence of accommodation for married students with families means that adult learners have to stay out of campus in rented rooms and apartments. Being out of the campus environment, they are not able to participate in extracurricular activities. They become alienated from a full campus life and culture. As a result many do not connect with the university system.

The second category is the structural challenge that relates to both the learners and the service providers. Cross (1981, cited in Silva, Cahalan and Lacierno-Paquet, 1998) refers to them as "institutional challenges or those practices and procedures that exclude or discourage working adults from participating in educational activities" (p. 36). It is concerned with how learning opportunities such as the form of education and training, and the availability of appropriate facilities are being provided (Hillage and Aston, 2001). MacKeracher et al. (2006) explain that institutional or structural barriers are found wherever learning takes place and it includes learning institutions and the workplace. "These barriers are created by policies and practices of educational providers as well as government policies..." (p. 15). Thus, institutional challenges include the lack of transport, limited local learning opportunities, the lack of facilities and equipment and the lack of knowledge about local learning opportunities and learning advice sources.

The attitudinal type is the third challenge and is referred to as dispositional challenges by Cross (1981, cited in Silva, Cahalan and Lacierno-Paquet, 1998). Both Cross (1981, cited in Silva, Cahalan and Lacierno-Paquet, 1998), and Hillage and Aston (2001) agree that this challenge manifests itself through the perceptions or the attitude of the learners about themselves and their education or learning opportunities that includes face-saving reasons and the lack of motivation. Some of the challenges affected by perceptions are, the lack of confidence, the fear of failure, the lack of confidence in their learning abilities, the lack of motivation, peer group culture, being surrounded by people who are anti-learning, low

aspirations and lack of role models, feelings of inadequacy, the lack of trust in 'officialdom' and formal institutions or organisations and the perception of being too old to learn (MacKeracher et al. 2006).

Catering for Adult Learners

This article is written on the premise that the Higher Education Transformation agenda may assist adult learners to overcome their challenges. This is done by capitalising on the identified strategic trusts.

First, adult learners are faced with the situational challenge. The Higher Education Transformation agenda has indirectly provided relevant strategies which when used may minimise if not curb the situational barrier. This is reflected in two of the strategic thrusts namely:

1. Widening access and enhancing equity
2. Improving the quality of teaching and learning

Hence, in assisting adult learners overcome the situational challenges, HEIs are urged to upgrade their basic infrastructure and facilities which could support the basic physical needs of the adult learners. To widen the access to HEIs, childcare centres and 24-hour resource centres have become a necessity. Likewise, to ensure equity, financial assistance needs to be provided to those who suffer difficulties in making tuition fee payments. Arrangements with related finance institutions could be initiated to enable such support. The Malaysian Government's in the form of PTPTN loans designed primarily to finance traditional students through undergraduate programmes should also be extended to adult learners pursuing postgraduate programmes.

Second, adults face structural challenges that relate to both the learners and the service providers. However, with the implementation of the Higher Education Transformation agenda and the strategic thrusts in action, it is almost possible to eradicate the structural challenge. Two of the strategic thrusts in particular which focus on this issue are:

1. Improving the quality of teaching and learning
2. Reinforcing the Higher Education Ministry's delivery system

From the two strategic thrusts, HEIs need to accelerate the activities which may lead to the changes required in policies, and teaching and learning practices. Hence, parallel with 'improving the quality of teaching and learning' and 'reinforcing the Higher Education Ministry's delivery system', HEIs may also opt to improve their services in providing advice and information required by adult learners from time to time. As adult learners may be working at a distance away from the university, flexible office hours on the part of the university's administration would be helpful to support such learners. A 24-hour information kiosk and e-administration are some possible alternatives. Finally, e-learning which is supported by an effective on-line communication system is also vital. This coheres with Tracey's (2004) suggestion that an efficient communication system could provide the academic and administrative support needed by the adult learners.

