5th BSME International Conference on Thermal Engineering

Quality assurance and accreditation of engineering education in Bangladesh

Harun Chowdhury[a],*, Firoz Alam[a], Shyamal Kanti Biswas[b] , M. Tazul Islam[b] and

A.K.M. Sadrul Islam[c]

[a]School of Aerospace, Mechanical and Manufacturing Engineering, RMIT University, Melbourne, VIC 3083, Australia
[b]Department of Mechanical Engineering, Chittagong University of Engineering and Technology, Chittagong 4349, Bangladesh
[c]Department of Mechanical and Chemical Engineering, Islamic university of Technology, Gazipur 1704, Bangladesh

Abstract

The quality engineering education is not only challenging but also of paramount importance in today's globalised world. Despite inheriting western engineering education system, the engineering and technological qualifications obtained in Bangladesh are not readily recognized globally mainly due to the absence of periodical accreditation and quality assurance processes. The recently created Board of Accreditation for Engineering and Technical Education (BAETE) under the Institution of Engineers Bangladesh (IEB) has become a provisional member of Washington Accord. However, it needs to develop and implement accreditation process as par the signatory countries. This paper provides a comprehensive accreditation process followed by a Washington Accord Signatory nation and highlights the steps that can be undertaken within the institution to enhance the quality of education and graduates'/students' satisfaction.

Keywords: Engineering education; quality assurance; course curriculum; accreditation; student feedback.

1. Introduction

The globalization and mobility have created unique opportunities for the flow of technology, knowledge, people, skills, money, transshipment of industries, goods and services, values, and ideas across the borders. Engineering education has become an integral part of this globalization as engineering graduates from a country can undertake employment in another country through permanent or temporary relocation. This international mobility of engineering graduates has compelled educational institutions to enhance the quality and standard by introducing various quality assurance and professional accreditation processes. The educational institutions, employers, and professional organizations have a keen interest in the quality of education received by engineering graduates who aspire to be internationally mobile especially in today's globalised economy. This quality assurance and professional accreditation are more important for countries which rely on human resources export and import [1-3, 6].

Quality assurance mechanisms for engineering education vary considerably from country to country ranging from strong peer-run accreditation programs to large government bureaucracies. The accreditation methods used by the Washington Accord signatory countries (details are given later) are considered to be the best developed and most well respected systems for the accreditation of engineering education in the world [3]. As a low middle income nation, Bangladesh with its

* Corresponding author. Tel.: +61 3 99256103; fax: +61 3 99256108.
E-mail address: harun.chowdhury@rmit.edu.au

approximate 150 million populations has set a target to become a middle income county by 2020 [2]. However, to achieve this goal, it needs to accelerate its current Gross Domestic Product (GDP) growth to a double digit figure for which Bangladesh needs to invest heavily in skills development. Without quality engineering and technologically skilled human resources, Bangladesh will not be able to attract large scale foreign and local investments in manufacturing and technology intensive industrial sectors. As a result, with '*low skills and low pay*' workforce, the country will not be able to achieve its double digit annual GDP growth target and to become a well-known nation.

Despite having one of the largest pools of science stream high school graduates (more than about 200,000) each year through Higher School Certificated (HSC) exams, the country's current higher education systems cannot accept more than 10,000 students in undergraduate engineering programs offered by all public and private higher educational institutions [5]. Although places for undergraduate engineering programs have slightly increased over the time both in public and private sector institutions, still the yearly intake numbers are one of the lowest in the world [1-2]. A comprehensive overview of current engineering education in Bangladesh can be found in Chowdhury and Alam [2]. The primary objective of this paper is to discuss the importance of quality assurance in engineering education and accreditation process. The paper also describes some practices undertaken by the universities of the developed world for the enhancement of quality of engineering education. Some practices that can be applied with minor or no modification to Bangladesh's engineering education systems in order to enhance quality of engineering programs and to prepare graduates for global employment have also been discussed.

2. Quality assurance and accreditation of engineering education

As mentioned earlier, the quality of engineering education is of paramount importance. However, primary focuses of Bangladesh government and other relevant organizations in Bangladesh are currently given mostly on curriculum development and modernization as well as teaching staff professional development at primary level and lesser extent at secondary level educations [6]. No appreciable visible attempts which might draw attention of all concerned people have been made to modernize and improve the quality of tertiary level education systems in Bangladesh. We think through HEQEP (Higher Education Quality Enhancement Program undertaken by UGC, Bangladesh) some, although might not be appreciable, changes in facilities development are expected. At present, there is no clear guideline about tertiary program renewals, quality enhancement and quality assurance.

2.1. Objectives of contemporary engineering programs

The curriculum is the most important part of engineering education systems as it facilitates graduates for their immediate employment. Like any programs, the engineering program must ensure that its course structure is responsive to market needs and students demand. There is no doubt that curricula need continuously updating as new knowledge is added rapidly to our existing knowledge bank [1-2]. Engineering programs must be designed to comply with the stage 1 competency standards [4]. This competency includes 3 main areas and 16 sub areas which are as follows:

(a) Knowledge and skill base
- Comprehensive, theory based understanding of the underpinning natural and physical science and the engineering fundamentals applicable to the engineering discipline
- Conceptual understanding of the mathematics, numerical analysis, statistics, and computer and information sciences which underpin the engineering discipline
- In-depth understanding of specialist bodies of knowledge within the engineering discipline
- Discernment of knowledge development and research directions within the engineering discipline
- Knowledge of contextual factors impacting the engineering discipline
- Understanding of the scope, principles, norms, accountabilities and bounds of contemporary engineering practice in the specific discipline

(b) Engineering application ability
- Application of established engineering methods to complex engineering problem solving
- Fluent application of engineering techniques, tools and resources
- Application of systematic engineering synthesis and design processes
- Application of systematic approaches to the conduct and management of engineering projects

(c) Professional and personal attributes
- Ethical conduct and professional accountability
- Effective oral and written communication in professional and lay domains
- Creative, innovative and pro-active demeanour

- Professional use and management of information
- Orderly management of self, and professional conduct
- Effective team membership and team leadership

Today's engineers need more than just a sound technical background to be successful. In the course of solving engineering problems, they need to interact effectively with people of various backgrounds including races, cultures, religions and languages. As mentioned above, the engineering education must offer students a compelling context for engineering design, multi-disciplinary team experience, and time to learn and practice professional skills, personalised mentoring and exciting technical challenges.

2.2. Engineering program accreditation process

Professional accreditation of an engineering undergraduate program is a common practice in most developed countries. In today's globalised world, the accreditation is more necessary than ever before. In Australia, all undergraduate four years engineering degree programs offered by any university (regardless of the university status or ranking) get accredited in every five years by the Accreditation Panels of the Institution of Engineers, Australia (IEAust).

In 1989, professional bodies from six English speaking Western nations signed an agreement in Washington to mutually recognize each other accredited undergraduate engineering programs. This agreement is popularly known as Washington Accord. At present, 15 countries' professional bodies are full members of that. These countries and their representative professional bodies are: Australia (IEAust, 1989), Canada (Engineers Canada, 1989), Ireland (Engineers Ireland, 1989), New Zealand (Institution of Professional Engineers NZ, 1989), United Kingdom (Engineering Council UK, 1989), United States (Accreditation Board for Engineering and Technology, 1989), Hong Kong (The Hong Kong Institution of Engineers, 1995), South Africa (Engineering Council of South Africa, 1999), Japan (Japan Accreditation Board for Engineering Education, 2005), Singapore (Institution of Engineers Singapore, 2006), Taiwan (Institute of Engineering Education Taiwan, 2007), South Korea (Accreditation Board for Engineering Education of Korea, 2007), Malaysia (Board of Engineers Malaysia, 2009), Turkey (MUDEK , 2011), and Russia (Association for Engineering Education of Russia, 2012) [7].

Five more countries' professional bodies are currently provisional members of Washington Accord. These countries are: Bangladesh (Board of Accreditation for Engineering and Technical Education), Germany (German Accreditation Agency for Study Programs in Engineering and Informatics), India (National Board of Accreditation of All India Council for Technical Education), Pakistan (Pakistan Engineering Council), and Sri Lanka (Institution of Engineers Sri Lanka) [7].

