APRU PROVOSTS FORUM

Compiled Notes from Sessions

March 23–25, 2016

APRU | Association of Pacific Rim Universities / W UNIVERSITY *of* WASHINGTON

Session I: Research on teaching and learning
Facilitator: Scott Freeman, principal lecturer, UW Biology

This session explored different kinds of evidence-based teaching and highlighted the data from a 2014 longitudinal study. It also modeled active learning and invited discussion of the advantages and disadvantages of each method.

Key takeaways:
- Evidence-Based Teaching is teaching based on collecting data from student work and then adapting one's teaching based on the data. It also includes reading about evidence-based teaching research done by others and making decisions based on those papers.
- If you ask faculty about teaching, their answers are often used faith-based, evidence-free claims that academics would never accept in their research. Ana Mari Cauce, UW's president, says "we study everything but ourselves." This session aims to change that.
- Disciplines present unique cognitive, emotional and psychological challenges for students. Classroom-based research can uncover what's going on.
- What evidence tells us about the classroom--research done in UW Biology classes has found:
    - Certain things help some groups without harming others—in one study women do better, but men are not affected; in another, everyone does better, including the best performers.
    - Students sit with their friends. Whether you intervene depends on whether the task is easy or hard.
    - Students do better in more diverse groups.
    - Compared to lecture courses, class sections using active learning (cards, clickers, weekly pre-graded practice exams) saw a significant drop in failure rates
    - Sections using clickers had 95% attendance compared to no clickers
    - With clickers, the computer can show students a histogram of their own aggregate, anonymous responses. However, the literature says don't show them that histogram, because it's counterproductive: they'll believe whatever the majority of students said.
- After years of research and experimentation, the current Intro to Biology at UW is lecture-free. High structure. The failure rate is now less than 10%. The percentage of As has increased, even though exams have gotten harder.
- Students often push back on active learning. There's a lot of literature on whether students like active learning. They'll get upset at first, if the instructor doesn't explain and demonstrate the benefits to student learning. Freeman gets student buy-in by showing students the data on lecture vs. active learning (e.g.,

higher grades, lower failure rate, etc.) and asks them to vote on which method they want.

- How do we know if we're doing a good job? What evidence tells us about learning during the course of an undergraduate career, across classes:
  - Concerns with quality of exam questions. We work with the questions a long time. Need to check with how students read the questions. Revise and use again. It's very important to make these types of tests low-stakes tests.
  - In the U.S., there's a national movement to establish learning goals in undergraduate education. EX: NSF Vision and Change in undergraduate biology education. Motivated by government and accrediting bodies, backward design – selling it to the faculty, and responsibility to students and their families who ask: what am I getting for my money?
  - In Biology, we took five areas of learning outcomes and are writing a test to assess each statement that we think students should be able to answer.
  - We plan for Bio-MAPS assessment. One motivation is that the data is representing UW and we want to compare our data to, for example, data emerging from UCLA. As a result, we always use aggregated data, rather than data from individual students.
- Freeman and colleagues broadened their research focus from course design in introductory biology to course design in all of the STEM disciplines. A meta-analysis looking at exam performance and low grade/fail/withdraw rates published in 2014 shows similar outcomes for active vs. lecture courses across all STEM. It has since been downloaded 125,000 times.
- So…now that we know what works to improve learning outcomes, how do we get people to change? Using the metaphor of the rider, the elephant, and the path (from *Switch* by the Heath Brothers) where…
  - The rider represents reason. The evidence that change is good → the research on teaching
  - The elephant is the desire to change → institutional commitment to evidence-based teaching and a system that rewards it
  - The path is the way to change, the how-to → training

Activity types experienced and evaluated by conference participants during this session:
1. Socratic teaching—ask, rather than tell
2. Think/pair/share using worksheets
3. Pre- and post-testing with identical questions
4. Polling with clickers—answer, discuss, answer again
5. Random calling—time to discuss in a group, random call on one member to answer

6. <u>Jigsaw</u>—each group of students gets different information, then students reform into new groups to teach each other the information learned in their original group

Activities focused on ways to get students thinking and responding to increase learning and to ensure broad, equitable participation. Pros and cons of each activity type were discussed.

