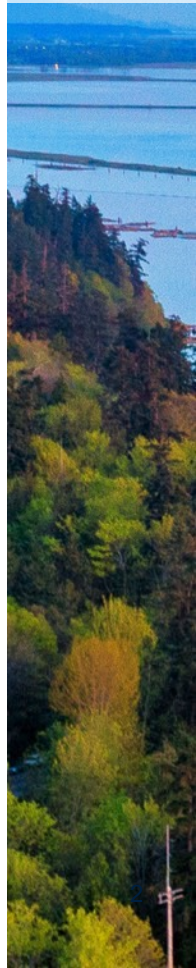
Students as Partners (SaP): Exploring the theory and practice of SaP in the Faculty of Science

April 11, 2023

Agenda

- Welcome & Introductions
- Overview - Partnership, Students as Partners
- Reflective Activity
- SaP Project Presentation: Dr. Allison Man; Augustine Jeong
- SaP Project Presentation: Dr. Laura Lukes; Dr. Bean Sherman
- Overview - The UBC Vancouver SaP Fund
- Questions, Comments, & Closing



Who we are

Polina Petlitsyna (she/her)
SaP Student Coordinator

Roselynn Verwoord, PhD (she/her)
SaP Strategist

Marissa Hall, MA (she/her)
SaP Evaluation Specialist

Overview of Students as Partners

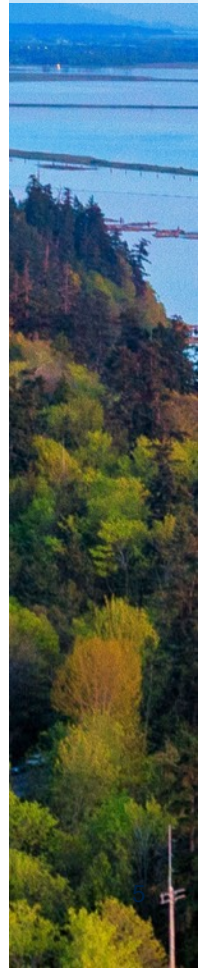
What is partnership?

- A process of student engagement, involving faculty, students, and staff learning and working together with the goal of enhancing learning and teaching.

- A way of doing things, rather than an outcome in itself (Healey, Flint, & Harrington, 2014)

- Marked by high levels of active student participation and contribution

- Students and faculty “have the opportunity to contribute equally, although not necessarily in the same ways, to curricular or pedagogical conceptualization, decision-making, implementation, investigation, or analysis” (Cook-Sather et al., 2014, pp. 6-7)



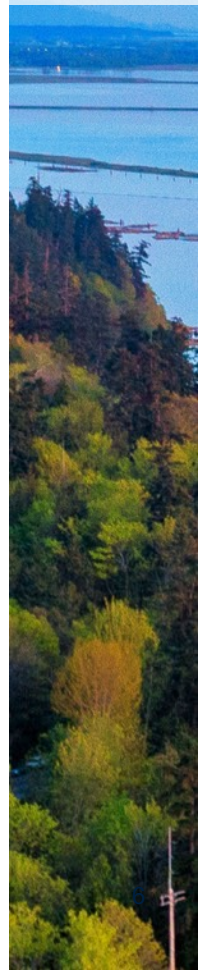
Why Partnership & Why Students as Partners?

- Students' active engagement in their learning
  - *Collaborators* in the academic mission of the university
  - Authentic engagement in learning

- Using learners' expertise in what it means to be a learner to enhance teaching and learning

- Students can be engaged in teaching and learning activities both *within and beyond the classroom*

- Genuine transformative learning experiences for all partners through learning and working together.

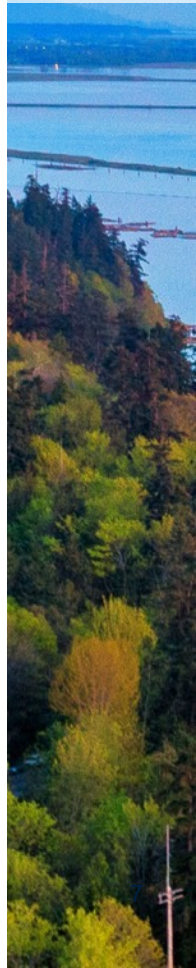


*You learn the **humanity** behind the professor and that these are the people who care about the classroom, just like you do. Having an opportunity to establish a relationship that's **not just based on authority** is really powerful in **getting to know your professor**.*

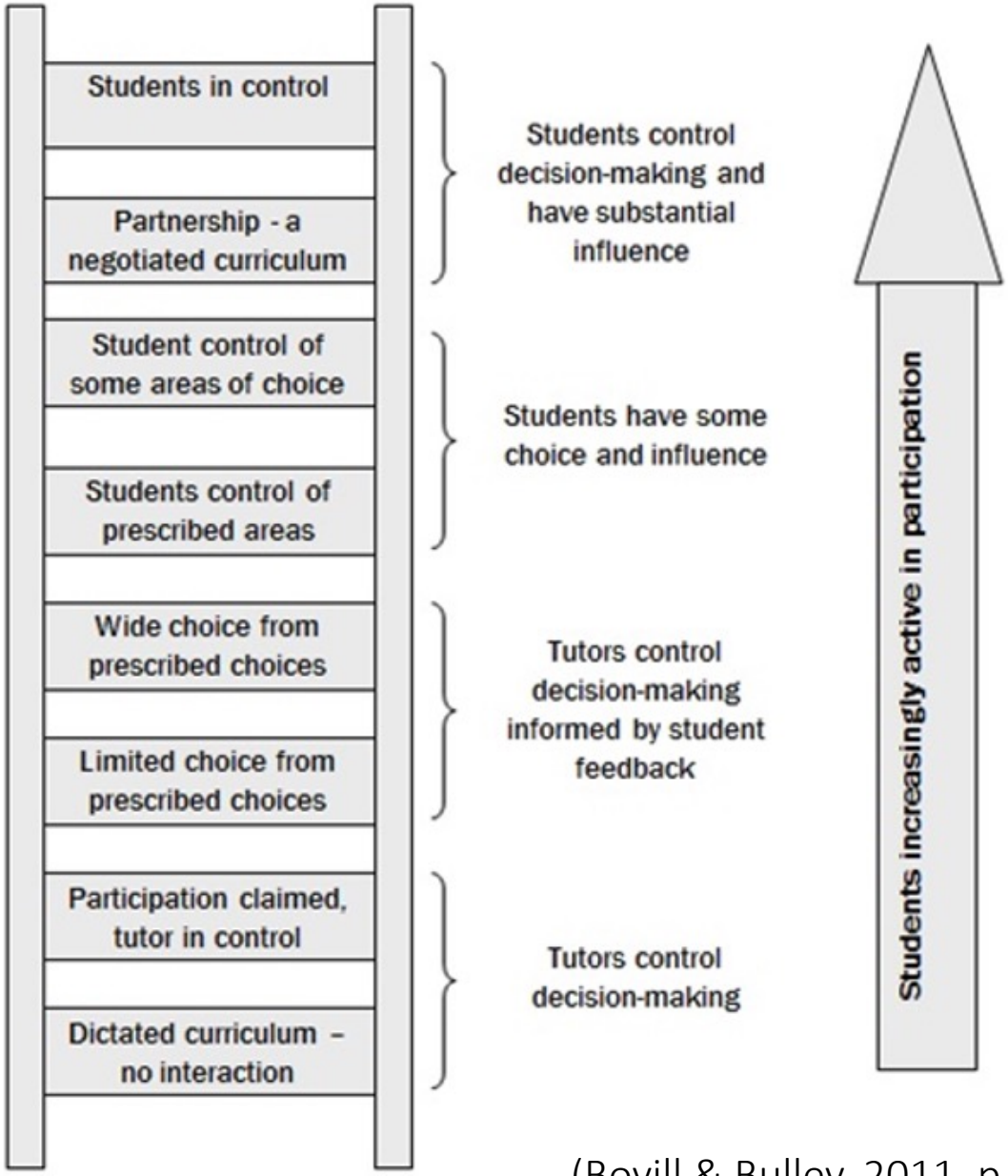
- Hayley Burke, Sociology Major/Spanish Minor, Bryn Mawr College

