TLEF Project – Final Report

Report Completion Date: (2019/02/28)

1. PROJECT OVERVIEW

1.1. General Information

Project Title:	Communicating Across the Curriculum in UBC Science		
Principal Investigator:	Jaclyn Stewart		
Report Submitted By:	Jaclyn Stewart		
Project Initiation Date:	April 1, 2016	**Project Completion Date:**	November 15, 2018
Project Type:	☐ Large Transformation ☒ Small Innovation ☐ Flexible Learning ☐ Other: [please specify]		

1.2. Project Focus Areas – *Please select all the areas that describe your project.*

☒ Resource development (e.g. learning materials, media)

☐ Infrastructure development (e.g. management tools, repositories, learning spaces)

☐ Pedagogies for student learning and/or engagement (e.g. active learning)

☐ Innovative assessments (e.g. two-stage exams, student peer-assessment)

☒ Teaching roles and training (e.g. teaching practice development, TA roles)

☒ Curriculum (e.g. program development/implementation, learning communities)

☐ Student experience outside the classroom (e.g. wellbeing, social inclusion)

☐ Experiential and work-integrated learning (e.g. co-op, community service learning)

☐ Indigenous-focused curricula and ways of knowing

☒ Diversity and inclusion in teaching and learning contexts

☐ Open educational resources

☐ Other: [please specify]

1.3. Project Summary

In April, 2016, our Writing Across the Curriculum Program added a "+" to our title, to signify our transition to incorporate non-traditional communication assignments into our ongoing selection of workshops and resources (made available through Science Writing Resources for Learning (ScWRL), which are already being used in SCIE 113, SCIE 300, BIOL 140, and other courses).
Since then, Writing Across the Curriculum + (WAC+) has supported faculty and teaching assistants using academic writing assignments in their science courses by also supporting non-traditional communication assignments, such as blogging, producing podcasts and videos, and writing press releases, and implementing oral presentations or oral exams in classes. We met the objectives identified in our proposal:

- Facilitate the discussion of best practices in designing, implementing, assessing, and evaluating student assignments that incorporate oral communication and non-traditional communication methods as learning tools for students.
- Support faculty and TAs as they use these methods and respond to student work through flexible, multi-modal resources.
- Facilitate the strategic use of existing campus resources and online resources, including relevant best-practice examples.
- Compile reference documents on:
    - The design, implementation, assessment, and evaluation of multimedia projects in science, including how to decide if multimedia assignments are a good choice for your course and selecting the right format to best support student learning.
    - The design, implementation, assessment, and evaluation of oral communication assignments or exams in science.
    - The importance and relevance of communication across the curriculum.

1.4. Team Members – *Please fill in the following table and include **students**, undergraduate and/or graduate, who participated in your project.*

Name	Title/Affiliation	Responsibilities/Roles
Jaclyn Stewart	Senior Instructor, Department of Chemistry	Project co-lead
Eric Jandciu	Strategist, Teaching & Learning Initiatives, Science Centre for Learning and Teaching	Project co-lead
Meghan Aubé	Formerly: Program Manager, Centre for Writing and Scholarly Communication Currently: Director, Academic Services, UBC Extended Learning	Project co-lead
Shannon Obradovich	Program Coordinator, Writing Across the Curriculum + Program; Graduate Student	Program management; workshop development; consultations; etc.
Loren Gaudet	Program Assistant and Evaluator, Writing Across the Curriculum + Program; Graduate Student	Assistant to program coordinator; Program evaluation
Grace Lee	Program Coordinator, Centre for Writing and Scholarly	Podcast development

	Communication; Undergraduate Student	
Lacey Samuels	Professor, Department of Botany	Advisory Board
Isobel Mouat	Graduate Student	Advisory Board
David Oliver	Instructor, Department of Microbiology and Immunology	Faculty Liaison, Best Practices for Teaching Science Communication Symposium

1.5. Courses Reached – *Please fill in the following table with **past**, **current**, and **future** courses and sections (e.g. HIST 101, 002, 2017/2018, Sep) that have been/will be reached by your project, including courses not included in your original proposal (you may adapt this section to the context of your project as necessary).*

One of the primary services that we have provided on campus is educator workshops.

