

# EXAMPLES OF EDUCATIONAL LEADERSHIP FROM THE FACULTY OF SCIENCE, UNIVERSITY OF BRITISH COLUMBIA: A DISCUSSION PAPER

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Discussion Paper

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This document curates a number of educational activities within the Faculty of Science and discusses why they are, or are not, educational leadership and if they are, how to document them. It is part of a larger initiative at UBC to clarify educational leadership (EL) and how it can be documented for promotion and tenure. It stems from an identified need to clarify, articulate and disseminate this relatively new requirement for the Senior Instructors and Professors of Teaching.

The [Collective Agreement](#) defines Educational Leadership (4.04) as: “an activity taken at UBC and elsewhere to advance innovation in teaching and learning with impact beyond one’s classroom. Educational leadership includes but is not limited to such things as:

1. Application of and/or active engagement in the scholarship of teaching and learning;
2. significant contributions to curriculum development, curriculum renewal, course design, new assessment models, pedagogical innovation and other initiatives that extend beyond the member’s classroom and advance the University’s ability to excel in its teaching and learning mandates;
3. teaching, mentorship and inspiration of colleagues;
4. formal educational leadership responsibility within Department/Program/Faculty;
5. organization of and contributions to conferences, programs, symposia, workshops and other educational events on teaching and learning locally, nationally and internationally;
6. contributions to the theory and practice of teaching and learning, including publications such as textbooks, print and electronic publications, book chapters, articles in peer-reviewed and professional journals, conference proceedings, software, training guidelines, instructional manuals or other resources; and
7. other activities that support evidence-based educational excellence, leadership and impact within and beyond the University”

Numbering is ours. Furthermore, the collective agreement states that, “Judgment of educational leadership is based mainly on the quality and significance of the individual’s contributions.”

In this section “beyond one’s classroom” is not intended to be taken literally as the walls of a classroom but figuratively, meaning beyond one’s own course or activity. If one’s effect is on another section of the same course, it is EL but EL of small impact. Highly significant EL has either impact in many courses at UBC or has impact nationally and preferable, internationally.

Ideas for specific work in educational leadership originate from EL faculty and from their collaborations with others. EL work may overlap with specific educational needs identified within an EL faculty member’s department, but this alignment is not required.

### **Goals of this document.**

This document provides a wide range of examples of educational activities within the Faculty of Science. It is intended to support faculty members in the educational leadership stream in the Faculty of Science when preparing tenure and promotion packages. It is also intended to support department heads and directors in the Faculty of Science when evaluating the dossiers of faculty members in the educational leadership stream and when supporting their tenure and promotion applications.

The examples of educational leadership activities provided in this document are not exhaustive - that is, they are not intended to cover all aspects of educational leadership. This is because the nature of educational leadership is one

where educational leaders identify needs in their particular contexts and creatively determine and implement solutions to address those needs. Because of this, educational leadership activities are diverse and often creative.

The examples we provide exemplify this diversity to showcase the breadth of educational leadership activities that occur in the Faculty of Science. The impact of some of these activities is relatively straightforward to document, and the impact of others, more difficult. We hope that this framework helps educational leaders with planning how they can gather evidence of and to document the impact of their work. In many cases the details of documentation are not given but instead we list what details are needed.

## Development and dissemination

To develop this document, we asked the heads and directors in each unit in the Faculty of Science to offer us the names of faculty members within their units who they felt exemplify educational leadership in the six categories identified in the Teaching and Learning Impact Framework<sup>1</sup>. The nominated faculty members include lecturers, educational leadership stream faculty members, and research stream faculty members.

We asked the nominated faculty members to participate in a workshop, and to provide us with two examples of educational leadership - one whose impact is fairly straightforward to document, and one whose impact is much more difficult to document. Five of the difficult examples formed the basis of a workshop, held on March 31, 2017.

The examples in this document were generated from the examples that faculty members provided us. We edited and/or modified each example to fit a template we developed for documenting the impact of educational leadership activities. We have sought to provide examples from each department that has an undergraduate teaching program. Although the examples are anonymous, we have secured the permission of those who contributed the examples to disseminate their work here.

Not all cases described below are strong examples of Educational Leadership. In some cases they are examples of excellent teaching but there is no evidence that the impact has gone beyond the instructor's own course or context. That is the **Scope of Impact** is limited. In these cases, the instructor should use the example to show their outstanding teaching rather than educational leadership. In other cases, the activity is primarily a continuation of an activity innovated or created for the same purpose and implemented in the same way as by a previous leader. Such an activity does not show the needed **innovation or creativity within context** for educational leadership but would be an example of service. Another case has scope and innovation but cannot **document impact on Teaching and Learning**. Again this is an example of service.

However, note that selecting and adapting ideas from other contexts and implementing them at UBC is educational leadership. Activities that are often done as service may also be educational leadership if the goal addresses an identified pedagogical need, the actions are clearly chosen to obtain that goal and impact on Teaching and Learning can be documented.