*It makes this really fundamental contribution in a radical way to **changing a campus culture**. It does it very slowly through self-selected people on both sides of the TLI equation (students and faculty). **In the long-term**, this can contribute to a **culture of much greater accountability**. It also changes the whole understanding of power because **everyone is now sharing power in a way that implicates everyone as responsible.***

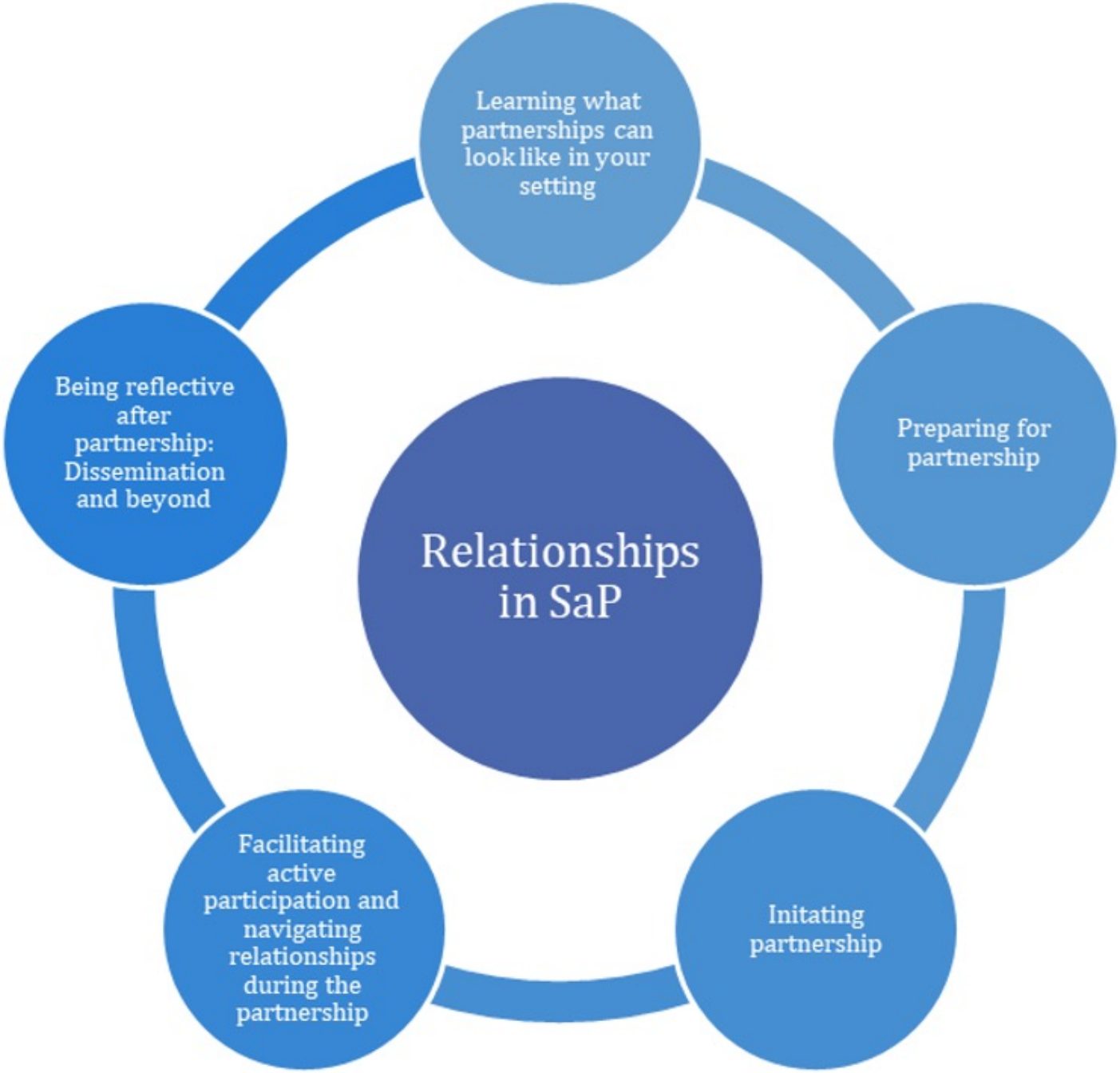
- Alicia Walker, Assistant Professor of History of Art, Bryn Mawr College



The Ladder of Active Student Participation



(Bovill & Bulley, 2011, p. 181)

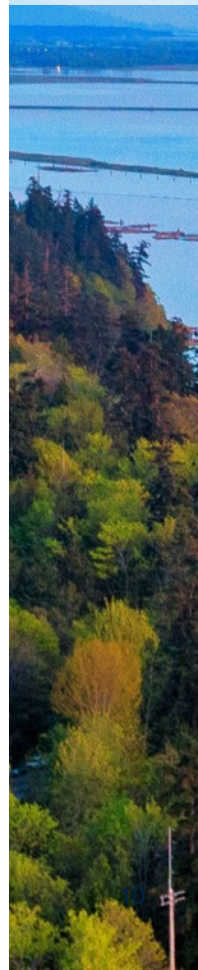


McCollum et al., in press

What might partnership look like?

Student and faculty partners work collaboratively to:

- **Explore** or research the student experience in a course to determine where changes might enhance the student experience or student learning;
- **Analyze** and revise pedagogical approaches, and/or design or redesign a course or parts of a course;
- **Decide** on the approach they will take and what dimensions of the course or teaching practices on which they will focus; and
- **Identify** needs to be addressed (e.g., how to engage students in answering questions, how to make courses more welcoming to a diversity of students) and develop actions or strategies to address those needs (pp. 3-5).



