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Barriers and pathways to creating sustainability education programs: policy, rhetoric and reality

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This article outlines an action-oriented research project regarding the University of British Columbia's engagement with sustainability. In 1997, the University of British Columbia (UBC) created a sustainability policy that suggests all UBC students should be educated about sustainability. Using data from a series of in-depth interviews the author outlines a range of institutional barriers that impede the implementation of sustainability education including: the problems of disciplinarity, the competitive environment of the university, misdirected criteria for evaluating students and faculty, and multiple priority-setting by the administration. The article concludes with recommendations on how to create institutional change and sustainability education programs at the university level.

Sustainability education is essential for students to appreciate, understand and think critically about complex environmental, social and economic problems (Huckle & Sterling, 1996; Orr, 1996). Many educators agree that learning about sustainability should include discussions of the implications of ethics, alternative worldviews, the role of humans within ecosystems and ultimately a discussion of what matters (Bowers, 1993; Jickling, 1994). How students learn to think about sustainability will influence their actions as local and global citizens. As more universities exchange degrees for money they risk becoming corporations with customers who demand education that will help them compete in the global economy (Orr, 1998). Orr (1998) addresses the relationship between academic planning and ecological sustainability and the current state of affairs within many universities:

> At an organizational level denial is embedded in the very fabric of bureaucracy, management, and committee structure characteristic of higher education in the post World War

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> II era. Colleges and universities have become over-managed and under-led institutions operating more and more like businesses with customers. College presidents increasingly regard themselves as CEOs whose chief mission is fundraising. Few think of themselves as intellectual and moral leaders and will not often invest themselves in controversies that jeopardize their upward mobility. (p. 2)

Following on this theme of the university as part of the problem is the need to find ways for universities to become part of the solution.

A large literature exists on sustainability declarations and signatories but only a few studies (e.g. Leal Filho, 1999, 2002; Shriberg, 2002; Wright, 2002) have examined their implementation. Leal Filho (1999), for instance, outlines a number of critical dimensions and conditions for success of sustainability initiatives and considers the case studies of two universities, Liverpool John Moores (UK) and Santa Clara University (CA, USA). Shriberg (2002) analyzes 11 assessment tools for measuring sustainability in higher education and raises questions about the utility of universal indicators for measuring sustainability in higher education. Wright (2002) outlines the common themes in university approaches to sustainability including: sustainable physical operations, sustainable academic research, environmental literacy, ethical and moral responsibility, cooperation amongst universities and countries, developing interdisciplinary curriculum, partnerships with government, non-government organizations and industry, and public outreach. Yet, as universities attempt to respond to the calls for sustainability or to the 'unsustainability' problem, few studies provide in-depth understanding of what is involved in the process.

When I started learning about sustainability, I thought it meant riding your bike to school every day and recycling tin cans. I assumed that sustainability was a new word for environmentalism. I had little understanding of the complexities of the social world until I moved from science to social science to pursue a doctoral degree. I have since come to understand that sustainability encompasses much broader and more complex issues than transportation choices and recycling, including social, ecological, economic, political and spiritual components. Sustainability also encompasses *how* things happen—classroom dynamics, decision-making processes, organizational structures, leadership strategies, strategic planning initiatives and collaboratively envisioning the future.

Researching the university

As a graduate student, I was generally expected to research outside of the institution, that I should research others, analyze the data and write papers for publication. Instead, I chose to study my own institution and my research is a personal and political journey of pursuing activist research within the university. It is also a personal inquiry to determine whether or not I could practice sustainability education and find personal well-being within an academic environment. I want to create university-level sustainability education programs and find out the extent to which the university is open to transformative shifts in programming, promoting sustainability and questioning its own everyday, taken for granted practices.

The University of British Columbia (UBC) (Vancouver, British Columbia, Canada) is the third largest university in Canada, with over 32,000 undergraduates, 7300 graduate students, 1800 full-time faculty and 7300 staff (and non-faculty employees). UBC grants 68 types of undergraduate and graduate degrees from 11 diverse faculties. The campus is located on a 402-hectare plot of land that overlooks the Georgia Straight at the base of the Fraser River. In 1990, UBC signed the Talloires Declaration, an international commitment to environmental sustainability in higher education. The Talloires Declaration outlines an action plan for incorporating sustainability and environmental literacy into teaching, research, operations and outreach practices of the university. In 1991, UBC signed the Halifax Declaration, another commitment to the importance of university leadership on the path to sustainable development. In 1997, UBC created a Sustainable Development Policy that all UBC students will be educated about sustainability. 'UBC seeks to become a centre for teaching and learning about the skills and actions needed to manage ourselves in a sustainable way' (University of British Columbia, 1997). The University of British Columbia is also committed to improving its performance in sustainability at an operational level.