Discussion:
Q: I'm an English professor. I don't see how this applies. What are discipline-specific ways to understand this work, in disciplines that assign papers rather than exams?
A: Scaffolding; students need information they need in order to solve a problem. So, in your case, students need instruction on paragraph structure, etc. before they can engage in higher-level skills. Whether in Biology or in English, this style of teaching calls for deliberate practice. We're trying to structure deliberate practice for our students. This is how we get novices to become experts.

Q: Comment: Another disciplinary challenge is that colleagues in my (Humanities) discipline often think that they don't lecture. But they do.
A: There are class observation tools & strategies an observer can use to report back to a faculty member on the active learning strategies s/he employs, for what percentage of class time, and the other strategies employed, for what percentage of class time.

Q: Do you think any teacher could be taught to use active learning effectively?
A: Almost everyone can learn. Occasionally an instructor can't do it, because he or she lacks cognitive empathy, which can't be created or mentored.

Comment: At UC Davis, we're trying to hire professors in cluster and bring them into an Active Learning community. We also work with promotion and tenure committees so that they understand what these faculty members are doing with Active Learning and Evidence-Based Teaching. Each of these faculty members need to convince their colleagues. They need support. And they are vulnerable at the point of tenure and promotion.

Session II: High Impact Innovations in Practice
Facilitators:
Dr. Stefan Stoll, UW Faculty of Chemistry/Biophysics,
Karen Freisem, Senior Consultant at UW Center for Teaching and Learning CTL

Introductions:
- Stoll recipient of Distinguished Teaching Award for Innovation with Technology
- Freisem collaborates with Faculty, and TA's who want to change teaching, specifically with instructors in STEM; Fulbright specialist in faculty development traveling internationally to have these conversations.

Most faculty want to teach well, but they feel they don't have the time, given the focus on research, proposals, and grants. This session explored the teaching practice reality on each campus, common challenges, how research faculty can cope with this dissonance using high-impact low-effort practices, and what provosts can do to support faculty

Activity types experienced and evaluated by conference participants during this session:
Reflect, write, and Discuss
Discuss and share

Do faculty on your campus experiences frustration regarding time and teaching innovation? How and why? How do they cope with these pressures?

Frustrations include:
- Lack of time to devote to innovative teaching in light of other demands on time
- Lack of incentives for teaching compared to research. Research, not teaching, is linked to promotion
- Lack of sustainable funding even where seed funding is present
- Low numbers accessing available support for teaching through centers for teaching and learning
- Budget issues that drive up teaching loads and class sizes
- Pressure not to innovate for fear of low student evaluations
- Increased compliance reporting taking up time
- Students not attending innovative classes since feel they can learn everything from the textbook (cal tech)
- Juggling schedules and time management

- Getting good support from their dept./university
- Hard to make teaching transformation visible
- Instructors often chose courses they are used to teaching
- There is competition between classes doing different things, which could drive away the teachers from innovation
- Students are looking for results, have certain expectations and may not value innovative teaching techniques

How instructors cope…
- Seek support from the Center for Teaching & Learning
- Consult with colleagues
- Find tools and colleagues is less of a challenge than finding TIME.
- Seek central funding for innovation (UBC, CalTech, UW all have innovation funds) Caveat: even good programs to enhance innovative teaching face the problem of how to sustain funding.

How to encourage innovation to spread to instructors?
- Provide more opportunity for faculty to talk to each other when teaching the same class… so then improvement can be shared (it is not happening now)
- We put in place learning and teaching programs…good motivated staff are doing great stuff, but the issue is with the staff who are not accessing that information.
- Explore more ideas → grouping shared experiences;
- Work on curricular (curricular design) together where you construct courses that are relevant for the students and not the staff. You can talk about curriculum that is more student led and not led by faculty→ osmosis–spread.
- Create teaching awards for teachers and teams
- Motivation is key. In Korea, by the time students come to college they are exhausted from rote memorization…UNLESS they are motivated. Same for teachers. Teaching can be your motivation/passion or just a means of living.
    - Less motivated faculty may use lack of time, lack of funding, as reasons/excuse to not innovate
    - People who are motivated may also feel frustrated because they feel the environment is not supportive or they are not getting student outcomes

How to get students behind the effort?
- From the student perspective, faculty fear that they will a get bad evaluation and sometimes it gets on record…. There is also the competition of losing your students→managing student expectations is a big issue. If you do not get student buy–in in the first 5 min…you could lose them.

