

# The “Beyond CWSEI” Discussion

*What key elements must we preserve to sustain the use of evidence-based teaching methods and drive further improvement of science education at UBC?*

## **INTRODUCTION**

On April 20, 2012, a 1 hour 45 min public discussion facilitated by Ian Cavers, Assoc. Dean of the Faculty of Science was held at the CWSEI End-of-Year event. Over 50 people participated, including research and teaching faculty members, CWSEI Science Teaching and Learning Fellows (STLFs), CWSEI and Skylight staff, and a few graduate students. The purpose was to consider the question posed above in the title. For the sake of clarity, the question was posed to participants in two parts:

1. *What current practices must be preserved to maintain the use of evidence-based teaching methods?*
2. *What could we do to drive further improvement of science education at UBC?*

Participants were asked to initially think individually about question 1 and make a list of about five comments. They then worked in groups of about eight to develop group lists that reflected the consensus priorities of each group. Finally, each group reported to all participants, priorities were listed on a white-board, and a whole-room discussion was led by Simon Peacock, Dean of the Faculty of Science. This process was repeated for the second question.

The prioritized items collected from each group were assembled into categories by Gulnur Birol, Sarah Gilbert, Francis Jones, and Ido Roll. The process was iterative, and ten categories of comments emerged. Interestingly, comments from participants did not separate into two principal themes based on the two questions. Instead, we found the ten categories group conveniently into four main themes: (I) Supporting Faculty in Translating Principles to Practice; (II) Student Involvement; (III) Institutional Support and Culture; and (IV) Collaboration and Communication.

## **SUMMARY OF THE COMMENTS AND DISCUSSION**

The following summarizes responses to the two questions identified using the discussion process described above. The organization of ten categories into four themes does not represent a hierarchy. The bracketed numbers of comments refer to the number of items contributing to each category, from the roughly sixty “key elements” prioritized by groups. Some comments are included in multiple categories. See [www.cwsei.ubc.ca/Files/EOY/EOY2012/BeyondCWSEI\\_items.pdf](http://www.cwsei.ubc.ca/Files/EOY/EOY2012/BeyondCWSEI_items.pdf) for lists of the comments in each category.

### **I. Supporting Faculty in Translating Principles to Practice**

#### **1. Local expertise (8 comments)**

The majority of the comments in this category can be characterized by this statement: “Dedicated fulltime experts (like STLFs) at departmental level.” In fact, five of the six groups had this type of recommendation as their first item. Many felt that these should be permanent faculty positions, perhaps hybrid STLF/Instructor positions. There was a strong emphasis that this support needed to be embedded in the department, e.g. “Local support (at departmental level) from experts who can communicate evidence-based teaching and learning” and “STLF (like) consultants in the department helping to implement techniques on an individual basis and spread ideas.” Other comments in this category included the need for IT support for courses (mainly educational technology support).

#### **2. Science education research (12 comments)**

Five of the six groups commented on the importance of supporting science education research in the Faculty of Science. As one group put it, “(to) enable, facilitate, (and) reward science education research at the scholarly level.” The comments emphasize several aspects of science education research. First, the importance of continuing to “collect data and objective evidence to help identify best practices.” Second, comments emphasized the leadership role that UBC assumes in science education research in Canada and the importance to maintain that role, for example, by disseminating knowledge that is developed here. This flow of information is bidirectional, as identified by one group: “1) continue to present UBCs results at teaching conferences; 2) bring awareness of best practice elsewhere back to UBC”. Last, many groups commented that science education research should be recognized as equivalent to other types of research in the Faculty of Science.

#### **3. Instruction, assessment, & curriculum (11 comments)**

All six groups contributed to this category of recommendations. Mandating, defining, using, and evolving learning goals were identified by three groups. The importance of actively reviewing, developing and/or defining curriculum of programs (not just courses) was mentioned by another three groups. The words “best practices” and “techniques” were used generally in recommendations about the need to mandate, enforce, monitor and improve how teaching is done. Two groups said it is important to continue data collection about effectiveness of individual courses as well as whole programs. They also said the focus should be on measuring improvements in student knowledge and abilities,

but that perceptions and attitudes are also important. In the subsequent whole-room discussion, a further comment recognized the importance of articulating what students “need” from degree programs, based on how graduates and employers will use the knowledge and skills gained.

## II. Student Involvement

### 4. Student voice and participation (5 comments)

Three groups mentioned “hearing from students” in one form or another. There was a reminder to account for diversity of students (i.e. no single teaching/learning approach is optimal for all students). Two groups recommended empowering (i.e. teaching) students to express their experiences, perceptions and preferences, and to knowledgeably critique the teaching they encounter. Two groups also said that both faculty and students should realize that students must be actively engaged in learning. Also, students should be included as active contributors in educational research projects. One group recommended focusing these efforts on first year students, including, for example, the new UBC “pathways” initiative. Finally, in the subsequent whole-room discussion, new points mentioned included the need for ongoing class observations, as well as student & faculty interviews and surveys.

### 5. Teaching Assistant development (4 comments)

Three groups had comments about the need for professional development opportunities for graduate students and specifically teaching assistants (TAs) who are deemed to play an important role in science teaching and learning. TA buy in to support active learning and assessment was felt to be important for sustainability. In the whole room discussion it was emphasized that TA’s play an important role and every new crop of TAs needs to be brought up to speed every year so there needs to be support for development of these TAs.

### 6. Graduate program (3 comments)

The comments in this category emphasized the involvement and training of graduate students in educational projects. Two groups suggested offering a graduate program in science education research.

## III. Institutional Support and Culture

### 7. Structure and Culture (8 comments)

Four of the six groups commented on the importance of developing policies and structures at the Faculty of Science and departmental levels that promote evidence-based teaching and education research. There was emphasis on maintaining the culture that values these practices and active involvement in learning for both student and faculty. Four comments suggest having some type of structure to maintain the culture, e.g. “some kind of central “entity” at the faculty level to provide professional development, communication between the individuals in various departments (ex. reading groups, repository for best practices).”

### 8. Incentives for improving instruction (12 comments)

All six groups commented on providing incentives (including requirements) for faculty to incorporate evidence-based teaching practices. There was emphasis in the whole-room discussion that these efforts take a significant amount of time. Suggestions included course buyouts (reduced teaching load), more student help with courses, some other form of credit for the effort, and various forms of requirements. Four groups mentioned modifying the promotion and tenure process, e.g. “Tenure contingent on effective teaching (evidence based teaching addressed in the review process).” It was acknowledged during the whole-room discussion that this would require a collective effort between the administration and faculty association. Another theme was that faculty should be encouraged to observe their peers’ teaching both within and outside of their departments. This was elaborated on in the whole-room discussion, emphasizing the importance of formative assessment of teaching, particularly for pre-tenure faculty.

### 9. Professional development for faculty (5 comments)

Three groups commented that the FoS should offer professional development support for faculty on how to implement and assess these practices. In addition to workshops, several groups suggested to include mentoring to support faculty. These mechanisms to support best practices should be perceived as bonuses, rather than punishments.

## IV. Collaboration and Communication

### 10. Collaboration and communication (6 comments)

One comment in this category talked about “establishing a culture that encourages and values mentoring, coaching, innovation, and communication in education.” Overall, all comments in this category talked about supporting communication and information flow – across departments and institutions, as well as across stakeholders (e.g., faculty and students). All six groups commented on the importance of sharing practices and findings, and learning about new practices.