My knowledge of the University of British Columbia includes my experiences as a Masters student, a teaching assistant, a research assistant, a Sessional Lecturer in Biology, a doctoral student in Community and Regional Planning, and a doctoral student in the Faculty of Education. I have filled notebooks with encounters that demonstrate the tensions between the values of sustainability and my day-to-day experience of university education. These tensions became so apparent to me as I continued my schooling that eventually they came to be the core of my research. I address two questions in this article: What are the barriers and limitations to creating sustainability education at UBC? What possibilities for overcoming these barriers are plausible? The intention of my research is to create change and to create space for change—whether that is a change in perspectives at an individual level or larger changes in institutional action, programs and policy.

Methods and methodology

My understanding of educational and social research is informed by feminist epistemology and feminist research methods as feminists (among others in the university) challenge our current institutional hierarchies and power structures (Lather, 1988; Maguire, 1993; Hubbard, 1996). Feminist methodologies rely heavily on the experience of both researchers and participants involved in the research (Reinharz, 1992). Feminist research methods encouraged me to question deeply my role as a researcher and the influence that research could have on participants. Reinharz (1992) explains that feminist research is a participatory model intended to create social and individual change by shifting the roles and relationships of the people involved in the project. My research is also influenced by the principles of participatory action research (PAR), which recognizes the inherent subjectivity in all social science research and includes reflectivity as an integral part of the research cycle (Hall, 1990; Stanley &

Wise, 1990). Participatory action research has many names and faces in the academic world and is gaining momentum in a number of disciplines, but all projects involve participants in the research process (participatory), are committed to social change (action) and have elements of social learning (education) (Moore, 2004). Action research is an emergent, iterative process by which change and understanding can be pursued simultaneously (Zuber-Skerritt, 1992; Dick, 1997).

The research process

Ideally, I would have had full enough participation from enough people to name my work 'participatory action research'. Unfortunately, faculty members and administrators are extremely busy and it was difficult to find people on campus with enough time to engage in this study. Instead, I concentrated on the action part of the PAR methodology. Action research is different from an 'ethnography' in that the researcher does not merely observe the system, even as a participant, but becomes an active participant in the research process. Coghlan and Brannick (2001) discuss these differences in their book *Doing action research in your own organization*:

> The ethnographic observer attempts to be an unobtrusive observer of the inner life of an organization, while the action researcher works at enabling obtrusive change. Above all, action research is about planned change. The intended change typically involves re-education, a term that refers to changing patterns of thinking and action that are currently well established in individuals and groups. (p. 42)

It was my intention to create change—not necessarily 'obtrusive' change but instead a more subtle kind of subversive change. I intended for my research to lead to changes in attitudes and understandings about sustainability education and I wanted all members of the university community to recognize the importance of implementing the sustainability policy.

During the research, I engaged in many sustainability projects on campus, I attended sustainability events, planned and delivered courses on sustainability and met with faculty and staff on numerous occasions in committees connected to sustainability education projects. To gain further insight into sustainability education, I interviewed people who were actively working on sustainability issues at UBC and discussed their experiences of creating sustainability education programs at the university. During initial interviews, I asked participants to identify other individuals of importance in this field. Through this process, the interview population shifted from faculty and staff focused on sustainability towards administration and faculty who were not working directly on sustainability education initiatives. The second round of interviews were with change-agents, decision-makers and administrators and generally people who were considered powerful on the campus. The majority of the administrators interviewed were people who worked in the area of academic programming (as opposed to campus operations or research initiatives). This was an important step in the research process as the second set of participants held high-level positions in the university and had different kinds of lived experiences of the university.

I chose to move away from interviews with students to focus on faculty and administrator perspectives. In total, I interviewed 30 participants at UBC, including undergraduate students, staff, faculty members from a range of disciplines, Deans, Associate Vice-Presidents and Vice-Presidents. Only two of the formal interviews were with students and the other 28 focused on faculty and administrators. Because many participants are experts in the field of sustainability and university education it was necessary that I include their voices in this article. There are no student quotations used in this article. As a graduate student I was learning from these experts and I have chosen to share their voices with you. In most cases, the quotations need little explanation. My intention is to present the experiences of faculty, staff and administrators in a manner that provokes others to reconsider and rethink their own understandings and beliefs. All interviews lasted one hour, were semi-structured and included 10 questions that paralleled my research questions. The interview questions were as follows:

- How long have you worked at UBC? What is your role at UBC? What faculty/program/department are you in?
- What is your involvement in sustainability education at UBC?
- What are some of the major institutional structures and dynamics that aid in the development of sustainability education at UBC in the area of (undergraduate education in the arts and sciences)?
- What are some of the barriers and limitations to creating sustainability education?
- What possibilities for overcoming these barriers are conceivable?
- What kinds of alternatives/steps toward sustainability education are being envisioned for UBC in the immediate future?
- What are the anticipated benefits and limits of these alternatives/steps?
- How would you describe UBC as an institution? Use a metaphor.
- What is the number one thing you would change if you could about UBC? Imagine you had a magic wand.
- Is there anyone else I should talk to about these issues?

