

Western
UNIVERSITY

Reflections

Academic Integrity in Canadian Higher Education: A Conversation with Julia Christensen Hughes

BY KEN N. MEADOWS, EDUCATIONAL RESEARCHER, TEACHING AND LEARNING SERVICES

Dr. Julia Christensen Hughes is Dean of the College of Management and Economics (CME) at the University of Guelph. She (along with Don McCabe, founder of the Center for Academic Integrity in the US) spearheaded the Canada-wide administration of the Academic Integrity Survey in 2002 and is collaborating with Don once more on the 10-year follow up in which Western will participate in October 2012. Julia will be giving the keynote presentation entitled *Integrity in the Academy: Imperatives, Incentives and Innovations* at the Teaching Support Centre's **Fall Perspectives on Teaching Conference** on Friday, August 24, 2012 (9:00 a.m., Social Science Centre, Room 2050).

I had the pleasure of interviewing Dr. Christensen Hughes about what we learned from the 2002 Academic Integrity Survey and what we might expect from the 2012 survey.

What is the Academic Integrity Survey?

The survey captures the perceptions and self-reported behaviours of students and faculty concerning academic misconduct by students. The idea behind the survey is to raise awareness amongst students, faculty, and administrators about questionable behaviours that are occurring on their campuses and to generate ideas for what might be done about them.

What were a few of the key findings from the 2002 survey?

There are so many interesting findings, where do I start? To begin with, there are significant differences of opinion between students and faculty

about what constitutes academic misconduct. There are behaviours that many faculty consider serious forms of cheating that students do not see in the same way. For example, an area in which there are differences of opinion concerns student collaboration. This is an area of a lot of confusion. When is it appropriate to collaborate and when is it not? Is it realistic or appropriate to require students not to collaborate on an on-line quiz, or on a take-home assignment for which there are right and



Julia Christensen Hughes
University of Guelph

wrong responses? Another example is getting questions and answers in advance of writing an exam. When faculty use the same exam from semester to semester and believe they have controlled access, some students inevitably manage to get hold of old copies. Is this cheating or a sensible approach to studying? Who cheated who? Understanding these differences in perception is important because not surprisingly, behaviours students tend to see as not cheating or trivial cheating are the most common behaviours they report participating in.

At the other end of the spectrum, where there is strong agreement between faculty and students that the behavior is wrong, there is still a fairly high percentage of students—as many as 9%, for example—who report turning in work that has entirely been done by someone else. The question here is do we have the mechanisms in

place to appropriately detect and respond to the most serious kinds of academic misconduct? Are the faculty adequately aware of the institution's policies, are they prepared to follow them and do they

...continued on page 2

Inside:

Academic Integrity in Canadian Higher Education	1
What Did You Just Say?!	3
Symposium on Research on Teaching	5
GIFTs up for Grabs	6
Mastering "Doctorateness"	7
Enhancing Your Teaching and Enable Others to Learn with OER	8
Blended (Hybrid) Course Design	10
Coming Events in TSC	11
Spring Perspectives on Teaching Conference	13

Contact us:

TEACHING SUPPORT CENTRE

Room 122, The D.B. Weldon Library
Western University
London, Ontario N6A 3K7
Phone: (519) 661-2111, ext. 80346
E-mail: tsc@uwo.ca

Reflections is the newsletter of the Teaching Support Centre at Western University
Available online at www.uwo.ca/tsc

Academic Integrity in Canadian Higher Education...

Continued from page 1

feel supported when they do so? And, are the penalties sufficiently severe to serve as a deterrent?

In reading the open-ended responses to the study, I got the impression that many students who break the rules do a kind of cost-benefit analysis or risk assessment. Some explained having engaged in serious forms of cheating, like paying a friend to write a paper, because they believed they would likely fail if they didn't, that there was little chance that they would be caught, and even if they were caught, the penalties would likely not be all that severe.