Third, adult learners also face attitudinal challenges. Hence, there is a need for HEIs to provide relevant support and opportunities for adult learners to overcome the challenges. The following strategic thrust in particular addresses the need for support and opportunities:

1. Enculturation of lifelong learning

As generally accepted, lifelong learning covers the whole range of learning which includes formal and informal learning and workplace learning. More importantly, it also includes the skills, knowledge, attitudes and behaviours that people acquire in their day-to-day experiences (The Scottish Executive, 2000 cited from <http://www.qualityresearchinternational.com/glossary/lifelonglearning.htm>). Additionally, according to Kasworm (2007), the inclusive culture in providing training and knowledge premised on research innovations, collaborations with companies as well as global partners is seen as a platform to materialise the concept of lifelong learning which could meet the needs of the 21st century such as creativity and innovation both at work and at home. Vygotsky's theory on the zone of proximal development and Bandura's Social-Cognitive theory on learning are reflected in the collaborations suggested. Psychologically, the collaboration could provide emotional support to the identified attitudinal challenges faced by adult learners. Hence, embracing lifelong learning through the participation in collaborative works could increase the adult learners' motivation, confidence, and also change their perceptions. This in turn will help them to overcome their attitudinal challenges.

Conclusion

The Malaysian Higher Education Strategic Plan sets the background to this article. Issues surrounding the challenges facing adult learners are also highlighted. The participation of adult learners in higher education is seen as another alternative to accelerate the innovative and research culture as aspired to Vision 2020 and the Ninth Malaysia Plan. Hence, it is important that assistance is provided to help adult learners overcome their challenges. It is expected that with such support, the participation of adult learners would be likely to increase. This article has attempted to explore alternatives to by capitalising on the identified strategic thrusts. These alternatives could be taken up by both the institution and adult learners themselves.

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M-Learning: Mobilising Learning in Higher Education

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Introduction

The latest teaching-learning approach in mobile learning is known as learning through mobile computational devices (Quinn, 2001), or network-based learning content (Malinen, Kari and Tiisanen, 2003). The emergence of this new pedagogical approach which promotes student centered learning experience using technologies based on mobile-learning offers opportunities, convenience, advantages and dynamic environment enabling students to succeed in their studies. This article briefly describes mobile-learning and discusses its benefits, challenges and prospects in the future education curriculum.

Mobile Learning: a Brief Description

Mobile learning, or m-learning for short, is a new concept and is very closely related to e-learning. Stone (2004), as cited in Shu-Fang Lin and Qiang Miao (2009: 3), defines m-learning as a “special type of e-learning, bound by a number of special properties and the capability of devices, bandwidth and other characteristics of the network technologies being used”. According to Kaplan-Leiserson (2005), as cited in Cochrane (2007: 37), m-learning offers “new possibilities that are available to people given the mass deployment of devices that everyone now has in their hands and the new connectivity that is coming”. Due to its convenience, Ismail and M. Idrus (2009: 55) refer to m-learning as “Convenience Education”.

M-Learning is often defined as learning that takes place with the help of portable electronic tools (Quinn, 2001) such as PDAs and mobile phones. These devices, because of their mobility, enable educators to achieve ubiquitous learning. Mobile phones, for example, may be said to be omnipresent; used by all generations; young and old, and the short message service (SMS) is widely used due to the low cost. This has made employing mobile phones with SMS easy to enable learners obtain information and knowledge anywhere and anytime.

M-learning intersects mobile computing with e-learning; it combines individualised (or personal) learning with anytime and anywhere learning (Quinn, 2001). It is facilitated by a convergence of Internet, wireless networks, W/H devices (Wireless phones and handheld devices) and e-learning. With a W/H device, the relationship between the device and its owner becomes one-to-one, always on, always there, location aware, and personalised (Homan and Wood, 2003).

Benefits of M-Learning

One of the major benefits of m-learning is its flexibility. According to Kuzspa (2005: 3), this medium is usually available at all times, so that it is possible to “access updated information and learning content anytime and anywhere”. Mobile devices, she adds, are “handy and always with you”, and they are particularly suited for “repetitive learning”. For example, when learning foreign languages, learners can make use of short repetition phases to better cram the whole learning materials.