Organizations holding provisional status have been identified as having qualification accreditation or recognition procedures potentially suitable for the purposes of the Washington Accord, and they are further developing accreditation procedures with the aim of achieving signatory status in due course [7]. It may be noted that qualifications accredited or recognized by organizations holding provisional status are not recognized by the signatories of Washington Accord. According to 'International Engineering Alliance' there are 6 international agreements in relation to mutual recognition of engineering qualifications and professional competence. However, 3 important agreements covering mutual recognition in respect of tertiary-level qualifications in engineering are: (a) The Washington Accord (1989, USA) which recognizes substantial equivalence in the accreditation of qualifications in professional engineering, normally of four years duration; (b) The Sydney Accord (2001, Australia) recognizes substantial equivalence in the accreditation of qualifications in engineering technology (normally polytechnic diploma/ Diploma 'D'), normally of three years duration; and (c) The Dublin Accord (2002, Ireland) recognizes substantial equivalence in the accreditation of tertiary qualifications in technician engineering, normally of two years duration. Currently, the National Board of Accreditation of All India Council for Technical Education is actively cooperating with the Institution of Engineers Australia (IEAust), also known as Institution of Engineers Australia, to build its professional capacity in order to become a full member of the Washington Accord.

In order to get accredited undergraduate engineering program in Australia, the program must satisfy a set of accreditation criteria in 3 major areas: a) operational environment of the institution, b) academic program, and quality assurance systems. Details about these criteria are shown in Fig. 1. Solid evidences as indicators of performance against each accreditation criteria are required to demonstrate. A typical accreditation process and step for engineering program(s) in Australia undertaken the accreditation panel of the Engineers Australia is shown in Fig. 2. The accreditation process is undertaken by the Engineers Australia by the invitation of the offering university/institution. There are various steps involved in the accreditation process. One of the important steps is the Campus Visit. The major duties and tasks performed by the accreditation panel over generally two days are shown in Fig. 3.

The accreditation of undergraduate engineering programs offered by public and private institutions in Bangladesh is not popular yet. The engineering professional body such as the Institution of Engineers Bangladesh (IEB) did not have any accreditation wing until recently. In July, 2000, the Institution of Engineers Bangladesh in collaboration with the Ministry of

Education of the Government of Bangladesh has established an accreditation body 'Board of Accreditation for Engineering and Technological Education' (BAETE) [8]. The primary objective of the BAETE is to accredit various engineering programs offered by the institution of higher education in the country. The BAETE has been developing its accreditation processes and steps. It has developed some criteria for the accreditation of engineering programs as shown in Fig. 4. Although the overall theme is compatible with Washington Accord signatory nations, it needs to refine these criteria and include more relevant one. Some of these accreditation are very generic, hierarchal and beyond the control of the department and the university. As Bangladesh has over 54 private universities, many of which offer undergraduate engineering programs, the BAETE currently focuses on the accreditation of undergraduate engineering programs offered by private institutions. As a provisional member of the Washington Accord, the BAETE must undertake initiatives and builds its capacity and expertise to become a full member. It can work jointly with Asia Pacific full members of the Washington Accord especially with the Engineers Australia, the Institution of Engineers Singapore, Board of Engineers Malaysia, and the Institution of Professional Engineers New Zealand for developing its own capacity and gaining experience by sending representative to these countries' professional accreditation. This will provide confidence in its own accreditation process development and frequent international organizational interactions.
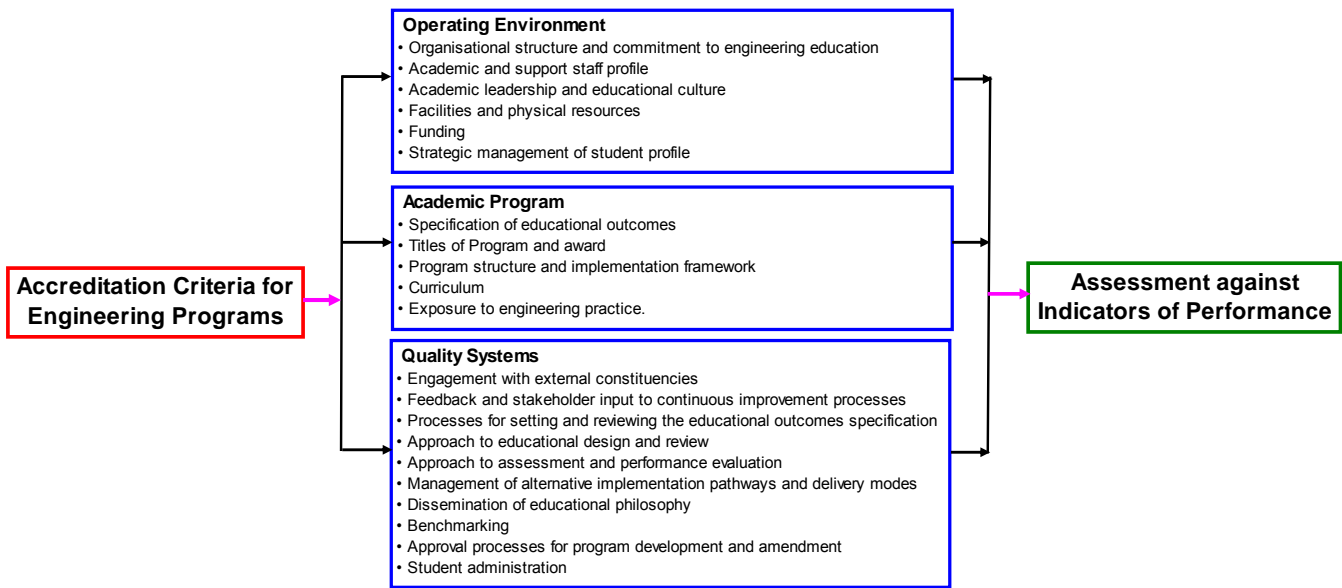

Fig. 1. Typical criteria for engineering program accreditation in a Washington Accord signatory country (adapted from [4]).
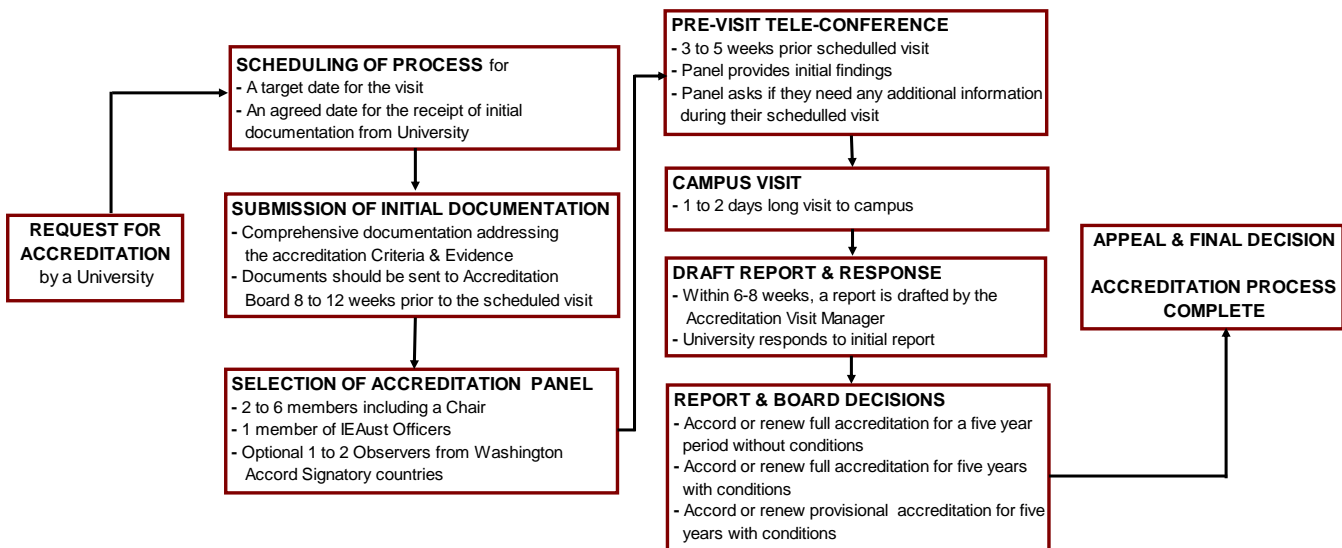