For promotion to Professor of Teaching, "requires evidence of outstanding achievement in .... educational leadership". Some of the examples below are too small in impact to meet this standard. They may form a piece of package of similar activities, or they may be used at the level of promotion to Senior Instructor, "requires evidence of ... demonstrated educational leadership"

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<sup>1</sup> <https://ctl.ubc.ca/programs/all-our-programs/teaching-and-educational-leadership/next-steps-evidence-for-impact/>

The contributors of examples have confirmed that their example is fairly portrayed and may be used.

Dean Simon Peacock and the Heads and Directors within the Faculty of Science have endorsed this discussion paper.

## LIST OF EXAMPLES

Each of the following examples present:

- a description and goals of the activity
- why this activity is educational leadership, with reference to the Collective Agreement section numbers
- the type of impact the activity has on people, processes, policies, and curriculum/practice
- documentation of effectiveness on teaching and learning
- scope of impact “beyond classroom”
- personal contribution of the educational leader

Discussion Paper

## EXAMPLE 1 – PHYTO’PEDIA: AN ONLINE RESOURCE

- Phyto’pedia is an online resource built to facilitate the identification of marine phytoplankton
- It was created for EOAS 442 but is publically available and widely used outside of UBC

### Goals

- Support EOAS students in quickly identifying marine phytoplankton and local seasonal transitions in marine ecology
- Development of an open educational resource
- Train graduate and undergraduate students, not enrolled in EOAS 442, in phytoplankton sampling, taxonomy and ecology, digital imaging and web design.

### Why is this Educational Leadership?

- #7 from Collective Agreement: Other activities that support evidence-based educational excellence, leadership and impact within and beyond the University

### Type of Impact

Impact on Practice	Impact on Student Success	Impact on Other Instructors	Impact on Scholarly Literature	Other Educational Leadership
<p>Creation / dissemination of resources / materials / software developed to support teaching and learning practice.</p> <p>A retired educator who is copying the structure of the site for another online resource.</p>	<p>Graduate students use this resource to identify toxic plankton species, to discuss plankton defense mechanisms, and to train machine learning algorithms.</p> <p>Undergraduate students taking EOAS 442 all benefit from the resource. Weekly labs evaluate student learning.</p>	<p>School teachers who are use the resource to teach about marine ecology.</p>	<p>Images to be included in a book on Marine Fungi to be published by Springer.</p> <p>Publications from graduate research that drew on the resource.</p>	<p>Resource is being used:</p> <ul style="list-style-type: none"> <li>• by NASA as part of mission to study ocean colour</li> <li>• by the Smithsonian NMNH as part of a marine micro-organism exhibit</li> <li>• by a visual artist in Trondheim, Norway presenting work depicting human impacts on marine environments</li> </ul>

### Documentation of Effectiveness

- Phyto’pedia is used in a laboratory of EOAS 442 for phytoplankton identification. Effectiveness was established by 1) comparing students ability to do the lab and the speed at which they did the lab before and after phyto’pedia was introduced, 2) comparing students ability to answer conceptual questions on quizzes before and after phyto’pedia was introduced and by 3) surveying the students opinion of phyto’pedia as a learning tool.

### Scope of Impact

- Structure of the site is being copied for another online resource. Details of this resource and what it takes from Phyto’pedia needs to be documented.
- Smithsonian NMNH use for educational display.
- School teachers are using the resource to teach about marine ecology. Details and numbers of classes needs to be documented.

## Personal contribution

- The role as an educational leader was to recognize the benefit of such a resource, write the proposal for funding, hire the student team, oversee the field sampling and digitization process, implement the website (with a creative commons, non-commercial copyright), incorporate the resource into the regular course work and broadcast the resource to interested individuals on campus.

## EXAMPLE 2 – BIOFLEX: TRANSFORMING FIRST YEAR BIOLOGY COURSES

- This project is a result of two levels of educational leadership and is a multi-section, multi-year collaboration to transform two first year biology courses. At the course level, ELs developed and implemented educational resources in a flipped classroom setting. At the senior leadership level, ELs developed policies and processes for the successful implementation of the new flexible learning initiative in the Faculty of Science.
- The project brings together two large teams (faculty, staff, postdocs, graduate students) across three departments (Botany, M&I, Zoology). This is a pilot project in the Faculty of Science

## Goals

### Course level Educational Leader:

- Enrich student learning and experience by transforming curriculum and pedagogy within two large first year courses (BIOL 112 & 121).
- Develop and document evidence-based, technology-enhanced course artifacts and educational resources to support active learning flipped classrooms.
- Seek out evidence-based educational technologies and intentionally integrate into courses.
- Create collaborative connections/relationships across the teaching team of the three departments.
- Provide course support for all faculty members interested in incorporating innovative classroom strategies.