How to get the university administration behind the effort? How can you, as provosts, make things be better without eating up faculty/lecturer time?

Promote High Impact, Low Effort Active Learning Tools, such as:

1. **One minute papers**—Can give time for learners to formulate their ideas before discussion and/or provide feedback to instructor on student learning (assessment)

2. **Group work**—"The group worksheets help us better understand the concepts and allow us to work with the week's material in an environment where we can get help from our TA and our peers." →this is the ideal

3. **ABCD Cards**—each student has a piece of paper with A, B, C, D in four squares, fold it and hold up a letter to answer multiple-choice questions in class
   - Low tech, in-class feedback where you can poll a class, similar to clickers
   - Affordable, promotes student engagement, gets students **_motivated_**

4. **Online Office Hours**—
   - Students want extra office hours and some of them commute, so in UW Chemistry department we hold online office hours on Sunday evenings
   - Allows instructors to meet with more students at one time and can replace in-person office hours, which are a lot of time investment for any faculty
   - Low effort but high-impact on student learning

5. **Video Keys**—
   - It's easier to record the answer...students love it...they can re-watch and follow the reasoning of the instructors
   - It reduces the time of the teachers and has more leverage with students

6. **Pre-lecture quizzes-Syllabus**—
   - First assignment in each class is to take the syllabus quiz→For example, "How should you see Dr. Stoll if you can't attend his office hours?"
   - Research shows it reduces time pressure on instructors

7. **Pre-lecture quizzes-Videos**—
   - You can track whether students are watching them; you can do a quiz before class

Discussion: What high-impact, low-impact techniques are you using at your university?
   - Peer Wise-when an individual thinks of a question and members of the class answer it. Credit goes to someone asking...indicates mastery of subject level
   - Post It notes-instead of clickers. At the end of class learners get put comments/questions on the board. Faculty can look at this after class and address/bring it up in the following class.
   - Using short video clip to calm down a big rowdy class: using short video clip to have the class quiet to get started... (say 300 students)
   - One-minute paper + group work
   - Using software to make group randomization fun
   - software generates numbers....
   - Using semi-prepared in-class exercise→ handout a piece of paper with something prepared for students to engage in group work –
   - Teach me something I cannot find in Google-in the process they have to learn something
   - Using interactive apps on mobile phones/tables
   - Group team work -producing something like video, images, etc.
   - Incentives like prizes/awards to motivate (i.e. bring in industry recruits to class)

- One-minute papers to get in depth discussion...with peer review of group to enhance discussion
- "Big Ticket" Innovation grants for online course and online degrees
- Two Test System– Test individual students and then follow with a group exercise to address the same/similar question to then note what differences that makes in learning outcomes
- STEFAN: putting lecture capture systems in large lecture halls so that students can view the material repeatedly...esp. important for international students
- Facebook
- Adapted so students only students enrolled in class have access to it
- FB is integrated into their daily life
- You can highlight, from beginning, student code of conduct and may be referred to it continuously around civility/appropriateness
- Using FB as tool for discussion→ Students answer their own questions and TA/Instructors comment if things go off track or there is mis-information exchange
- FB is free
- FB requires no technology instruction
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Closing→ Recap of Goals, give you the opportunity to reflect, consider teaching reality of campus, and consider new strategies for low effort high impact tools for faculty

Key Takeaways:
- Encourage smalls steps that don't cost too much time...(may be more time upfront, but less time in long run)
- Encourage use of technology as it supports innovative teaching practices (FB, online quizzes, etc.)
- Encourage faulty to share practices (how do you do that with faculty at your institutions? We talked earlier about clusters at UC DAVIS–a group of faculty who keep sharing and working on projects together. Perhaps setting up a structure for faculty to do something similar... maybe some complex and others not so complex....
- Consider facilitating across institutions –sharing practices once a week, or have a pilot learning community

Session III: "Designing and Running Active Learning Classes"

Facilitators:

Matt McGarrity, principal lecturer, UW Communication

Robin Chin Roemer, instructional design librarian, UW Libraries

First Half of Session: Matt McGarrity, Principal Lecturer, Communication
- Focus on the class
- Teach large classes, small classes, and MOOCs
- How do you cultivate a meaningful classroom experience for students regardless of class size?