Coming back to partnership…

Consider partnership values (Healey et al., 2014)

- Authenticity
- Inclusivity
- Reciprocity
- Empowerment
- Trust
- Challenge
- Community
- Responsibility

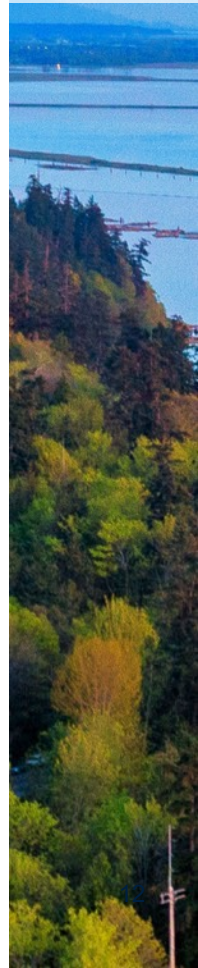
Healey et al (2014)

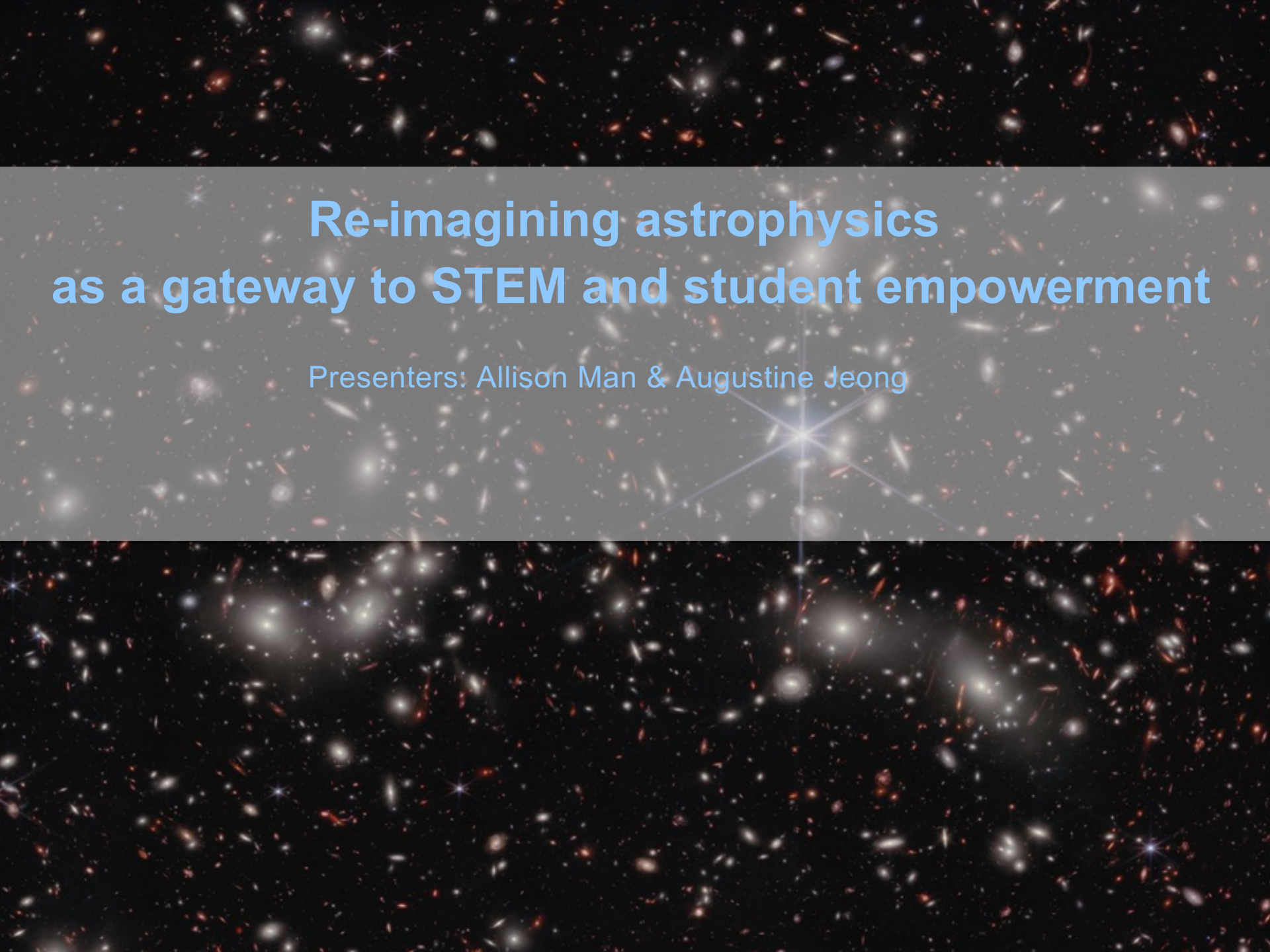
Activity

Consider the values of a partnership (authenticity, inclusivity, reciprocity, empowerment, trust, challenge, community, responsibility).

Reflect on the following questions:

- Which value(s) resonate more to you when you think about partnership work? Why?
- How would you support this value in a partnership with students?





Re-imagining astrophysics as a gateway to STEM and student empowerment

Presenters: Allison Man & Augustine Jeong

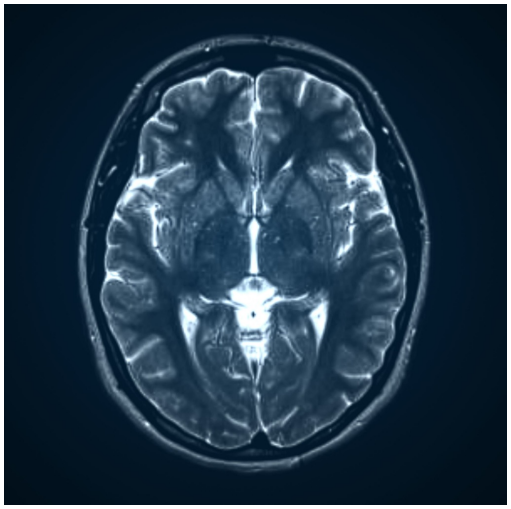
ASTR 200 – Project Summary

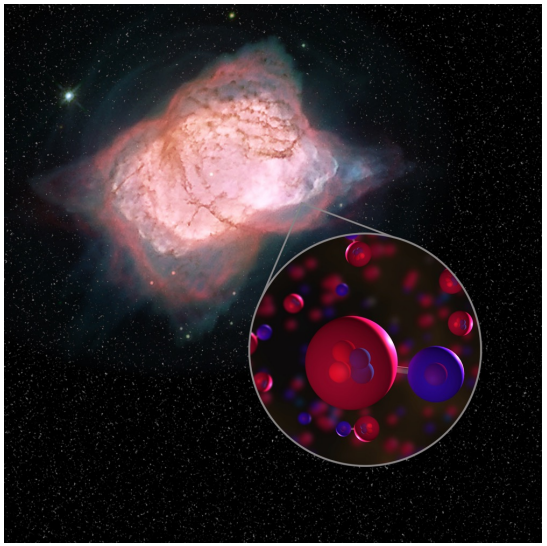
ASTR200: an entry course to astrophysics

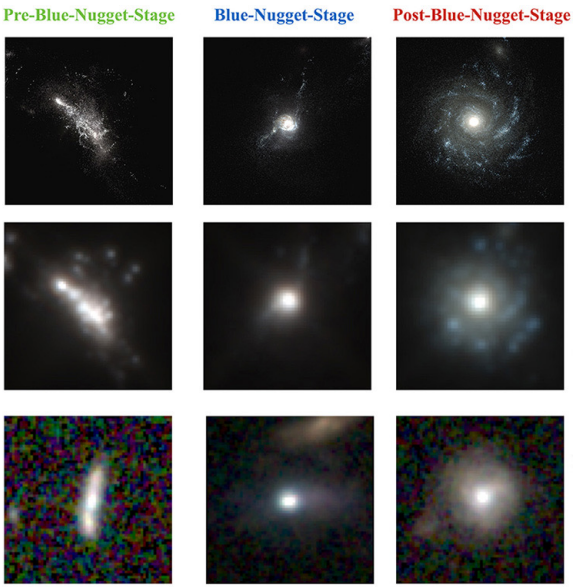
- Most students take it as a science elective
- Potential to engage students of diverse scientific backgrounds (e.g. computer science/engineering, math, chemistry, biology)

Context

- Students vary in their attitudes towards physics and math
- ASTR200 is primarily designed as a course for physics students







ASTR 200 – Why Students As Partners?