### Senior leadership level:

- Develop policies and processes for the successful implementation of the new flexible learning initiative in the Faculty of Science.
- Share experiences and practices at senior management meetings to inform others on campus.
- Anticipate risks and develop mitigation strategies to ensure the success of the initiative.
- Identify and secure resources .

## Why is this Educational Leadership?

- Primary Impact is #2 pedagogical innovation (Faculty ELs)
- Primary Impact is #4 formal EL responsibility (Dean's office ELs)

## Type of Impact

Impact on Practice	Impact on Student Success	Impact on Other Instructors	Impact on Scholarly Literature
Transformation of course curriculum and pedagogy – adoption of flipped classroom approach and in-class worksheets.	Curriculum/pedagogy was designed to enrich student learning. Learning gains were assessed using various methods.	Promoted cross-course conversations in Botany & Zoology.  Provided professional development opportunities for faculty, postdocs, and	Multiple conference presentations and a peer reviewed article.

		graduate students. Creating and sharing evidence-based examples, course content, and syllabi. Evaluation plan was used by other projects on campus.	
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### Documentation of Effectiveness

- The impact on student learning has been assessed by analyzing student performance on concept inventories and exam questions. Evidence from these measures is needed.
- The impact on student experience has been assessed by analyzing student responses to student experience survey and focus group questions.
- BioFlex as a project was documented by an internal UBC report-back system.
- Faculty and student testimonials were collected.

### Scope of Impact

- The resources were made available to the other teaching team members for their use. Classes where resources were used need to be listed.
- The project was used as a test-bed that helped inform other projects on campus and beyond. These projects need to be listed and details given of how they used BioFlex.
- Multiple conference presentations and a peer reviewed manuscript. Details need to be listed and quality of publication venue specified.

### Personal contribution

- Two levels of educational leadership:
- ELs – representing each course – provided direction and priorities for the project (based on needs of courses and professional development)
  - were invited by the UBC senior leadership to develop and implement the project as a pilot for a campus-wide flexible learning initiative (based on their proven track records from previous projects)
  - Ensured buy-in and effective communication from teaching team members, TAs, and senior management
  - Worked closely with their peers and shared their process/evaluation practices within the Faculty of Science and UBC
  - Successful application of funding to support the project
  - Acted as the leader and representative for the project and engaged in opportunities to disseminate and discuss the project with others
- EL - representing senior leadership in the Dean's office - championed the project: Identified flexible learning as a strategic project that 1) would substantially improve student learning and 2) required resources and organization in order to happen as a project of this scope and scale had not yet been undertaken within the Faculty of Science at UBC.
  - Implemented policies that allowed the improved pedagogy
  - Shaped the processes that allowed it to happen by helping design the project and prepare the project plans
  - Arranged resources



### EXAMPLE 3 – STATSPACE: AN ONLINE STATISTICS EDUCATION RESOURCE

- This project brings together instructors from Science, Arts, and the School of Population & Public Health to develop, adapt, and use high-quality open instructional resources that address conceptually challenging topics in introductory statistics.

#### Goals

- Develop, deploy, and evaluate a suite of high-quality, open, adaptable, introductory statistics instructional resources that are consistent in look and feel and grounded in existing research on learning and statistics. <https://statspace.elearning.ubc.ca/>
- Direct the development, deployment and testing of a system, dubbed StatSpace, to support the curation, use, and sharing of the project’s resources.
- Support faculty members who are not statistics experts in adapting and integrating the developed resources into their statistics instruction.

#### Type of Impact

- Primary Impact is #6 from the collective agreement. This project develops and shares open instructional resources and guides for faculty teaching statistics.

Impact on Practice and Other Instructors	Impact on Student Success	Impact on Processes & Policies
<p>Example 1: Project faculty members began incorporating group work and classroom activities into their large-class teaching practice as a direct result of their involvement in this project. Direct impact: around 2000 students per year. Broader impact: One of the faculty members is now mentoring other faculty on use of group work in large classes.</p> <p>Example 2: Project faculty members from two departments worked together to develop and refine homework questions that challenge students’ grasp of fundamental statistics concepts. Direct impact: ~ 200 students per year. Broader impact: (1) Partnerships: Statistics instructor now partnering with faculty from other non-stats departments to share content and pedagogical expertise; (2) Resources: New set of vetted and tested homework questions now available world-wide through open WeBWork platform.</p>	<p>~3000 students impacted in first year of project</p>	<p>The project team developed a process and practice for collaboratively reviewing and enhancing one another’s resources. Team members expect that this process could continue beyond the project.</p>

#### Documentation of Effectiveness

Project resources have been evaluated using think-aloud protocols and pre- and post-testing of statistics concepts with student pilot-testers. Results have been used to refine the resources.

