

# Chapter 12

## Engineering and Information Technology: Challenges and Opportunities for Exchange Studies

**Shanton Chang**

*The University of Melbourne, Australia*

**Martina von Imhoff**

*Technische Universität München, Germany*

**Rikke Ilona Ustrup**

*IT University of Copenhagen, Denmark*

### ABSTRACT

*Students in the Engineering and Information Technology (IT) field are statistically less mobile than in many other disciplines. This has been documented across Australia, Europe and North America. While studies have shown the benefits of going abroad for a period of time, these messages seem to be lost on many Engineering and IT students. Using comparative case studies between/among various Universities, this chapter outlines and explores the challenges of trying to encourage more of such students to go abroad. Challenges include: (1) student concerns; (2) degree structure and program limitations; and (3) faculty buy-in. This chapter outlines three cases where strategic and operational actions have been taken to mitigate identified challenges. Best practices include the identification and introduction of 'mobility windows' in curricula in cooperation with faculty, having a clear management framework and performance indicators and achieving faculty buy-in.*

### INTRODUCTION

*Engineering is a global enterprise. Is it not uncommon for engineers to work on multi-national teams designing products which will be manufactured in one part of the world (e.g., Asia) to be sold in another part of the world (e.g., Europe and North America). (Parkinson, 2007, p. 1)*

DOI: 10.4018/978-1-5225-0169-5.ch012

Professional Engineering and Information Technology (E&IT) associations across the world, recognise that the structure and nature of their work is global. It is not unusual for E&IT projects to take on multinational suppliers, team members and collaborators. Hence, the need for global skills is well recognised and increasingly prioritised by employers. Yet, researchers and practitioners in Study Abroad and Exchange (SAEX) have continued to note the lack of participation from E&IT students in global mobility programs (Berkey 2010; Parkinson, 2007; Christensen, Doerr & Adam, 2014). While recognising the limitations in numbers, Christensen, Doerr and Adam (2014) suggested that Higher Education Institutions (HEIs) are starting to strategise around improving the mobility of E&IT students with some gains in numbers. Yet, despite the efforts of study abroad and exchange professionals within universities, internationally, the numbers continue to be modest.

This chapter recognises the success of E&IT SAEX programs should not be seen only from the perspective of an increase in numbers of students going abroad. However, it is one key indicator of the level of acceptance from faculty and students members. The authors also argue that there is a clear interaction between/among recognising the challenges, strategies to mitigate identified challenges, providing incentives, attractiveness of the programs on offer, changing faculty and student attitudes, and an increase in the number of learners taking part. Therefore, this chapter explores the challenges that have been previously highlighted in both practitioner forums and the literature, as well as discussing ways forward. Using the cases of Technische Universität München (TUM), The University of Melbourne (UOM), and IT University Copenhagen (ITU), this chapter will show how these different institutions have developed some key strategies and practices at the departmental and central level. The close interaction of international faculty, coordinators and advisors, is critical to the success in increasing mobility and enriching programs.

## **Background**

Parkinson (2007) provided a detailed summary of the different formats of SAEX for students with a focus on Engineering programs. Broadly speaking, however, this chapter classifies these programs according to their focus and timing.

The focus of the program refers to whether it is coursework based, research based or an internship. Parkinson's (2007) survey of American HEIs found that the majority of programs were focused on coursework, where students take courses/subjects at other universities for credit back home. This is still the dominant focus of most exchange programs. A smaller number of programs were field trips or internships, where students have the opportunity to interact with industry partners overseas. It is unclear however, if these internship and field trips accrued transferable credits in each instance. Therefore, it is posited here that these would include both 'for credit' and 'not for credit' programs. The third focus was research based programs, which was a minority of the programs in Parkinson's (2007) sample of American HEIs. Only four institutions in that sample identified research based programs (University of Dayton, MIT, Syracuse, and Worcester Polytechnic), with varying success.

Timing simply refers to whether it is a program that is semester- or year-long or a short-term program that is eight weeks or less (Kehl & Morris, 2008). There has been research that debates the effectiveness of different types and length of mobility experiences (Chieffo & Griffiths, 2004; Davidson, 2010; Kehl, 2005). The efficacy of each type of mobility program is likely to be dependent on the desired outcome and competencies for each program. For example, Davidson (2010) found that longer term exchange provides better acquisition of language skills. However, the desired outcomes of E&IT programs may be

23 more pages are available in the full version of this document, which may be purchased using the "Add to Cart" button on the publisher's webpage:  
[www.igi-global.com/chapter/engineering-and-information-technology/164123](http://www.igi-global.com/chapter/engineering-and-information-technology/164123)

## Related Content

---

### Science, Technology, and University Outreach as a Tool for Regional Transformation

B. Pandu Ranga Narasimharao (2017). *Handbook of Research on Science Education and University Outreach as a Tool for Regional Development* (pp. 1-10).

[www.irma-international.org/chapter/science-technology-and-university-outreach-as-a-tool-for-regional-transformation/176958](http://www.irma-international.org/chapter/science-technology-and-university-outreach-as-a-tool-for-regional-transformation/176958)

### Engaging Inclusive Excellence: Creating a College With an Equity Mindset

Elena Sandoval-Lucero, Tamara D. White, Derrick E. Haynes, Quill Phillips, Javon D. Brame and Kathryn A. Sturtevant James (2017). *Cultural Awareness and Competency Development in Higher Education* (pp. 40-60).

[www.irma-international.org/chapter/engaging-inclusive-excellence/177453](http://www.irma-international.org/chapter/engaging-inclusive-excellence/177453)

### Assessment of Theses in Design Education: Conceptualizing a Co-Creative Process for Grading by Automated Criteria Evaluation

Nina Svenningsson, Montathar Faraon and Victor Villavicencio (2021). *International Journal of Innovative Teaching and Learning in Higher Education* (pp. 1-17).

[www.irma-international.org/article/assessment-of-theses-in-design-education/294567](http://www.irma-international.org/article/assessment-of-theses-in-design-education/294567)

### Outbound Mobility and Students' Decision Making Process: A Case of India

Rashim Wadhwa (2016). *Global Perspectives and Local Challenges Surrounding International Student Mobility* (pp. 36-52).

[www.irma-international.org/chapter/outbound-mobility-and-students-decision-making-process/141965](http://www.irma-international.org/chapter/outbound-mobility-and-students-decision-making-process/141965)

### From University to the Labour Market: Assisting Students Through Personal Career Maps

Elena Ramona Richiteanu-Nastase and Monica Elisabeta Paduraru (2024). *Preparing Students From the Academic World to Career Paths: A Comprehensive Guide* (pp. 186-205).

[www.irma-international.org/chapter/from-university-to-the-labour-market/345269](http://www.irma-international.org/chapter/from-university-to-the-labour-market/345269)