Why do Active Learning?

Creating a situation where students do the bulk of the work, regardless of discipline

Part 1: Designing Active Learning Classes
- Start with skills and assignments
    - What do you want students to walk away with
- Make classes activity spaces
    - Where they will be doing the work of the learning

- ➢ Start with skills and assignments
    - What do want students to be able to do?
        - Rubrics can identify the course's main skills and clarify assessment
        - Rubrics clarifies assessment but also what is expected of them (students)
        - Not just being able to solve the problem, but being able to explain why and the comprehension
        - The assignments is the bucket of the skills identified

- ➢ Classes as activity spaces
    - Use the class time to engage students in conversation, group activities, etc.
    - Design classes that are different
    - The class becomes the place to practice
    - Active learning changes how we approach the class itself
    - What's the output?
        - By doing the output, students will learn hands-on; this also creates engagement between students

- ➢ Conducting Active Learning Classes
    - Create spaces that tolerate mistakes
        - Normalizing the notion in the development of a skill
        - Normalize trial and error (labs are great places to do this)
    - Encourage collaboration and peer teaching
        - Explain the answer, report the reasoning. Doing this decreases the opportunity for wrong answers/explanations
        - Collaboration can have a significant impact on the learning process
        - Collaboration can also happen in an online class
    - Aid in learning reflection
        - Allows students to reflect on their notes, organize the notes.
            - Leads to overall comprehension and retention
            - Gives students the opportunity to learn from each other, especially when they pair off
            - Helps students understand their own learning habit(s)

- o We want them to make mistakes: it's how they will learn

- ➢ Challenges to active learning classes
  - Love of "content": focus on content "delivery"
  - Lack of time
    - o Less time to include all the content
    - o Finding examples, articles, research, etc.
  - Fear of evaluation
    - o Of student and faculty evaluations
      - ▪ Active learning demands more time and work from students. If students aren't willing to do it, they may give the course and the faculty member bad evaluations
      - ▪ Faculty fear that the format is less rigorous

Discussion: What challenges do your teachers face in creating active classes? What programs do you have to help?
- ➢ Different design and maintenance decisions.

Second Half of Session: Robin Chin Roemer, Instructional Design Librarian, UW Libraries

UW Active Learning Classrooms (ALCs)
- ➢ What makes this room an active learning classroom?
  - ALC gets treated as a decentralized lecture

- ➢ It's an adjustment for instructors
  - How to use the classroom
  - How to adjust the pedagogy

- ➢ It's also new for students
  - At first they were hesitant to write on the walls
  - They didn't know how to approach the space

- ➢ ALCs are trending at more and more universities and are considered an investment.

- ➢ What do teaching spaces look like at your institution? How do you they encourage/challenge active learning?
  - Target audiences
  - Locations and "owners"

- ➢ Modular, flexible spaces where active learning also occurs

- How to improve student learning through the course of their careers?
  - Need to make a space that's as dynamic as the curriculum

- Libraries are strong partners in the creation of both formal and informal learning spaces
  - Bringing together service experts

- What do informal learning spaces look like at your institution? How do they compare to formal learning spaces?
  - Locations, audiences, and partners
  - Intended design vs. actual use

- The virtual space is also an active learning environment
  - Teaching and learning tools
  - Learning Management Tools for the classroom, ALC, and hybrid environment
  - Skill-building workshops for students

- What educational tools are promoted at your institution? How does their adoption impact active learning?
  - Online and hybrid learning trends
  - Innovative or informal uses

- Teaching spaces
- Informal learning spaces
- Educational tools and technologies

Session IV: "What Can Provosts and other Administrators do to Improve Learning?"
Facilitator: Gerald J. Baldasty, UW interim provost and executive vice president

- ➢ Advocate on behalf of teaching and learning

  - You talk about it. You have to show up and be present at events that matter. People are aware of the kind of support that comes from the President and Provost.
  - You have to have some credibility in order to be successful at this. Success and credibility in both research and especially teaching.
  - You work with other people
    - o Mobilize already existing networks. It's not always necessary to begin from scratch.

