



Undergraduate Research Initiative *Report 2017*



“Rubbing elbows with educators, experts and beamline scientists, seeing a billion dollar facility and experiencing the world of research science first hand gave me insight into how badly I wanted to be involved in furthering the research that could actually be making a difference.”

“I’ve been bragging about this project to everyone I know, and will probably continue to do so for quite a while.”

“I would take this lab over and over again...”

“It gave us a chance to take control of our studies and foster our own learning environment.”

“I learned a lot about group work whether it was time management or responsibilities, and I gained further skills in my public speaking, as well as referencing and citing.”

“I was excited about the beamline, it was my first time I felt I was a scientist.”

UNDERGRADUATE RESEARCH INITIATIVE

Report 2017



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Acknowledgments

The goals achieved and reported here are a result of the efforts of faculty collaborators, research coaches, peer mentors, and Undergraduate Research Initiative staff across the Offices of the Vice-President Research and the Vice-Provost Teaching and Learning.

Introduction

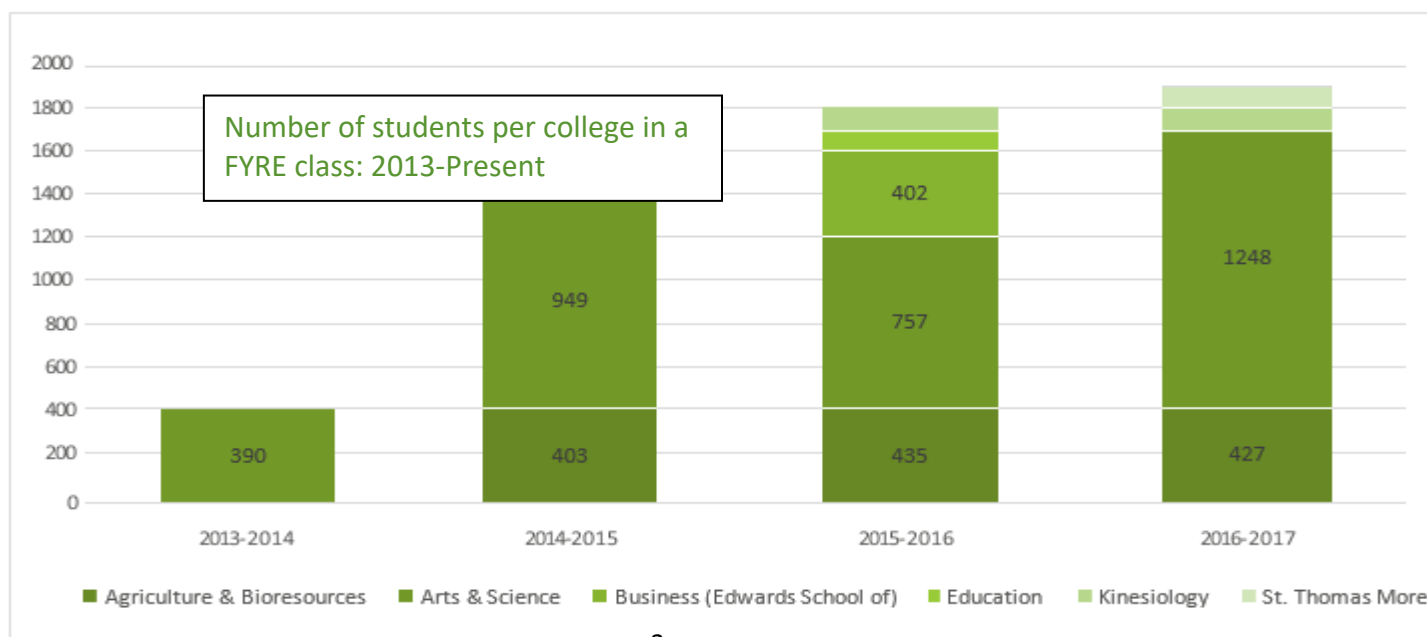
Over five years ago, the University of Saskatchewan set an ambitious goal to have “Established a baseline and increased by 50% the number of undergraduate students participating in research,” as indicated in the third integrated plan **Promise and Potential 2012-2017**.

This goal has been realized through targeted investments made by the **Offices of the Vice-President Research (OVPR)** and **Vice-Provost Teaching and Learning (VPTL)** – toward curriculum innovation, program evaluation, funding and administrative backing, and research assistantships.

This report looks across the past three years, from the pilot phase in 2013 to the current semester, 2017. It is evident that across this time the culture of undergraduate research at the University of Saskatchewan has expanding: from 350 course-based participants in the pilot to over 2200 in 2016-17, and 260 student recipients of a funded Undergraduate Student Research Assistantship (USRA).