Think of these as two separate issues: Where there is a lot of confusion—we need to engage in meaningful conversations, try to resolve disparate points of view, reflect on our assessment practices, and then educate the community at large. The serious types of misconduct need a clear and significant response. We need to make sure that we have policies the faculty support and are prepared to follow. [Note: *The results of the 2002 study are summarized in Christensen Hughes & McCabe, 2006b; see references below.*]

What were some of the most surprising findings for you?

I was certainly surprised by the self-reported rates of participation in some of the more serious behaviours. This really concerns me. I believe these rates reflect a sentiment shared by a minority of students that they are at university simply to get a credential, and they plan to get that credential as 'efficiently' as possible.

Reflecting on the open-ended responses to the study, I drew a number of different conclusions and coined two phrases: 'Students cheat when they feel cheated' and 'When faculty create game-playing conditions, students will engage in game-playing behaviour.' A lot of students expressed sincere concern for some of the things they saw going on in the academy and said that it created an environment conducive to academic misconduct. For example, once an exam is set or an assignment is given, it is out there. If a faculty member uses the same exam or assignment again, the student 'game' for many becomes simply getting hold of last year's exam or paper and replicating it without necessarily having understood the

material. You then have some students who have access and some who don't. This breeds resentment and cynicism among students. They then try to win the game rather than authentically engage with the course material. To me it was surprising to see how many students wrote passionately about feeling cheated by the assessment approach taken by faculty. They felt the focus was more on supporting the faculty member's need to assign grades as opposed to encouraging learning. A similar dynamic takes place when students are assessed on short-term recall. If students don't see such an examination approach as legitimate, they might be tempted to bring notes or electronic aids into the exam room.

My advice to faculty is to make sure the assessment approach truly reflects the learning objectives of the course and to explicitly explain to students how the approach will support their learning. Also, always change assignments and exam questions from semester to semester. If that's not possible, make old assignments and exams available to all students—either on-line or on reserve at the library. At least then there will be a level playing field.

In my book *Taking Stock* (Christensen Hughes & Mighty, 2010), I summarize research that demonstrates there is a relationship between the learning environment created by the faculty and the learning approach taken by students. I am certainly not saying that faculty are to blame for all forms of student misconduct, but the way faculty approach the assessment of learning has a profound effect on the approach students take to their learning.

Another thing that surprised me was some of the criticism of the survey. I was told by both faculty and students that the survey should not have focused exclusively on the misconduct of students. A common sentiment was, 'You said this was a survey on academic misconduct and it is not, it is actually a survey on student cheating.'

One faculty member suggested that as faculty we need to look in the mirror first and ask ourselves what behaviours we are modeling to our students. He admitted to taking 'short cuts' in his own work due to deadlines and other pressures, such as not being fully

prepared for class and hastily preparing exams. I was equally struck by student comments such as 'We see faculty lecturing all the time who don't give attribution for the ideas they share with us.' Challenging the notion that students shouldn't submit the same piece of work for more than one course, one student wrote, "We come across papers that faculty have written and published in several different journals that are not all that different, yet they get credit for having published multiple articles."

Why a 10-year follow up? Why is it important to replicate the research at this time?

Academic integrity is at the core of the academy yet it is constantly under threat. Technological innovation continues to challenge. Understanding how profound—how systemic—the barriers are to its achievement is important. We need to be able to hear the voices of faculty and students as to why academic misconduct is occurring and what else we can be doing about it. The survey is tangible evidence of an institution's concern and commitment to doing what it can to create a culture of integrity.

What do you expect might have changed in 10 years?

My hunch is that, sadly, despite increased awareness and the efforts of many universities to establish offices of integrity, clarify their policies, and offer workshops for faculty and students, I do not know that we will see the numbers go down. Our institutions exist within a broader societal culture that to some extent condones 'cheating to win' or relates success to wealth and celebrity, regardless of how it was earned. I believe that notions of character and honesty do not get the attention they should. This is a major cultural influence that we need to acknowledge. For significant change to happen I believe we need to have deep learning experiences become the reality for the majority of our students. Until that happens, I do not think that we are going to see much change.

What are the key messages you want faculty members to take away from discussions of academic integrity?