The research questions paralleled the interview questions and included the following: What are the barriers and limitations to creating sustainability education? More specifically, what are the major institutional structures and dynamics that aid in (or obstruct) the development of sustainability education at UBC in the area of undergraduate education in the arts and sciences?

After transcribing and analyzing the interviews I allowed participants time to review and edit their transcripts and they could withdraw from participating in the study at any time. The process of checking quotations ensured that all participants were part of the research process and were open to having their voices in reports and publications. At an early stage (including ethical review), I decided not to identify participants by name or position in the university. I assumed that if participants understood that their names and positions would *not* be included they would be more open in bringing forward information about the university and there would be less chance of the comments being connected with any one individual. It is for this reason that I have

not identified quotations by position. I transcribed all interviews and coded the data by hand into a range of concepts and themes. Data from interviews were triangulated with university policy documents, and with documented observations made during my involvement in sustainability dialogues on campus. A critical friend was used to help review sources, reconsider the use of quotations and highlight alternative perspectives. At the end of the research project, I circulated a 75-page internal report to all participants that outlined the barriers and pathways to sustainability education at UBC. I encouraged participants to provide feedback and integrated it into the final manuscript.

During the research, I was involved in two significant projects related to sustainability education at UBC. One activity was a collaborative inquiry writing project in which seven participants (staff, students, faculty, administrators) shared their experiences of the implementation of UBC Sustainable Development Policy (Moore *et al.*, 2005). I am also a member of a small team planning a proposal for an undergraduate program in sustainability studies. Our proposal for an interfaculty undergraduate program in sustainability studies is complete and we are continuing program design and developing implementation strategies and tactics.

Barriers to sustainability education

A number of themes emerged during the analysis of the interviews and policy documents that led to the proposed list of barriers to sustainability education at the university (see Table 1). These barriers form the organizational structure of this article and include: the disciplinary environment, the competitive environment, misdirected criteria for evaluation, and unclear decision-making structures for priority-setting and implementation. These are obviously not the only barriers to sustainability programming, nor are mine the only interpretations possible. The quotations included in the article are intended to portray expert opinions as all of the participants in the research have spent a large portion of their careers working within the university system and have experience with how the 'system' or 'institution' works.

Barrier one: the disciplinary environment

The University of British Columbia's organizational structure is closely tied to disciplinary boundaries (e.g. departments of sociology, biology, history, etc.), but the academic plan supports and promotes interdisciplinary education. Despite a number of specialized programs for undergraduates (e.g. Interdisciplinary Arts degree, Integrated Sciences Program) and graduates (e.g. Individual Interdisciplinary Studies graduate program) at UBC, many participants associated sustainability with a need for more interdisciplinary programs. The problems associated with researching and studying within a single discipline are nothing new and UBC has recognized the need to move towards interdisciplinarity in its recent academic plans. In 1932, Charles Beard wrote a paper 'The quest for academic power' for the American Association of University Professors. He had this to say over 80 years ago:

Table 1. Barriers to curriculum change towards sustainability education at the University of British Columbia

Barriers to Sustainability Education	Details
Disciplinary environment	• Disciplines determine organizational structure and most departments claim interdisciplinary programs. • Funding is allocated to departments—infrastructure/structures determine outcomes. • Turf wars and boundary wars due to contentious worldviews. • Students have difficulty changing directions, taking courses outside their discipline (i.e. too many prerequisites).
Competitive environment	• Between and within: students (for grades), faculty (publication, grants), departments (students, funding), universities (prestige, power, etc.).
Misdirected criteria for evaluation	• Faculty (publication lists for promotion and hiring). • Student exit surveys focus on jobs and salaries as criteria for student evaluation. • Lack of clear evaluative structures for university policy and plans (i.e. lack of policy implementation).
Unclear priorities, decision-making and power	• Too many priorities. • Unclear decision-making structures. Research as top priority. • Distinct hierarchy of power—administration, faculty, staff and students.

> The task is difficult no doubt, and the educator who rushes in where angels fear to tread will probably run the risk of amusing his colleagues who sit snugly ensconced in their specialist corners. It is easier to ascertain the price of cotton in Alabama from 1850–1852 or to measure the length of frogs' legs in Ireland than to find out what education is and might be; but, despite our desire to escape the problem, the issue presses itself upon us with increasing insistence. (p. 464)

The critique of the disciplinary nature of academic institutions can be found elsewhere in the environmental and sustainability education literature including critiques by Bowers (2001) and Thomas and Nicita (2002). Despite a long list of warnings from academics, universities continue to be discipline centered and teach undergraduates subjects as if they were arranged in tidy boxes (or so it may appear to undergraduates). Do disciplinary boundaries choke creativity and transformation at UBC or are they necessary to maintain order and structure within a large organization? One research participant said this on the subject of interdisciplinarity:

> I am very critical of disciplinary boundaries and the way disciplines try to define everything and lock it in. I am a bit ambivalent in the following sense. I think that knowledge is vast and to some extent you have to parcel it in order to practically have some coherent body of knowledge that leads to people feeling they can get their mind around something and the training—to do something practical with. But at the same time the disciplines often have a stranglehold on the way the university runs, and this translates into departments and people who defend their territories. The disciplines have too much of a stranglehold

> on the structure of the university, so there has to be kind of a blending of the two…And that is difficult to do.

