Transnational Education and Engineering Accreditation

Ian Harrison\textsuperscript{1,2} (ian.harrison@nottingham.edu.my),
Kay Bond\textsuperscript{1} (kay.g.bond@nottingham.ac.uk)

\textsuperscript{1}Faculty of Engineering, University of Nottingham, United Kingdom
\textsuperscript{2}Faculty of Engineering, University of Nottingham, Malaysia Campus, Malaysia

Abstract: There is an increasing incidence of transnational education in the higher education sector, whereby student learning is undertaken in a different country from the awarding institution. One example is the branch campuses operated by the University of Nottingham in Malaysia and China which awards identical certificates to graduates from common programmes across the three campuses.

This paper explores the specific challenges faced by transnational education in the case of a programme that has been validated by a national professional institution, and consequently provides graduates with partial exemption from the full process of gaining individual professional recognition.

This is typified by engineering education where programme validation by engineering institutions is highly prized by prospective students. International agreements (such as the Washington Accord) exist to govern the mutual recognition and substantial equivalence in the accreditation of qualifications in professional engineering.

An example is described where the local accreditation panels from different countries required different programme features from what was designed as a common, transnational, programme delivered in three countries. Achieving degree accreditation for students graduating in each different country is clearly challenging whilst maintaining the undifferentiated status of the degree.

Whilst international agreements appear to provide a supportive framework for transnational education, this paper concludes that specific requirements of individual national accrediting bodies will continue to prove challenging to the higher education institutions involved.

Introduction

The UK has a leading position globally in terms of the education of international students and the University of Nottingham has a significant share of this market; in 2011 the University of Nottingham was cited by the UK Council for International Student Affairs (UKCISA) as the third largest UK recruiter of international students, with Engineering as the second largest (anecdotal from HEA Engineering Subject Centre in 2010). However, this position is not easy to maintain as markets that universities such as Nottingham have traditionally targeted, e.g. China, have seen increasing investment with fewer Chinese students seeking an education abroad (Norton, 2010). Moreover, Head (2012) reports that ‘with China achieving the status of fourth top host country (after the US, UK and France) in 2010, countries that have pegged growth in their tertiary sectors on a sustained influx of Chinese students would be wise to rethink strategies’. Choudaha (2012), whilst more optimistic, also suggests that ‘institutions should start preparing for these shifting patterns’. The University of Nottingham has sought to address this through the establishment of overseas campuses in Malaysia and China.
Along with the obvious difficulties of setting up overseas campuses and quality assured degree programmes, there are the additional complications in terms of professional accreditation, particularly for engineering programmes.

Although the Washington Accord (IEA, 2009) defines key graduate attributes for professional engineers that form a set of degree programme learning outcomes, each accrediting body defines its own standard and the mutual recognition operates on substantial equivalence. Since each accrediting body defines its own standard, the accreditation requirements differ from one country to another. This presents challenges to Universities operating in different jurisdictions because they are required to meet multiple requirements whilst maintaining equivalence of the degrees across their campuses and the educational ethos of the home campus.

Transnational Education

Transnational education is a very loose term and is often used to describe any international delivery of education which also includes overseas education. However in this paper the definition given in the United Nations Educational, Scientific and Cultural Organisation (UNESCO) / Council of Europe (COE) (2002) code of practice in the provision of transnational education is used;

‘All types of higher education study programme, 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. Such programmes may belong to the educational system of a State different from the State in which it operates, or may operate independently of any national system.’

Similarly, the Global Alliance for Transnational Education (GATE, 1997) denoted

‘transnational education as any teaching or learning activity in which the students are in a different country (the host country) to that in which the institution providing the education is based (the home country). This situation requires that national boundaries be crossed by information about the education, and by staff and/or educational materials.’

This definition intentionally excludes the common form of international education where the student is mobile and moves to another country to receive an education delivered by an institution belonging to a State in which it is delivered.

The above definition of transnational education is broad and there are many different ways it can be and is delivered. McBurnie and Pollock (1998) have indicated that there is a variety of delivery modes of transnational education: distance education (with or without local support); twinning programmes; articulation programmes; branch campuses; and franchising arrangements. In an engineering context, the most important modes of delivery are branch campuses, franchise, and validation. These essentially only differ by the amount of control the awarding institutions have on teaching quality; the institution has most direct control at their international branch campuses. McBurnie and Pollock (1998) describe a branch campus as 'a fully fledged campus of the provider institution that offers programs from commencement through graduation.' Here, the awarding institution is responsible for the delivery, assessment and quality control of the degree programmes provided in the host country. Often for commercial and political reasons there may be a local partner who may be involved in the non academic processes of the branch campus. Examples of this type of delivery are the University of Nottingham campuses in Malaysia and China, although McBurnie (2002) discusses a number of Australian examples in Malaysia, South Africa and Vietnam.