Fig. 2. Typical steps for engineering program accreditation process in a Washington Accord signatory country (adapted [4]).
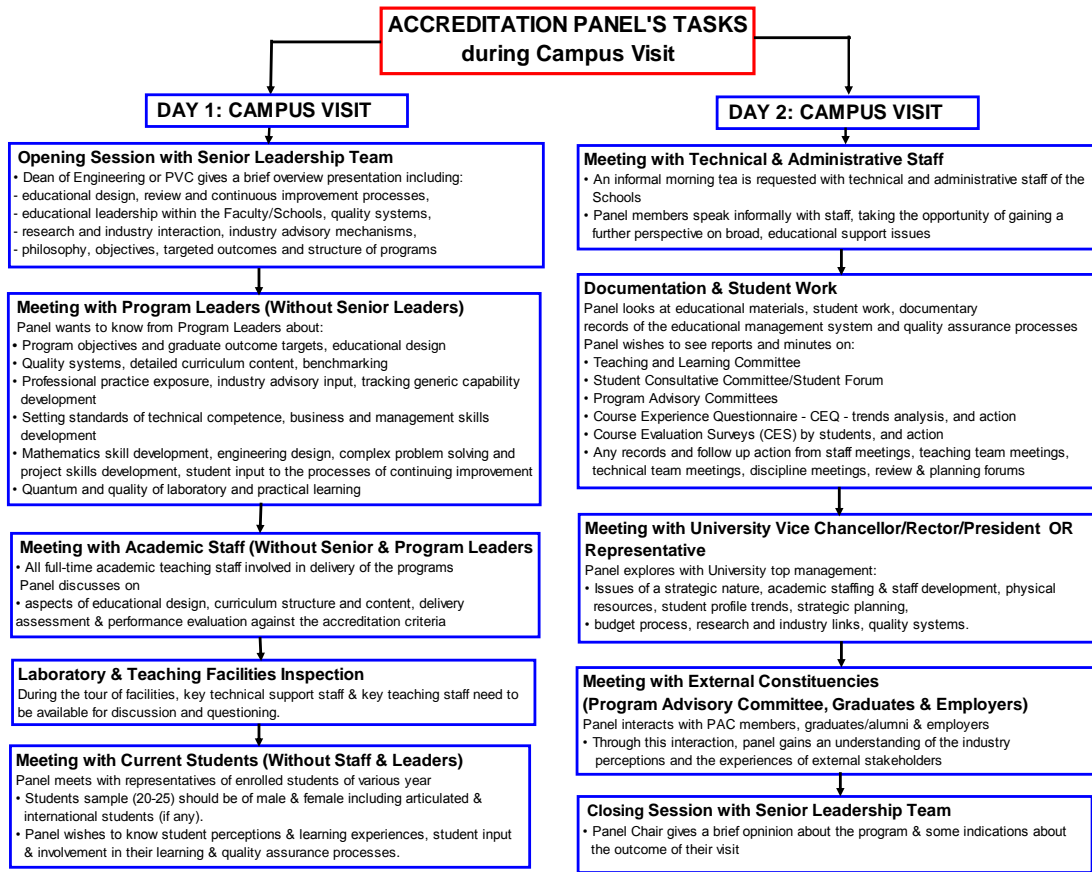
ACCREDITATION PANEL'S TASKS during Campus Visit

DAY 1: CAMPUS VISIT

Opening Session with Senior Leadership Team
• Dean of Engineering or PVC gives a brief overview presentation including:
- educational design, review and continuous improvement processes,
- educational leadership within the Faculty/Schools, quality systems,
- research and industry interaction, industry advisory mechanisms,
- philosophy, objectives, targeted outcomes and structure of programs

Meeting with Program Leaders (Without Senior Leaders)
Panel wants to know from Program Leaders about:
• Program objectives and graduate outcome targets, educational design
• Quality systems, detailed curriculum content, benchmarking
• Professional practice exposure, industry advisory input, tracking generic capability development
• Setting standards of technical competence, business and management skills development
• Mathematics skill development, engineering design, complex problem solving and project skills development, student input to the processes of continuing improvement
• Quantum and quality of laboratory and practical learning

Meeting with Academic Staff (Without Senior & Program Leaders
• All full-time academic teaching staff involved in delivery of the programs
Panel discusses on
• aspects of educational design, curriculum structure and content, delivery assessment & performance evaluation against the accreditation criteria

Laboratory & Teaching Facilities Inspection
During the tour of facilities, key technical support staff & key teaching staff need to be available for discussion and questioning.

Meeting with Current Students (Without Staff & Leaders)
Panel meets with representatives of enrolled students of various year
• Students sample (20-25) should be of male & female including articulated & international students (if any).
• Panel wishes to know student perceptions & learning experiences, student input & involvement in their learning & quality assurance processes.

DAY 2: CAMPUS VISIT

Meeting with Technical & Administrative Staff
• An informal morning tea is requested with technical and administrative staff of the Schools
• Panel members speak informally with staff, taking the opportunity of gaining a further perspective on broad, educational support issues

Documentation & Student Work
Panel looks at educational materials, student work, documentary records of the educational management system and quality assurance processes
Panel wishes to see reports and minutes on:
• Teaching and Learning Committee
• Student Consultative Committee/Student Forum
• Program Advisory Committees
• Course Experience Questionnaire - CEQ - trends analysis, and action
• Course Evaluation Surveys (CES) by students, and action
• Any records and follow up action from staff meetings, teaching team meetings, technical team meetings, discipline meetings, review & planning forums

Meeting with University Vice Chancellor/Rector/President OR Representative
Panel explores with University top management:
• Issues of a strategic nature, academic staffing & staff development, physical resources, student profile trends, strategic planning,
• budget process, research and industry links, quality systems.

Meeting with External Constituencies (Program Advisory Committee, Graduates & Employers)
Panel interacts with PAC members, graduates/alumni & employers
• Through this interaction, panel gains an understanding of the industry perceptions and the experiences of external stakeholders

Closing Session with Senior Leadership Team
• Panel Chair gives a brief opninion about the program & some indications about the outcome of their visit

Fig. 3. Typical tasks undertaken by the accreditation panel during campus visit by a Washington Accord signatory country (adapted from [4]).

ORGANISATIONAL INFRASTRUCTURE
• **Criterion 1: Mission, Goals & Organisation**
- **Management:** Mission, goals, commitment, attitude, planning & monitoring. Incentives, Effectiveness
- **Organisation and Governance**: Leadership, motivation, transparency, decentralisation & delegation, involvement of academic staff, efficiency
• **Criterion 2: Financial and Physical Resources & their Utilisation**
- Capital resources, operational budget, maintenance budget, developmental resources & budget
- Land, buildings, hostels, support services (water, electricity, communication, etc.), office equipment, canteen, transport, medical facilities

ACADEMIC PERFORMANCE
• **Criterion 3: Human Resources- Academic Staff, Supporting Staff**
- **Academic Staff**: Numbers, qualifications, recruitment procedures, workload (teaching, research, consultancy, administration), attitudes and commitment, academic staff development (QIP, conferences, continuing Education, professional societies, industrial exposure, sabbatical leave etc.), performance appraisal by students/others
- **Supporting Staff** (technical/administrative):Numbers, qualifications/skills, recruitment procedures, attitudes & involvement, skill development, performance appraisal
• **Criterion 4: Human Resources- Students**
- **Admission:** Central or institutional criteria (minimum criteria for different categories), admission policy for lateral entry (if any)
- **Academic Results**: Performance in competitive examinations, admission to postgraduate courses; employment of graduating: students during the post year; feedback from employers; entry behaviour of candidates; dropouts during the past three years
• **Criterion 5: Teaching-Learning Processes**
- **Syllabus** (contents, frequency of revision), **Academic calendar**. Registration announcement, Number of instructional days, contact hours per week, Evaluation procedures and involvement of external examiners, system of feedback,
- **Laboratories**, workshops and Equipment (facilities, maintenance and utilisation), Library, IT facilities, Instructional materials, Budget for consumables,
- **Instructional programme** implementation (lectures, tutorials, assessment and grading of student performance),
- **Maintenance** of course files, Workshops, Laboratory Classes, Colloquia, Projects,
- **Teaching** aids, removal of obsolete experiments and introduction of contemporary experiments, System of academic records, Answer books, Project reports
• **Criterion 6: Supplementary Process**
- **Extra and co-curriculum activities**, student counselling and guidance, professional society activities, entrepreneurship development, alumni information, campus recruitment, training and placement activities.

