

## Collaborating and crossing borders – lessons learnt

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### Introduction and concepts

Since the establishment of the Finnish universities of applied sciences (or polytechnics), international collaboration has become a key activity at these institutions. Usually, the aim of international education is to support the process of integrating an international, intercultural or global dimension into the whole educational organisation (see Knight 2015; Altbach & Knight 2007). The term 'international education' can include many aspects, such as transnational education, borderless education and cross-border education (Knight 2015). The process of internationalisation in education has been emphasised in many ways over the last 25 years. For instance, in the Strategy for the Internationalisation of Higher Education Institutions in Finland 2009–2015, it is suggested that internationalisation is important for ensuring 'the development of national strengths through international cooperation'. The 2015 international panel review of Finnish higher education emphasised that internationalisation should take a more comprehensive approach, concentrating on areas beyond student mobility. Indeed, experts believe that internationalisation should include, among other things, greater collaboration between teaching and research, opportunities for 'internationalisation at home' through studies, and the intensification of cultural awareness (Hazelkorn 2017).

Internationalisation as a phenomenon can be considered from the perspectives of individual, organisational and societal motivation. Individual motivation is linked with the willingness to be prepared to live and work in global environments, and to acquire intercultural competence. From

the point of view of society, internationalisation is seen to benefit the economy due to associated new business opportunities and even innovations (Knight 2015).

In the early years (i.e. the 1990s), internationalisation was based mainly on building a network of foreign higher education institutions (HEIs) in order to enable teacher and student exchanges (see Välimaa et al. 2013). For example, in the Kemi-Tornio region, new partners were sought first in European countries (e.g. Germany). Little by little, the collaborations started to evolve and other activities came along. International degree programmes commenced and various development projects were organised, with the aim of intensifying international collaboration between students and teachers. At the former Kemi-Tornio University of Applied Sciences, the first international development projects began in 1995, with the unit of technical education beginning to take part in 1997. Thereafter, the number of international R & D projects started to increase gradually. In 2005, there were two international projects underway, both funded by Interreg III. By 2007, five such projects were in progress, one of which was financed by Leonardo. From 2007–2013, eight international projects were being funded by Interreg IVA, and by 2016, the number of Interreg projects had risen to 14. In the R & D strategy document for the years 2010–2012, it was defined that 10% of all project volume should be international; today, the proportion of international projects is 40 % (Alajärvi-Kauppi 2017). The aim of this article is to describe the process of international collaboration in the Kemi-Tornio region and the associated experiences, with the key focus being on engineering education.

## Activities and experiences

### **Building partnerships**

Building the partner network was the starting point for internationalisation at Kemi-Tornio University of Applied Sciences. The first partner HEI was Fachhochschule Augsburg University of Applied Sciences. The collaboration started in 1993–1994 and continues to this day. In the beginning, collaboration activities consisted mainly of outgoing teacher exchanges and a small number of incoming exchange students (for whom a special programme was designed, partly at the cost of the Finnish organisation). Thereafter, the network expanded to include several partners, as listed below.

Table 1. Partner HEIs, engineering education at Kemi, years 1993 – 2006 (Kehusmaa 2017)

| HEI  | COUNTRY  | PARNTERSHIP<br>STARTED (aprx) | STATUS 2017 |
|--|----------|-------------------------------|-------------|
| FH Wiener Neustadt                                       | Austria  | 2003                          | NO          |
| Techno Z Salzburg  | Austria  | 2002                          | NO          |
| FH Vorarlberg  | Austria  | 2004                          | YES         |
| Technicum Wien   | Austria  | 2003                          | YES         |
| IESN Haute Ecole<br>d'Enseignement<br>Superieur de Namur | Belgium  | 2003                          | NO          |
| Ingeniørhøjskolen<br>Københavns<br>Teknikum              | Denmark  | 2002                          | NO          |
| Tallinn University of<br>Technology                      | Estonia  | 1995                          | NO          |
| FH Augsburg  | Germany  | 1993/1994                     | YES         |
| Hochschule Bremen  | Germany  | 2004                          | YES         |
| Budapest Polytechnic,<br>Obuda University,               | Hungary  | 2003                          | YES         |
| Silesian University of<br>Technology                     | Poland   | 2005                          | YES         |
| Instituto Poitecnico de<br>Castelo Branco                | Portugal | 2004                          | YES         |
| University of Zilina                                     | Slovakia | 2006                          | YES         |
| Universidad de Alicante                                  | Spain    | 2006                          | YES         |
| Universidad de<br>Politecnica de Cartagena               | Spain    | 2004                          | NO          |
| Luleå tekniska<br>universitet                            | Sweden   | 1995                          | YES         |

As the table shows, network building was very active in the period 1993–2006. Most of the partnerships were based on collaboration in education. The main challenge in developing such collaborative work further was that engineering students did not seem to be active participants in the exchange programmes on offer. Some partnerships ended due to various reasons: in some cases, the education offered at the partner university was of a higher level than that at our institution; in others, the HEI offered too few courses in English.