In a franchise operation, the institution's control is one step removed. The delivered programme is normally designed by the awarding department but the delivery of the programme is subcontracted to another institution. The awarding body is then responsible for auditing the delivering institute to ensure quality control. Current examples of this type are the Electrical and Electronic Engineering degrees offered by INTI college in Malaysia and the University of Bradford, UK.

Finally, when a programme is validated, the programme content is the responsibility of the delivering institution but may be based on a programme already provided by the validating body. The validating partner ensures the quality and level of the programme. For example, Middlesex University validates the Computer Science degrees at October University in Egypt.

Although the distinct types of transnational education have been described, the boundaries between them are not well defined. For example, many international campuses are separate financial entities
and are considered as Universities in their own right in their host country. Consequently, it could be argued that these are essentially franchise operations. However, this argument neglects the academic and managerial governance of the home institution.

The other modes of delivering transnational education (offshore institutions, distance learning, virtual universities, corporate universities and international universities) are less relevant to the engineering context currently but some may become more important in the future. For example, corporate universities may become more important as multinational companies look to train their staff across their global enterprise in a skill set which is closely allied to their needs.

**Accreditation**

'Fit to practise' is a very important concept in many professions and engineering is no exception; in many cases a professional's competence can have life-or-death repercussions. For example, if the structural integrity of an aircraft fails, not only does the company lose a $300 million aircraft but, perhaps more importantly, there may be over 400 people on board who could lose their lives. Governments recognize that engineers should have a certain level of competence and have set up regulatory bodies (e.g. Engineering Council (EC) in the UK). The regulatory framework, correctly, ensures these bodies are only concerned with the registration of engineers practising in their country. As will be discussed later, this does not preclude them working internationally with similar bodies.

To ensure the background knowledge of an engineer is sufficient, professional registration bodies define generic baseline descriptors (Engineering Council, 2011). However, the specific knowledge an engineer requires is not documented. To ensure that the background knowledge is of an acceptable standard, the engineering degrees are accredited. Each country has its own process but at the heart of the accreditation is a panel visit (peer review) which, along with other aspects, assesses the level and appropriateness of the curriculum. The panel members are drawn from the local industry as well as from other institutions of higher education. Consequently, comparisons are made locally and this ensures consistency across the higher education sector. Ultimately the membership of the panel and the terms of reference of the accrediting bodies make these national in nature.

Graduate mobility, including the home-coming of international students, has lead to numerous agreements between professional engineering regulatory bodies. Probably the most important of these agreements is the Washington Accord of the International Engineering Alliance (IEA), which has 13 signatories, including the UK, with several more countries holding provisional status. The accord recognised the substantial equivalence of professional engineering degrees of 4 year duration (IEA, 2011). To aid the development of mutual recognition, the alliance has published expected graduate attributes (IEA, 2009) from which the signatories develop their own generic graduate descriptors. Under this accord, signatories such as the Board of Engineers Malaysia (BEM) will accept an accredited 4 year MEng degree as being equivalent to an accredited four year engineering Bachelor's programme. This allows a returning Malaysian student, who studied in the UK, to register with the BEM as a graduate engineer. The same would be true for a student with a Malaysia degree seeking chartered status in the UK.

**Accreditation of Transnational Engineering Degrees**

Over recent years there has been a growth in international branch campuses. A recent report (Lawton & Katsomitros, 2012) suggests that there are over 200 operating worldwide, with a further 37 to open in the near future. Of the 200 currently operating, 29 offer engineering degrees; the UK with seven, and Australia and the US each with six are world leaders in this area. The most popular host country is the UAE (hosting ten) followed by Malaysia hosting five. Singapore is the only other Washington Accord signatory currently hosting an international branch campus. Nine of the planned new international branch campuses will involve engineering and two of them will be UK institutions establishing operations in Malaysia. South Korea also features as a popular place to host new campuses.

Although the degrees offered by the international branch campuses are usually undifferentiated, they are not covered by the Washington Accord. The national emphasis of engineering accreditation is reinforced by item 3 of the Accord which states ‘The Accord applies only to accreditations conducted by the signatories within their respective national or territorial boundaries.’ (It must be noted that Hanrahan (2011) highlights an exception not included in the Washington Accord documentation itself, ‘Recognition applies ... boundaries, except: – Offshore programmes offered by a university with
programs accredited in home territory’ – in practice this is not the case, particularly where there are two signatories involved.)