Our goals:

- To better serve a diverse student body
  - Help them understand how astrophysics intersects with other disciplines in science
  - Motivate and empower them to pursue STEM studies and careers
- Enhance student-centered active learning
  - Students would like to see more engagement and interactions

ASTR 200 – Students As Partners

SaP Proposal

- Invited students who recently completed ASTR 200
- Worked on proposal together before submission

Vision Building

- Discussed at length what an ideal ASTR200 would look like
- Clarified our expectations for the partnership and work

Course Redesign

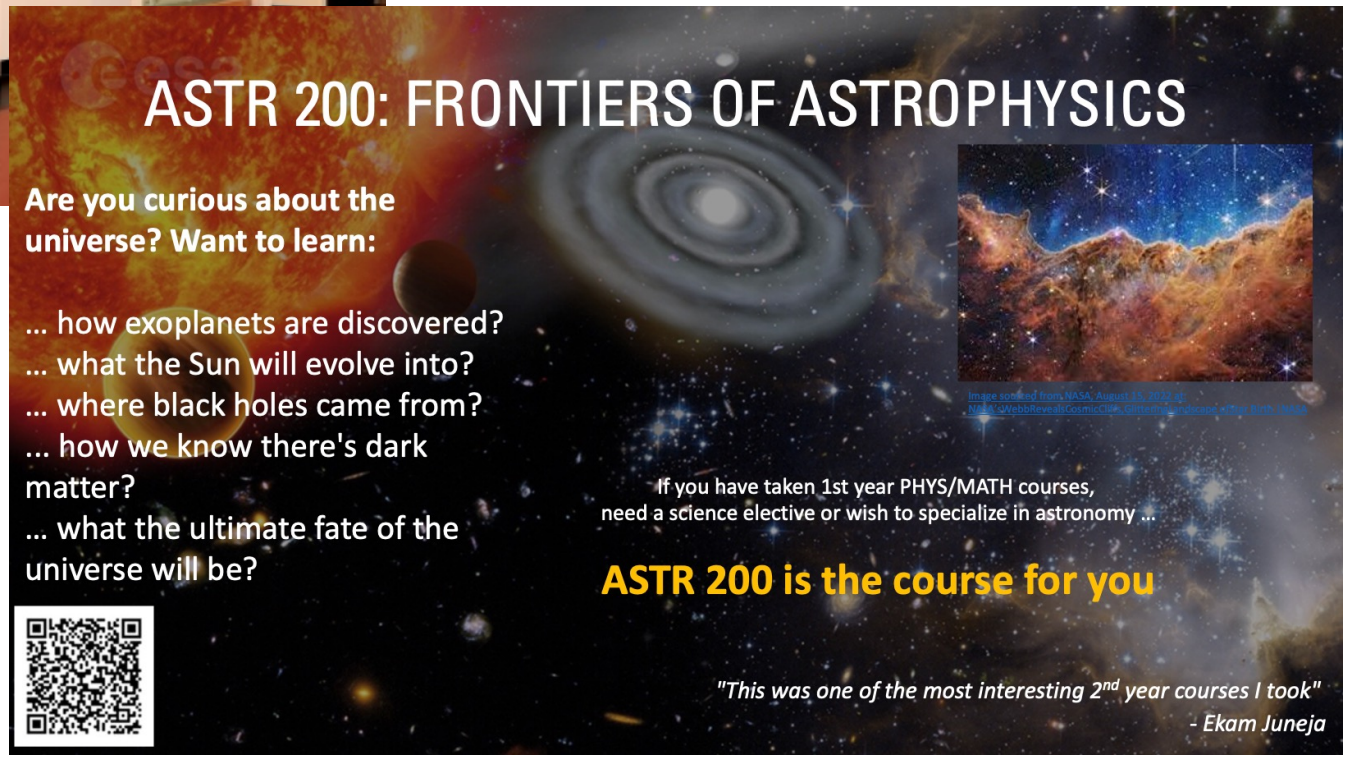
- Devised strategies for active learning
- Updated content to emphasize connections to other science disciplines

Implementation

- COPUS observations & student interviews

ASTR 200 – Attracting new students

Worked with Communications Coordinator to displays flyers placed across Hennings to promote the course



ASTR 200 – Solar observation and stargazing events

We enlisted the help of the UBC Astronomy Club, including ASTR majors and honours students who took the course in previous years.

ASTR 200 – Storifying worksheets

- We tried to 'storify' the worksheets, adding story elements to the original questions where the reader (the student) is the character that has to come up with a solution for a problem.
- We also tried to make the worksheet sound more friendly and give more context to the problem.
- **Goal: better engage students, make them feel a stronger sense of belonging to the subject matter.**

ASTR 200 – Storifying worksheets (example 1 – prev)

ASTR200 Winter Term 1 2021 Worksheet 3 Sept. 22

1. William Herschel observed Triton, a moon of Neptune. It has an orbital period P of 5.88 days $= 5.08 \times 10^5$ s and a roughly circular orbit with $a = 355,000$ km (similar distance from Neptune as the Earth's moon is from us).

   What is the mass of Neptune, $M_{\rm N}$?

   (a) Start from Newton's form of Kepler's equation, $P^2 = \frac{4\pi^2}{G(M+m)}a^3$, and rearrange to solve for $M + m = M_{\rm N} + m_{\rm T}$ where $m_{\rm T}$ is the mass of Triton.

ASTR 200 – Storifying worksheets (example 1 – after)

ASTR200 Winter Term 1 2021 Worksheet 3 Sept. 22

Glad to see you are still with us! Welcome to our third workshop.

Today, you embark on your first real mission as an astronomer, applying the concepts you have learned until now.

Positive reinforcement

Good luck astronomer, and as always, work together with your team and if you get stuck, your TA and Instructor astronomers are here to help!

1. Put yourself in the shoes of a young 19th century German astronomer. You and your fellow astronomers have just begun to better understand the solar system and you are excited to learn more about it. And more specifically, you would like to find the mass of Neptune.

Creative and fun scenario

Fortunately, one of your colleagues, William Herschel, observed Trion, a moon of Neptune. Here are its characteristics:

- It has an orbital period P of 5.88 days $= 5.08 \times 10^5$ s
- It has a roughly circular orbit with $a = 355,000$ km (similar distance from Neptune as the Earth's moon is from us).