First Year Research Experiences (FYRE)

The number of students engaging in and learning about the culture of research at the U of S from the beginning of their degree continues to increase through the implementation of FYRE classes. These are made possible with collaborating faculty, who, with support provided by research coaches and help in curriculum design, are supported to include a course-based project as part of a first year class section. Resources are allocated to support early research experiences, and in so doing, the U of S is building students’ skills and invigorating faculty engagement with the **Scholarship of Teaching and Learning**.



CURRENT COLLABORATING CLASSES AND COLLEGES

There have been six colleges involved with offering FYRE over the past three years: Agriculture and Bioresources, Arts & Science, Education, Edwards School of Business, Kinesiology, and St. Thomas More. The latter was a new addition for the 2016-2017 academic year.

Since the pilot in 2014, collaborations have included some special programming such as the College of Arts and Science Aboriginal Student Achievement Program (ASAP), and the College of Agriculture and Bioresources FYRE on the Beamlines program, a joint venture with the Canadian Light Source (CLS). [FYRE on the Beamlines](#) was piloted in Environmental Science 110 in term one of 2016/17, and gave participating undergraduate students the unique opportunity to complete a research project using the IDEAS Beamline at the CLS.

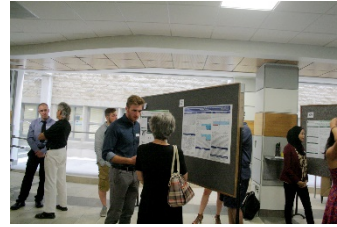
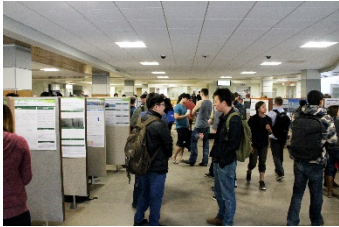
2016-2017 Collaborating Classes per College

College of Agriculture and Bioresources		
AGRC 111: <i>Sustainable Plant and Social Management</i> Dr. Melissa Arcand & Krista Wilde 271 students	ANBI 110: <i>Introductory Animal Bioscience</i> Dr. Natacha Hogan & Dr. Andrew Van Kessel 109 students	EVSC 110: <i>Renewable Resources and Environment</i> Dr. Colin Laroque 47 students
College of Arts and Science		
ASTR 104: <i>Astronomy of Planets</i> Dr. Daryl Janzen 126 students [online]	ASTR 113: <i>Descriptive Introduction to Stellar Astronomy</i> Dr. Daryl Janzen & Stan Shadick 40 students	ENG 110: <i>Literature and Composition</i> Dr. David Parkinson 92 students
ENG 110: <i>Literature and Composition</i> Dr. Kathleen James-Cavan 65 students	GEOG 120: <i>Introduction to Global Environmental Systems</i> Dr. Alec Aitken 136 students	GEOG 120: <i>Introduction to Global Environmental Systems</i> Dr. Xulin Guo 125 students
GEOG 130: <i>Space, Place & Society: Introduction to Human Geography</i> Dr. Paul Hackett 129 students	GEOG 109: <i>The Earth and Life Through Time</i> Dr. Gabriela Mangano 30 students [ASAP]	HIST 135: <i>History Matters: Sex and Population Control</i> Dr. Mirela David 70 students
HIST 175: <i>Prairie Life Stories: Public History for Social Change</i> Mandy Fehr 25 students	INTS 102: <i>Studying in Science Essential Skills and Strategies</i> Dr. Sandy Bonny 30 students [ASAP]	SOC 112: <i>Foundations in Sociology Social Construction of Everyday Life</i> Victoria Mowat 310 students
WGST 112: <i>Introduction to Women's and Gender Studies</i> Dr. Mirela David 64 students	WGST 112: <i>Introduction to Women's and Gender Studies</i> Dr. Emily Snyder 31 students	
College of Kinesiology		St. Thomas More College
KIN 122: <i>Social Behavioural Foundations of Physical Activity</i> Serene Kerpan 124 students	CMRS 110: <i>The Graeco-Roman Tradition – Evolution and Reception</i> Dr. Zachary Yuzwa 81 students	

Student numbers are based on enrollment data following the deadline for *registration changes*.

