

IAF SPACE EDUCATION AND OUTREACH SYMPOSIUM (E1)  
On Track - Undergraduate Space Education (3)

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DESIGNING EDUCATION AND OUTREACH PROGRAMS TO SUPPORT UNDERGRADUATE  
STUDENTS IN PERIPHERAL AND ISOLATED LOCATIONS

**Abstract**

Universities, government agencies, and space corporations all take part in exposing undergraduate students to the space industry through various outreach programs. The most prominent of these are projects and challenges proposed to student design teams; popular examples in Canada include: (1) the Canadian CubeSat Project (CCP) by the Canadian Space Agency (CSA), which allows student teams to design and launch a 3U-CubeSat into orbit; and (2) the Launch Canada Challenge (LCC), a national competition for teams to design, launch, and recover sounding rockets. With representation from all 13 provinces and territories, students from across the country have demonstrated interest in developing Canada's space industry. However, students outside major space hubs – the provinces of Quebec and Ontario – have difficulty advancing to the next stage in their undergraduate careers: obtaining internships, CO-OP work terms, or starter jobs within the space industry.

The primary purpose of this paper is to characterize the challenges faced by undergraduate students in peripheral parts of the country, and communicate these lessons learned to universities, government, and industry. Evidence is drawn from interviews with undergraduate students, hiring statistics, and personal anecdotes. The secondary purpose is to explain the positive benefits associated with improved engagement with peripheral areas in the country, accomplished through equitably-distributed engagement efforts. Some of these benefits include improved diversity within the workplace, stronger connections with other industries, access to a larger hiring pool, and improved innovation and productivity. While this paper discusses Canada's undergraduate space industry, similar issues exist within the United States and elsewhere in the world (to be confirmed by further research).

The progression from participation in student-run design teams to obtaining relevant internships is a crucial step towards careers in the space industry. Upon their return from these jobs, the technical experience and insider "tips and tricks" that experienced students pass on to their peers fosters the growth of undergraduate space programs. Facilitating the transition from participation in outreach programs to internship opportunities for peripheral students will ensure that the completion of a Bachelor's degree does not mark the end of their contributions to the space community.