Use these as clues to find the mass of Neptune, $M_{\rm N}$.

(a) Start from Newton's form of Kepler's equation, $P^2 = \frac{4\pi^2}{G(M+m)}a^3$, and rearrange to solve for $M + m = M_{\rm N} + m_{\rm T}$ where $m_{\rm T}$ is the mass of Triton.

ASTR 200 – Storifying worksheets (example 1 – after)

2. Congratulations on finding the mass of Neptune! It certainly is a major achievement in your time and your name is all over the newspaper. 'Fueled' by your success, you imagine a rocket, or rather, a magic space broomstick (that you brilliantly name sproomstick) to further explore the solar system.

   The Vis-viva equation is an equation that explains the motion of orbiting bodies in general. And so, without losing generality of the foregoing, this equation explains the motion of the sproomstick in the Sun's orbit. Let us learn more about this equation.

   (a) The total energy per unit mass E in an elliptical orbit with semi major-axis a is given by: $E = -\frac{GM}{2a}$. E is negative which indicates a bound orbit. Note that this is energy per unit mass also known as specific energy.

   Starting with expressions for the kinetic energy K and potential energy U per unit mass along with the expression for E above, obtain an equation for speed v as a function of r. This expression is called the vis-viva equation.

ASTR 200 – Assessment questions

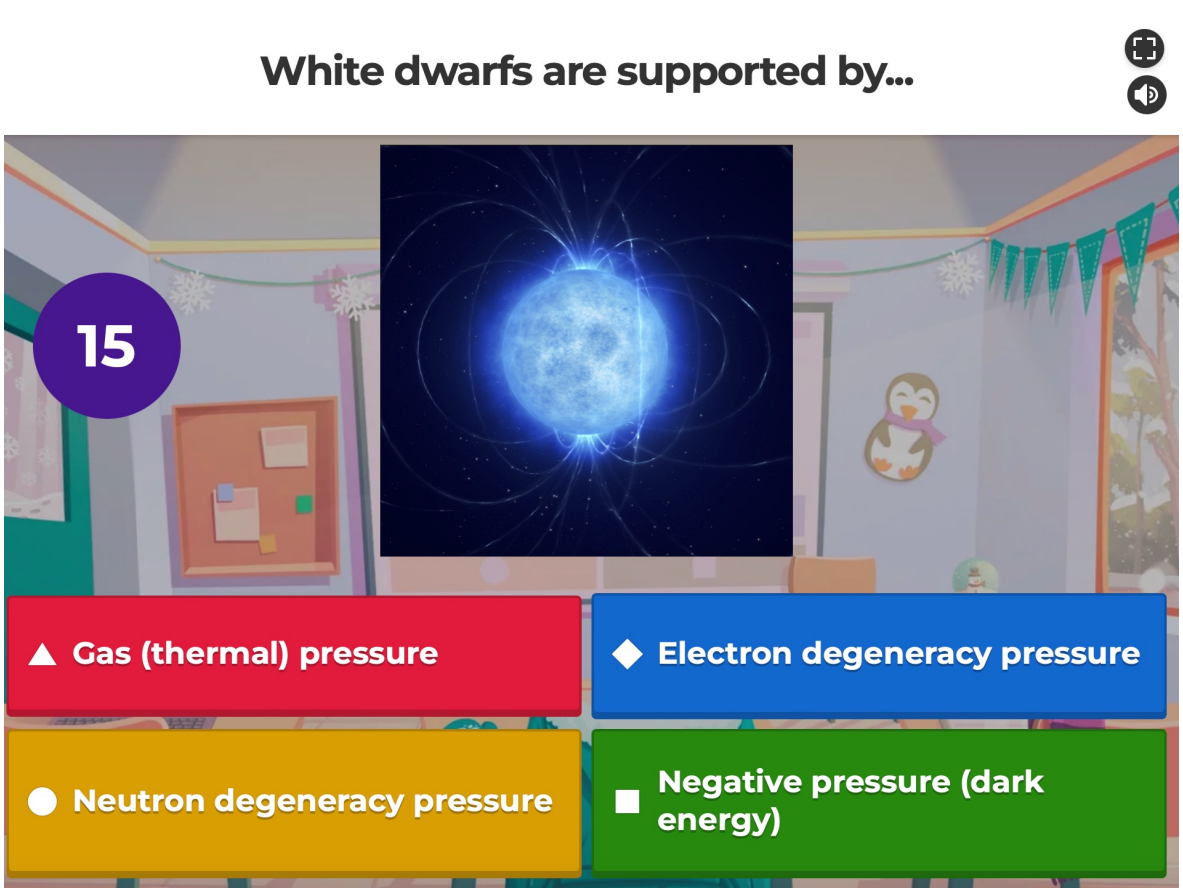
- In previous years, assessment questions were largely quantitative in nature.
- We designed some qualitative questions that require students to synthesize knowledge and express their arguments in writing.

1. **Falsifying Geocentrism.**

   Using your own words, explain in a few sentences how we know that the Earth is not at the center of the Universe. Support your arguments with evidence, which can include historic or modern observations. You are welcome to consult external (reputable) resources and use their figures or animations: please provide a reference in that case.

ASTR 200 – Kahoot quiz

Before midterm and final exams, we had short Kahoot quizzes in class to help students revise course concepts.



ASTR 200 – What we wanted to do but didn't get to

- Assess **students' learning attitudes**
  - Necessity for Behavioural Research Ethics Board approval, more lead time and expertise required than anticipated
  - Substantial work needed to adapt existing surveys (e.g., Colorado Learning Attitudes about Science Survey)
- Incorporate **inquiry-based activities**
  - Would require a significant redesign of the course curriculum to allow lab components
- **Longitudinal study** of enrollment and students' decision to major in astronomy

ASTR 200 – Expectations / Reflections

- Enrollment increased from 50 to 90

- New student engagement activities (e.g. Kahoot, stargazing events) very well-received

- It would have been better if we could have gathered more COPUS data from earlier in the lecture and throughout the term.
    - We could compare the results and look for any trends.
    - However, given that the goal of the project was to redesign the course, this is likely pushing the original scope of the project.

- Storifying the worksheet has potential to better engage students and give them a sense of belonging in the course and the subject by pulling them into the stories as their characters.
    - It would be interesting to better study the effectiveness of such storification and its applicability to other fields of study.

ASTR 200 – Experience as a faculty

- Course redesign
  - It was incredibly useful and fun to involve students in the course redesign. They often have useful insights that are not apparent to instructors!
  - I think students are motivated and empowered by knowing that feedback from former students helped to improve their learning experiences

- Partnership
  - Our partnership seemed to have worked well. Clarifying expectations from up front is key. Incredibly useful to have Science Education Specialist to facilitate our discussions
  - Challenging to work in hybrid/remote format over the summer, when we all had different time constraints
  - Would be great if there's a way to involve student partners in different capacities

ASTR 200 – Experience as a student

- Everyone was respectful and it was a lot of fun working with Allison, Sahib, Ekam, and Adele on this SaP project.

- I think it was especially more fun because we had just taught / taken the course and we all had interests in the subject matter (as I think the students taking this course do in general).

- This was a first time where I worked closely with a faculty member on a project, so it was really cool.