- ➢ Rely on and empower networks

- ➢ Communicate about innovations and recognize success

- ➢ What are non-financial incentives?
  - o Faculty want time. Time to do things.
  - o Course buy-outs can inspire projects and research
    - ▪ Example: Technology Teaching Fellows Institute
    - ▪ Example: Flipping the Classroom Initiative

- ➢ How do you use technology to improve the classroom?
- ➢ How do you incorporate pedagogy?
  - o Time is a motivator as well as expertise – the availability of people to help.

- ➢ Goals
  - o To get more involved in APRU
  - o To learn more and develop partnerships

- ➢ Examples of what UW has done so far:
  - o Technology Teaching Fellows Institute, co-sponsored by UW-IT, Provost Office, CTL
    - ▪ Stipends
    - ▪ Fellows required to peer-review transformed courses
    - ▪ Each Fellow shares new course with department or other faculty groups
  - o Distinguished Teaching Award for Innovation with Technology
    - ▪ New award for individual or team

- Much innovation is ateam-based.
- How do we support those networks?
  - Provost Reports on Innovations in Teaching & Learning
  - Highlight people who are doing innovative things – not just technology, but broad innovators.

- What's next?
  - Share best practices with each other.
  - Further research-based practices.

Session V: How can APRU institutions collaborate to advance teaching and learning across campuses?

Facilitators:

Beth Kalikoff, director, UW Center for Teaching & Learning

Yusuke Morita, associate director, Waseda Center for Teaching, Learning and Technology

Session Goals:

1. Share examples of cross-campus partnerships that strengthen teaching & learning at two or more APRU institutions
2. Discover opportunities to create or advance partnerships
3. Build communities of teaching, learning, & mentoring

Session Methods:

- Small-group discussion, whole-group discussion, jigsaw, reflection, T/P/S

Questions:

1. **Why partner with other APRU campuses around teaching and learning?**
Examples:

1. 2-campus: Waseda/UW Center for Teaching, Learning, & Technology (CTLT)
   o Waseda & UW Faculty Facilitators
   o Research collaborations
   o Faculty Development program
   o Faculty learning communities
- Goals of UW-Waseda Joint CTLT
   o Develop global excellence in evidence-based teaching methodologies
   o Explore new, evidence based models for teaching and learning
- Professors don't want to change
   o "Digital natives"
     ▪ Harvard University
       • People now born w/ technology. Teaching styles *must* change
   o "Opening of Japan in 1854"
     ▪ A catalyst needed to change the mindset
     ▪ **Faculty facilitators who visited Waseda**
       • Promoting active learning
         o Meeting deans and associate deans
         o Observing classes
         o Advising how to teach students effectively
       • Building faculty community
         o Faculty seminar or symposium
         o Faculty café (informal)
       • Collaborative research

- - - Clarifying the effectiveness of using technologies
  - **Faculty development (FD) Program at UW**
    - *Waseda's faculty members join in UW-FD program*
      - Intensive program in 2-3 weeks
      - Observe active learning classes
      - Meet host professionals
      - Pedagogy seminars & workshops
      - Active teaching plans
      - Presentation
      - Build faculty community

2. 7-camups: Global Learning Community
   - *Hong Kong U of Science and Technology, National U of Singapore, Tsinghua U, U of Malaya, Waseda U, U of Sothern California, U of Washington*
     - Facilitated by Karen Freisem & Wei Zuo
     - Met weekly through Zoom to discuss teaching and learning cultures on campus, innovation, & practices

2. **What kinds of institutional goals could a APRU partnership support?**
3. **How could an APRU partnership serve faculty members on each campus?**
4. **How could an APRU partner serve students on each campus?**
5. **How can you tell if a partnership has succeeded?**
   a. Questions discussed at tables