Currently, we offer six different workshops: Writing Assignment and Assessment Design; Providing Effective Feedback; Strategies for Student Success; Teaching Succinct and Accurate Science Writing; Teaching Oral Communication in Science; and Non-Traditional Communication Assignments. The following table indicates the workshop, the number of times each workshop was given, and the total number of attendees for the period of August 2015-August 2017:

Workshop	Times Held	Total number of attendees
Writing Assignment and Assessment Design	4	25
Providing Effective Feedback	10	86
Strategies for Student Success	3	26
Teaching Succinct and Accurate Science Writing	6	70
Teaching Oral Communication in Science	2	18
Non-Traditional Communication Assignments	1	5
Total:	26	230 (135 unique)

In addition to promoting discussion on best practices in teaching science communication through workshops and other discussion-based practices, WAC+ has also supported educators (faculty and TAs) through one-on-one consultations, classroom visits, and TA training.

Date	Educator	Department	Course	Topic
Sept 2015	Susan Hollingshead	EOAS	EOSC445	One-on-one consult regarding rubrics for 4th year special project course
Oct 2015	Cathy Nomme, Pam Kalas, Carol Pollock	Biology	BioTAP	Consult regarding Marking survival skills workshop; Also gave part of workshop at BioTAP
Nov 2015	Diane Srivastava	Biology	BIOL548I	Consult on tips on giving effective feedback, for peer review in grad scientific writing course

Jan 2016	Jean Francois	Microbiology and Immunology	MICB406	Concept mapping to help students organize ideas
June 2016	David Oliver	Microbiology and Immunology	JEMI+, JEMI Pearls	Input into the JEMI+/JEMI Pearls discussion for future methods
June 2016	Paul Lusina/Phillipe Kruchten	Electrical and Computer Engineering	Capstone Design Courses	How to find/train Tas to assess writing, instructional workshops on writing/communication for the undergraduates, curriculum development for the ECE program s in general
June 2016	Brett Van Poorten	Institute for the Oceans and Fisheries	New Graduate Program	Discussion of skills and courses/approach to development of a new graduate program
Aug 2016	Kathy Nomme	Biology	Biology Teaching Retreat	Provide feedback on new BIOL140 guidelines for student (terminology, figures etc)
Aug 2016	Benjamin Cheung	Psychology	TA Training	Prepare TA Training workshop on Effective Feedback
Sept 2016	Ninan Abraham	Biology/Botany	BIOL530	Succinct and accurate writing primer for graduate students (requested in-class, but too short notice)
Sept 2016	Elizabeth Gillis	Chemistry	TA Training	Providing effective feedback on writing assignments to senior TAs (need to modify more for lab reports in future perhaps)
Oct 2016	Kathy Nomme	Biology	BioTAP	Give section of workshop on effective feedback
Nov 2016	David Oliver	Microbiology and Immunology	MICB421/MICB447	Provide feedback on oral presentation guideline documents for his 4th year course
Jan 2017	Jackie Stewart	Chemistry	CHEM 300	Prepare TA Training workshop on Effective Feedback
July 2017	Parvin Bolourani	Microbiology and Immunology	PD	Give workshops to MI in July for Professional Development (open to all educators)

From October 2015 until November 2016, WAC+ facilitated a lunch and learn: a one-hour session on a specific topic (for example, how to reduce jargon in science writing, or teaching writing to large classes) with a guest speaker followed by a group discussion. Our guest speakers have come from the Faculty of Science, but also from Continuing Studies, Centre for Teaching Learning and Technology, Aboriginal Initiatives, and the Departments of English, Sociology and Psychology. The attendance at the lunch and learn sessions has numbered between 3 and 6 people from a variety of faculties.

Community of Practice: Lunch and Learn	Date	Guest Speaker(s)	Number of Attendees
How to Motivate Students to Get Help With Their Writing	Oct 2015	Meghan Aube	3
Using Writing in Large Classes	Dec 2015	Dr. Robin Young, Dr. Neil Armitage	4
Designing Effective Peer Review in Science Courses	Jan 2016	Dr. John Sherman, Dr. Peter Graf	N/A
Reducing Jargon in Science Writing	Feb 2016	Chris Balma, Jenna Zukswert	N/A
Using Writing to Learn (Low-Stakes Writing) in Science Courses	April 2016	Anka Lekhi, Dr. David Oliver	3
Encouraging Students to Proofread their Writing	May 2016	Dr. Carelin Brooks, Dr. Gisele Baxter	5
Teaching Writing and Communication to Multilingual Students	Oct 2016	Amber Shaw, Dr. Ashley Welsh	3
Student Peer Feedback	Nov 2016	Dr. Silvia Bartolic	3

Best Practices in Teaching Science Communication Symposium

The first "Best Practices in Teaching Science Communication Symposium" was held May 3, 2017, as part of the Centre for Teaching and Learning Technology's (CTLT) Spring Institute. Our newly recruited faculty liaison, Dave Oliver, was instrumental in both the innovation and organization of the Symposium.