Model the behavior you want your students to engage in. For example, model citation when

...continued on page 3

What Did You Just Say?! The Perils of Pragmatics

BY NADINE LEGROS, LANGUAGE & COMMUNICATION INSTRUCTOR, TEACHING SUPPORT CENTRE

Misunderstandings between what a speaker intends to communicate and what a listener understands can be humorous. Sitcoms such as *Two and a Half Men* employ this type of misunderstanding to great comedic effect. For example, Alan warns his son, “Hey you better hurry up or you’re going to be late for school.” Jake responds, “That’s okay, I don’t mind.” The exchange is funny because it encapsulates their entire relationship: Alan is ineffectual, and Jake is notoriously underachieving. Unfortunately, this type of misunderstanding isn’t always funny; poor pragmatics can have a very negative impact on relationships between native speakers and non-native speakers of a language. This impact is especially critical for graduate students who are non-native speakers of English and those who are speakers of World English—the varieties of English that are spoken in countries such as India or Ghana. Poor pragmatics can imperil the relationships international graduate students have in their many roles on campus.

Pragmatics

The study of pragmatics focuses on the aspects of meaning and language use that are dependent on the *intentions of*

the person speaking, the *context of any given situation* (including the relationship between the speaker and the listener), and the *understanding of the person listening*. Pragmatics examines what a person means by the use of certain words and what their choice of words communicates given the situation (Cargill, 1998). The above example occurs in the morning when Jake is getting ready to go to school. Alan’s choice of words, “You had better hurry” indicates that he intends to warn his son. By not recognizing the intended warning in his father’s words, Jake is demonstrating a lack of awareness of pragmatic meaning.

International graduate students may not have a well developed awareness of pragmatics in English for multiple reasons. First of all, most international students have been taught by instructors whose first language was not English. Non-native instructors of English tend not to recognize pragmatic error as often as native-speaker instructors do, and they also tend to underestimate its significance (Kasper & Rose, 1999). Secondly, the English as a second language classroom is not a conducive environment for learning about pragmatics as the situations for pragmatic miscommunication do not arise often

(Kasper & Rose, 1999). The relationships in a language class are clear, and the topics of discussion are more contained than they are in ‘real life’ situations. In addition, pragmatic missteps occur more frequently between non-native speakers of a language and native speakers of a language than they do between individuals who share the same language background.

How pragmatic competence correlates with language proficiency is unknown; what is known is the impact that pragmatic error has on a listener. When somebody speaks very little of our language, we tend to consider them to be ‘outsiders’ and judge their behaviour depending on how we generally feel about their culture (Platt 1989). However, when an international graduate student speaks English very well, we tend to consider the person to be part of our group and interpret their behaviour according to our rules—we assume shared agreement about what our words actually mean (Platt, 1989). In the face of pragmatic missteps by highly fluent speakers of a language, the tendency is to consider the comment to have been deliberate rather than an error, and a subsequent tendency is then

...continued on page 4

Academic Integrity in Canadian Higher Education...

Continued from page 2

you lecture, really be clear on the sources and show how your own ideas have built on them. If you hand something out to your students, again cite it—have a reference. Live that expectation. Think about integrity in your own work.

In addition, I would tell faculty to have a hard look at their approach to assessment. This is most important. Look at your course and ask yourself what you most want your students to learn. Ask yourself to what extent your learning activities and approach to assessment are congruent with the objectives. Are there things you

could do differently that will motivate students to engage more deeply—more authentically—with the material? When students believe the faculty member is sincerely interested in their learning, is highly motivated to help them learn, is passionate, and is giving fully of themselves to the course, students are more likely to mirror those behaviours. How we approach the course, how we construct activities in class, what we ask our students to do—does it all drive deep learning? If it does, students will be less likely to engage in misconduct.

REFERENCES

- Christensen Hughes, J. M., & McCabe, D. L. (2006a). Understanding academic misconduct. *Canadian Journal of Higher Education*, 36(1), 49-63.
- Christensen Hughes, J. M., & McCabe, D. L. (2006b). Academic misconduct within higher education in Canada. *Canadian Journal of Higher Education*, 36(2), 1-21.
- Christensen Hughes, J. M., & Mighty, J. (Eds.). (2010). *Taking Stock: Research on teaching and learning in higher education*. Montréal, Quebec: McGill-Queen’s University Press.

