This special issue of the Foundation for Student Science and Technology Journal is very meaningful to me as I have been mentoring secondary school and university students for over twenty years. This special issue contains papers produced by secondary school students who participated in Student Science and Technology Online Research Co-op Program. Although some secondary school students have always found ways to do research and have found mentors, the Online Research Co-Op Program provides another avenue into this experience that opens up this experience to students regardless of their location. Even as I write this, I am preparing to speak with a new co-op student, however this time, the student and I will never meet face-to-face. The Online Research Co-Op is a wonderful opportunity for secondary school students who are planning post-secondary studies in a range of science and social-science disciplines. I speak from experience as I also run a similar program for second-year students at the University of Toronto. When students reflected on the skills that they developed as part of the research co-op, these skills included independent study, scientific writing, critical reading and problem solving. Most of the students felt they were better prepared for post-secondary studies. They all noted the challenging or difficult nature of the articles that were assigned as part of the research.

My own experience with a research co-op student this year echoes these comments. When we started, we agreed on a subject area of mutual interest. I assigned some challenging reading material, some of it written for professional economists and geographers. The student was then able to use my software to produce a simulation of the material in the readings, which was novel, both in its application of the software and in its ability to reproduce theoretical results.

I began working with my first secondary school students in 2004. At first I was told not to expect too much, and not to assign too much. Not surprisingly, the results matched this advice. I was motivated to begin working at a higher level with secondary school students after attending a few regional science fairs. I was astounded by the creativity and the quality of the work that I saw, and a few of the students that I met at these fairs became my own students the following year. This was no longer an “expect little, assign little.” Rather, it was “expect real contributions to my program and assign the work required for those contributions”. I find, and continue to find, that secondary school students can participate in university-level research programs and make valuable contributions to the research.

The Online Research Co-Op will increase the scientific literacy of these participants. Prior to the placement, most of the mentors rated their student’s scientific literacy as average. After the placement, the lowest category was “somewhat advanced” and most students were rated as advanced in scientific literacy.

The papers in this special issue represent the potential for secondary school students to do research across a range of areas and communicate it to an academic audience. These papers are the result of a commitment made by both students and mentors to research. Although they stand on their own merit, if you are in secondary school, regardless of your career objectives, I hope that you are motivated to participate in a future tranche of co-op students. The complexity of tomorrow’s challenges will require a scientifically literate population to weigh the evidence and make the necessary decisions.

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Dr. Bass received his PhD in Geography from Penn State University, in 1989. He has been working on green infrastructure research since 1995, and was one of Canada’s early pioneers in green roof and wall research. Dr. Bass also has a long history in the field of climate change scenarios, leading the Weather Generator Project - an international scientific research effort to improve climate change scenarios, managing the Canadian Climate Change Scenarios Network - an on-line source for climate model output for Canada, and as a member of the Intergovernmental Panel on Climate Change (IPCC) task team that was responsible for distributing and working with climate model output.

Dr. Bass is an Adjunct Professor at University of Toronto in the School of the Environment and the founder and Director of the University Research Experience in Complex Systems (URECS). URECS brings secondary school and university students together to explore the interaction between environmental change and health, and also offers workshops on the simulation of environmental change and health, green infrastructure, networking and the Prisoner's Dilemma.

Dr. Bass was the recipient of the Lifetime Achievement Award for Green Roof Research, and was one of the scientists on the United Nations’ Intergovernmental Panel on Climate Change which shared the 2007 Nobel Peace Prize.