INDUSTRY-INSTITUTION
• **Criterion 7: Industry-Institution Interaction**
- **Industry participation** in curriculum planning; continuing education & industrial internship for faculty; consultancy, industry visits & training; project work; extension lectures; placement
• **Criterion 8: Research & Development**
- **Institutional budget** for Research & Development; academic/sponsored/industrial research & development, publication & patents
- **Recognition** as Centre of Excellence/special assistance/department support program, fellowship/assistantship, join guidance with industry/R&D labs/other institutions for PhD theses/MTech projects; criteria for evaluation of PhD theses/MTech projects

Accreditation Parameters & Criteria for Engineering Programs in Bangladesh

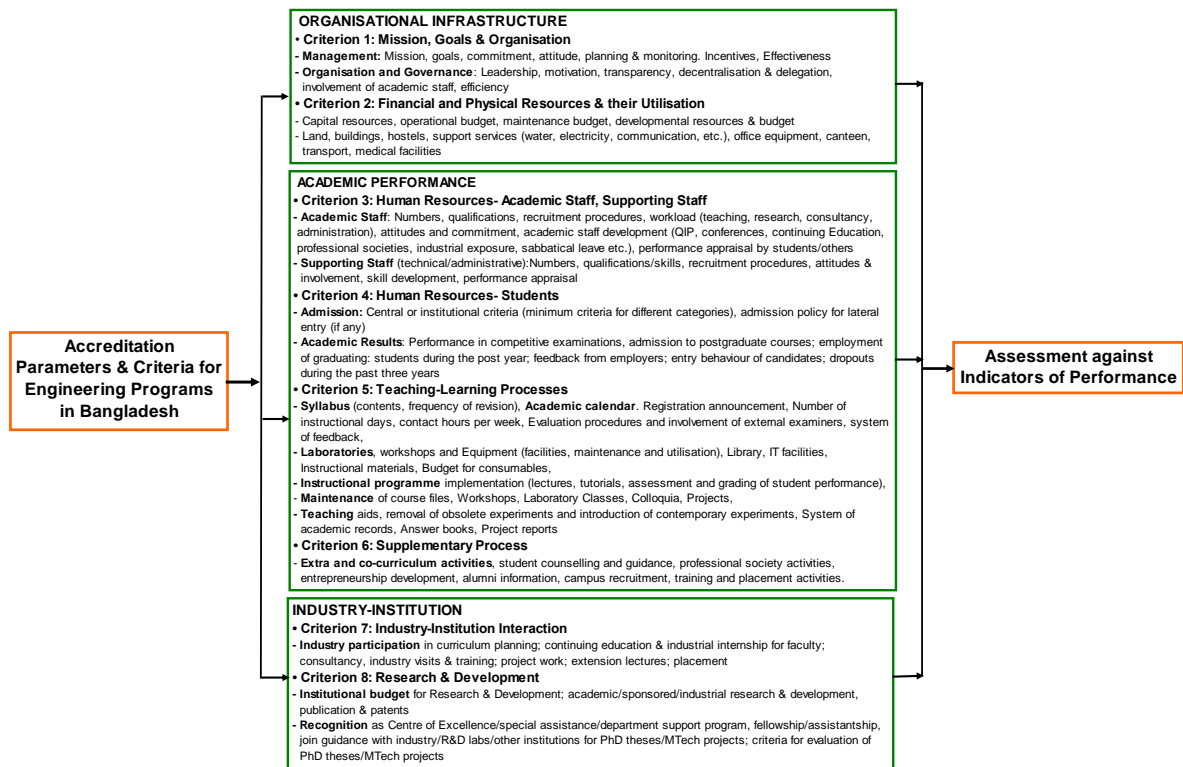**Assessment against Indicators of Performance**

Fig. 4. Typical criteria for engineering program accreditation in Bangladesh [8].

3. Concluding remarks

In order to ensure minimum quality assurance and standard, all engineering programs offered by public and private universities/institutions in Bangladesh must get accreditation by the BAETE. It will have multiple effects including individual program's quality enhancement and graduates' confidence in their qualifications. Additionally, engineering graduates from Bangladesh will have better opportunity for their engineering qualifications to be recognized globally. Once the Institution of Engineers Bangladesh becomes a full member of the Washington Accord, graduates from accredited engineering programs will not be required their qualification assessments in any of the Washington Accord signatory countries to practice as an professional engineer. It will also assist to get qualification recognized much easier in non Washington Accord signatory nations. As Bangladesh heavily relies on human resources export, the professional accreditation will provide much needed opportunity for Bangladeshi engineering graduates to seek professional employment overseas with minimum or no hassle.

References

[1] Alam, F., Dilla, E., Subic, A., Tu, J., 2007. A three step teaching and learning method in laboratory experiments for a thermal fluid course, Journal of Wold Transactions on Engineering and Technology Education 6(1), p. 13.

[2] Chowdhury, H., Alam, F., 2012. Engineering Education in Bangladesh- An Indicator of Economic Development, European Journal of Engineering Education 37(2), p. 217.

[3] Becker, F.S., 2006. Globalization, curricula reform and the consequences for engineers working in an international company, European Journal of Engineering Education 31(3), p. 261.

[4] Engineers Australia - Stage 1 Competencies for Professional Engineers, [retrieved from http://www.ieaust.org.au]

[5] Bangladesh Bureau of Educational Information and Statics (BANBIS), [retrieved from http://www.banbeis.gov.bd]

[6] Middlehurst, R., Woodfield, S., 2004. The Role of Transnational, Private, and For-Profit Provision in Meeting Global Demand for Tertiary Education: Mapping, Regulation and Impact, a Case Study of Bangladesh, Centre for Policy and Change in "*Tertiary Education*". Commonwealth of Learning and UNESCO, University of Surrey, UK.

[7] International Engineering Alliance (Washing Accord) [retrieved from http://www.washingtonaccord.org/Washington-Accord/signatories.cfm]

[8] Bashar, M. A., 2005. Accreditation of Degree Programmes in Engineering and Technology, Bangladesh Country Report. CPSC, Manila. [retrieved on 26 August, 2012 from http://www.apacc4hrd.org/conf_workshop/apacc05/CR/ban/]

5th BSME International Conference on Thermal Engineering

Transnational education: benefits, threats and challenges

Firoz Alam[a,]*, Quamrul Alam[b], Harun Chowdhury[a] and Tom Steiner[a]

[a]School of Aerospace, Mechanical and Manufacturing Engineering, RMIT University, Melbourne, Australia
[b]Department of Management, Monash University, Melbourne, Australia

Abstract

The transitional education is increasingly becoming popular as it provides internationally recognised education at the doorstep of students. The reduction of government subsidies to Western universities has created conditions for looking for alternative ways to generate income to offset the financial short fall. As a result, the Western higher educational institutions have become heavily dependent on onshore fee paying international students. However, the income from onshore fee paying international students is falling. Therefore, universities start to offer their education to international students in their home countries. Scant information on impacts of transnational education is currently available in the public domain. This study reviews the current status of transnational education especially in Asia.

1. Introduction

   Transnational education is an arrangement in which courses or programs offered by an educational institution based in one country are delivered to students located in another country [15]. More elaborate definition of the transnational education is given by the United Nations Education, Scientific and Cultural Organization (UNESCO) which states 'all types of higher education study programs, or sets of courses of study, or educational services (including those of distance education) in which the learners are located in a country different from the one where the awarding institution is based' [12]. Thus, transnational education is considered to be borderless non official higher education which offers all forms of higher education activities operating in parallel to and outside the official higher education system of the host country. The transnational education in the context of globalization has become a market driven activity to promote multicultural, diverse and internationalized outlooks among students [14].

   The global demand for education, training and research propels the unprecedented worldwide mobility of peoples for variety of reasons including migration, political and economic security, trade and business, employment, tourism, study and research. This mass movement of people is transforming social institutions, cultural practices and sense of identity and belongingness [10]. These changes have resulted in multiple new cross-national, cross-cultural flows and networks defining the global world of the 21st century [13]. Worldwide demand for higher education is growing at an exponential rate, driven by economic progress of developing nations, demographic trends and increased globalization of economies and societies. Students' participation in higher education rose by 128% from 1990 to 2007 (66.9 to 152.5 million students) [12]. The global mobility of students has also increased, quadrupling over the past three decades to 3.3 million in 2008 compared to

2.8 million international students' global mobility in 2007 [8]. Based on current trends, the number of international students will continue to be around 6.7 million by the year 2020 [2].

Currently three English speaking countries: USA, UK and Australia attract nearly half of the world total foreign students. For example, over 40% of students studying outside their home country in 2007 were in the USA, UK and Australia. Over half of the world's international student population was from the Asian region led by China, India and South Korea. China and India showed the strongest growth in outwardly mobile students between 1999 and 2007 (UNESCO, 2009). The fast growing young population in the emerging economies of Southeast Asia (Indonesia, Malaysia, Thailand, Vietnam, etc.), South Asia (India, Bangladesh, Pakistan), North Asia (China, Philippines) South America (Argentina, Brazil, Chile, Peru, Columbia, Venezuela, etc.), Middle East (Saudi Arabia, United Arab Emirate, Iran, Yemen) North Africa (Egypt, Sudan, Algeria, Morocco, Ethiopia), South & Central Africa (South Africa, Nigeria, Kenya, Tanzania, Ghana, Democratic Republic of Congo, etc) is putting pressure on domestic education systems. The countries concerned are increasingly unable to satisfy local demand for higher education as many of these developing countries cannot expand the existing capacity of their higher education in the face of increasing demand due to financial limitations. Consequently, the existing resources are spread over increasingly larger student populations. Therefore, the excess demand for higher education in most developing countries can only be met by transnational education from developed nations [8]. By 2020, around 3 million students from the developing nations will seek their higher education outside of their own countries to major English speaking countries of UK, Australia, Canada, USA & New Zealand [9]. While the demand for students coming to UK, Australia, USA and other English speaking destinations to study conventional courses at traditional education institutions would increase, this can be outstripped by the demand for education through the transnational education.