What Did You Just Say?!

Continued from page 2

to assign attributions to the person who has made the pragmatic error. Returning to our sitcom example, Jake's comment might be viewed as belligerence rather than genuine misunderstanding, especially given the fact that he is a native speaker.

Ways Pragmatics Imperil Communication

Lack of pragmatic awareness on the part of international graduate students has implications both in terms of how they receive and deliver messages. It can result in their sometimes being unable to understand messages accurately, because they need to "decod[e] what is said ... and understand ... what is meant" (Balconi & Amenta, 2010, p.96). For example, a supervisor may use the words, 'You might want to reconsider your entire theoretical approach' within the context of a meeting about the impasse her graduate student has encountered in his research. The supervisor may intend the use of the word 'might' to be diplomatic and gentle given the difficult news she is delivering. If the student is solely focused on the language used, he may hear the word 'might' and think he has some choice in the matter, which in fact he does not.

Pragmatic misunderstanding can be a result of interference from the students' first language—they will translate something directly from their language into English. For example, a common way to phrase a question for Persian speakers when they are teaching in English is 'Do you have any idea what' In English, we tend to use this phrase at the beginning of sentences which have some accusation in them or which imply a lack of knowledge or of demonstrated thought. For example, a parent might say to a teenager when they have come home late, 'Do you have any idea what time it is!?' In a classroom, an undergraduate student might hear this phrase and misinterpret it to be an insult to their intelligence when it was an invitation to participate.

Another reason for pragmatic missteps is that while native speakers of a language are privileged by access to a range of linguistic devices from which they can draw, non-native speakers are less so. For example, during an academic advising session with a supervisor, an international student asked, "Can I waive this course?" (Bardovi-Harlig & Hartford, 1993, p. 297). The student might have appeared not to have been deferential enough

to the professor's authority by asking whether the student himself could waive the course, as the waiving of courses is the sole domain of the supervisor. However, the situation could have arisen simply due to a paucity of vocabulary—perhaps the student did not know the phrase 'to get credit for previous work.'

One of the riskiest components of language for non-native speakers is that they do not always understand the connotations of phrases. For example, imagine you give the following feedback to a student: 'Your argument would be more convincing if you supported it with some facts and figures from empirical research.' Your student, believing herself to be showing deference, responds with, 'If you say so.' She might intend the comment to convey, 'Professor, you know better than I do.' However, 'if you say so' has very negative connotations in English. The meaning of this phrase is closer to, 'Well, I don't really agree with what you have said, but I'm going to pretend that I agree just so that you stop talking.' Another such example is the phrase, 'Of course.' Many students will use this phrase intending to say, 'Yes, I agree,' without realizing that the response connotes, 'I'm not an idiot, you know.'

Developing Pragmatics

Unfortunately pragmatic errors are like Kierkegaard's view of life—only understood backwards. It seems to be only after hackles are raised that we pause for that what-just-happened moment. Dictionaries with examples of pragmatic effectiveness do not exist as pragmatics are too contextually bound for such resources to be created. So, what can native speakers who are engaged in communication with international graduate students do to assist them?

The overarching theme of pragmatic errors is that the comments are inappropriate, but informing an adult that something that they have said was inappropriate is delicate business. If the person speaks English very fluently, some may experience a high degree of defensiveness. When possible, a potential debrief to inappropriate comments would consist of: 1) informing the student, 'In English (or in Canada or in my understanding), the words (for example) *if you say so* have a negative meaning. They can communicate that you are not accepting what has been said to you;' 2) asking the student if that was what they wished to communicate. In

addition, an entire chapter about pragmatics (Meanings in Context) is available in my book, [Communication Strategies for International Graduate Students: Surviving and Thriving in Canadian Academia](#). (Note: this free book is available online to the Western community.)

