

# Integrating International Students into Computer Science Programs: Challenges and Strategies for Success

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## ABSTRACT

International students are an important and desirable constituent in most computer science programs. These students help to enrich the programs, bring new perspectives into the classroom, diversify the student population, globalize the curriculum, broaden the perspective of domestic students, and generate revenue for the host institution. Each of these characteristics is desirable and increasingly important in today's highly connected world and job market. Most institutions invest resources in attracting international students and provide orientation sessions for them on arrival to help acclimate them to the new environment and to introduce them to other students. There are often clubs to provide support groups and social functions to help them meet and make friends with domestic students. However, challenges for international students, and for the faculty teaching them, persist at many institutions despite these efforts to help international students deal with culture shock, differing academic expectations and teaching methods, and different attitudes toward issues such as plagiarism.

## CCS Concepts

• **Social and Professional topics** → **Adult education, computing education programs**

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## Keywords

International students; computer science education; computing; information systems; information technology; information and communication technology.

## 1. INTRODUCTION

The goal of this working group is to bring together of international faculty to discuss the challenges faced at various institutions and to explore those challenges and identify strategies to ameliorate them.

Participants in the working group come from diverse institutions with diverse missions. Several of the participants have been international students themselves. Each institution, however, attracts international students into their graduate and/or undergraduate programs, and must face and address the challenges presented as a result. These challenges are faced by the students who travel to the host country in order to pursue a degree, but also by the faculty and administration at these institutions. These challenges persist despite the resources invested by institutions to create and provide an inclusive and supporting environment for the international students. Support comes in many forms including clubs, social events, orientation sessions, and regular meetings with support staff in an attempt to acclimate the students in their new environment.

Faculty at many institutions are not provided any training on the challenges facing international students, or on their cultural backgrounds or norms. As a result, classroom challenges arise. Often these are born from a cultural misunderstanding, or simply a lack of knowledge of the student's home countries educational system.

## 2. THREE SAMPLE INSTITUTIONS

### 2.1 Northwest Missouri State University, USA

Northwest Missouri State University (NWMSU) is a regional university located in Maryville, MO. It services 6,530 students of which 10% are international students. The School of Computer Science and Information Systems offers a number of degrees at the undergraduate and graduate level. These include degrees in Computer Science, Information Systems, Information Technology, and Data Science. Programs are offered at the main campus or at regional offices in St. Joseph and Kansas City.

The undergraduate Computer Science program attracts a number of international students primarily from Nepal, while the graduate degrees in Applied Computer Science, and Information Systems are almost entirely international students almost exclusively from India. Each of these programs presents its own challenges in terms of attracting, and retaining international students. However, the challenge of integrating the students into the classes, and into the academic community, is common across the programs and the locations where they are offered. Several initiatives have been tried over the years including regular, required advising sessions for students where topics ranging from exam study habits to plagiarism to expectations in a US academic environment are covered. Despite such efforts, challenges persist.

### 2.2 Eastern Institute of Technology, New Zealand

Eastern Institute of Technology (EIT) has three campuses in New Zealand. One of the campuses, based in Auckland, is exclusively for international students studying in the areas of Business, Applied Management and Information Technology. To gain entry to the programs the students must have a degree from their home country and meet an English language requirement. International students can also study the same Business, Applied Management and IT programs on the main campus in Napier where they are integrated with the domestic students.

There are many challenges for these new students and the faculty have implemented different strategies to support the students however they have not all been as successful as they would have liked. A new strategy will be implemented in semester 1, 2017 and this will be compared to the previous three strategies to gauge the success. Focus groups and surveys will be held with graduating students to better understand the issues and then design interventions that will be of interest and importance to the wider Computer Science education community.

International education is the fourth largest export earner in New Zealand and the country has an impressive international reputation in providing education for these students. Investigating comparative educational institutions and different countries strategies will be of significant importance for the support and guidance for these students.

### 2.3 University of Kent

The University of Kent (UoK) is based in Kent, England. The main campus is situated in Canterbury and overlooks the historic city. It services over 15,800 students. The Medway campus presents professionally focused programs for 4,000 students in renovated listed buildings on Chatham's Historic Dockyard. Overall 149 nationalities are represented. There are also a number of smaller satellite postgraduate campuses throughout Europe: Athens, Brussels, Paris and Rome. 27% of our student population are international with 11% from the EU. Also, 37% of our teaching and research staff come from outside the UK.

Kent is consistently voted one of the top UK universities in international student satisfaction surveys and has established a number of support services to benefit its international population, with academic help, personal support and social events tailored to those studying away from their home country. More still needs to be done to help attract and retain these students.

Students whose first language is not English are required to have an appropriate grade/score in an approved English language examination for entry to the undergraduate degree programs we offer. Students whose English is below the required standard, or whose school leaving qualifications are insufficient for direct entry are encouraged to register for the International Foundation Program (IFP), which facilitates degree-level entry into almost all of our undergraduate programs. It provides a year's preparation in academic subjects, study skills and English language.

The School of Computing offers postgraduate research degrees and undergraduate taught courses at both UK campuses with more business focused courses based at the Medway campus. The undergraduate Computer Science (CS) program runs at the Canterbury campus and has recently begun offering a module on the IFP as a means to improve international recruitment levels. A taught Masters CS course at the same campus attracts students from around the world but particularly French students, who comprise approximately half the cohort.

## 3. CONCLUSION

While these three sample institutions are given here just as example, they give an overview of the current situation. The three examples also show that the challenges are not unique to one host country, or one source country, but rather are a shared challenge faces by computing programs with significant international populations. It is envisaged that with many other working group participants a wider perspective on international students will be gained. The challenges that these students faced will be addressed and different strategies will be developed to help universities support and integrate their international students into their computer science programs. This will be a valuable resource of importance to the computer science educators worldwide.