Several interviewees were quick to blame disciplinary boundaries for a range of problems in the university. They also recognized that the system produces 'excessively specialized' experts. One recognized how sustainability had pushed the envelope of interdisciplinarity on campus in many interesting ways, to the point where people had raised concern over which department did 'sustainability' best! Another participant discussed how subject matter or concepts might better organize universities.

> Anything, absolutely anything that focuses on subject matter and not disciplines is useful. I believe that disciplinary boundaries are not useful in any truly meaningful way. Sustainability is a perfect example of a subject that should not be constrained. Perhaps the interaction will foster tolerance for different disciplines and respect for the people who do the work.

Most of the major problems in the world are not disciplinary in nature (i.e. climate change, overconsumption, poverty, global trade issues). One participant gave the example of the complex issue of children's rights to clean water. This problem can be considered through a number of lenses—a corporation's interest in creating water treatment facilities, management of natural resources, global water policy, children's rights, and international planning and development. All of these topics are closely related to the concept of sustainability and it is commonly assumed that problems like these can be solved only with an interdisciplinary focus. If future generations face these types of problems, how will our education system prepare students to deal with them? Do students need to wait until graduate school to grapple with issues in an interdisciplinary manner? Because sustainability issues are interdisciplinary in nature, it is imperative that undergraduates be exposed to the problems and products of interdisciplinary thinking and research.

A longstanding argument against interdisciplinary undergraduate programs is that it would be 'better' for students to get disciplinary training first as the following participant explained.

> The feeling has generally been at UBC that it is better to get some sort of disciplinary grounding under your belt first so that you then have some body of expertise that is coherent, and then you put something else on top—something more specific to a given industry or a given concern. Now what you have to be very careful about is that if you do have people in more disciplinary backgrounds at the undergraduate level, you at least make them aware of all these fields and not lose sight—in fact encourage them—to go on and do graduate work where they broaden and cut across disciplines.

Many faculty members suggested that it is important for students to start with a disciplinary foundation and wait until later on in their schooling to deconstruct that foundation. My concern with this argument is that many students will never actually get to a stage in their education where they engage in interdisciplinary thinking or deconstructing the foundations they have been taught. At UBC, most undergraduate programs are four years in length and there is little time to become interdisciplinary when the current disciplinary curricula demand particular pathways and prerequisites and permit little movement between faculties. Increasingly, programs at UBC allow

interdisciplinary movement but few cross the boundaries of faculties (i.e. between Arts, Science, Commerce or Engineering).

Barrier two: competitive environments

The second major barrier that emerged during the interviews was the competitive environment of the university. The notion of competition is also linked to the disciplinary boundaries created by institutional structures. The theme of competition arose in discussions about the perceived prestige of disciplines, the inequity of funding to departments and a general discussion of 'turf wars'. Many participants were upset with the tensions between faculties, between departments, between faculty members and within classrooms. However, competition went beyond disciplinary boundaries to include discussions of competition between universities. Participants felt that competition between universities was heightened by yearly rankings by the media and other sources. Participants also discussed their experiences of competition in everyday work life and many suggested that we live within a societal culture of competition that also dominates academic culture. Here is one participant's partial response to the question 'What is inhibiting universities from the larger paradigm shift towards sustainability?'

> The well paid and well funded faculties are the sciences—the technology, engineering, medicine and so on. That is where the university growth is. And as a result we see the fading of the humanities, the collapse of interest in languages, culture, history and so on. Things that make us really remarkable as a species, as human beings, are being pushed into the background in the mad technological rush to train people and give them the best technical training and equipment to maximize both their income potential and the economic return to the university on patentable research. I think all of these trends are manifestations of the university having bought into the corporate game. Now in fairness, the withdrawal of public funding forces the university to look for alternative ways of supporting itself. But again, the withdrawal of public funding is an indication that society at large has bought into this corporate privatization model. The university is forced by circumstances to reflect the larger social view but to my mind this results in the trashing of the real goal of higher education, the idea that we can actually create better people.