Later, international networks such as Uarctic brought new exchange options for students. Since 2014, when Lapland University of Applied Sciences was established, the network has grown,

with some new members joining; the main focus remains, however, on European partnerships. Additionally, the partnership network has expanded vastly in order to fulfil the requirements for various R & D projects.

### **International education – CBE**

In the mid-1990s, the importance of internationalisation was growing across the country. New financing opportunities (e.g. Erasmus) allowed our university to send and receive more exchange students. With a view to expanding and speeding up internationalisation activities, planning commenced for an international degree programme in 1994. The new programme, entitled ‘Cross Border Engineering’ (CBE), which would lead to a Bachelor’s Degree in Engineering, opened a year later. The focus was on digital electronics and embedded microprocessor design, and tuition was totally in English, as with most international degree programmes at Finnish HEIs. The main objective of the programme was to train students to meet the growing needs of the information technology sector. During the degree programme’s inaugural year, 1995–1996, there was one Russian student in the group of 36 students. As time went on, the number of foreign students of different nationalities started to expand: students originated from China, the United States, Romania, Kenya, Nigeria, Ghana, Cameroon, Portugal, Zambia, Nepal and Algeria. In total, 133 students (61 % of whom were Finnish) graduated from the programme during its years of operation, i.e. 1995–2008.

As a result of the international degree programme, the whole learning environment developed an international atmosphere, which enabled increased contact between foreign students and Finnish ones. It was thus that ‘internationalisation at home’ became possible. The student union, KeIO, organised a number of events for all students; nonetheless, foreign students often mixed with each other only. Exchange students, however, tended to take part in general events more actively.

New staff members were recruited to meet the needs of international education. For example, two Bulgarian teachers with expertise in electronics joined the institution in the late 1990s. Additionally, ongoing teacher visits were organised in collaboration with Tallinn University of Technology. A few years later, a Vietnamese laboratory engineer was recruited to serve the requirements of the international degree programme. As a result, a new partner contact was

actualised: Can Tho University in the Mekong Delta region of Vietnam became interested in collaborating in the field of information technology. The collaboration began in 2003 and was certified via an official agreement in autumn 2005. Later, another Vietnamese teacher was recruited to teach information technology on the international degree programme.

After the CBE programme commenced, the number of incoming exchange students started to grow. In 2002, 13 persons (7 students) went abroad for an exchange period and 14 persons (10 students) came to engineering education. The student exchanges were enhanced by two short programmes (30 ECTS): ‘Gateway’ (which ran from 1996–2000) and ‘Technology as Business’, or TaB (which ran from 2002–2005). Additionally, engineering students were given the opportunity to take part in an intensive course at Shanghai University in China. The programme was based on an agreement made with Centria University of Applied Sciences.

Table 2: Example time slots of mobility in engineering education at Kemi (Vipunen; Garam 2017, Ruottu 2017)

| Activity/Year     | 2002-2005 | 2006-2009 | 2010-2013 | 2014 - 2017 |
|-------------------|-----------|-----------|-----------|-------------|
| Outgoing students | 22        | 4         | 35        | 21          |
| Outgoing teachers | 18        | 20        | 0         | 10          |
| Incoming students | 24        | 33        | 10        | 39          |
| Incoming teachers | 9         | 6         | 0         | 18          |

### **Projects and collaboration**

The internationalisation process as a whole opened up new ways and means for the development of engineering education. The partner network and the international degree programme led to the establishment of several educational development projects. A group of teachers and students joined the POOL (Project Organisation OnLine) project in 2004–2005. TehcnoZ Salzburg was the coordinating the project, the main purpose of which was to study and develop virtual working environments. Again, this collaboration led to new partnerships with several HEIs: Romania’s Universitat Tej Technica din Cluj-Napoca, Spain’s Universidad de Alicante and Ireland’s Galway-Mayo Institute of Technology.

Contact with Vietnamese HEIs enabled an ICT development project to begin in Vietnam's Mekong Delta region. The project (which ran from 2009–2010) was financed by the North-South-South (NSS) programme. The project partners were Can Tho University of Technology, the College of Information and Communication Technology, and the Pedagogical University of Dong Thap (Garam 2008). Key activities included intensive courses in participating countries and staff exchanges. The first part of the NSS project consisted of a Finnish group (three students and one teacher) spending between one and three months in Vietnam in Spring 2010. Subsequently, a group of three Vietnamese students and one teacher spent the autumn semester of 2010 at Kemi.