Speed of access is another benefit of m-learning. Mobile devices enable learners to gain immediate access to data. For instance, a SMS text message providing information relating to a time-table change will be received much quicker as opposed to delivering the message via phone calls or emails.

Further, mobile devices are place-independent. This provides several benefits for e-learning environment such as allowing students and instructors to utilise their spare time while travelling in a train or bus to finish their homework or lesson preparation (Virvou and Alepis, 2005).

More importantly, m-learning has been found to be favourably accepted by students. A pilot research project conducted by Ismail and M. Idrus (2009) at Universiti Sains Malaysia involving distance education students reveal that students welcomed the use of mobile phone for learning. The results also show that learning via mobile phone was able to assist and motivate students’ study.

Challenges

Despite its vast potentials, m-learning is still minimally developed. As Ismail and M. Idrus (2009: 55) point out, m-learning is “still in its infancy and in an embryonic stage”. It is also not very common in higher education (Lomine, 2009).

The scholarship of m-learning is also still under-represented though it is steadily developing. Lomine (2009: 2) states that there is a growing volume of publications, seminars and events on m-learning hinting a real possibility that m-learning is becoming “the next big thing” in education.

In addition to the lack of scholarly work, there are some technical issues facing the use of m-learning particularly with respect to the use of hand phones. For instance, Kuszpa’s (2005) study found that the small displays, buttons and keyboard on hand phones may create problems for learners.

The small displays, according to her, give too little space for a good presentation of the learning content and provides low comfort and causes eyestrain. Similarly, small buttons and keyboard are not very comfortable and offer only limited input possibilities.

“...m-learning, despite its various challenges, will definitely become more attractive for learners as well as for education providers in the near future making a strong and viable contribution to the education process.”

On top of these, there are also issues of inconvenience and security of carrying mobile devices. Regular charging can be a nuisance. Also, data can be lost if this is not done correctly (Kuzspa, 2005).

Finally, issues related to learners' needs must also be considered. Research on needs analysis have shown that students have specific language and learning needs. These should be taken into account by educators when developing sms-learning so that the approach is more student-oriented in fulfilling learners' needs more effectively.

Conclusion

Due to the popularity and the continuously increasing capabilities of mobile devices, the basic potential of mobile network technologies for learning purposes is undeniable. Learning everywhere and anytime can be a valuable complement to traditional learning. Admittedly, however, as noted by Kuzspa (2005), it is no substitute for traditional learning methods especially when mandatory physical presence is required. Nevertheless, with reduced prices and new business models being presented by mobile network operators, and with almost all higher education students owning at least a basic mobile device, m-learning, despite its various challenges, will definitely become more attractive for learners as well as for education providers in the near future making a strong and viable contribution to the education process.

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Malaysia-Vietnam and Malaysia-Lao PDR Workshops on Higher Education and Developing Human Capital: towards Strategic Partnerships and Alliances

Reported by Ooi Poh Ling

The Malaysia-Vietnam and Malaysia-Lao PDR workshops on Higher Education and Developing Human Capital which were held on 23-24 June 2009 and 10-11 August 2009 respectively are subsequent efforts by the Malaysian government to strengthen collaboration, particularly in the domain of higher education, with four Southeast Asian countries namely Cambodia, Lao PDR, Myanmar and Vietnam. The workshops were organised by the Ministry of Higher Education Malaysia with the intellectual and technical support from National Higher Education Research Institute (IPPTN), Universiti Sains Malaysia. These series of workshops were conducted in collaboration with the Ministry of Education and Training, Vietnam and the Ministry of Education, Lao PDR. In Hanoi, Vietnam, 45 local participants attended while in Vientiane, Lao PDR, 40 participants were present.

The two workshops deliberated on five themes:

- Higher Education: Present and Future Directions;
- Partnering and Alliances in the Academic Sector;
- Partnering in Quality Assurance;
- Linkages, Staff and Student Exchanges;
- Partnering and Alliances in the Research Sector.