International graduate students have many different roles within the university—student, research assistant, teaching assistant, supervisee—and each role requires the development of many aspects of language. The pragmatic dimension lies at the intersection between language, the culture of an individual's department, and the context of Canadian academia. Students need to develop the "cultural capital" (Siegal, 1996, p. 376) that is specific to each of their roles to negotiate this intersection. The best thing to do is to be aware of the potential for pragmatic miscommunication, to delay responses to inappropriate remarks, and to explore intended meaning. Of critical importance is also encouraging international graduate students to develop relationships that will expand their communication skills.

REFERENCES

- Balconi, M., & Amenta, S. (2010). From pragmatics to neuropragmatics. In M. Balconi (Ed.) *Neuropsychology of Communication*. Milano: Springer-Verlag Milan.
- Bardovi-Harlig K. & Hartford, B.S. (1990). Congruence in native and nonnative conversations: status balance in the academic advising session. *Language Learning*, 40(4), 467-501.
- Bardovi-Harlig, K. & Hartford, B. (1993). Learning the rules of academic talk: A longitudinal study of pragmatic change. *Studies in Second Language Acquisition*, 15(3), 279-304.
- Cargill, M. (1998). Cross-cultural postgraduate supervision meetings as intercultural communication. In M. Kiley & G. Mullins (Eds.) *Quality in Postgraduate Research: Managing the new agenda*. The University of Adelaide, Adelaide.
- Kasper, G., & Rose, K.R. (1999). Pragmatics and SLA. *Annual Review of Applied Linguistics*, 19, 81-104.
- Platt, J. (1989). Some types of communicative strategies across cultures: Sense and sensitivity. In O. Garcia. & R. Otheguy (Eds.) *English across cultures, cultures across English: a reader in cross-cultural communication*. Berlin: Mouton de Gruyter.
- Siegal, M. (1996). The role of learner subjectivity in second language sociolinguistic competency: Western women learning Japanese. *Applied Linguistics*, 17, 356-382.

Symposium on Research on Teaching

BY ALLEN PEARSON, FACULTY ASSOCIATE, TEACHING SUPPORT CENTRE

On April 19, the Teaching Support Centre and the Research on Teaching Learning Community sponsored a symposium on research on teaching.

The purpose of the symposium was to highlight the work done at Western on research on teaching. It also provided the opportunity for faculty members, librarians and archivists, and graduate students to learn more about research on teaching and to meet and interact with colleagues who have completed research on teaching projects. Many interesting and valuable projects have been completed at Western that broaden our understanding and knowledge of teaching in our environment. This was an important opportunity to learn more about these developments.

The symposium featured presentations by two recipients of the 2010 Research on Teaching Small Grants award. Carroll Iwasiw of the Arthur Labatt Family School of Nursing spoke on her project, "Writing Levels of Year 1 Students in Western-Fanshawe Collaborative BScN Program." The other presentation was by Kathy Hibbert and Roz Stooke of the Faculty of Education reporting on their project, "Supporting Graduate Students' Writing in Curriculum Studies."

The symposium also had a poster section where completed research was presented. Included in this section were faculty members and librarians from Arts & Humanities, Education, Health Sciences, Science, and Western Libraries.

Marjorie Johnson wins 3M National Teaching Award

Congratulations to Marjorie Johnson, who has been awarded the highest teaching honour in Canada, a 3M National Teaching Fellowship. Teaching in the Department of Anatomy and Cell Biology in the Schulich School of Medicine & Dentistry, Johnson is one of 10 fellowship recipients this year. Read more in [Maclean's](#) magazine or on the [STLHE](#) website.



3M National Teaching Fellowships



Celebrating 26 years

3M National Teaching Fellowships Nomination Deadlines

Internal: August 17, 2012

External: August 31, 2012

Every year, 10 Canadian professors are recognized for their exceptional contributions to teaching by the 3M National Teaching Fellowship, created by the Society for Teaching and Learning in Higher Education and 3M Canada.

[Click here](#) for details regarding nomination process, award eligibility, etc.

If you are interested in discussing how to put together a dossier for the Fellowship, please contact Dr. Debra Dawson at dldawson@uwo.ca. Dr. Dawson served on the 3M Selection Committee for several years and would be pleased to assist you in this process.