GROUP DISCUSSION

Current partnerships:

- Sydney-- Joint-teaching: law program w/ Kyoto, Ling w/ Sudan, Museum studies w/ Honk Kong U, Nursing w/ Singapore
-
- Joint degrees:
  - PhD through U21.
  - UW – in processes of rolling out dual masters degree w/ Tsinghua.
    - 16 months in Seattle, 6 months in Beijing
  - UW & ___ U: Joint Project-Based Learning in engineering
    - Students from both parties. Students work separately at their campuses and then get together for a week at UW to share their projects, what they learn, and each others' cultures
    - Stanford – co-teaching, attend same courses at different universities and then join together for a final project.
  - Kyoto U: Student exchanges with the hope of building faculty exchanges

Future partnerships:

- Form a network of the different Centers for Teaching and Learning that all have different focuses (research, active learning, etc.)
    - Low-effort, high-impact
- The Reinvention Center
    - Teaching and Learning focus. Brings them together, proposes grant projects
- Faculty Developers exchanges.
    - Visit other APRU campuses to come up with effective active learning strategies for their respective campuses.
        - UW visiting Waseda – mentoring program in place that is part of the structure and culture of the institution.
- Faculty join online. Allowing connection, similar to exchange programs available to students.

Session VI: Innovation and the University
Facilitator: Vikram Jandhyala, UW vice provost for innovation

How to teach innovation

How to remain at the cutting-edge of development

PART 1: WHAT IS INNOVATION STRATEGY? Introduction to innovation strategy at UW

- UW = #4 most innovative University overall, #1 most innovative public university
- Center of Commercial Innovation
    - CoMotion – your innovation partner
    -
        - Innovation transfer
            - Taking the best innovations to impact
                - Tech transfer
                - Innovation transfer
        - Innovation Learning
            - Getting the ideas out, in terms of what people do
                - Just-in-time
                - Best practices
                - Ideathons
                    - Similar to hackathon, but broader than just tech.
                - UW-wide intro courses
        - Innovation Strategy
            - Public/private partnerships
            - Ecosystem connections
            - New models of research and education
- CoMotion Incubators
    - Fluke
        - Predominately UW companies
        - Wetlab and software companies
    - Startup Hall
        - External companies
            - Techstars
            - UP Global
            - Founders Co-Op
    - Blume
        - Themed companies

Amazon Catalyst – an example of public-private partnership

PART 2: DESIGN THINKING AS AN ELEMENT OF INNOVATION LEARNING

- Design thinking:

- o Human-centered.
- "Failing forward"
  - o What you learn from failure, not glorifying failure.
- 5 steps of design thinking
  1. Empathize
  2. Define
  3. Ideate
  4. Prototype
  5. Test

PART 3: WORKSHOP USING DESIGN THINKING TO REIMAGINE THE UNIVERSITY

How might we design the university of the future?

If you were creating a university now, what are some ideas, questions, opportunities, challenges that you would focus on?

- Exercise: Brainstorm (10 minutes)
  - o Lean Canvas Overview
- Exercise: Mapping your ideas (5 minutes)
  - o Creating themes, naming the themes (3–5)
  - o Pick one theme to move on with
- Exercise: Storytelling
  - o *Breaking down traditional time-based and space-based university model.*
    - Having students come in undeclared
    - 2nd year, hone in on areas of interest, mentorship
    - Volunteering
    - Opportunity to come back to take classes, gain info
  - o *Technology*
    - Augmented reality, virtual reality, etc
  - o *Teaching and learning in the future, made better through diversity and inclusion*
    - Curriculum
      - Students should enroll in challenges, rather than courses
      - Focus on ethics in STEM
      - Create a passion for learning through diversity and inclusion
    - A university open to everyone
      - Not constrained by language barrier
      - Students spend at least 6 months in another country
      - Collaboration through other universities
  - o *Network – Global knowledge playground*
    - Flexible learning
    - Use of new technology
    - Relevancy of university to society
  - o *Advancement of knowledge*
    - Saving the planet
    - Employability of individual
  - o *Personal Education*