- I think working in the team and trying to think in the perspective of a course designer helped me to not only become a better student but a better peer teacher as I work as a TA (for a second year Computer Science course).

- I would personally love to see this program be expanded to more courses. I have no doubt it would make them more engaging and improve students' experiences.

- **Overall, a great learning opportunity for students.**

Acknowledgements

We are grateful to the support and help from the following colleagues and units for our Students As Partners project:

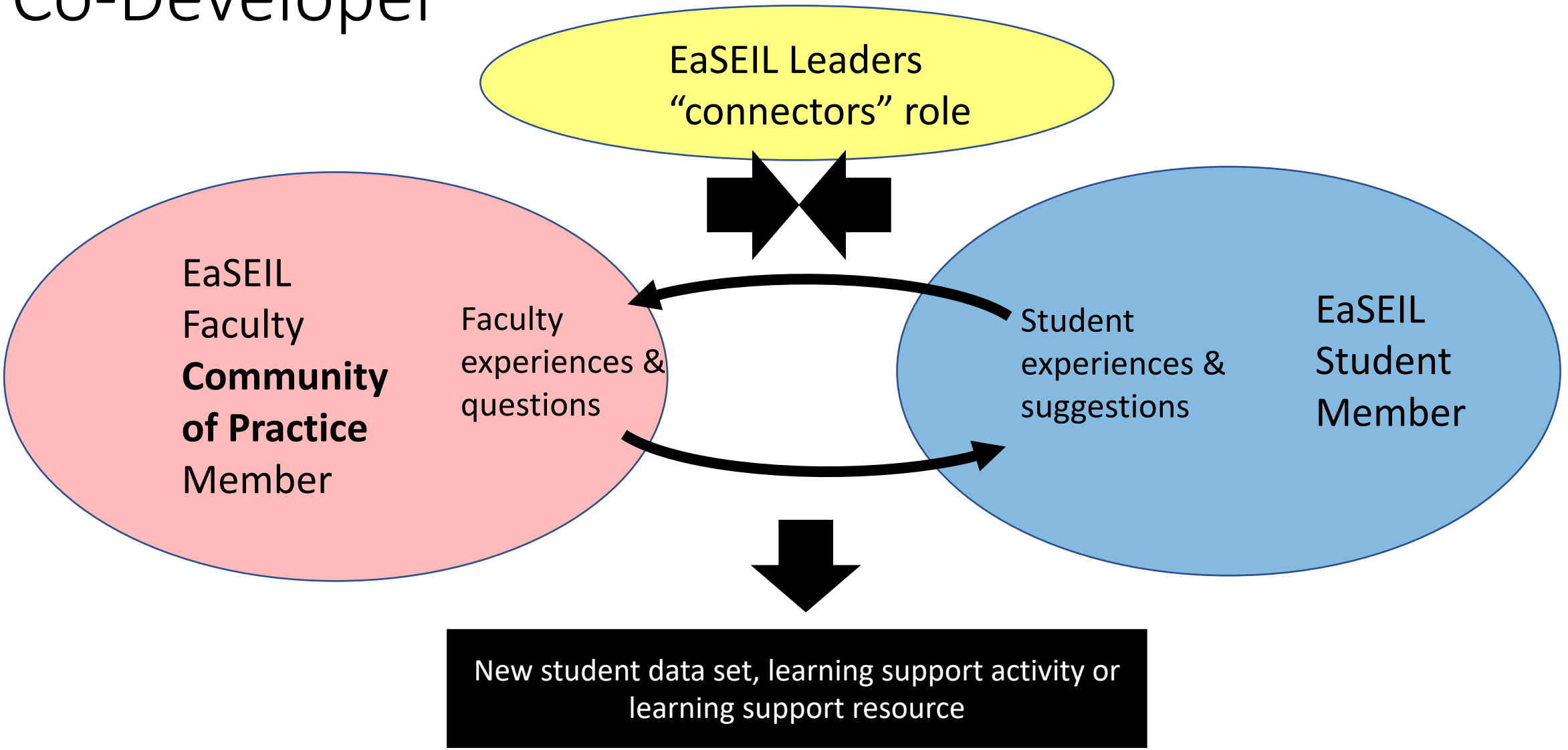
- Department of Physics & Astronomy
  - Ekam Juneja, Student Partner
  - Sahib Johal, Student Partner
  - Dr. Adele Ruosi, Science Education Specialist
  - Dr. Ingrid Stairs, Professor
- UBC Astronomy Club
- Skylight
  - Zohreh Moradi, Research Analyst
  - Manuel Dias, Educational Consultant
- Students As Partners programme
- Center of Teaching, Learning and Technology

Overview of the **Earth Science Experiential and Indigenous Learning (EaSEIL)** Project's Approaches to Students as Partners

Slides prepared by Laura Lukes, Ph.D.

EaSEIL is funded by the UBC Teaching and Learning Enhancement Funds and support from the UBC Earth, Ocean and Atmospheric Sciences Department