PUBLIC DISPLAYS OF FYRE

The Undergraduate REsearch Initiative supports faculty who want to offer students an opportunity to share their projects with the campus community. In addition to research coach and administrative support, the **Experiential Learning Fund**, available through the Gwenna Moss Centre for Teaching Effectiveness (GMCTE), offers up to \$250,000 annually to fund innovative academic projects across campus. In some instances, this fund has been used to support FYRE, including the 2016-2017 showcases: Agriculture and Bioresources FYRE Poster Fair (term 1) and the Geography 120 Poster Symposium (term 2).



THE RESEARCH ARC

Each FYRE project aims to have students involved with the three stages of the **research arc** by having the students:

- i. craft a research question;
- ii. investigate the question; and
- iii. share the results.

This approach introduces students to the basic cycle of professional research, and allows them to learn through engagement at each stage.



FACULTY ON FYRE

Since the inception of FYRE in February 2013, current and interested faculty collaborators are welcomed to events offered each term. On October 24th, 2016, the Initiative hosted the Fall Faculty Event, “Undergraduate Research: Collaborate, Innovate, Activate.” Through these facilitated events, faculty exchange resources, ideas, and experiences, and are welcomed to participate in the **Scholarship of Teaching and Learning** or to connect around related sub-topics and themes such as research in **Science Technology Engineering and Math (STEM)**.

FYRE PROGRAM EVALUATION TO STUDENTS

Following a pilot phase wherein survey tools were designed and administered to three participant groups including faculty, research coaches, and students, the initiative has continued to measure progress and outcomes. In 2016/2017 the in-class student questionnaire was administered in all participating classes along with a research coach focus group in December 2016. Online surveys for new faculty collaborators and debriefing sessions keep the Initiative growing and improving. This year, third year “check-in” surveys were added to find out how students who first experienced FYRE reflect on the experience and its value. Students in third year kinesiology, environmental science, and animal bioscience classes responded to the call to reflect and share their opinions. The results indicate that students believe FYRE is a valuable part of the first-year experience.

Research Assistantships

OVPR USRA MATCHING GRANT

In the summer of 2016, 81 **Undergraduate Student Research Assistantships (USRA)** were awarded to undergraduates hired to work on faculty-led research, scholarly and artistic work. Each summer, USRA's are awarded to academic units, and are **matched or superseded** by the faculty supervisor or college. These awards give students the opportunity to complete hands-on research, develop transferable skills, and highlight the potential for graduate school and a research career.

Number of student recipients per college/school, 2014-2017			
Agriculture and Bioresources	17 students	Law	7 students
Arts & Science	149 students	Library	3 students
Dentistry	7 students	Medicine	10 students
Education	23 students	Nursing	29 students
Edwards School of Business	24 students	Pharmacy and Nutrition	12 students
Engineering	41 students	Environment and Sustainability	8 students
Johnson Shoyama School of Public Policy	5 students	Public Health	5 students
Kinesiology	16 students	Veterinary Medicine	7 students
Total = 363 students			

"I did not know what to expect going into the event, but I left feeling more proud of the research I had completed over the summer, more knowledgeable about the different kinds of research happening at the U of S, and more inspired to continue with academic research in my future."

– 2016 USRA Recipient

"Excellence cannot be achieved alone. Behind every Olympic athlete is a coach; behind every researcher is a mentor. Whether this was a supervisor, a grad student, or a fellow undergraduate, someone was likely there for you to turn to for guidance and support."

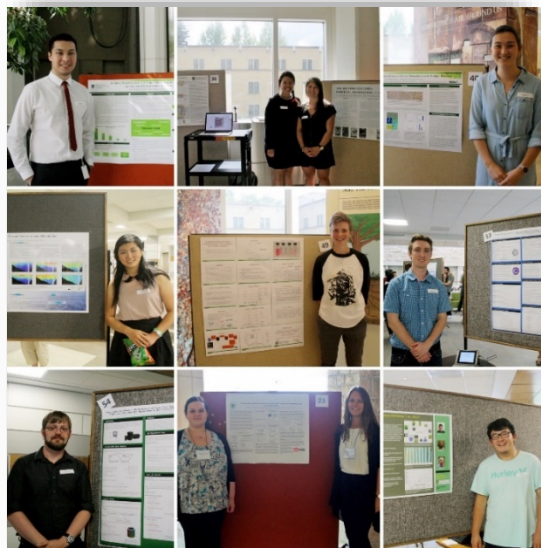
–2016 USRA Event Guest Speaker

Building and Promoting a Culture of Research

DISSEMINATION

The Initiative is involved with supporting two main, campus-wide events throughout the year and an on-line peer-reviewed journal as well as co-hosting panels in conjunction with the Aboriginal Student Achievement Week festivities. Events and the journal allow students from multiple disciplines to showcase their research, scholarly and artistic works.