- - Entire structure made appropriate for people in all points in time, in life.
    - Car-assembly line approach
      - Self-organizing, self-adaptive
    - Interaction with people
    - No boundaries ... intellectual, organizational, geographical

How innovation happens – DJI Drones as a platform

A design-thinking tool

- Lean canvas
  - Adapted from Lean Methodology and business model canvas
  - A visual hypothesis representing the key elements of your prospective idea
    - Problem
    - Customer segments
    - Unique value proposition
    - Solution
    - Channels
    - Key Metrics
    - Cost structure
    - Revenue streams
    - Unfair advantage

- Program Plan
  - The full narrative of how you will build a sustainable business/program

- **Mapping exercise – 30 minutes**
  - *Personalized learning*
    - How to access education in just-in-time model
    - How to become capable
    - How to break into rigid curriculum
  - Types of learners
    - Retooling mid-career
    - Enrichment learners
  - Unique value proposition
    - APRU network
  - Solutions
    - Seamless, easy for students and partners
  - Metrics
    - How many learners across the globe accessing
    - Accessing across time?
    - Fitbit for education. Personal education tracker

How to make the University a hub for innovation
- How to get industry more engaged

- How to adopt campus life to innovation
- How to get students engaged

Customers
- Faculty, students, community

Solutions
- Find ways of developing spaces on campus
- Activities, events to integrate community.

Unique value
- University has best talents and minds around

How to prepare students for both jobs and lives that don't yet exist
- Technological, social change and globalized world
- Students, parents, funders, government, employers, environment, underprivileged populations

Solutions
- University's ability to create and adapt for problems that yet to exist

Unique
- Open to all knowledge
- Fostering all aspects of future problems

Key Metrics
- Education, employability
- Quality of life
- Civic engagement
- Community footprint and leadership
- Sustained mentorship
  - Lifelong mentoring
  - Encouraging active learning

Teaching and learning made better through diversity and inclusion
- Ethics in STEM

Problems
- Diverse student population
  - Citations, plagiarism

Users
- Students, families, community

Unique Value Proposition
- Diversity
- Focus on ethical dilemmas

Key Metrics
- Cases of academic integrity
- Pre- and post-tests. Freshmen vs seniors

Innovative problem-solving w/ no departments
Problem
- Academic planning

- o Grant program to gain funding + base-level funding that is not tied to departments
  - Student recruitment
    - o Why would a student go to a university without majors
      - ▪ Guarantee employment w/ partnerships

Channels
- Social media
- Work intentionally w/ summer academies

Metrics
- Peer review

Session VII: "Public-Private Partnership"
Facilitators:
Vikram Jandhyala, UW vice provost for innovation
Lara Littlefield, UW chief advancement officer for innovation

PART 1: Context

TRENDS
a) Students
   Summary of trends of students entering programs:
   - Which growing, which not?
   - Which have diversity, not?

   Computer Science (CS) & Engineering have significant gender imbalance. International students are increasing, especially in CS and Engineering. Health Sciences = mostly domestic students.

   What can we learn from trends so we can package our work in ways that are exiting but also meaningful?
   - What are CS and Health doing well?
   - Diversity in all forms is important.
   - Int'l participation is great. Gender imbalance is not.
   - MS programs are "disrupting" traditional PhD routes.

b) Research & Development (R&D) funding
   Declining federal budget & funding for R&D. The increase in industry funding is an opportunity.

c) University and industry synergy
   MIT study – project manager, who has one foot in industry, the other in the university, is important for success of university/industry collaborations.

Outcome vs. impact
   - Industry most often measures outcomes
   - Industry rarely explores what happened finally, long-term impact.
   - As a result, we see a gap between outcomes and impact.