GIFTs up for Grabs

BY NATASHA PATRITO HANNON, EDUCATIONAL DEVELOPER, TEACHING SUPPORT CENTRE

During this past holiday season, the TSC called upon Western graduate students to contribute generously to those in need ... of novel teaching ideas, that is! The Great Ideas for Teaching (GIFT) contest offers graduate students an opportunity to design and share unique classroom activities, creative assignments or other instructional strategies that enhance student learning. Three exceptional proposals were selected from among numerous submissions to be shared with the Western community at the Winter Conference on Teaching and via our website (www.uwo.ca/tsc/graduate_student_programs/teaching_contest.html). Complete with stated learning outcomes, descriptions of key concepts addressed, and a breakdown of timelines and necessary resources, these GIFTs are ripe for incorporation in Western classrooms by faculty and TAs alike.

The winning proposals were designed with a specific disciplinary- and course-context in mind, however many of the ideas could be easily modified for application across academic fields. **Elizabeth Hundey** conceived of an exciting **Photo-Reflection assignment** for an introductory Physical Geography course. The semester-long reflective project draws students out of the classroom and into a critical examination of the landscapes and weather patterns that surround them. Students are asked to curate a collection of four original photographs and provide a description of the geographic components/phenomena



Elizabeth Hundey



Chelsea Hicks



Jenna Butler

illustrated therein. While print submissions are acceptable, students are encouraged to explore online tools such as *Flickr* and *tumblr* for the presentation of their assignment. This project seeks to engage diverse learners, offering students a venue to apply geographic concepts to personal experiences and 'read' landscapes using the academic framework and language of professional geographers.

Chelsea Hicks, graduate student in Biology, crafted a proposal that sought to address a pressing contemporary problem—many professionals are not equipped with the requisite skills to function effectively in interdisciplinary teams (Bruce, 2004). Using a popular elective course in Science (*Genetics in Everyday Life*) as inspiration, Chelsea developed **a suite of three integrated activities** that capitalize on the diverse disciplinary backgrounds of registered students and support the development of their teamwork and information literacy skills. The proposal describes, at length, two collaborative workshops and a group project that function in unison to both prepare students for and assess their established skills in interdisciplinary collaboration.

An instructor in introductory Computer Science, **Jenna Butler** often struggled to make abstract concepts concrete for her diverse group of first year students. Through the **creative use of physical objects, simulations using student volunteers, and theatrical representations**, Jenna enlivened complex concepts such as *inheritance, recursion and linked-*

list algorithms, simultaneously enhancing both student understanding and retention. Her proposal described in detail the eminently practical, low cost, and effective techniques that she employed over the past year. These would serve as wonderful inspiration to any instructors seeking greater student engagement in the large-class context.

Our graduate students constantly impress us with their inventiveness and insights into modes of effective undergraduate instruction. At the TSC, we encourage them to articulate their instructional ideas in a number of formats—the **GIFT contest**, contributions to our **Future Professor Series** of workshops, and via submissions to the **Teaching Innovation Projects (TIPS)** journal. We call on all members of the Western community involved in teaching and learning to capitalize on our graduate students' valuable pedagogical insights.

REFERENCE:

Bruce, A., Lyall, C., Tait, J., & Williams, R. (2004). Interdisciplinary integration in Europe: the case of the Fifth Framework programme. *Futures* 36(4), 457-470.

Faculty of Science Learning Development Update

BY TOM HAFFIE, FACULTY ASSOCIATE, TEACHING SUPPORT CENTRE AND LEARNING DEVELOPMENT COORDINATOR, FACULTY OF SCIENCE

For the spring 2012 update, I am excited to announce that the Science Student Council will be collaborating with the Faculty to fund an annual Research on Teaching Grant program! The Council contributed \$3,000 to kick-start the program and these funds have been matched by the Faculty. Program policies and procedures are in development. Watch for announcements.