2. Modes of transnational education

There are five popular modes widely used in transnational education. They are: (a) branch campus, (b) franchising or partnership, (c) articulation or twinning, (d) distance or virtual education, and (e) study abroad.

2.1. Branch campus

Under branch campus arrangement, an educational institution of higher studies from the offering country (source country) establishes a fully fledged branch campus in the host country to deliver courses and programs to students in that country. This arrangement allows the offering institution to conduct educational activities more effectively than any other modes. It allows appointing qualified local staff as well academic staff from the offering country on contract basis or on deputation. However, offering programs through branch campus is costly and requires significant financial commitment on offering university's behalf. Around 5% courses and programs are currently offered under this arrangement [1,4,5,11]. Nevertheless, the branch campus mode is becoming popular among students especially in restrictive countries such as India and Pakistan, in moderately restrictive countries such as China and Bangladesh and in liberal countries like Singapore, Malaysia, Hong Kong, United Arab Emirates and Qatar.

2.2. Franchising or partnership

Under this mode of delivery, a provider from the offering country authorizes a provider or a partner in the host country to deliver its courses and programs. The qualification is awarded by the source country's institution. All arrangements for teaching, management, assessment, profit-sharing, awarding of qualifications are arranged in compliance with the host and source countries' regulations/policies. In many cases, academic staff from the source country's institution visits host country's partner to deliver intensive lectures within short duration, the education quality and assessments are moderated by the academic staff of offering institution. More details of such arrangement can be found in Alam et al. [1]. Over 90% of all courses and programs are being offered in the host country through this arrangement. Despite being most cost effective with certain degree of quality assurance, the mode poses some financial and reputation risks due to local partner's financial and other shortcomings [1, 5].

2.3. Articulation

The articulation is a systematic recognition by an institution from the offering country of specified course(s) or program(s) at an institution in the host country. This model allows partial credit transfer towards a program at the offering institution. Under this arrangement, an institution in the source country collaborates with a provider in the host country to develop an articulation arrangement allowing students to take courses in the host country's institution and get credit transfer

for the study at the institution of the source country later. Generally one qualification is awarded by the institution in the source country.

2.4. Distance/virtual education

Under distance/virtual education delivery mode, courses and programs are offered via televisions, radios, computers, internet, video conferencing, Skype, Lectopia, virtual blackboard, correspondence, or other methods within or beyond the national boundaries. All students directly enroll in source country's institution from anywhere in the world. Under this mode of delivery, occasionally some arrangements of face-to-face intensive lectures/workshops and other supports are offered to students through regional study or support centers.

2.5. Study abroad

In this model a student from an institution of a country travels to undertake courses and degrees for a fixed period of time at an institution which is located in a different country. Under this arrangement, after completion of the course(s), students get due recognition of their completed courses in their home institutions. The arrangement allows students to be exposed and experienced different cultures, languages and lifestyles. This mode of transnational education is popular among students in developed nations. However, it is less popular among Asian institutions.

2.6. Double/joint degree

Offering double degree or joint degree is a new phenomenon. Under this scheme, education providers in different countries collaborate to offer a single degree program and/or double degree program for which students receive qualifications from both providers, or a joint award from the collaborating partners. This arrangement is especially popular among European, North American and Australasian universities.

3. Regional hubs for transnational education

In order to make the foreign higher education locally available at an affordable price and national higher education systems globally competitive, governments of many developing nations especially Singapore, Malaysia, Hong Kong, China, United Arab Emirates (UAE) and Qatar have enacted laws and policies to attract leading universities from developed nations especially the UK, USA, Australia, New Zealand, Canada, Germany and France to offer their programs for local students as well as students from regional. To tap the rising education market, Western universities have been offering various undergraduate and postgraduate programs in Singapore, Malaysia, Hong Kong, UAE and Qatar through their own campuses or jointly with local partners. At present, over several hundred various undergraduate and Masters Programs are being offered in these regions by leading western universities. The two most populous nations China and India have been utilizing this opportunity for their national benefits. Both countries are allowing reputed Western universities from the UK, USA and Australia to open their local branches.

Unlike Singapore, Malaysia and Hong Kong, the governments of China and India want foreign universities' presence permanently. Additionally, the governments of China and India wish to see foreign university not to be only the commercial entity. Foreign universities in the UAE and Qatar can operate fully commercially as there is no bar on fees, ownership, and repatriation of profits. At present, most foreign universities are concentrated in five regional hubs: (a) Singapore & Malaysia, (b) China & Hong Kong, (c) India, Bangladesh & Pakistan, (d) United Arab Emirates & Qatar, and (e) South Africa. These regional transnational educational hubs are shown in Fig. 1.

Among all regional education hubs, Singapore and Malaysia are leaders for hosting large number of foreign universities' programs. Thanks to historical and linguistic bonds, universities from the UK and Australia play a dominant role there. Over 600 different programs including undergraduate (Bachelors), postgraduate (Masters and PhD) are being currently offered by the universities of the UK and Australia there. The presence of North American universities in Singapore and Malaysia is also gradually increasing. Most foreign western universities offer their programs mainly through their local private partners who either administer, deliver programs using mainly local academic staff and/or jointly with the local and offering university's academic staff.

In the Middle East, two countries UAE and Qatar have become regional hubs for the transnational education. Currently, over 400 different undergraduate and Postgraduate Programs are being offered by universities mainly from the USA, UK and France there. Several US universities have established their branches to tap the rising Middle Eastern education market.

The UAE and Qatar have allocated special education zones within their main cities to establish campuses of foreign universities (e.g., Dubai International Academic city and Qatar Education City).

Fig. 1. Major regional transnational education host countries.

The geographical proximity, historical and linguistic bonds have provided an excellent opportunity to Australian universities in early 2000 to capture a lion's share of South East Asian (Singapore, Malaysia, Vietnam), South Asian (India, Bangladesh, Sri Lanka) and North Asian (Hong Kong, China, Taiwan) education market which has peaked in 2003 with 1569 programs [11]. Australia had an early advantage following the Colombo Plan in the 1950s of aid programs that developed into collaborative education activities between Australia and South East Asian institutions, especially in the 1980s. This operating knowledge of the South East Asian education market was later used to move into the student markets of China and India as education providers shifted from education as aid to education as trade. However, Australian universities have now been facing stiff competition from their counterparts from the UK and USA. In order to consolidate presence in host countries, many reputed Western universities have established full-fledged local branch campuses as shown in Table 1.

Table 1. List of foreign universities with their full fledged or joint venture campuses.

	Institution name	Source country	Host country
1	New York University	USA	China
2	Duke University	USA	China
3	Johns Hopkins University	USA	China
4	University of California, Berkeley	USA	China
5	Kean University	USA	China
6	University of Nottingham	UK	China
7	University of Liverpool	UK	China
8	Lancaster University	UK	China
9	Monash University	Australia	China
10	Monash University	Australia	Malaysia
11	University of Nottingham	UK	Malaysia
12	Curtin University of Technology	Australia	Malaysia
13	Shanghai Jia Tong University	China	Singapore
14	City University of New York	USA	Singapore
15	Curtin University of Technology	Australia	Singapore
16	RMIT University	Australia	Vietnam

4. Economical and social impact

The transnational education helps to develop local skills, reduce capital outflow, brain drain, and pressure on local education system. It offers choice for students, opportunity for competition development among foreign and local institutions hence quality improvement. As students can get their education without leaving their home country or region, it can reduce the brain drain from developing countries. Thanks to financial might and competition from the transnational education, universities of many host nations have emerged as strong international competitors in the race for talent hunts,

research and innovation. Based on current trend, economical progress, and geopolitical development, the outflow of knowledge seekers from the developing nations will compensate the inflow of students especially between Asia, Europe and North America. The emerging super power China now receives more students than it sends abroad. It may be noted that China sends around 400,000 students overseas for higher education each year followed by India with around 300,000. In 2007, China's international enrolment was ranked 5th in the world, just behind the USA, Britain, France, and Germany [5, 8, 12]. It shows that China is making enormous progress in developing its high quality education system to make it a major study destination by 2020. A similar strategy has also been undertaken by Singapore, Malaysia and India.

The transnational education provides an opportunity for working professionals to upgrade their qualifications while working full time as they have limited scopes through local education systems. It allows obtaining qualifications without leaving the home country and employment.