In order to gain access to a university education, students needed to compete for grades in high school and (in many cases) on standardized examinations. The promotional material for UBC clearly explains that students in high school need to have a record of high averages to be admitted. For example, a sound clip on the UBC web page for incoming students explains why UBC is hard to get into:

> Some people think we are hard to get into and we are. At UBC, we are looking for the future leaders and so we court the country's best and brightest, then we ensure they are surrounded by others who are just as talented. To get into most UBC programs you need a very high average not to mention straight A's for effort. Yes, we may be hard to get into but by demanding the best we are able to produce the most prepared graduates possible. (University of British Columbia, 2002)

At first glance this sound clip entitled 'UBC—leading by example' is a simple sound bite of promotional information, but unpacking the underlying message reveals that

these kinds of messages are at the root of the unsustainability problem. Many university programs demand the best and the brightest students and claim to produce the best students and yet these programs rarely explain what it means to be the best. In his book *The university in ruins* Readings (1996) claims that universities rarely define the criteria for being the best or outline the values underlying excellence. 'As an integrating principle, excellence has the singular advantage of being entirely meaningless, or to put it more precisely—non referential' (Readings, 1996, p. 22). In a recent academic planning process, UBC asked the members of the community to respond to the following vision statement in an online questionnaire (University of British Columbia, 2003a). 'In indicating that UBC aspires to become "Canada's best university", is the current Vision statement in Trek 2000 too ambitious—or not ambitious enough?' The question did not ask 'What does it mean to become Canada's best university?' and as a result we are left with ambiguous and unclear intentions.

There is a difference between creating an environment in which students, staff and faculty strive to compete and an environment in which students, staff and faculty are encouraged to become enthusiastic learners. There is also a difference between creating a 'learning community' or a 'learning university' and creating a university that competes for excellence (Duke, 1992). The learning university strives to create an environment where partnership and collaboration are valued and there is a general openness to change. A learning university is not only focused on research, but places significant importance on creating an environment for learners (faculty, staff and students). A learning university emphasizes a shift in organizational culture, a focus on collaboration instead of competition and creating a community to foster and stimulate learning in all of its members. I am not suggesting that a learning university may not also be an excellent university but instead that the members of the learning community would create the criteria by which excellence is assessed. This is a subtle but important distinction. The consistent message to 'be the best' (as opposed to working collaboratively or creating learning communities) is just as explicit for new faculty competing to gain tenure and become a permanent part of the UBC community. Another participant discussed this predicament:

> Mainstream culture sends a message that competition leads to greater productivity and excellence. I think that can, and should be challenged. It's like learning. Students receive individual grades and marks. Outside of the university, people work in teams much of the time. Even when people aren't in teams, most recognize that their success depends in many ways on the cooperation of other people. In a university context, work is graded on an individual basis…you are pretty much on your own.

The environment of competition is found not only among faculty and students. One staff member suggested that competition is the default and that we need to work more consciously to cooperate with one another. In an academic environment, critical thinking is valued, rewarded and encouraged and this may be connected to the ongoing competitive environment in academia. In academia, individuals gain power and prestige by creating new knowledge and publishing it. New knowledge claims and assertions are assessed by critiquing one another's work, through critical examination by other researchers, by publicly critiquing research at conferences and by blind peer

reviews for journals and other publications. One participant discussed the tension between moving forward as an institution and spending time critiquing ideas of colleagues.

> It is an embedded cultural thing at the university…so is the whole idea about moving knowledge forward through criticism—that is very deeply embedded at the university—the idea of whatever you do having to stand up to criticism. And so that is where the atmosphere of competitiveness evolved. And I think sometimes competition is really good for stuff—to up the ante—but it is often used in a negative way at the university—quite distressing and I think that is one reason there are not more women academics—they actually don't like that whole scene.

Another participant suggested that the university is a reflection of the dominant worldview that regards human beings as independent from the rest of nature. This participant was deeply concerned about the corporatization of the university.

> The university reflects the values of mainstream society. If you read our own literature, we are not really here any longer to produce better citizens with a wider understanding of our role in the world or our relationship to one another. We have increasingly bought into a kind of corporate model of higher education. Increasingly I think society sees the university as a way of training highly skilled technicians who will be better able to compete in the global economic rat race. And of course, it is precisely this rat race that is destroying the planet. In short, the university is a reflection and it reflects in most of its operations the values of the mainstream society.

I asked one participant the following question: 'What would a collaborative approach at the university look and feel like?' and this was the response: 'I think everyone's stress would go down measurably, we would feel better about coming to work, morale would increase and interestingly, so would productivity. We might even have moments of mirth and merriment.'

Barrier three: misdirected criteria for evaluation

Evaluation takes place at a number of levels at the university: in classrooms, in department meetings and in boardrooms where administrators plan. Students are asked routinely to evaluate the teaching ability of their instructors and new systems are being developed at UBC to record and appropriately release these evaluations to the university community. Every unit (department, research institute) on campus also conducts evaluations on an ongoing basis that include departmental reviews by internal and external review committees. Evaluation indeed happens at the level of classrooms and departments but I wanted to know how university plans and policies were evaluated.