Students as Partners : Course Content Co-Developer

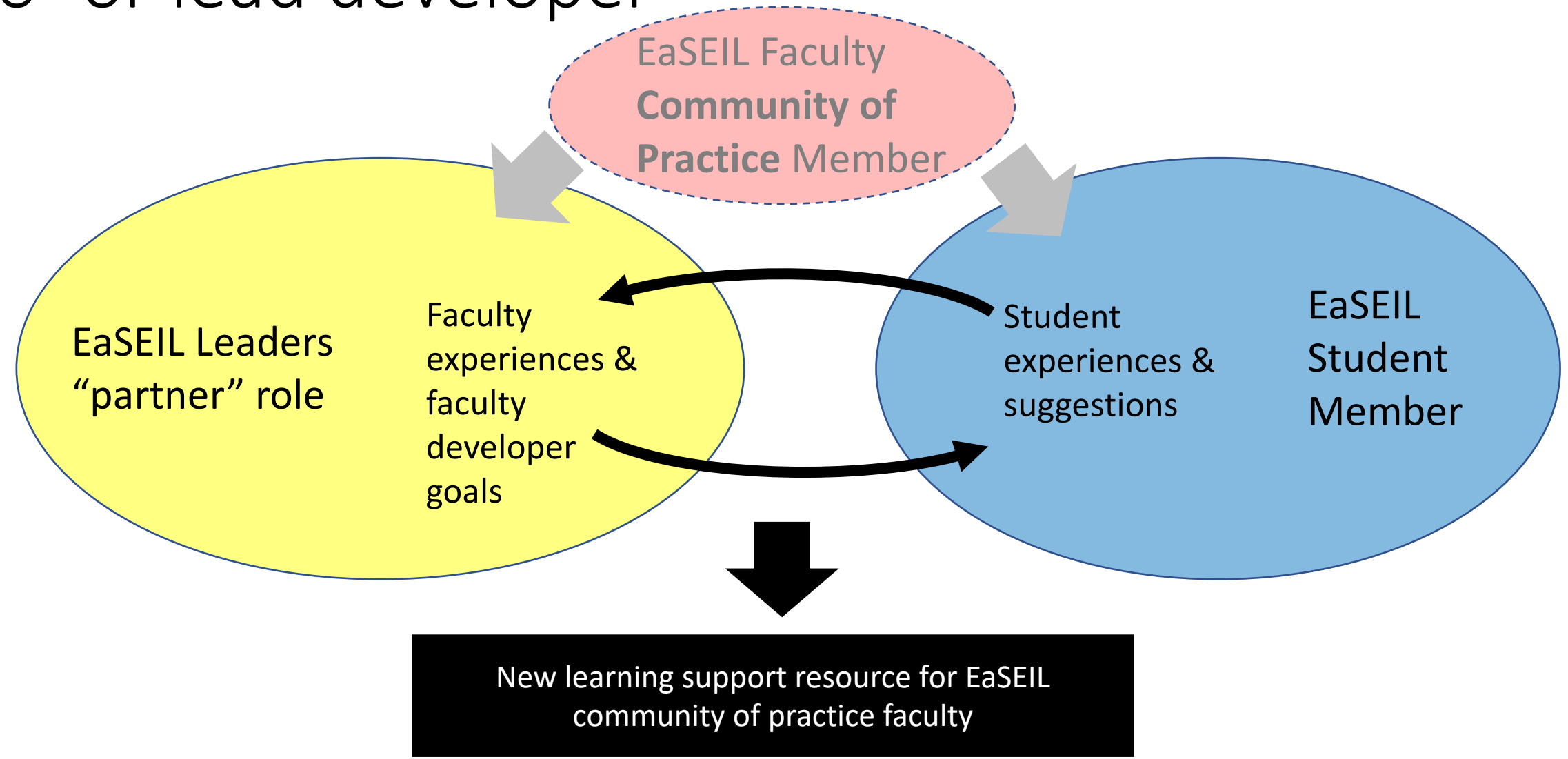


Outcomes: Course Content Co-Developer

- 3 faculty-student pairs; 2 projects
- Project 1:
  - Faculty had competing priorities, project put on hold
- Project 2:
  - Timeline over two terms; new student with new term (partnership starting over)
  - Faculty changed, leading to dissolution of project as priorities changed

LESSON LEARNED: Partnership support infrastructure is critical to partnership success. UBC's SaP program would have been helpful to develop a meaningful partnership model.

Students as Partners : EaSEIL-related project co- or lead developer

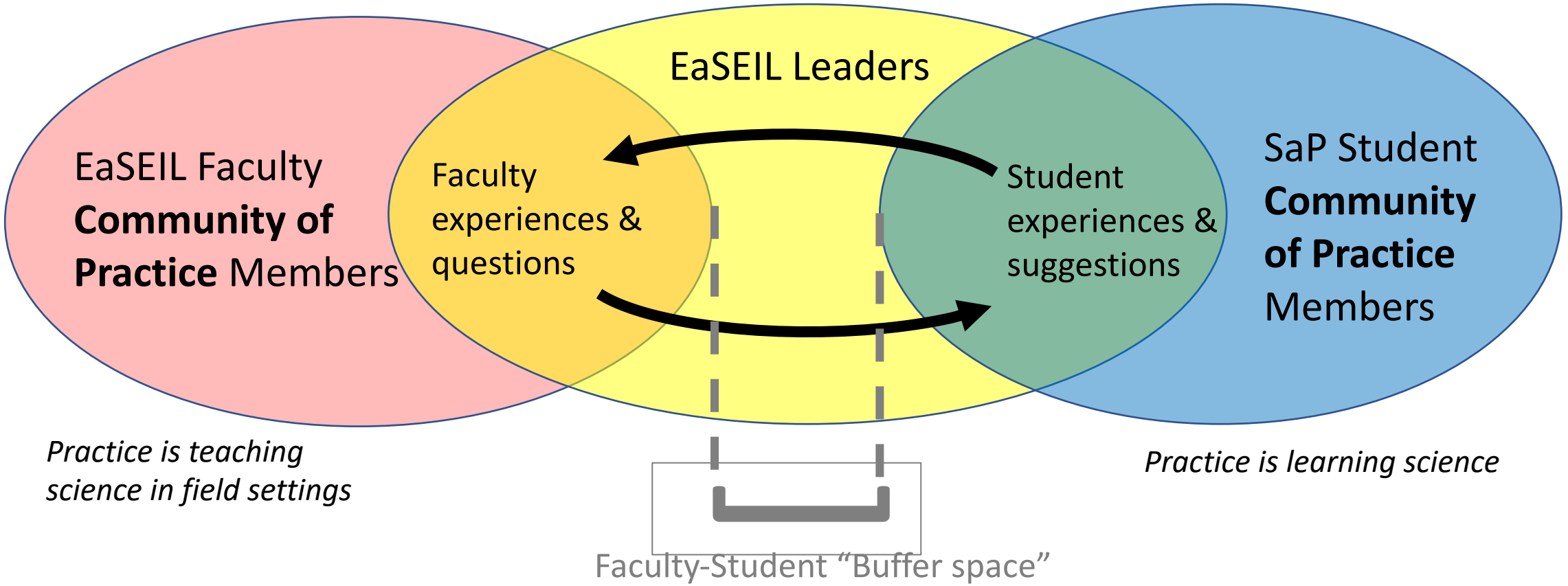


Outcomes: SaP EaSEIL-related project co- or lead developer

- 10 EaSEIL leadership-student projects started summer 2022
- 4 ‘true’ partnership projects:
  - Developing a virtual field tour of UBC-Teck Geological Field Station
    - Virtual Tour
    - Research Study and Poster Presentation at International Conference
    - Student-led Paper (in preparation)
  - Accessibility Guides for faculty and students
    - 2 student-led guides produced and shared with EaSEIL Faculty
    - Oral Presentation about Collaboration at International Conference
    - Open access version (in preparation)
  - Indigenous topics workshop for research groups to create spaces for dialogue
    - Open access workshop slide set (in preparation)
    - Open access Facilitator’s Guide (in preparation)
    - Piloted workshop with students at UBC and with faculty at an International conference
  - EaSEIL website development

LESSON LEARNED: Design and Implementation can be a long process, important to discuss implications at start of a partnership.

Students as Partners : Advisor



Outcomes: Advisor

- 6 focus groups with students on topics faculty expressed interest in through surveys or community of practice discussions
- 2 open access documents sharing student voices (in preparation)
- Preliminary summative documents shared with faculty in EaSEIL and informing choices and practices

EaSEIL SaP – create open access documents

- Students were paid to participate in focus groups ($50)
- Provided a summary document from the focus group discussions to students to comment/edit/revise.
  - If they engaged in this stage ($25)
- Final version of documents will be sent to focus group participants
- Topics determined by surveying EaSEIL CoP members

Topics of Focus groups with students

- **What experiences made you feel included**
- In STEM classes, in general
- In field settings
- **Indigenous content in STEM courses**
- Have you experienced it?
- Would you like it in your courses? How would you like it in your courses?
- **Accessibility**
- What accommodations have you needed?
- What accommodations did students wish they had when learning in the field?
- **What helps students learn in the field/what helps students feel like they belong (working) in the field?**