USRA Summer Social & Poster Competition Students' contributions to research in the summer 2016 were showcased at an event for faculty supervisors and student recipients of USRAs awarded by the **Natural Sciences and Engineering Research Council (NSERC)** and the **Office of the Vice-President Research (OVPR)**. This was a combined effort between the hosts wherein the number of submissions doubled from the previous year and various students participated in the creation of vlogs posted at [Usask YouTube channel](#).



USSU Undergraduate Project Symposium

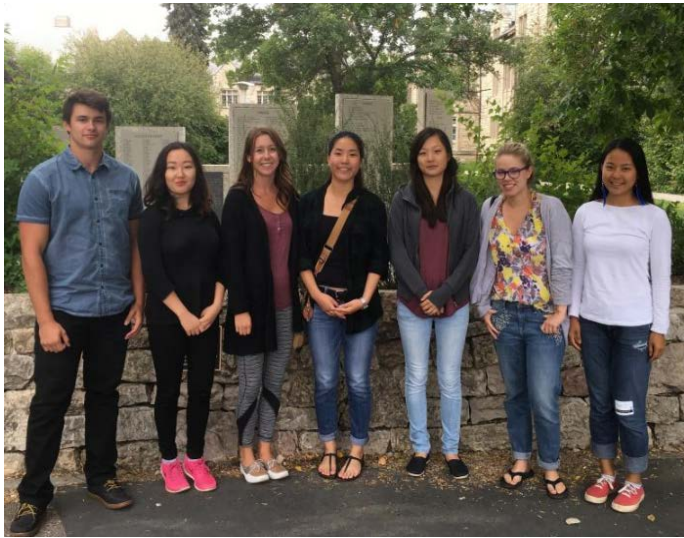
The **University of Saskatchewan Student Union's Undergraduate Project Symposium** is an adjudicated event at which invited faculty and staff judge students' submissions of research, scholarly and artistic work. This pan-disciplinary event accepts submissions from undergraduate students interested in showcasing their effort. The 5th annual Symposium took place in January 2017, and with 45 displays, nearly doubled in size from the previous years. Prizes are awarded to the top three submissions in both science and engineering, and in social sciences, humanities, and fine art. Viewers were encouraged to vote for their favourite project. A "Signature Areas," prize is also awarded for a project reflective of one of the University of Saskatchewan's six Signature Areas.

R(Ex)³ Panels

Research Exchange, Expertise and Expose events are panels that include an undergraduate researcher alongside a faculty and graduate student researchers who share their experiences. The 2017 event was focused on sustainability and was offered in celebration of Aboriginal Achievement Week with co-hosts, the Office of Sustainability and Student Learning Services, Academic Transitions, University Library.

University of Saskatchewan Undergraduate Research Journal (USURJ)

Following the success of the 3-year pilot, the **Undergraduate Research Initiative** committed to providing support for an additional 3 years, from 2016-2019. Furthermore, the Initiative brokered a **graduate student fellowship** to partially fund the editor-in-chief. Since the journal's launch, 3 volumes and 5 issues have been produced, giving 71 student authors, 79 undergraduate editors, and 8 graduate editors the opportunity to engage in publishing peer-reviewed research and art.



PAL UNDERGRADUATE RESEARCH WORKSHOPS

Since 2015, 19 exemplary students from a range of majors and colleges have taken on roles as Undergraduate Research Peer Mentors through the Peer Assisted Learning Library Program. These students design and co-facilitate workshops open to the entire student population. Overall, Peer Mentor volunteers have delivered workshops to over 160 students participants ultimately building skills, sharing information on opportunities and resources, and contributing to a culture of research across disciplines and years of study.

Workshop Topics have included:

- Getting Started in Undergraduate Research
- Being Research-Minded in Class
- How to Approach a Professor
- Transferable Skills: From Research to Workplace and Vice Versa
- Presenting your Research
- Applying for Funding
- How to Create a Research Poster
- One Health: Problem-Solving from Any Discipline

SOCIAL MEDIA

The initiative maintains an active on-line presence which expands the reach research beyond the campus borders and class0-time. Each platform brings a new advantage, from making information readily accessible to students, sharing stories of undergraduate researches, thereby reaching larger audiences. Social media platforms have been added each year and engage students, campus colleagues, faculty, funding agencies, and counterparts at other institutions. These outlets have proven useful for communicating with undergraduate researchers, scholars, and artists and making the Initiative's presence and aims better known and more meaningful.



 research.usask.ca/undergraduate/

 U of S Undergraduate Research Initiative

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