To organize the event, the WAC+ team compiled a list of educators (primarily from Faculty of Science, but not exclusively) who were using innovative teaching techniques in their classroom. This list was generated through previous encounters at CoP Lunch and Learn Sessions, general networking, and word of mouth. Our team invited 10 participant-groups (as some were team-based teaching) to submit abstracts about their innovative teaching practices. We ended up with 9 unique presentations:

Presenter	Topic
Alice Campbell (SCIE 113 and Skylight)	Scaffolding writing assignments to teach written argumentation in SCIE 113
Judy Chan (Faculty of Land and Food Systems and CTLT)	Translating scientific knowledge for a global audience via Wikipedia and YouTube
Vishakha Monga and José Rodríguez Núñez (Department of Chemistry)	Oral communication as a means to enhance the in-lab learning experience
David Ng (Michael Smith Laboratories)	Game based learning in the STEM setting (or how to mix Pokemon and D&D into your pedagogy)

Anthony Paré (Language and Literacy Education)	Fine-tuning writing assignments across the curriculum
Rosie Redfield (Department of Zoology)	Editing Wikipedia: student projects that benefit everyone
Amber Shaw and Ashley Welsh (in absentia) (Academic English Program, Vantage College / CTLT, Skylight and Vantage College)	Strategies for enriching English language learners' writing and communication in the sciences
Sarah Woodward, Andrew Santos, Shervin Mortazavi (in absentia), and Kirstin Brown (in absentia) (JEMI, Department of Microbiology & Immunology)	JEMI-Methods: Creating a self-sufficient student-run instructional video series
Robin Young (Botany Department)	A novel tool for teaching students to read, interpret and communicate science: The Press Release

The round-table symposia are on-going and noted on our website: http://scwrl.ubc.ca/educator-resources/wac/symposium/

2. OUTPUTS AND/OR PRODUCTS

2.1. *Please **list** project outputs and/or products (e.g. resources, infrastructure, new courses/programs). Indicate the current location of such products and provide a URL if applicable.*

Product(s)/Achievement(s):	Location:
New Workshop: Non-Traditional Communication Assignments	http://scwrl.ubc.ca/educator-resources/wac/wac-educator-resources/
New Workshop: Teaching Oral Communication	http://scwrl.ubc.ca/educator-resources/wac/wac-educator-resources/
CTLT Institute Round-Table Symposia (we do this instead of the Lunch and Learn Community of Practice, now).	http://scwrl.ubc.ca/educator-resources/wac/symposium/
WAC+ Newsletter	

Date	Topic
Sept 2016	Resources for Student Success
Nov 2016	Working with Multilingual Students
Dec 2016	Using Student Peer Review
Jan 2017	Writing Assignment Design

	Feb 2017	Teaching Oral Presentations
	Mar 2017	Non-Traditional Communication Assignments
	Apr 2017	Helping Students Prepare for Final Exams (Guest Expert, Hansel Wu, Science Student Engagement Coordinator)
	May 2017	Sourcing Digital Content
	June 2017	Designing Authentic Writing Assignments
	July 2017	Game-based Learning (Guest Expert Dave Ng, Director of the Advanced Molecular Biology Laboratory)

2.2. Item(s) Not Met – *Please list intended project outputs and/or products that were not attained and the reason(s) for this.*

Item(s) Not Met:	Reason:
N/A	

3. PROJECT IMPACT

3.1. Project Impact Areas – *Please select all the areas where your project made an impact.*

☒ Student learning and knowledge

☐ Student engagement and attitudes

☐ Instructional team teaching practice and satisfaction

☐ Student wellbeing, social inclusion

☐ Awareness and capacity around strategic areas (indigenous, equity and diversity)

☐ Unit operations and processes

☐ Other: [please specify]

3.2. What were you hoping to change or where were you hoping to see an impact with this project? – *Please describe the intended benefits of the project for students, TAs, instructors and/or community members.*

Ongoing since May, 2016, our Work Learn graduate student (Loren Gaudet) has conducted evaluations of the program components. Loren created, distributed, and analyzed responses from workshop surveys.