Other international projects that have taken place include the 2008–2011 Innopreneurship project and the 2012–2014 Innopreneurship 21 project. The aim of the former was to study and develop entrepreneurship education, thus building a basis for further activities. The project consortium brought together Luleå University of Technology (LTU), Bodø Business College (today part of the University of Nordland) and engineering education at Kemi-Tornio University of Applied Sciences. Towards the end of the project, in June 2010, an international conference was organised in Luleå. As a result of the conference and project activities, it was possible to expand personal networks between international experts in the field of entrepreneurship education. The second project continued some of the work carried out for the first project, but included an expanded network: a Finnish partner, the University of Oulu, joined the team. In addition, our Norwegian partner provided the pedagogical-education aspect for this project. One of the main focuses of the Innopreneurship 21 project was the creation of a cross-border teaching and learning environment for entrepreneurship education. Several activities took place in relation to this project, including a joint course run by LTU and Kemi-Tornio in autumn 2013, on which a group of 21 students from different disciplines studied networking from a range of perspectives (see Mäkimurto-Koivumaa, Westerberg & Kess 2013). Students gave very positive feedback after the course, including the following remarks:

‘A different take on what we are actually doing and how to do it.’

‘Learning new ideas for collaboration. Making new friends.’

‘It was really a fun project in general – a lot of fun – and I believe all of us learnt a lot about collaboration, and each other.’

During the Innopreneurship 21 project, it became possible to cross borders in three ways. First of all, the participating HEIs had different prerequisites for establishing the aims linked to supporting entrepreneurship education; thus, they were crossing borders at conceptual and organisational levels. Secondly, the project members had different educational backgrounds and represented various disciplines, such as engineering, business and teacher education. Therefore, they had different approaches to education, which brought about some problems but also provided opportunities for collaboration. Thirdly, the participants crossed borders between nations and cultures. Even though the participating HEIs were in the same cultural area, there are some differences between the Nordic countries. It became clear during the project that cultural differences enriched co-operation and enabled the project members to participate in internationalisation (see Mäkimurto, Westerberg & Kess 2013).

## Conclusions: lessons learnt

Internationalisation in education requires the development of a variety of activities and, above all, the dedication of motivated, visionary individuals. As Knight (2015) states, internationalisation is an ongoing process. As the examples given in this article indicate, the internationalisation of education proceeds through a number of different stages. In order to start the process, a partner network needs to be developed. In the case of engineering education in the Kemi-Tornio region, the first partnerships were built via personal contacts and interests. Later, the partner network expanded due to the different activities taking place. Today, the internationalisation process continues, being part of the strategic development plan at Lapland University of Applied Sciences. International education has opened new possibilities, as well as introducing staff and students alike to different geographical regions and cultures. In some cases, international projects have enabled new studies to take place – for example, collaboration with new partners within the POOL project has led to virtual collaboration being tested. Moreover, the projects that take place inform one another – experiences on the POOL project were utilised in a different context to facilitate collaboration with Vietnamese partners, for instance. The Innopreneurship 21 project allowed borderless education via virtual environments to be actualised.

To conclude, some remarks are offered about the lessons learnt via international collaboration:

1. Building a partner network requires individuals to make personal contact with partners and to work actively to bring about collaboration. One way in which to expand forms of collaboration beyond student exchanges is to identify one partner HEI for each degree programme. Systematic and regular visits between teachers on the collaborating degree programmes could enable the mutual development of education programmes and may even enable facilitate the creation of joint degree programmes. An experimental joint degree programme was developed between Kemi-Tornio and IESN in 2007; unfortunately, this programme did not succeed. Another method of collaboration involves creating and maintaining active partnerships based on mutual interests; in many ways, a large number of partners is not essential. Further, it should be asked whether or not all the possibilities available are being utilised effectively. For example, our engineering education department joined the international CDIO network in 2011. This network has a lot to offer in the context of internationalisation, all of which ought to be exploited to its fullest extent.
2. International education opens up new possibilities for developing the field of engineering education as a whole. Partners become familiar with new cultures, and international degree students challenge staff to review procedures and material. Language skills and cultural awareness become essential aspects of daily work at an internationalising organisation. Unfortunately, we did not succeed in integrating international degree students into our region very well, which was due in part to barriers created by the Finnish language. Furthermore, the closing of the international degree programme in 2008 had some negative effects. The lack of courses taught in English led to a decrease in incoming exchange students. To tackle this problem, it was decided that the curricula for all the degrees at Kemi-Tornio University of Applied Sciences would be revised in 2012–2013 so that each programme had to offer 30 ECTS in international studies from autumn 2013. The policy has remained in place since the founding of Lapland University of Applied Sciences. As such, student exchanges have begun to increase once more, albeit gradually, and the concept of ‘internationalisation at home’ has been reintroduced. Additionally,



when the international degree programme ended, the institution lost a number of staff members and their expertise. As a result, the operating environment was no longer as international as it used to be. Fortunately, the arrival of different groups of exchange students each semester brings different cultural influences into the institution.

The process of internationalisation has enabled the development of competence in various areas. Teaching in English is challenging for staff members, but it also brings with it the confidence to communicate in a foreign language. Of course, the maintenance of international contacts and a partner network has become more demanding because the context does not exist anymore. Here, an important question needs to be posed: how can we make sure that the competencies and knowledge developed during these processes are not totally lost?

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