Focus groups with students

- Advertised through general emails sent to EOAS undergrads
- EaSEIL CoP participants advertised
- undergraduates & grad students in FoS, Forestry, IS, and LFS
- 1 - 6 students in a focus group
- 1.5 hours long
- Each topic had 1 - 3 focus groups
- Questions were posed from a positive view point
- E.g., when have you felt included
- Students first answered the questions individually on a document
- A discussion of each question followed
- 2 EaSEIL leaders – one to facilitate and the other was a note taker
- Recorded audio on zoom

Focus Groups

- EaSEIL leads went over the notes and summarized what students had said
- Sent the document out to the students for feedback
- Incorporated the feedback
- Informally shared overview of the findings with EaSEIL CoP f
- Will share all of the finalized documents

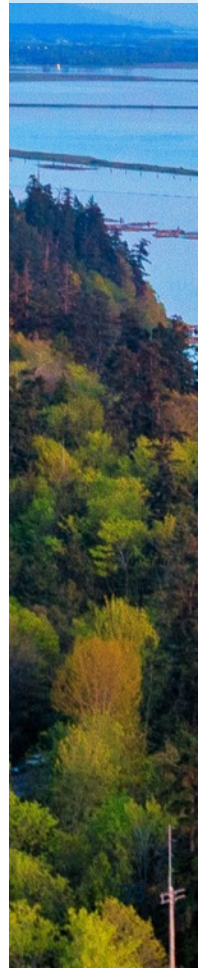
The UBCV SaP Fund

Development of the UBCV SaP Fund

- Vision of Associate Vice Provost, Teaching and Learning
  - Build on existing SaP initiatives in Canada - McMaster University; Carleton University
  - Goal – To fund up to 40 SaP course design or re-design projects at UBCV by June 2024

- Alignment to UBC's Strategic plan:
  - Core Area: *Transformative Learning*
    - Priorities: Education Renewal; Practical Learning; Interdisciplinary Education; Student Experience
  - Core Area: *People and Places*
    - Priority: Inclusive Excellence

- SaP in initiative design, implementation, and evaluation:
  - Partnership among three individuals: staff (SaP Strategist), graduate student (SaP Evaluation Specialist), and undergraduate student (SaP Coordinator)



Overview of the UBCV SaP Fund

Students as Partners (SaP) Fund

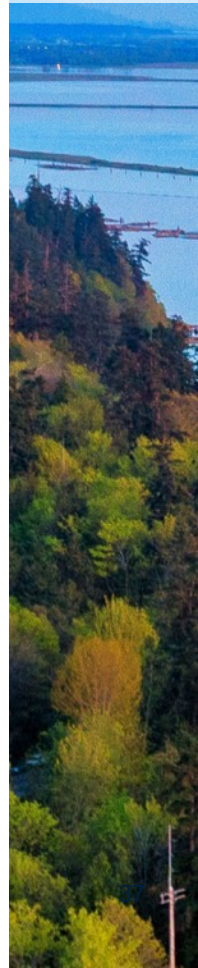
Description: Support UBCV undergraduate students to work in partnership with faculty to redesign undergraduate courses
Amount/project: $7,100; all but $100 must be used to support student partner remuneration

SaP Dissemination Funding

Description: Support undergraduate students involved in funded SaP projects to disseminate outcomes from those projects.
Amount/project: $1000/project
Eligible Expenses: conference registration; travel; accommodation; etc.

Overview of the UBCV SaP Course Design Grants

- Faculty and/or student partners submit project proposal
  - Why the course needs to be designed/re-designed
  - How it will benefit from student partner perspective(s)/contributions
  - How partnership will be conceptualized and operationalized in the work
- Proposals are adjudicated by a panel of students, faculty, and staff
- Funded projects receive:
  - **Learning Design support** – methods for course design; feedback on proposed course design activities; project management support
  - **Evaluation support** – methods of evaluation; feedback on proposed evaluation activities
  - **Partnership support** – connecting to resources; guidance on process of working in partnership, relationship-building



Implementation of the UBCV SaP Course Design Grants

- **Three** funding calls to date (2022; 2023); one upcoming funding call (June 2023)
    - **32** funded projects across **7** faculties

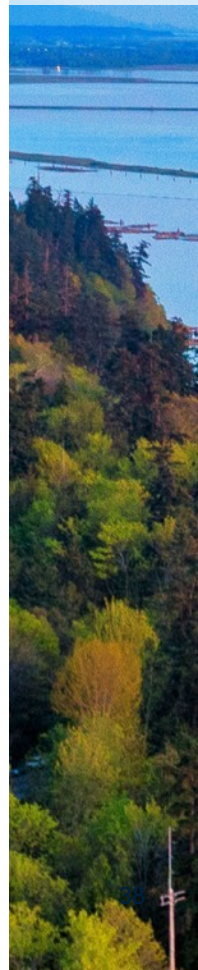
- Workshop topics offered to date:

Cohort Kick-Off *(Cohort 1, Cohort 2)*

Course Design Workshop *(Cohort 1, Cohort 2)*

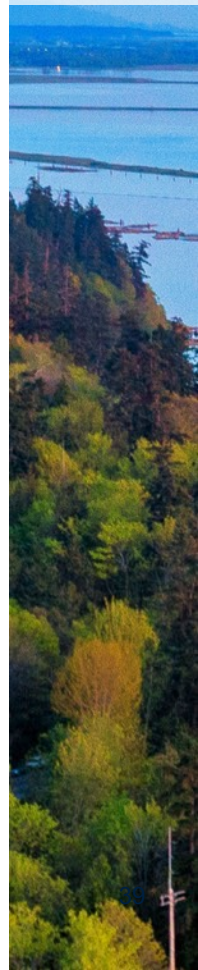
SaP & TLEF Evaluation Workshop *(Cohort 1 and 2)*

Inclusive Teaching Workshop *(Cohort 1 and 2)*



Sample Funded SaP Course Design Projects

- ISCI 400: *Capstone Development*; (Science)
- PHRM 481: *Redesign with knowledge users in mind: The healthcare quality improvement course in Pharmaceutical Sciences* (Pharmaceutical Sciences)
- ECED 480b: *Reimagining Early Childhood Education online courses through co-creating the course ethics of care with infants and toddlers* (Education)
- FNH 473: *Amplifying learning in a fourth-year community experiential learning course: Implementation of innovative practical and theoretical activities* (Land and Food Systems)
- FRST 304: *Implementing course mastery tracking through student-revised learning objectives;* (Forestry)
- VISA 401B: *Decolonizing the Studio Critique: Exercises to Promote Community in the Visual Art Classroom;* (Arts)
- BMEG 330: *Developing curriculum to acknowledge and explore the lack of diversity in the field of biomechanics* (Applied Science)



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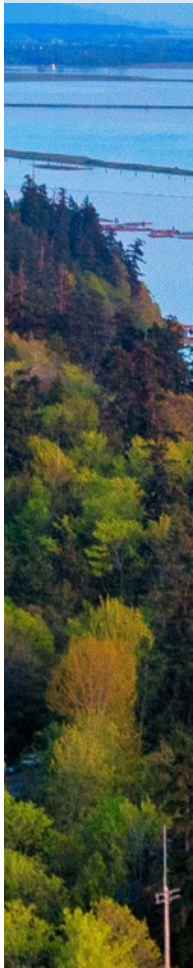


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