At UBC, university-wide evaluation takes place in the Office of Planning and Institutional Research. During the interviews it became apparent that the feedback loops and evaluative structures for the university plans are rarely coordinated with the criteria used in the meta-evaluations of UBC. UBC has a set of plans, priorities and policies as well as operational timelines that are well intentioned and useful. I was curious to find out how the university (as a whole) determined whether it was doing

a good job of meeting the goals and expectations outlined in these plans. How does UBC know if these plans and policies are making a difference? Administrators informed me that it is difficult to evaluate the objectives of the university because of the large size of the institution and the range of mandates of the units on campus. UBC does evaluate student experience through exit surveys of graduates in collaboration with government agencies and other organizations (e.g. University President's Council of BC, 2001). These surveys are geared towards employment statistics, job satisfaction and student satisfaction with their university experience. I asked one participant why the questions on the exit surveys did not match the current goals of the administration and this was the response:

> Well the survey came long before the TREK plan [UBC's academic plan] came in and I guess what we would do is base it more on the academic plan—the part that has to do with students. Have you read the academic plan? It puts a high value on sustainability and citizenship and again we are torn because we do have to look at the economic aspects. We do have to report that they got jobs. And we do have quite a lot of emphasis on jobs and employments and level of employment. We do also try to look at generic learning and sustainability might be a topic that might be a future survey.

UBC has a mandate to teach all students about sustainability but has no way to determine whether this goal was being reached. During the interviews I learned that the university evaluates its own progress in only a few concrete ways.

Evaluating faculty. At the University of British Columbia, faculty in tenure track positions are expected to excel in three core areas in order to be promoted: teaching, service and research—not necessarily in that order. Evaluating individual faculty for promotion is not as straightforward as it may appear. The Faculty Association negotiates UBC's policies and procedures for moving candidates through a series of evaluative steps to a final appointments committee. The *Guide to promotion and tenure procedures at UBC* (University of British Columbia, 2003b) is 27 pages in length and outlines the detailed process for faculty promotion. Recently these procedures were updated to include a more detailed section on the scholarship of teaching as reason for promotion. Many participants discussed the overwhelming problem of the current reward structure or what many called 'the publishing game'.

> It basically comes back to the reward system. The reward systems for sustainability education and the reward system for true interdisciplinary research and education and the basic reward system for teaching well…I don't see why we cannot promote someone who is an exemplary teacher—if you see it as 3 cups or 3 glasses of water—you have got your service/outreach and your teaching and your research. Why we can't appoint people as 70% teaching 10% research and 20% outreach. If we don't have anyone transferring knowledge to people who actually need it in society we are not fulfilling our obligation. And yet a lot of people in this Faculty and I am sure in other applied Faculties whose skill is very much in knowledge transfer and they are less interested in publishing in a journal that 100 people read…they are more interested in an opinion/editorial piece that 100,000 people read—but you go down that road and the rigor thing comes up and all that. But my sense is that there are a number of Deans that are really concerned about building the undergraduate foundation—the question always comes back—well wait a minute—there is a real tension

> between the priorities of the 'research intensive university' and the need to build that really great foundation of excellence in undergraduate learning.

Evaluating the number and quality of research publications is the simplest way to assess faculty members. Hiring and promotion committees count publications and citations and rank journals in order of prestige. If teaching is *as* important as research, how do universities evaluate the teaching capabilities of new faculty?

> You know it is interesting, I don't think we have a good way of evaluating whether someone is going to be a good teacher or how much they care about teaching. Most people ask them to write about why they want to be a faculty member—what do they think about teaching, what are their philosophies and they can bullshit that one pretty easily. Many departments look at the performance in the seminar and try to translate that into teaching and some departments have them deliver a lecture…which I always thought was kind of artificial—walking into the middle of a 4th year class…I just don't think we have objective criteria that work.

I was told that it was common practice for hiring committees to count the number of publications of a job applicant and to consider where the publications were published and how many authors appeared. I was told that in the case of multi-authored papers, hiring committees would contact the other authors to determine the percentage contribution of the candidate. The order of authorship is another way to quantify the 'excellence or lack of excellence' in an individual. As one professor retires, another is brought through the same demanding system of hiring and promotion and the system reproduces itself with minor (and in some cases major) grumblings.

Fortunately, the reward system is slowly changing to include criteria for the scholarship of teaching. The rhetoric at UBC has shifted to embrace and encourage collaborative exercises and yet the reward structure remains very much in tune with individual efforts. Collective efforts by faculty members are forcing administrators to reconsider outdated criteria for hiring and promotion. What questions should be included to expand the current criteria for excellence? In what ways are teaching and service assessed? Is publication the only way to become a leader in the academic world? One participant answered this question when it was posed in an interview.