#### Scope of Impact

- The resources are currently being used in multiple courses within various Faculties at UBC. These courses need to be listed.
- Resources have been accessed online prior to any formal advertisement or launch. This needs to be documented.
- The project team is collaborating with representatives from BCCampus, the British Columbia Committee on the Undergraduate Program in Mathematics and Statistics, and BC Teacher’s Federation to disseminate the resources more broadly across the province.

## Personal contribution

- Identified TLEF as a possible way to support the common desire among a group of introductory statistics instructors to develop and share instructional resources.
- Negotiated with Deans, other Department Heads and faculty members to identify common ground and develop a supported project.
- Lead the project team (including eleven faculty members from nine departments across three Faculties plus staff from the library, CTLT, Skylight, and MedIT) through two grant proposals, one year of project ideation, and two years of project implementation.
- Lead the development and management of project budgets, reporting, and staffing.
- Chaired monthly project team meetings plus nurtured project sub-teams, including evaluation and StatSpace.
- Contributed content and pedagogical expertise to resource development and review.
- Engaged Deans, other Heads, and senior University administration in conversations about project sustainability.

## EXAMPLE 4 – CONCEPT INVENTORIES: DEVELOPMENT, ADMINISTRATION, AND DISSEMINATION

- Development, employment and dissemination of validated concept inventories targeting challenging biology concepts

### Goals

- Develop series of conceptual questions (i.e., concept inventories) to assess areas of student misconceptions and as a way to measure prior knowledge at the start of a course/term
- Adapt well-established methods of concept inventory development to create a set of validated biology concept inventories
- Use as pre- and post-test (measurement of conceptual learning gain) to allow identification of misconceptions that impede learning in a wide variety of courses.
- Use as diagnostic tests to allow identification of prior knowledge at the start of a course or a new topic area, to help establish baselines and deploy appropriate resources as needed to support students in courses.
- Share these inventories widely with colleagues at UBC, and at other institutions nationally and internationally. Questions for Biology (Q4B) website: <http://q4b.biology.ubc.ca/>

### Why is this Educational Leadership?

- Primary Impact is #2: Significant contribution to new assessment models

### Type of Impact

Impact on Student Success	Impact on Other Instructors and on Scholarly Literature
<p>Inventories change our understanding of students' preconceptions and/or misconceptions about specific topics in biology, and allow us to develop targeted activities to improve student learning</p> <p>To date, more than 10,000 students benefited from these concept inventories at UBC</p>	<p>These inventories have been used by more than 20 UBC faculty members in all first year and select upper level biology courses multiple times over the years as pre- and post-tests providing direct evidence of student learning.</p> <p>Over 100 faculty members at institutions in North and South America, Europe, Asia, Australia and South Africa have used at least some of these concept questions.</p> <p>The peer-reviewed publications reached out to many biology instructors nationally and internationally</p>

### Documentation of Effectiveness

- There is a growing body of literature on the effectiveness of the use of concept inventories to improve student learning

- Reports (TLEF interim and end of project reports)

### Scope of Impact

- Conference presentations and peer reviewed articles. Details need to be listed and quality of publication venue specified.
- More than 10,000 students have benefited from these concept inventories at UBC. Details of classes and enrollments need to be specified.
- More than 100 instructors beyond UBC are using these inventories across the world. How this is known needs to be specified.
- Multiple PIs at UBC used these inventories as validated assessment tools to assess their projects’ effectiveness. These PI’s and their projects need to be listed.

### Personal Contribution

- ELs identified the need to measure student learning in select biology courses in alignment with broad program level curriculum evaluation plans
- ELs brought together a large team of faculty members, from three departments (Botany, Zoology, and Microbiology and Immunology), who are interested in developing concept inventories and administering them in their classrooms to assess student pre/mis-conceptions and how these conceptions change over a course
- The concept inventories were developed, tested and used by the ELs in their classrooms in biology courses at UBC, used by other instructors of the same course, then written and published with co-authors. The ELs also secured funding to hire graduate students, postdocs to work on the project benefiting the employees’ professional growth (as a way of mentorship) as well.

### EXAMPLE 5 – CASE STUDIES: PEDAGOGICAL DEVELOPMENT AND PUBLICATION

- The EL developed carefully chosen case studies to illustrate important concepts(for example, genetic inheritance). She then produced a complete teaching packages for the case studies and published them on a website for case studies.

### Goals

- To enhance pedagogy through use of relevant case studies which makes it more “real” and “immediate” to the students.
- Case studies allow students to pursue study using the scientific method. For the genetic case study this includes
  - hypothesis generation,
  - pedigree construction and analysis,
  - evaluation of inheritance patterns and
  - reconciliation of changing inheritance patterns, depending on perspective.

### Why is this Educational Leadership?

- Primary Impact is #6 instructional manual from the collective agreement.

### Type of Impact

Impact on Practice	Impact on Student Success	Impact on Other Instructors
The development of the materials includes instructor guides that facilitate the use of case studies by other instructors.	Improved course materials engage students more actively in their learning and allow them to practice scientific method.	Instructors using the case studies directly benefit from the case study but also see the impact case studies can have on students.