The transnational education can have negative impact as well. Embracing internationalization among higher education systems in Asia has clearly suggested that Asian countries are very keen to become more international. Some researchers have expressed concerns about over westernization of Asian unique cultures, languages, traditions and heritages [7]. In order avoid over westernization, Asian universities need to rediscover Asian scholarship, unique values, traditions and cultures through academic exchange and international research collaboration within Asia.

At the beginning of the transnational education, many programs were delivered not at a level of their source country. However, thanks to stiff competition among foreign universities and steps taken by the host countries, the quality of most programs has significantly been improved. Various professional bodies of source and host countries regularly undertake audits and provide accreditations ensuring the minimal level of standard required for a particular program.

5. Concluding remarks

The current trend of internationalization of higher education system will generate students mobility between developed and developing countries. The creation of hubs will change the demography of the student cohort. The location of hubs will influence the curriculum and related facility and infrastructure. The danger is that if host countries do not formulate a long term higher education policy in accordance with their sustainable economic and development programs an e-elite class will emerge in many emerging and developing countries changing the social fabric.

The ongoing debate on higher education in developing countries has been mainly based on social development policy perspective. The changes in the economy, intensity of global interaction and desire to actively engage in international activities and the need to create social and human capital as means of economic development has not yet been seriously considered in the international education debate. As a consequence, no theoretical framework has been developed to understand and systematically address the issue of internationalization higher education.

References

[1] Alam, F., Subic, A., Plumb, A., Shortis, M., Chandra, R., 2012. An Innovative Offshore Delivery of an Undergraduate Mechanical Engineering Program, in Developments, in "Engineering Education Standards: Advanced Curriculum Innovations". IGI Global, USA, p. 233-245.
[2] Calderon, A., 2010. "Emerging countries for student recruitment in tertiary education", The IMHE- OECD Conference on Higher Education in a World Changed Utterly: Doing More with Less. Paris, p. 6.
[3] Chowdhury, H., Alam, F., 2012. Engineering Education in Bangladesh- An Indicator of Economic Development, European Journal of Engineering Education 37(2), p.217.
[4] Hussain, I., 2007. Transnational Education: Concept and Methods. Turkish Online Journal of Distance Education 8, p. 1163.
[5] IDP, 2011. Employment Outcomes of International Students in Australia. Presentation to the Asia Pacific Association for International Education Conference, Taiwan.
[6] Lien, D., 2008. Economic analysis of transnational education, Education Economics 16(2), p. 149.
[7] Mok, K. H., 2009. The Quest for Regional Hub of Education: Searching for New Governance and Regulatory Regimes in Singapore, Hong Kong and Malaysia, East-West. Senior Seminar on Quality Issues in the Emerging Knowledge Society, Malaysia.
[8] OECD, 2010. Education at a Glance. [http://www.oecd.org/document/52/ Accessed 24 March 2011]
[9] Purves, J., 2007. Can transitional education assist development aims?, Commonwealth Education Partnerships, p. 119.
[10] Rizvi, F., Lingard, B., 2010. Globalizing Education Policy, Routledge, New York.
[11] Skidmore, M., 2011. The future of transnational education, The Observatory on Borderless Higher Education, [retrieved from http://www.obhe.ac.uk/newsletters/borderless_report_november_2011/future_transnational_education]
[12] UNESCO, 2009. Institute of Statistics, UIS database. [http://www.uis.unesco.org/ev.php]
[13] Urry, J., 2000. Sociology beyond Societies: Mobilities for the Twenty-first Century, Routledge, London.
[14] Varghese, N. V., 2009. GATS and Transnational Mobility in Higher Education, in "*Higher Education on the Move: New Developments in Global Mobility*" edited by Bhandari, R and Laughlin, S. AIFS Foundation, New York.
[15] Ziguras, C., 2003. The impact of the GATS on transnational tertiary education: Comparing experiences of New Zealand, Australia, Singapore and Malaysia, Australian Education Researcher 30, p. 89.

5th BSME International Conference on Thermal Engineering

A pilot study on postgraduate supervision

Firoz Alam[a]*, Quamrul Alam[b] and Mohammad Golam Rasul[c]

aSchool of Aerospace, Mechanical and Manufacturing Engineering, RMIT University, Melbourne, VIC 3083, Australia
bDepartment of Management, Monash University, Melbourne, VIC 3145, Australia
cSchool of Engineering and the Built Environment, Central Queensland University, Rockhampton, QLD 4702, Australia

Abstract

The postgraduate education is considered to be important as it provides the educational institutions opportunities to build their research capabilities, enhance academic reputations and financial gain. The success and quality of post graduate education largely depends on effective and efficient supervision of postgraduate students. Despite its immense importance, the teaching and learning through postgraduate supervision is not still fully understood. As the expectation of high quality postgraduate supervision is increasing, the supervisory role is becoming more challenging due to the fact that most postgraduate students are coming from various ethnic, cultural, political, economical, linguistic and educational backgrounds and their attraction and retention are paramount for educational institutions. The primary objective of this work is to undertake a study on postgraduate supervision experience to provide better support for improving timely research completion, quality supervision, retention rate, student satisfaction, research environment and administrative support services. The research was undertaken based on questions based surveys. A set of anonymous questionnaires was distributed among postgraduate students studying at 3 universities in Australia. The study indicated ways to improve timely completion, quality thesis writing and scientific publications. The role of the supervisor plays a crucial role to the overall satisfaction, retention and completion.

Nomenclature	
APA	Australian Postgraduate Award
APAI	Australian Postgraduate Award Industry
RTS	Research Training Scheme

1. Introduction

The world wide demand for specialised skills and innovative research due to globalisation, continuous change in competitive market, management and services, design and development has compelled to produce large number of postgraduates. Opportunities and access to postgraduate studies have also been increased. Most universities in developed nations are currently underfunded due to reduced government subsidies. Finding no other alternative, most institutions heavily rely on full paying international students. As a result, educational institutions are trying hard to build their research capabilities, enhance academic reputation through producing high quality graduates, publishing journal articles in high impact journals and creating a brand image to attract full paying undergraduate and postgraduate students. In order to be competitive for attracting postgraduate (PhD & Masters) students, universities are striving to improve the quality of

---

* Corresponding author. Tel.: +61 3 99256103; Fax: +61 3 99256108.
E-mail address: firoz.alam@rmit.edu.au

postgraduate research (both fundamental and applied), provide quality supervision (for higher student satisfaction, completion and publication) and create research support services including facilities & resources to achieve those goals [2, 10-11].

Currently both supervisors and students are under enormous pressure to complete postgraduate programs within a defined timeframe. As postgraduate students generally come from diverse background, ethnicity and vary significantly by age, cultures, language, religion, experience and ability, with and without scholarships, they face pressures to complete their degrees prior or within the candidature time. Additionally students are under pressure to publish research papers, financially support families by undertaking jobs; and develop broader skills for enhancing their employability after completion. If required infrastructure, supervision and research environment are not available, pressures and expectations can negatively affect the creation of new knowledge, ground-breaking work, keeping up with the current body of knowledge through critically examining contemporary literature, and writing quality thesis by postgraduate students [10].

A schematic of multiple skills that students should acquire from a postgraduate research program is shown in Fig. 1. Deficiency in any of these skills will lead postgraduate students to experience delays in their studies or withdrawing from the program altogether. Postgraduate students generally face multi-fold problems due to inadequate or faulty research design, inaccurate or insufficient data collection and processing, and difficulties with thesis writing. These issues can arise due to inexperience of the student, poor supervision and/or an inefficient system [14]. Rademeyer [16], Hockey [9], and Smith & West-Burnham [18] found that the successful completion of a dissertation/thesis was just as much a function of abilities of the student and the supervisor. As mentioned earlier, there are high proportions of postgraduate students failing to complete their studies within the stipulated time frame or giving up their studies completely due to problems related to inadequate supervision, research support and research environment.
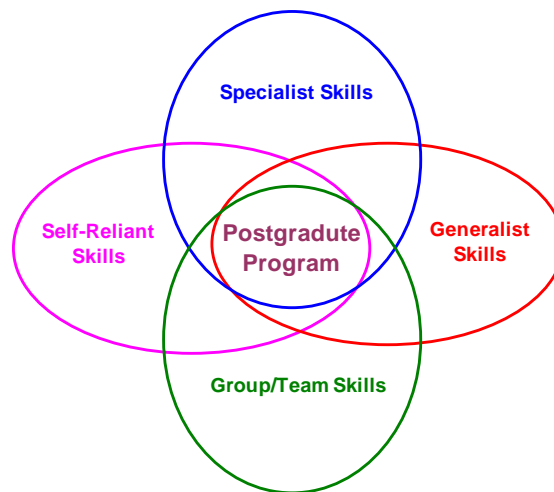

Fig 1. Schematic of Postgraduate Skills (adapted from [4]).