At this point it is worth using the University of Nottingham as an exemplar. The University has campuses in Malaysia and China and offers engineering degrees on all campuses (the China Campus has yet to graduate its first engineering student). A student graduating with an MEng degree from the Nottingham campus, under the terms of the Accord, will be recognised by the Accord Signatories and the student will be able to register as a graduate engineer in a signatory country. This is not the case for a student who studied the same engineering degree at the Malaysia campus, because his/her degree is not covered by the Accord even though it has been accredited by a UK Professional body. However, the student will still be able to register in another signatory country because the University of Nottingham has sought appropriate Malaysian accreditation. China is not a signatory of the Accord and so a student graduating in China, with exactly the same degree, will not be able to register under the standard scheme as a Chartered Engineer. Does this discriminate against the Chinese student?

As briefly explained above, international branch campuses hosted in other Washington Accord signatory countries require additional accreditation. Since the graduate attributes are the same in theory this should not be difficult to achieve. As always, the problems appear in the detail. Although the graduate attributes are derived from the same point, local interpretations lead to minor differences in the accreditation criteria of the signatories. The accreditation panel members are usually from the host country and naturally look for conformity with the local higher educational sector in the host country, plus each accrediting body has its own additional rules. These factors often make the second accreditation relatively challenging to achieve whilst maintaining the undifferentiated status of the degree. Since the UK HEI sector is a global leader in establishing international branch campuses and Malaysia a very popular host country, citing the issues faced by the University of Nottingham Malaysia campus to achieve accreditation in Malaysia as an exemplar seems appropriate.

In the UK, industrial placement is not a requirement of accreditation, whilst in Malaysia it is. The question faced was ‘how to integrate the requirement for industrial placement at Malaysia Campus whilst maintaining the undifferentiated nature of the degree’? The adopted solution was to create an industrial training module which the students needed to pass to progress on to their final year of the MEng degree. The module was given zero credits so that it does not contribute to the degree programme, consequently, the students studying at the Malaysia campus need to do more work to pass the undifferentiated degree. Is this fair to these students?

The mutual recognition of undifferentiated degrees delivered by an international branch campus, either in another signatory country or in a country that has not signed up to the Washington Accord, is solvable by modifying the Accord. Interestingly the International Engineering Alliance has two other Accords covering Engineering Technology programmes (Sydney Accord) and the Engineering Technician programmes (Dublin Accord). In each of these Accords, there is some provision for transnational education in the Accord. However the published rules (IEA, 2011) still require the undifferentiated programmes to meet the requirements of both the home and host accrediting bodies.

As stated above, the accreditation processes are national in nature and have been designed to improve the programmes within that specific country. In addition, the implementation speed of any recommendations made by accrediting panels by institutions of higher education differs from country to country. In the case of the international branch campuses, implementation changes are even slower because the effect of any proposed change on other campuses needs to be understood before any proposal is agreed and adopted. The International Engineering Alliance specifies generic learning outcomes but the implementation of outcome based learning by the signatories is derived nationally and does lead to differences. For example, the system chosen by the Malaysian Engineering Accreditation Council is different from that implemented by the professional bodies of the UK. The Malaysian system places significantly more emphasis on the Bloom taxonomy and continual quality improvement. These differences accentuate the diversity of learning philosophies in various countries.

For example, in the UK there is an expectation of more independent learning by students when compared to students studying in Malaysian universities. The ongoing challenge for the Faculty of Engineering at the University of Nottingham, and other institutions operating international campuses, is to have one set of processes that address the multiple requirements of the differing accreditation bodies whilst maintaining the undifferentiated nature of the programme, the educational ethos and compliance with the rules and regulations of the University.
Conclusion

In conclusion, the paper has examined the conflicts between accreditation and transnational engineering education. The national importance of ensuring engineers have the necessary core competencies means the accrediting bodies have not yet embraced transnational education and this will continue to lead to conflict because transnational education is by definition ‘without borders’ (ALTC, 2009). The provision of a transnational engineering degree across multiple signatories highlights the differences in accrediting body expectations and educational ethos.

References


**Copyright statement**

Copyright © September 2012, authors as listed at the start of this paper. This work is licensed under a Creative Commons Attribution-NonCommercial-NoDerivs 3.0 Unported License ([CC BY-NC-ND 3.0](http://creativecommons.org/licenses/by-nc-nd/3.0/)).