## Documentation of Effectiveness

- The effectiveness of case studies needs to be documented through references to the literature OR
- The effectiveness of this case study needs to be documented through comparisons with classes not using it

## Scope of Impact

- Two of the case studies were published on the peer reviewed site *National Center for Case Study Teaching in Science*. This site was cited as a source for model case studies in the National Academy of Science's report *BIO 2010: Transforming Undergraduate Education for Future Research Biologists*.
- Scale of impact shown by status of the published case studies. At the time, they were two of the most popular case studies on the site (by tracked downloads)

## Personal contribution

- The case studies were tested and used by the EL in her classroom in first year biology at UBC, used by other instructors of the same course, then written and published with a co-author.

## EXAMPLE 6 – INTEGRATION OF ONLINE OPEN RESOURCES: DEVELOPMENT AND DISSEMINATION

- The project is a result of the ELs development of an innovative distance education section of Physics 100 (multi-section course) and their interest in learning technology, in particular the edX edge platform and the opportunities it offers including an online lab.

## Goals

- Develop an innovative online course based on customizing an open textbook (open-stax), adding embedded animated worked examples, and transforming the lab into an online format.
- Through this transformation enhance students' self-directed learning during distance education..

## Why is this Educational Leadership?

- Primary Impact is #2 pedagogical innovation.

## Type of Impact

Impact on Practice	Impact on Student Success	Impact on Other Instructors
The resources being created are innovative and open for sharing. The process of developing these resources has reshaped both the pedagogy (blended model) and the curriculum (what students are to learn) for the course.	The course curriculum and materials are designed to enrich students' self-regulation. Students no longer need to purchase a textbook which saves them money.	This is a multi-section course and as such, the EL works closely with other instructors within the department teaching the course. Other instructors within and outside of UBC have been exposed to this project via media and invited talks.

## Documentation of Effectiveness

- The impact on student learning has been assessed by analyzing student performance and perceptions of the resources on their learning and experience.

## Scope of Impact

- There is considerable interest in this pedagogical innovation from other scholars and stakeholders. This is evidenced by: 1) Publication of a peer-reviewed paper in the *International Review of Research in Open and Distributed Learning*. 2) Invitation to speak about the project and open textbook at the 2017 *European MOOCs Stakeholders Summit Conference*. . The quality of the publication venues needs to be specified in some manner.
- The enhanced textbook is freely available online.

## Personal contribution

- The resources were piloted by the EL in their physics class and used by other instructors of first year courses. The EL collaborated with other faculty at UBC to write and publish a paper on the development and use of open educational resources

## EXAMPLE 7 – STUDY STRATEGY INTERVENTIONS: SUPPORTING LOW-PERFORMING STUDENTS IN LARGE INTRODUCTORY SCIENCE COURSES

- Course-specific interventions to support student performance and study strategies in first year science courses

## Goals

- Improve study strategies for low performing students in a first year science course.
- Implement course-specific interventions across other first year science courses
- Shift student/faculty attitudes and behaviours regarding study strategies in first year science

## Why is this Educational Leadership?

- Primary Impact is #2 from the collective agreement. This pedagogical innovation went beyond the lead’s classroom and enriched undergraduate student learning and experience.

## Type of Impact

Impact on Practice	Impact on Student Success	Impact on Other Instructors	Impact on Scholarly Literature
The lead assisted with the development of the tutorial content and pedagogy. The outcomes of the tutorials have also reshaped the curriculum/pedagogy for their given course (the tutorials are feedback for how to improve the teaching and learning within this context).	These targeted tutorials are designed to support students who require additional help with the course content and their study strategies. The tutorials provide a sense of belonging, improve student attitudes towards math learning, and enrich students’ metacognitive strategies.	The lead developed these workshops for their section of a first year science course - but this model has since been adopted by other faculty members within the Faculty.	The lead has published a peer-reviewed paper with colleagues in another department.

## Documentation of Effectiveness

- The impact on student learning was assessed by: comparing the performance and skills of students who did and did not attend the tutorials; pre-post surveys of students’ attitudes and strategies; and interviews/focus groups with students. This data was shared at local, national, and international conferences.

## Scope of Impact

- The framework was adopted in other five other first year undergraduate courses within the Faculty of Science at UBC. These courses need to be listed
- The framework and outcomes of this project were published in *Journal of College Science Teaching*. The quality of the journal needs to be specified in some manner.
- The EL presented the framework and outcomes at the *Scholarship for Teaching and Learning in Higher Education Conference*.

## Personal contribution

- The EL on this project inspired and collaborated with many faculty, graduate students, and postdoctoral fellows to undertake such workshops within their own courses and contexts.
- The EL mentored faculty and graduate students in the development, implementation, and assessment of the interventions.
- The EL also contributed to local, national, and international conferences and peer-reviewed publications.