Most of the feedback has been positive, and we have used the constructive feedback to make adjustments to workshop content.
We disseminated our work at the Annual Science Education Open House poster session (April 7, 2017) and presented a poster at the TLEF showcase on May 4, 2017.
We have also created, distributed, and analyzed responses from an annual survey, deployed in July 2016. We will deploy this survey again in July 2017. Loren will continue to evaluate the program, producing a summative evaluation in addition to formative program evaluations produced throughout the Fall and Spring terms.

3.3. Were these changes/impacts achieved? How do you know they occurred? – *What evaluation strategies were used? How was data collected and analyzed? You are encouraged to include copies of data collection tools (e.g. surveys and interview protocols) as well as graphical representations of data and/or scenarios or quotes to represent and illustrate key themes.*

Our progress toward specific goals from our proposal is described in the table below:

Goal	Outcomes
Facilitate the discussion of best practices in designing, implementing, assessing, and evaluating student assignments that incorporate oral communication and non-traditional communication methods as learning tools for students.	- In addition to our writing workshops, we created and offered two new workshops on teaching science communication: "Teaching Oral Communication in Science" and "Non-Traditional Communication Assignments." Each was held 1-2 times. - We have presented additional workshops to the wider audiences of the Faculty of Graduate and Postdoctoral Studies writing week and another at the CTLT Spring Institute. - We held a Best Practices in Teaching Science Communication Symposium as part of the CTLT Spring Institute. This featured 9 unique presenters addressing a variety of science communication pedagogies, and we have plans to hold another Symposium at the CTLT Summer Institute.
Facilitate the strategic use of existing campus resources and online resources, including relevant best-practice examples.	- Although we initially considered webinars, feedback from our annual survey and our advisory committee strongly indicated that webinars were a less desirable format than in-person workshops. As such, we concentrated on the latter.

	- We currently have two podcasts in production: one addressing Indigenous Initiatives in Teaching Science Communication, and one addressing using Wikipedia in the classroom. These will be housed on our ScWRL site when completed.
Support faculty and TAs as they use these methods and respond to student work through flexible, multi- modal resources.	- Shannon, our project coordinator, has held one-on-one consultations, supporting faculty to incorporate and use methods from our workshops and online materials. - Shannon has also been requested to conduct TA training for Biology, Chemistry, and other Science Departments.
Compile reference documents on: The design, implementation, assessment, and evaluation of multimedia projects in science, including how to decide if multimedia assignments are a good choice for your course and selecting the right format to best support student learning. The design, implementation, assessment, and evaluation of oral communication assignments or exams in science.	Complete and on website. We have added a section to our webpage for WAC+ content (http://scwrl.ubc.ca/educator-resources/wac/wac-educator-resources/). One of the strengths of our program is the emphasis on evidence. For each theme, we have compiled a list of relevant literature for workshop participants.

3.4. Dissemination – *Please provide a list of **past** and **upcoming** scholarly activities (e.g. publications, presentations, invited talks, etc.) in which you or anyone from your team have shared information regarding this project.*

2017
Future of Research Communications and e-Scholarship (FORCE) 2017 conference
BERLIN, GERMANY | October 25-27
Writing Across the Curriculum+
Science-Specific Support for Teaching Communication Skills
Shannon Obradovich, Meghan Aubé, Loren Gaudet, Eric Jandciu, and Jackie Stewart
(poster)

2016
EADTU Conference
Rome, Italy, October
Science Writing Resources for Learning (ScWRL): A Suite of Open Teaching and Learning Science Writing Resources
Meghan Aubé, Thomas Deane, Eric Jandciu, and Jaclyn Stewart
(talk and proceedings)

4. **TEACHING PRACTICES** – *Please indicate if **your** teaching practices or those of **others** have changed as a result of your project. If so, in what ways? Do you see these changes as sustainable over time? Why or why not?*

   As part of our post-workshop program evaluation, we always ask participants how soon they plan on implementing the ideas presented at the workshops: never, immediately, or in upcoming terms. 100% of respondents indicated that they would implement ideas from the workshop immediately or in an upcoming term.

5. **PROJECT SUSTAINMENT** – *Please describe the sustainment strategy for the project components. How will this be sustained and potentially expanded (e.g. over the next five years). What challenges do you foresee for achieving the expected long-term impacts listed above?*

   We are currently working with the Centre for Scholarly Writing and Communication to develop strategies for an ongoing WAC+ program at UBC, including funding for a full-time coordinator. Regardless of the outcome of these discussions, we will also continue to hold Best Practices in Teaching Science Communication at the Spring and Summer Symposiums.