In Vietnam, issues raised were poverty alleviation, training, research particularly multidisciplinary research and sharing of information through a data base. The workshop



Opening ceremony was officiated by Vice-Minister of Education, Lao PDR, Mdm. Sengdeuane Lachanthaboun.

revealed that there is a gap of information between Vietnam and Malaysia as the students in Vietnam have very vague impressions of Malaysian higher education. Thus, information sharing between Vietnam and Malaysia needs to be intensified to encourage more collaboration. Their focus of inter-exchange of knowledge and expertise is on the themes Health for All and Education for All. Training in English for academic staff and students in Vietnam was also emphasised.

In Lao PDR, a lot of emphasis was stressed on training in specific areas such as medicine, health science, engineering, tourism, entrepreneurship, leadership, e-learning, English and information technology. Lao PDR has young and inexperienced personnel who need training which Malaysia can provide. Short courses, attachment schemes and training were suggested for officials from Lao PDR which involve Malaysian higher education institutions and government offices.



Delegates and participants of the Malaysia-Vietnam Strategic Dialogue in a group photograph.

University Curriculum and Employability Needs

University curriculum that meets employability needs is deemed as an important factor in enhancing human capital development. Unemployment among public higher education institution graduates has dominated much public discussion in Malaysia and the university curricula in preparing students for the workplace has been questioned. This book reports

the findings of a study that has aimed to examine the skills and competencies as required by employers in the workplace in the fields of Science, Information and Communications Technology so that current development trends can inform the designing of the university curriculum. The discussion engages quantitative and qualitative methods to elicit views from the industry managers, academics and graduates on four areas: digital age literacy skills, effective communication skills, inventive thinking skills and high productivity skills. The command of English language, technological and computer skills; the ability to communicate, to take risks and to be able to confront challenges; as well as the capacity to work hard and productively were noted as important factors that contribute to gainful employability. This comprehensive report provides several outlooks that will enable the Ministry of Higher Education, university authorities and the industry to make choices about designing learning environments that can enable university students to seek successful employability.

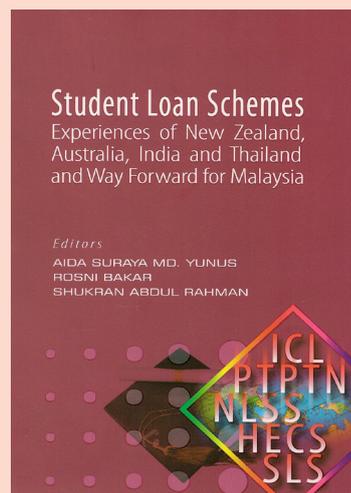


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Student Loan Schemes: Experiences of New Zealand, Australia, India and Thailand and Way Forward for Malaysia

Massification and democratisation of higher education had allowed tremendous increase in access for deserving students to both public and private higher education. The decrease in public expenditure on education together with the rapid expansion of student enrolment in higher education institutions have somewhat created greater financial pressures to many governments especially in the less developed countries. In many countries, the expansion of higher education adds further to the existing financial crises and there were pressures to reform the financing system of higher education in general. In view of the development of higher education, the government cannot be depended upon as the main source of financing for the sector as a whole. The central issue is who should pay the costs of resources that are required for higher education, how should education be financed, and how should allocation of funds be managed? Many argued that since university graduates can expect better job opportunities and higher lifetime earnings, students should share the cost of their education. This book brings together the experience of five countries namely, New Zealand, Australia, India, Thailand and Malaysia, in dealing with issues on student loan schemes to fund higher education. It is interesting to compare and contrast the experiences of countries which have been implementing student loan schemes with others which are only recently beginning to grapple with these issues. Arguably, for the former, student loan schemes have evolved over the years and for the latter, learning from others is very important indeed. The advantages and disadvantages of the income contingent loan as opposed to other type of loans in financing higher education were elaborated upon by the authors. The final chapters in this book discuss the way forward for Malaysia with respect to student loans based on the experiences of Australia, India, Thailand and New Zealand. Directions and plan of actions were indicated with a view towards reworking the current student loan scheme in Malaysia.



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