## EXAMPLE 8 – LEADING CHANGE: LEADERSHIP ROLES WITHIN A SCIENCE EDUCATION INITIATIVE

### Goals

- Long-term, sustainable culture shift for students and faculty toward evidence-based, student-centred pedagogy.
- Transformations of majority of courses in the department; support for majority of faculty members in the department to make transformations happen.

### Why is this Educational Leadership?

- Primary Impact is #4 formal EL responsibility

### Type of Impact

Impact on Practice	Impact on Student Success	Impact on Other Instructors	Impact on Scholarly Literature
<p>After 10 years, most courses in the department include some evidence-based, student-centred approach to pedagogy.</p>	<p>Most students in courses are experiencing evidence-based pedagogy. Several studies indicate increased student learning and improved experience.</p>	<p>Most faculty members who have transformed their courses have not reverted to pre-transformation approaches. Based on data from the Teaching Practices Inventory, (1) the department's courses are, on average significantly more student-focused and evidence-based than prior to the initiative, and (2) more instructors express ideas about actions they could take to improve student learning, rather than focusing on problems with students or infrastructure.</p>	<p>Curricular and pedagogical transformations have been disseminated at conferences and in peer reviewed journals. Some involve the lead, but many were spearheaded by STLFs whose work the lead managed.</p>

## Documentation of Effectiveness

- Some pre-post testing of student learning in particular courses.
- Pre-post testing of student perceptions and learning experiences in many courses across the department.
- Student surveys and feedback.
- Anecdotally, students have suggested (unprompted) that specific as-yet-un-transformed courses should be transformed.

## Scope of Impact

- Survey shows that most courses in the department were impacted. Total percentage needs to be given.
- Report on impact, written by outside researchers based on extensive stakeholder interviews, documents scope with the department.
- Conference presentations and peer reviewed publications. Details need to be listed and quality of publication venue specified.

## Personal contribution

- Personal contribution was an organizational role, both in initiation, planning, and maintenance over several years.
- Leading and organizing departmental proposal to CWSEI.
- Serving as department liaison and director.
- Setting up systems for managing work, defining STLF roles.
- Enabling /supporting/facilitating others to do the nitty gritty work.
- The role of the EL in leading/facilitating this project needs to be documented in the Head's letter.

## EXAMPLE 9 – FIRST-YEAR SYMPOSIUM IN THE FACULTY OF SCIENCE: DEVELOPMENT, FACILITATION, AND LEADERSHIP

- The EL developed and facilitated a first-year symposium for faculty within the Faculty of Science at UBC

## Goals

- To develop a community of practice for first year educators.
- To build stronger connections among faculty, staff, administrators, and students involved in the FYE.
- To share promising practices for how the FYE can be improved within the Faculty of Science (and beyond).

## Why is this Educational Leadership?

- Primary Impact is #5 from the collective agreement. The EL organized and contributed to the development, implementation, and dissemination of a symposium to support first year science educators at UBC.

## Type of Impact

Impact on Student Success	Impact on Other Instructors	Impact on Policy and Processes
Ideally, the interaction and collaboration of multiple FYE educators will positively impact the overall FYE for students.	The symposium was geared towards informing and supporting FYE instructors in Science. The symposium provided a space for educators to discuss and share best practices for supporting FYE students. The instructors also took part in a Market Place session that allowed them to engage with several people from services across the institution (e.g., Science Student Advising; Science	The FYE symposium format is being adopted as a yearly event at UBC. Administrators from the Vice-President's Office and Dean's Offices are supporting this symposium.

### Documentation of Impact

- The EL sought written reviews from administrators in the Faculty of Science Dean’s Office and the Vice-President’s, Students Office, regarding the involvement and leadership of the EL.
- Survey data was collected at the FYE Science Symposium to assess participant experience.

### Scope of Impact

- The EL presented the model of this symposium at UBC events (*CTLT Institute* and *UBC-O Learning Conference*) and national conferences (*Western Conference on Science Education*).
- The FYE symposium began within the Faculty of Science in 2016 and has led to a campus wide symposia being planned for January 2018.
- The EL remains a key contributor to the first year symposia being developed at UBC and other Canadian universities. Other universities developing first year symposia based on UBC need to be listed.

### Personal contribution

- The EL brought together several key players from interdisciplinary units across the university (e.g., science faculties; CTLT; Vantage; Skylight; VP Office Students; Science Information Centre) to make these symposia possible.
- They acted as the Chair for the first ever FYE Science Symposium that occurred in September 2016.
- The EL has documented their role in the planning, facilitation, and dissemination of the FYE symposium in science.

## EXAMPLE A – REVIVAL OF DEPARTMENTAL READING GROUP: A PIECE OF EL

- This effort revived a reading group focused on teaching and learning issues, with the intention of creating a sustainable community of practice.