> I think faculty that either are leaders or we believe will become leaders in whatever discipline they are in…By being leaders they are recognized as being in the top 10 in the world as cardiac physiologists or whatever it might be…Victorian historians or whatever. Of course the expectation is that those people will be also superb teachers. So we reward teaching and we expect teaching—quality teaching.

I had heard this argument many times before—that somehow the best researchers were the best teachers in universities. And so I asked the question 'Do you see that there is a link between top researchers and top teachers?' The following was one response.

> I think that. Yes I do. It is not 100% but you find people that are enthused and excited about generating knowledge want to share it and people that want academic careers do it because of their involvement with students.

I will leave the argument about the link between good teachers and good researchers for others to consider. An entire chapter of the book *No place to learn: why universities*

aren't working by Pocklington and Tupper (2002) is devoted to the connections (or lack thereof) between research and classroom content. The authors claim that the link between research and teaching needs to be carefully considered and call it the 'myth of mutual enrichment' (p. 110). The notion that top researchers make the best professors has and will continue to be challenged. There are many attributes that active researchers bring to their classrooms just as there are important attributes that skilled educators and practitioners can bring to the undergraduate classroom.

Barrier four: unclear priority-setting and decision-making

I wanted to know how and where decisions are made with regards to creating a curriculum about sustainability. I was talking with administrators who are 'at the centre' and yet they told me that the faculty members had more power than they did to change the curriculum. The faculty pointed at the administration, and management pointed back at the faculty. It became clear that administrators were considered 'above' faculty members in this clearly hierarchical institution and yet there is confusion about how decisions are made and who has the power to create change. Here is one of many examples of what I call 'pointing at the power'.

> The blocks are actually in what I call middle management and even lower—I don't think the blocks are always with the senior administration around sustainability education—the blocks are often with the disciplines and the Faculties—we need to educate our colleagues about how they can put sustainability education learning outcomes into their courses. I think it is a block at the delivery level that we need to work on—it is a block at the Faculty level. Now you could say—wait a minute—there is no funding…it isn't coming through…but it is like that with everything…there has to be reallocation and creativity around how we do things.

I imagined that I was going to find people with 'the answers' in the interviews, people who would inspire me with their intellect, finesse and strategic thinking about undergraduate education. Over the years I had questioned the decisions at UBC but I trusted the decision-makers were making strategic, carefully considered choices. In talking with one participant it became apparent that they too had similar ideals about how the inside of a large university worked.

> I agree with you and what struck me (and this is across institutions) is the lack of the simulations of the models to which we are going to ascribe. We might be making some other kinds of decisions so what is the impact…has someone done a simulation of this 2 or 3 years down the line…what is going to be the ripple effect? Where are we going to get the money from? All we have to do is build more apartments…and that sort of crosses, social, environmental and political impacts. I don't see that kind of thing going on and I expected to see that the closer I got to the centre…I thought there was somebody off in some building somewhere who did this sort of stuff. I am not sure how anxious I should be about that. I would have thought that because we are caretakers of an institution we would be doing a lot more of that.

I was looking for a single answer, but I came to realize that there are many ways to create change at the university.

Pathways to change

The final interview questions were about organizational change as it relates to sustainability and university culture. The discussion of sustainability often led people to ponder how change happens in general, and whether the shift towards sustainability happens at the level of the institution or the individual. One participant who had spent a lot of time thinking about change suggested that instead of changing individuals one by one, members of the university should work on the things they could more easily change such as policies, rules, etc. Most participants believed that major changes must happen before sustainability education will find a place within the university. Unfortunately, there was no consensus on the best approach to creating that change. Some participants believed that a major shift needed to occur at the level of individual while others felt that the institution as a whole needed to change directions.

The four barriers outlined in this article (disciplinarity, competition, misdirected evaluation and unclear priorities) are not specific to sustainability education. However, without changes in these areas, there is little hope for sustainability education to become a reality. I have outlined a short set of recommendations for creating sustainability education including more emphasis on transdisciplinary research and teaching, collaborative and transformative learning, and creating structures that incorporate participatory evaluation.

Transdisciplinary research and teaching

Universities need to think broadly about interdisciplinary education and begin to consider transdisciplinary research and teaching. Sustainability education is transdisciplinary in nature and should *not* be thought of as a new subject or discipline. The dialogue about sustainability must include globalization, environment, development, economic systems, social justice and conservation to name just a few. The distinction between interdisciplinary and transdisciplinary is in the meaning of the prefix of the words. Interdisciplinary refers to research or education that occurs between or among disciplines. Interdisciplinary research can also mean research on a single topic by two or more disciplines, or using methods and concepts from one discipline to answer questions from another discipline. Transdisciplinary education or research goes further than interdisciplinary to include interfaculty programs and has the intention of creating new boundaries for exploration and understanding. Transdisciplinary research and education is complementary to interdisciplinary approaches and concentrates on the space *between* the disciplines, *across* the different disciplines and *beyond* all disciplines (adapted from Nicolescu, 1997; Lattuca, 2001).