There is a growing concern about higher degree attrition and completion rate. The attrition rate is as high as 50% in postgraduate research programs especially from first year of programs offered in North American universities [3, 6, 7, 12, 19]. Among developed nations, Australian universities generally had lower attrition rate (~10-20%) in late 1990s [3]. More recent data for 2007 indicates that the attrition rate of postgraduate students (Masters and PhD) in Australia is around 10%. However, the attrition rate for Master students is higher than PhD students [15]. Nevertheless, it has created a concern for university managements as most universities are under tight financial budgets.

Currently research supervision has become a focal point for achieving higher research completion, research output and graduate student satisfaction. Supervision can be defined as two-way interactional process that requires both the student and the supervisor to consciously engage each other within the spirit of professionalism, respect, collegiality and open-mindedness. Supervision is a complex social encounter which involves two parties with both converging and diverging interests. Therefore, balancing these interests is very crucial for the successful supervision of postgraduate students. The relationship between the supervisor and the postgraduate student is considered to be the key factor in the success or failure of students' research work. It is no doubt that a supervisor is the closest person who can mentor and provide the necessary support and guidance to the student in need [1, 5, 8, 13, 17].

As mentioned earlier, postgraduate supervision can generally face multifaceted problems including a) inadequate supervision (e.g. lack of supervisor's experience, commitment, and/or time; b) emotional and psychological problems

(student's intellectual and social isolation; his/her insecurity to fulfill the standard and lack of confidence in his/her ability to complete thesis within the time frame or not at all); c) lack of understanding and communication between supervisor and student; d) student's lack of knowledge, skills, training or experience in research methods, e) family and work commitment, f) lack of financial support, g) inadequate administrative or institutional support, and h) poor research infrastructure and environment. Therefore, it is the utmost interest of the university, supervisor and the student to complete the research with higher impact within the time frame. However, often it is not clear how this objective can be achieved. Therefore, with a view to understand the issues faced by postgraduate students, a pilot study among a group of postgraduate students at three Australian universities was undertaken.

The study explores the postgraduate supervision experience in order to render better support for improving timely research completion, quality supervision, retention rate, student satisfaction, research environment and administrative support services.

2. Research design and methodology

In order to understand the factors that can affect students most, we have undertaken a pilot study among current and recently completed postgraduate (Masters and PhD) students in two broad disciplines (Engineering and Management) at 3 Australian universities. The targeted students for the pilot project are from the School of Aerospace, Mechanical and Manufacturing Engineering at RMIT University in Melbourne, Department of Management at Monash University in Melbourne and the School of Engineering and the Built Environment at Central Queensland University in Rockhampton. Out of three groups of students, two groups are from engineering background (RMIT & CQ University) and the remaining group is from management background (Monash University). The reason for selection of such wide background is to see if there is any variation in student's feedback. The target student number for the pilot project was 40. A plain language questionnaire was developed. The survey contains 21 questions in 3 main sections: a) section one – support from the research supervisor, b) section two – support from the institution, and c) section three – general student comments or suggestion. Section one contains 9 questions, Section two – 6 questions and Section three – 6 questions. Additionally, the questionnaire has introductory questions regarding postgraduate program, host institution, country of origin, background of financial support for the study and the medium of instruction of prior program(s). Students were asked not to write any sort of identification in order to keep the survey completely unanimous. The survey questionnaires are given in Appendix. Over 40 copies of questionnaire were distributed among targeted postgraduate (Masters and PhD) research students in aforementioned three universities. A total of 30 completed surveys were received. The survey response rate was 75%.

3. Results and discussion

Data from all 30 completed returned surveys has been grouped and analyzed. It was noted that participated students came from varied cultural, geographical and linguistic backgrounds. The participated 30 students came from a range of countries including Australia, India, Bangladesh, China, Japan, Saudi Arabia, Oman, Kuwait, Sri Lanka, Thailand, Malaysia, Indonesia, Philippines, and Jordan. Based on student responses, it was noted that over 60% students have earned their prior degrees through English medium and the remaining students have had their degrees in other languages. The financial support received by students for their tuition fees and sub assistances is varied significantly. Nearly 70% students obtained Australian government (APA, APA-I, RTS) and host university scholarships. However, over 25% students have received scholarships from their home countries' governments. The Australian students are excluded from this statistics. Only 5% postgraduate students are financed by themselves (i.e., self finance).

The students responses related to Section 1 (supervisory support) and Section 2 (institutional support) are analyzed together. The analyzed data for questions 3 to 15 is shown in Fig. 2. Responses to questions 1 & 2 were not included in Fig. 2 as responses to these questions are incompatible with responses to Questions 3 to 15.

The responses to Question 1 have revealed that 75% postgraduate students selected their supervisors through direct contacts with their respective supervisors. Only 16.7% students found their research supervisors through the university research office and around 8.3% through the university webpage as shown in Appendix. Nearly 90% international students have chosen their supervisors long before they formally applied for admission. Nearly 50% students meet with their supervisors fortnightly whereas 37.5% students meet once or twice a week and only 12.5% students meet with their supervisors monthly (Appendix). However, some students who meet with their supervisors fortnightly are happy to meet once a week.

Over 95.8% postgraduate students are happy with their supervisors for providing support and academic direction. In contrast, only 4.2% students are not happy with their supervisors. The unhappy students are mainly from the category of students who meet with their supervisors monthly. Most postgraduate students (~91.7%) have received appropriate

academic support in their first year of candidature whereas only small number of students has received little or no academic support from their supervisors. Regarding non academic support and pastoral care from supervisors, over 85% students expressed their satisfaction and the remaining students (15%) did not receive expected non academic and pastoral care support. The students' responses also revealed that nearly 46% postgraduate students fall behind against the timeline of their research progress due to some difficulties in their 1st year of candidature. Only 20.8% students received timely advice and guidance from their supervisors to overcome this initial research difficulty.

More alarming piece of information has come out from this pilot survey is that over 33% postgraduate students have experienced the temporary breakdown of relation with their supervisors out of frustration and lack of clear research goals. Most students are satisfied with the support that they received from the research office. Similarly they are happy with available research environments and resources at the university. Around 70% students consider the research seminars organized by the department or school are not useful. However, it was not clear why did these seminars fail to excite postgraduate students. Although around 71% postgraduate students are happy with the level of financial support they receive from the university to attend and present research papers at conferences nationally, most of them cannot attend international conferences due to the unavailability of funds at the university. Majority students commented that the attendance to international conferences provides an opportunity for them to develop networking, obtain external feedback to their research work and enhance their communication skills.

Over 80% of students commented that they expect from their research supervisors to guide them in their research proposals, choice of research methodology, and documentation and publication of their research. They strongly wish to have supportive and professional relationship with their supervisors, and happy to receive constructive criticism and reflection on their research processes.
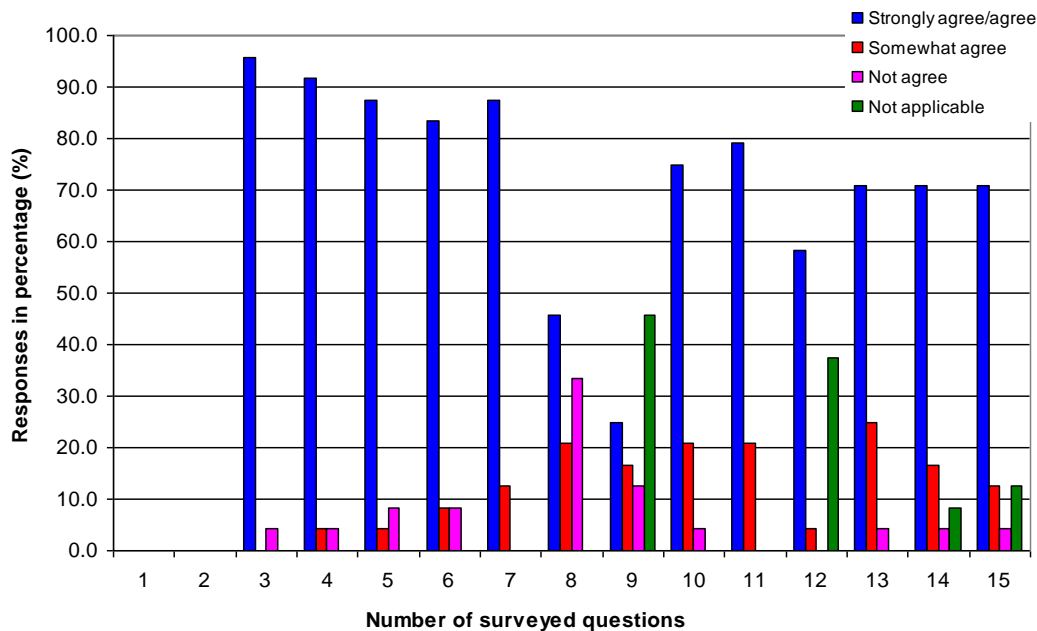

Fig 2. Students' responses to questions 3 to 15.