### Goals

- Bring together faculty and graduate students to read and discuss literature related to computer science education.
- Invite computer science educators from other institutions to present their research.
- Provide peer review on conference proposals and manuscripts.

### Why is this is only a piece of Educational Leadership?

Primary impact is #3: inspiration of colleagues, however...

- Shifting or changing the culture within a department is considered EL – but - this activity/group may not be sufficient on its own (it’s a piece of the puzzle).
- The faculty member leading this group is displaying EL by providing a structured and collaborative means for group member receive feedback on their conference proposals/presentations and manuscripts – but – the impact may be relatively small in scope/impact

### Type of Impact

<b>Impact on Practice and Other Instructors</b>	<b>Impact on Scholarly Literature</b>
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<p>Particular articles may influence the curriculum/pedagogy of the group members.</p> <p>The invited talks are campus wide so faculty/students/staff from other departments may join.</p> <p>Members of the group hopefully develop a sense of belonging and expertise that could be shared with colleagues within or outside of the department.</p>	<p>The peer review aspect of conference proposals/papers may lead to successful acceptance.</p>
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### Documentation of Effectiveness

- It is very difficult to document to show significant impact on teaching and learning from this type of activity.
- One could try:
  - Gather feedback/data from the group members about why they attend this group (and the importance for its presence).
  - Gather feedback from group members about whether and how they have implemented ideas discussed in the group, in their courses.
  - Gather feedback/data from the group members about the usefulness of this peer review activity.
  - Gather feedback/data from the group members and other faculty/staff about what they have heard with respect to the react group/invited talks.
  - Are the facilitators described as “experts” in EL by their departmental colleagues? (i.e., are they respected and consulted by their colleagues?).
- Documentation of a cultural shift may be difficult as it takes time to develop and is hard to attribute.

### Scope of Impact

- 10-12 total people are currently attending. Positions within the department/university needs to be documented.
- Enumerate and list the proposals/papers were accepted that went through peer-review with this group
- Enumerate and list the courses in which pedagogy changed catalyzed by group discussions.

### Personal contribution

- Group organization
- Curating selected literature for the group
- Actively seeking cutting edge literature for the group to discuss
- Documenting processes and outcomes of the group

### EXAMPLE B – ENVR 400: OUTSTANDING TEACHING, BUT NOT EL

- Development and ongoing implementation of capstone course, ENVR 400, which incorporates experiential and community-based service learning.
- Community partners are involved in the evaluation and shaping of the course.

### Goals

- Students are partnered with a community organization to work collaboratively on a science research project that will ultimately benefit the organization
- To provide an authentic and meaningful experience for senior environmental science students, by providing them the opportunity to gain science research experience in a supported environment.

**Why is this Outstanding Teaching, but not Educational Leadership?**

- This course is an example of outstanding teaching as it provides students with a valuable, authentic learning opportunity and provides community partners with meaningful scientific research that can enhance their organizational aims.
- It is not educational leadership, as defined by the Collective Agreement, since the impact of the educational leaders’ activity does not extend beyond his or her own classroom.
- To be considered educational leadership, the course design model of involving the community in the course’s development and evaluation would need to be published and/or adopted by other educators. If the former, it would be EL under #1 in the collective agreement: scholarship of teaching and learning. If the latter, it would be EL under #2 in the collective agreement: pedagogical innovation.

**EXAMPLE C– MATH OUTREACH: MEANINGFUL SERVICE, BUT NOT EL**

- Organizing a series of lectures on math and engineering for high school students around Vancouver
- Attract students who are under-represented by thoughtful advertising and selecting diverse speakers

**Goals**

- Inspire students to attend university and study STEM
- Showcase, to students and the wider community, the diversity of people doing STEM

**Why is this Meaningful service but not Educational Leadership?**

- This series is an example of meaningful service to the students and the university as it encourages students to pursue STEM in high school and be qualified applicants to university. It also has an impact on representing the university to the community.
- It is not educational leadership, as defined by the Collective Agreement, since the impact of the educational leaders’ activity does not extend beyond this lecture series which in this case would be considered the instructors “classroom”.

**Type of Impact**

Impact on Community	Impact on Others
This activity has an impact on representing the university to the community.	If the lecture series is adopted/published, it has a potential to have an impact on others beyond the university.

**Documentation of Effectiveness**

- To be considered educational leadership, the effectiveness of the activity needs to be documented. Effectiveness could be documented through gathering feedback/data from
  - participants about why they attend the workshop (and the importance of it for their academic choices)
  - statistics of participants academic choices compared to their cohort
  - adopters about whether and how they have implemented the activity/ideas in the workshop to their own context.

**Scope of Impact**

- To be considered educational leadership, the lecture series design would need to be adopted by other educators, or published and/or the EL is invited to give talks about this outreach activity. The names of the adopters, their affiliations etc need to be listed. The publication details (including the impact factor, citations, etc) need to be documented.