Three exceptional graduate students have finished their Fellowships in Learning Development this year. Bernard Chan (Applied Mathematics) supported various aspects of

the Learning Development portfolio, including the Western Conference in Science Education, Discovery Café, and the review of Canadian scholarship in teaching and learning in Mathematics. Jenna Butler (Computer Science) reviewed the Canadian literature on scholarship of teaching and learning in computer science while developing a comprehensive framework for a new first-year computer science course. Beth Locke (Computer Science) compared computer science curricula at other institutions and worked on curriculum development. All three Fellows made a contribution to the upcoming *Purple Guide on Science Education at Western*.

Mastering “Doctorateness”

Helping Graduate Students Understand How to Move from ABD to PhD

BY NANDA DIMITROV, ASSOCIATE DIRECTOR, TEACHING SUPPORT CENTRE

How do you know when your graduate students are ready to go and do research on their own, or when they are ready to defend their dissertation? Most faculty members would say ‘I know it when I see it.’ We all know intuitively when a doctoral student sounds like a scholar and can talk the talk of economists, biochemists or historians—when they come up with original research questions and propose a sophisticated and reliable research design to study these questions. Researchers who explore components of this quality in graduate students call it *doctorateness* (Trafford and Leshem, 2009). We often assume that grad students know what doctorateness is, and know what they need to do to achieve it, when in fact, much of what constitutes doctorateness is made up of implicit assumptions about what good scholarship is in the discipline. We know it when we see it, but it is very difficult to articulate in detail.

How we define doctorateness varies somewhat by discipline, but there are some common characteristics of doctoral quality—such as the ability to engage with the literature in the discipline and use its theoretical foundations to create new knowledge; the ability to abide by principles of research ethics; and to theorize about research findings in a meaningful and creative way. So if we created a word cloud for doctorateness, different disciplines would share the same core qualities, but would add unique competencies and traits around the edges of the word cloud. In nursing or occupational therapy, reflective practice would probably be one of the words; in psychology, mastery of advanced multivariate statistics would probably appear. (An interesting new website, wordle.net, creates word clouds from any text.)

So when you attend your next thesis proposal meeting, comprehensive exam, or PhD public lecture, observe which qualities are the most critical—which qualities determine whether a candidate passes the thesis defense or the comprehensive exam. When you listen to the next job talk, observe what makes the candidate sound like a student, and what makes them sound like an independent scholar. Then, share these qualities with your doctoral students. Articulating what *doctorateness* means in our disciplines may help us support graduate students in their progress towards the degree in several ways. It makes the outcomes of the doctoral program more clear, and may help them proceed on

the path to the doctorate when they get stuck at major conceptual thresholds.

In 2009, Dr. Jennifer Boman wrote an article in *Reflections* about threshold concepts in the disciplines based on the work of Land and Meyer (2008). Take a look at her article ([click here](#)) for examples of threshold concepts and an overview of how thresholds may promote and hinder student learning. After reading the article, you may notice that doctorateness is a major conceptual threshold on the doctoral journey (Kiley, 2009; Whisker & Robinson, 2008).

Crossing the threshold of doctorateness has been conceptualized as a ‘rite of passage,’ during which students “learn the language not merely of the subject area but of graduate research study, and learn to act as a graduate researcher with the rigour and conceptual levels of thinking that is expected of them” (Kiley, 2008, p. 293.) By the end of their doctoral education, most students are able to apply successfully for faculty positions because they are perceived as independent scholars in their discipline. The ability to ‘pass’ as an independent scholar goes beyond subject expertise and ingenuity in research, and includes the ability to communicate one’s research effectively as well as the ability to form meaningful collaborative relationships with members of the disciplinary community (Boden, Borrego & Newswander, 2011).

Because *doctorateness* is a key threshold in doctoral education, students often get stuck before crossing it, and struggle for a while as they try to understand what being an independent scholar is really about. A sense of getting stuck is a normal stage of learning, called a “state of liminality” in the threshold concepts framework (Land, Meyer & Smith 2008). Faculty can help students get unstuck by sharing examples of really original or theoretically innovative research written by other grad students—not just senior scholars—to model the level of scholarship expected of a Ph.D. Supervisors can help their research team by encouraging them to read each other’s writing and give feedback, or by asking students who ‘get doctorateness’ to present their work to the lab group and to mentor the junior students who are at the threshold.