4. Concluding Remarks

The post graduation education is essential for universities to build their research bases and profiles. The success and quality of postgraduate education largely depend on multiple factors. The supervisor's role determines postgraduate student's overall satisfaction, retention and completion.

The pilot study indicates that most students choose universities and research projects through personal contacts with the respective supervisor. A very small number of students select universities and research projects via the university research office and other online/offline means. Most students are happy with the support they receive from their supervisors. However, they need more support and guidance especially in the early stage of their candidature.

The lack of progress makes students apathetic, anxious and poor relations with their supervisors. Most students are appreciative of their institutional, administrative and financial supports. However, the current amount of financial support is

not adequate for most students to attend international seminars/conferences which are considered to be the vital for their networking, obtaining professional feedback and improving communication skills.

Most students prefer to have research meetings with their respective supervisors weekly or fortnightly. Students who have meetings monthly with their supervisors are generally unhappy with their supervisors. This group of students also falls behind in their research progresses.

References

[1] Acker, S., Hill, T., Black, E., 1994. Thesis supervision in the social sciences: managed or negotiated? Higher Education 28, p. 483-98.
[2] Beer, M.D., Mason, R.B., 2009. Using a blended approach to facilitate postgraduate supervision, Innovations in Education and Teaching International 46(2), p. 213–226.
[3] Colebatch, H.K., 2002. Through a glass darkly: Policy development on higher degree completions in Australia, Journal of Higher Education Policy and Management 24(1), p. 27-35.
[4] Cryer, P., 1998. Introduction, in: P. Cryer (Ed.) Developing Postgraduates' Key Skills: issues in postgraduate supervision, teaching and management, Guide 3, pp. 1–5 (London, Society for Research into Higher Education/ Times Higher Education Supplement).
[5] Cryer, P. and Mertens, P., 2003. The PhD examination; support and training for supervisors and examiners, Quality Assurance in Higher Education 11 (2), p. 92-99.
[6] D'Andrea, L.M., 2002. Obstacles to completion of the doctoral degree in colleges of education, Educational Research Quarterly, March.
[7] Elgar, F., 2003. PhD Completion in Canadian Universities. Final Report. Halifax, Nova Scotia: Graduate Students Association of Canada.
[8] Ellis, E.M., 2001. The impact of race and gender on graduate school socialization, satisfaction with doctoral study, and commitment to degree completion, Western Journal of Black Studies 25(1), p. 30-45.
[9] Hockey, J., 1996. Strategies and Tactics in the Supervision of UK Social Science PhD Students, Qualitative Studies in Education 9(4), p. 481-500.
[10] Ismail, A., Abiddin, N.Z., 2011. Improving the Development of Postgraduates' Research and Supervision, International Education Studies 4(1), p. 78-89.
[11] Lee, A.M., 2007, Developing effective supervisors: Concepts of research supervision, South African Journal of Higher Education 21(4), p. 680-693
[12] Lovitts, B.E., Nelson, C., 2000. The hidden crisis in graduate education: Attrition from PhD. Programs. Academe, 86 (6), p. 44-50. Available at www.aaup.org/publications/Academe/00nd/Nd00lovi.htm. (Accessed November 5 2007).
[13] McAlpine, L., Weiss, J., 2000. Mostly true confessions: Joint meaning-making about the thesis journey, Canadian Journal of Higher Education 30(1), p. 1-26.
[14] Mouton, J., 2001. How to Succeed in your Master's and Doctoral Studies. Pretoria: Van Schaik
[15] Olsen, A., Spain, J., 2008. Staying the course: Retention and Attrition in Australian Universities. Australian Universities International Director's Forum Report, available at www.spre.com.au/download/AUIDFRetentionResultsFindings.pdf (Accessed August 20, 2012)
[16] Rademeyer, G., 1994. Thesis supervision: getting the genie out of the lamp, South African Journal of Higher Education 8(2), p. 92-95.
[17] Seagram, B., Gould, J., Pyke, S., 1998. An investigation of gender and other variables on time to completion of doctoral degrees, Research in Higher Education 39(3), p. 319-335.
[18] Smith, P., West-Burnham, J., 1993. Mentoring in the Effective School. Essex: Redwood Books.
[19] Wright, T., Cochrane, R., 2000. Factors influencing successful submission of Ph.D theses, Studies in Higher Education 25(2), p. 181-195.

Appendix: Postgraduate Supervision Experience Survey Questionnaires

The Postgraduate Supervision Experience Survey is designed to capture feedback about your research experience. The feedback we receive helps us to clearly identify priorities for improvements to your postgraduate research experience.

Program Name …………………………………………………………………………………………...

Institution/University..………………………………………………………………………………………

Your home country……………………………………………………………………………………………

Institution/University of your prior degree(s)…………………...

Medium of instruction of your prior degree(s) ....……………………………………

Financial support status (please circle):

   ○ Aust Govt. Scholarship   ○ University Scholarship   ○ RTS

   ○ Int. Aid Agency scholarship   ○ Home country Govt. scholarship   ○ Self funded

Institution/University…………………………………………………………………………………

Section One: Supervisory Support

1. How did you choose your principal supervisor?
   ○ University webpage   ○ Personal contact   ○ Do not know   ○ Through research office

2. How often do you meet with your supervisor to discuss your matter?
   ○ Once/Twice weekly   ○ Fortnightly   ○ Monthly

3. Are you satisfied with the supervision and support by your supervisor?
   ○ Highly satisfied   ○ Satisfied   ○ Somewhat satisfied   ○ Not satisfied

4. Have you received adequate academic support in 1st year of your candidature?
   ○ Strongly agree   ○ Agree   ○ Somewhat agree   ○ Not agree

5. Are you satisfied with the level of support you received from your supervisor at the beginning of your program? [accommodation, transport, banking, shopping, schooling, social & cultural issues related to Australian way of life]
   ○ Strongly agree   ○ Agree   ○ Somewhat agree   ○ Not agree

6. Are satisfied with the level of pastoral care from your supervisor? [support during low moral, sense of isolation, death/sickness of immediate family member, family issue, financial hardship, racial discrimination, etc]
   ○ Strongly agree   ○ Agree   ○ Somewhat agree   ○ Not agree

7. Have you received guidance and encouragement for publication during your study?
   ○ Strongly agree   ○ Agree   ○ Somewhat agree   ○ Not agree

8. Have you faced any of the following issues during your study:
   ○ Lack of progress against timeline   ○ Timely advice when needed   ○ Breakdown of relation between you and your supervisor

9. How often do you attend Group Meeting organised by your supervisor?
   ○ Once/Twice weekly   ○ Fortnightly   ○ Monthly   ○ N/A

Section Two: Institutional Support

10. Are you satisfied with the level of support from Department's/School's Higher Degree Committee (admin support, financial support, professional development, etc) ?
    ○ Strongly agree   ○ Agree   ○ Somewhat agree   ○ Not agree   ○ N/A

11. Are you satisfied with the level of support from Faculty/College and University Higher Degree Committee?
    ○ Strongly agree   ○ Agree   ○ Somewhat agree   ○ Not agree   ○ N/A

12. Are you satisfied with the level of support provided by the University Ethics Committee with your ethics application (if applicable)?
    ○ Strongly agree ○ Agree ○ Somewhat agree ○ Not agree ○ N/A

13. Do you have adequate research environment in your department/school that inspires you to conduct research?
    ○ Strongly agree ○ Agree ○ Somewhat agree ○ Not agree ○ N/A

14. Do you think that postgraduate seminar organised by the Department/School is useful?
    ○ Strongly agree ○ Agree ○ Somewhat agree ○ Not agree ○ N/A

15. Have you received any financial support from the university to attend scientific conference/seminar/education fair?
    ○ Strongly agree ○ Agree ○ Somewhat agree ○ Not agree ○ N/A

Section Three: Comments

16. Are you facing any type of difficulties, if so, please write?

17. How does your supervisor manage resources required for your research?

18. Did you face any difficulties because of your non-English speaking background (if appropriate?)

19. Was there any reason for delay in your progress (if applicable) and how did you overcome this delay?

20. Was there any opportunity for work in the faculty as a teaching or research assistant, or so? If not did you work outside of university?

21. Do you have any comments? If so, please write