- Since the impact of the educational leader’s activity does not extend beyond this lecture series which in this case would be considered the instructors “classroom”, this activity would be considered limited impact. This is, though, an example of outstanding service.

**Personal Contribution**

- Reached out to under-represented students
- Organized the lecture series
- Invited a diverse range of speakers

**EXAMPLE D – PEER EVALUATION OF TEACHING: DEPARTMENTAL REDESIGN : NOT EL UNDER COLLECTIVE AGREEMENT**

- This project changed the procedures for peer evaluation of teaching including: training in classroom observation for peer evaluators; timely communication with candidates regarding criteria for evaluation; communicative follow-up with candidates regarding evaluation.

**Goals**

- Provide summative evaluation of teaching for promotion and tenure (P&T) purposes, including well-informed documentation of evaluation
- Provide quantitative peer evaluation of teaching to make it more useful to P&T evaluators

**Why could this be Educational Leadership?**

- Could be #3: inspiration of colleagues, Effective peer teaching evaluations may change department teaching culture and inspire better teaching.
- Although this has impact on processes and policies, this type of impact is not included as EL in the collective agreement.

**Type of Impact**

Impact on Practice	Impact on processes and policies	Impact on Other Instructors
Impact on teaching practice of individuals (persons being evaluated) and their colleagues (the evaluators).	Revised the policy and procedures related to peer evaluation of teaching within the department.  Documented policy, procedure and evaluation scale for other units to use.	Implementation of revised peer evaluation of teaching impacts instructors within the department and leads to a shift in the departmental culture/values of teaching and learning.

**Documentation of Effectiveness**

- It is very difficult to document the impact of this type of activity on teaching and learning. It would be easier to use this as an example of good service, for which documentation of effectiveness is not needed.
- One could try:
  - Surveys of candidates about the process
  - Surveys of newly trained evaluators about the process
  - Comments from candidates and/or evaluators about their experience and their perceptions of the benefits and value of the new process on teaching

## Scope of Impact

- Each faculty member coming up for review in this department now experiences this new process. Numbers of faculty members reviewed needs to be included.
- Department's new system was adopted/modified by other departments in the Faculty of Science. Names of departments need to be included.
- Evaluation scale is being considered at University level. Details need to be included.

## Personal contribution

- Conducted research on best practices
  - Led discussions of drafts and iterations prior to finalizing the new policy and procedure
  - Worked with the department head to restructure relevant committees and committee processes
  - Led the process in the transition years
  - Iterated based on what was learned during the transition
  - Trained more than 10 faculty members to act as evaluators
- Documented processes and expectations so someone else could maintain the new system

## EXAMPLE E – CHEMISTRY DEMO KITS: DEVELOPMENT AND DISTRIBUTION IN HIGH SCHOOLS: POTENTIALLY EL

- Development of demo kits to be distributed to colleges and high schools to support student learning of concepts in Chemistry.
- Each kit contains: 1) User manual; 2) Video explaining how to perform the demonstration; 3) Worksheets; and 4) Suggested Learning Objectives for the demonstration

## Goals

- To provide colleges & high schools with inexpensive demonstration kits to enhance student learning of a given concept in Chemistry.
- The design and use of the demo kits are intended to improve student attitudes to chemistry.

## Why is this potentially Educational Leadership?

- Primary Impact is #6 from Collective Agreement: instructional manuals or other resources. However, to be Educational Leadership:
  - Documentation of the effectiveness of the kits on learning is needed
  - Also needed is evidence that the kits are widely used, or preferably, that the model for developing the kits was adopted by others developing teaching and learning resources for high schools and colleges.

## Type of Impact

Impact on Practice and on Other Instructors	Impact on Student Success
Kits would impact teaching practice of the HS and College instructors who choose to use them.	Student learning of concepts is intended to improve with use of the kits.  Student attitudes towards Chemistry is intended to improve with use of the kits.

## Documentation of Effectiveness

The impact on student learning could be documented by:

- Measuring student learning gains by comparing performance of students who used the kits with students who did not use the kits.
  - Can be compared using grades
  - Can be compared using relevant concept inventory
- Measuring student attitudes towards Chemistry through the use of a validated attitudes survey that is appropriate for the student level.

### **Scope of Impact**

- Breadth of use of the kits needs to be documented including number of kits distributed, number of schools and geographically reach.
- Requests for kits needs to be documented.
- Any evidence that another group are producing similar kits adopted from this activity needs to be documented.

### **Personal contribution**

- The EL needs to document the process of developing the kits. The scope of their contribution would help to determine the impact of their educational leadership.
- Questions to consider in documenting the process include:
  - How (and by whom) the need for the kits was identified
  - To what extent were the kits developed collaboratively with stakeholders?
  - To what degree were the kits developed to be used in diverse environments (rural or urban)?
  - How were the kits promoted and distributed?

Discussion Paper