It is important to note that UNESCO supports transdisciplinarity in projects related to creating a culture of peace within the upcoming decade (2005–2014), the UN Decade of Education for Sustainable Development (deRebello, 2003). There is a small (but growing) literature on the relationship between sustainability and transdisciplinary research and thinking. Creating structures within our universities to

promote transdisciplinary research and teaching would open pathways in the movement towards sustainability education.

Collaborative and transformative learning

Everything that happens inside classrooms between students and between students and professors is a part of the curriculum of higher education. How we teach is as important as what we teach. Sustainability education must also include the implicit curriculum often hidden within the structures and organization of the entire campus (Margolis, 2001). Shifting to models of collaborative and transformative learning is necessary if we are shifting towards models of sustainability education. A collaborative working space focuses on the process of learning where people exchange ideas, feelings, experiences, information and insights and there is an emphasis on listening, negotiating, challenging, questioning and understanding alternative perspectives (Cranton, 1996). The role of the educator in these learning environments is to provide materials and goals for the students and establish a trusting atmosphere for learning. The focus of teaching and learning in a collaborative model shifts from information transfer (transmission and reception) or discussion (cooperative model) towards a model in which all participants are involved in a shared process of constructing knowledge. By creating spaces at the university where collaboration is practiced and encouraged, academics can move away from the current structures of competition, towards processes connected with the values of sustainability.

Participatory evaluation

Ideally, evaluation strategies should be integrated into the planning of educational projects and programs. As the university makes plans and sets priorities it needs to create evaluative structures to determine whether program goals and objectives are being met. Patton (1990) explains that one negative connotation associated with evaluation is that it is something done *to* people (as opposed to *with* people). Instead of 'being evaluated', participatory evaluation is controlled by the community and is undertaken as a formal, reflective process for the development and empowerment of all participants (Patton, 1990). By creating evaluative structures that are open and transparent, more of the university community members (faculty, decision-makers, staff and students) would be able to participate in processes of decision-making. University-wide evaluation needs to occur as an ongoing process, not only after a project or program is complete. Good evaluative structures are not unlike good action research projects with clearly outlined cycles of planning, acting, reflecting and evaluation. The intention of evaluation is that it happens over time in order to improve the outcomes and processes of the project. Participatory evaluation is appealing as it represents a movement away from conflict and competition towards a paradigm of collaboration and understanding. By allowing more participants to be involved in the university-wide evaluation of programs, plans and priorities, members of the university

could share in changing the institution and have the potential of expanding community networks.

Faculty members suggested that administrators have more power to create change and yet administrators maintained that faculty members have more power to create change in their departments and classrooms. It was clear that the goals of the administration were not always aligned with the goals of the faculty members and as a result many initiatives were uncoordinated. Faculty and administrators working for the inclusion of sustainability education felt exhausted and had difficulty balancing their workloads with further commitments for moving sustainability forward. Many faculty members are frustrated with the constantly shifting vision of UBC and felt there was a need for long-term thinking beyond 5–10 years. Many participants felt the university needed to engage in sustainability planning that would consider 100 years in the future and the impact of our decisions on future generations. There was consensus that it is much easier to talk the talk about sustainability than to walk the walk of sustainability. However, many participants are working hard to walk the walk in their daily lives and believe that small changes will eventually turn the tide towards sustainability. It is clear that a good academic vision does not necessarily result in an effective implementation plan of that vision. The current Sustainable Development Policy outlines the need for changing pedagogy, ecological literacy and sustainability education and yet few sustainability education programs are happening at the university. In the most recent version of UBC's academic plan (TREK 2010), sustainability is more prominently featured in a number of areas and may become a part of the university's mission statement. I was informed that the dialogue documents that I circulated to the participants of this study were utilized extensively in the consultation process of this academic plan.

The current trajectory of university education is not integrated with the ideas, values and processes connected to the concept of sustainability. Planning for sustainability education in an interdisciplinary context encourages us (students, staff, faculty and administration) to question how we might change the entrenched values and practices that have helped produce the present sustainability crisis. UBC committed to sustainability and sustainability education by signing international and local declarations for sustainability. In order to meet these obligations, UBC must ensure that sustainability education is a priority. In my opinion, it would help greatly to encourage decision-makers to become more accountable to their policies. Further research is needed to determine how universities can create educational programs that have the ability to transform perspectives and ways of being in the world. Through interviews and workshops I came to understand that many academics share values that underlie sustainability and sustainability education. By creating new models of collaborative and transdisciplinary learning, the university can create structures that allow for sustainability to move from current rhetoric to reality.

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