Industry-University Synergy
   - open to pivoting
   - open to outcomes, especially failures

Benefits of University + innovation
   - Meaningful

- Encourage diversity
- Help industry innovate

Part 2: Examples of new public-private partnerships at UW and CoMotion.

a. Amazon Catalyst fund – find big new ideas that might have global impact. First award for Earthquake Early Warming System.
Other examples: detect osteoporosis, desalination
Not making a big splash about funds, but about the impact.

b. Global Innovation Exchange (GIX) UW, Tsinghua, and Microsoft
New model brings MS students together globally to do projects.
Engagement for industry partners:
  1. envisioning
  2. problems come from industry, & industry mentors work with students

c. Mobility innovation Center
  1. Form partnership: "Challenge Seattle" brings Seattle, UW, industry together to talk about issues/solutions.
  2. Idea is that CoMotion helps connect with UW faculty who might be best to work with them on the project. 6-9 month time frame.

d. Start-Up Hall
Created by President Young and entrepreneurs from the area.
Occupants: Non-UW start-ups and accelerators

Part 3: Public-Private Partnerships Exercise
Three parts
a. Group discussion
b. Brainstorm
c. Mapping Your Idea and Reporting

a. Group Discussion
Question for group discussion:
What types of public/private partnerships have work well at your institution? Why? Commonalities? Differences?
Get a scribe and someone who will be willing to talk for the group.

Debrief:
Table 8
- Build a lab together. Works well. By welcoming them into my house, I can be assured of funding. Win-win situation.

Table
- Interdisciplinary year–long courses
- Nissan participation in development of future concept of car
- Center for Water Studies
- Why work? Alignment and commitment

Table 2
- Similar
- We all seem to have incubators
- California: venture capital funds
- China: significant involvement of government in industry parks, e.g. Su Jo
- Sydney: student–union run incubator

Table 7
A number of projects
- Internships in materials sciences
- Hong Kong establishing research and innovation centers in mainland China, work in progress.
- Japan: joint research on campus
- University of Auckland: one particular long–term engagement with health equipment relying heavily on students and staff research in Bioengineering
- What makes it work? From university perspective, engaging students.

Table 5
- Leverage unique strengths of university
- Tohoku U: Materials science is very strong. We have partnerships in making devices.
- Hawaii: travel

Putting It All Together
We brainstormed this morning. Now we'll take what we've done this afternoon and use our morning brainstorm to brainstorm the following question:
How might we create an experience for private partners that support the future university? You can empathize from either side – private side or university.
Q: Can we also put in a little bit about risk?
A: Absolutely.

Brainstorm. 7 minutes.
Think about the university that you designed.

Discussion: Obstacles and solutions
Pick one idea – and become one of the players. And from that viewpoint, what are three obstacles and three ways to solve that obstacle?

Debrief

Table 7 –
Obstacles:
- Non-alignment → understand each other
- Governance and limitations → Industry more top-down → Solution = understand where and how to establish relationships. Better match-matching
- Non-alignment of reward structure, e.g. applied research at most universities is not as high status → Solution: recognize societal impact

Table 5
- Tension: long-term, short-term → not really a solution.
- Politics and social structures in which innovation finds itself → Solution: think through how innovation ins contextualized in terms of politics, social structures
- What do we do about intellectual property → Solution: Patent system

Table 2
From industry perspective
- Damned academics, never get anything done, let along on time → good project managers with foot in both camps.
- Damned academics, they only want to publish articles and they want to keep their IP in a jar in the back yard → think through negotiations around speedy transfer.
- Damned university has such rigid HR practices structures (tenure) → We now understand that there is tenure, but maybe we should fund some of the positions to get us the agility and speed without compromising tenure.

Table
- From university perspective
- University and companies have different interests. University = long-term, industry = short term → have a better design
- Intellectual property → have been arrangement of IP before execution of project.
- Operation of structure of University and company, university = bottom-up, decentralized, industry = top-down, centralized → have joined steering committee
- Similar to previous groups.

Table 8

All the good ideas have already been said.
- We couldn't even decide which perspective so we combined.
- We concluded that two days of Active Learning is too tiring and exhausting so we had to resort to non-verbal communication.
- Here is the university
- Obstacle –
- Connecting faculty, industry mentors and entrepreneur advisors → solution is money and maybe passion.
- Shortage of money → We got stuck on solutions here.

- Measuring success → Peer review, amount of money generated, which brings us back to our second set of obstacles.

Summary (VP)

IP mentioned,

Incentive

Attacking problem from both sides

Tenure

Positions where faculty have a foot in example one person here 50% Google, 50% here.

Thank you! Active Learning takes a lot; it could be called tiring learning as well.