Some departments work to illustrate doctorateness through organizing a conference. They collaborate with a department at a nearby university to organize a local conference, where Ph.D. candidates

can practice presenting their research, and hear about innovative thesis projects that other graduate students are working on at Waterloo, Guelph, or the University of Toronto. Departments can also help graduate students understand what academic success in the discipline looks like by involving students in the hiring process: grad students are invited to job talks by candidates, and after hiring is complete, the department holds a debriefing session, where faculty members share what they thought of the research and the presentations of each candidate. Some candidates come across as mature scholars, while other candidates may still sound like students—and it is important for graduate students to discuss what qualities distinguish the two.

Mentorship is critical at the threshold of doctorateness, because students are often discouraged and may consider quitting grad school—especially around the time of comprehensive exams or the proposal defense. With some help and mentorship, however, the light bulb will go on, and they will suddenly get doctorateness and start coming up with more and more innovative research designs and begin to thrive as independent scholars. Some students ‘get’ doctorateness from the first day of grad school, while others gradually understand it, after crossing learning thresholds slower, until they finally demonstrate that they have mastered doctorateness—at the thesis defense.

REFERENCES

- Kiley, M. (2009). Identifying threshold concepts and proposing strategies to support doctoral candidates. *Innovations in Education and Teaching International. Special issue: Embracing Contraries in Research on Doctoral Education*, 46(3), 293-304.
- Land, R., Meyer, J. H. & Smith, J. (2008). *Threshold Concepts within the Disciplines*. Rotterdam: Sense Publishers.
- Trafford, V. & Leshem, S. (2009). Doctorateness as a threshold concept. *Innovations in Education and Teaching International. Special issue: Embracing Contraries in Research on Doctoral Education*, 46(3), 305-316.
- Whisker, G. & Robinson, G. (2009). Encouraging postgraduate students of literature and art to cross conceptual thresholds. *Innovations in Education and Teaching International. Special issue: Embracing Contraries in Research on Doctoral Education*, 46(3), 317-330.

Enhance Your Teaching and Enable Others to Learn with Open Educational Resources (OER)

BY MICHAEL B. MCNALLY, DOCTORAL CANDIDATE, LIBRARY AND INFORMATION SCIENCE, FACULTY OF INFORMATION AND MEDIA STUDIES

Over the last decade, Open Educational Resources (OER) have emerged as a growing phenomenon in the educational field aiming to make learning materials freely available over the Internet with the goals of facilitating lifelong learning, enhancing scholarly collaboration, and providing broader access to publically funded educational resources. The term Open Educational Resources can be traced to a 2002 educational conference hosted by UNESCO where OER were defined as, “the open provision of educational resources, enabled by information and communications technologies, for consultation, use and adaption by a community of users for non-commercial purposes.”¹ The UNESCO conference was created in response to the initiative by the Massachusetts Institute of Technology (MIT) to make nearly all of its courseware material freely available over the Internet. Although the majority of OER materials are for university level material (both graduate and undergraduate), resources are also available at the primary and secondary levels. Underpinning OER are open licenses that ensure free access to materials; however, in some cases licensing restrictions may limit one’s ability to alter another’s OER. The most widely used system for licensing OER is the Creative Commons approach.² OER are sometimes alternatively called Open CourseWare (OCW).

The rise of OER reflects a broader trend towards greater openness to intellectual works and is conceptually linked to other ‘open’ movements including open source software and open access scholarly publishing. This trend for increased openness has strong linkages with the academic concept of the free exchange of information. At the same time, intellectual property mechanisms, including patents and copyrights, have become increasingly prominent for commodifying intellectual work and limiting access to information. While universities are not immune from the increased pressure for producing commercializable innovations, providing free access to education materials in the form of OER is important for several reasons. At a global level, the provision of educational resources without cost is an

important mechanism for social and economic development and for facilitating both international and intercultural information exchanges. For governments, OER allow for wider interaction with higher education resources, and promote lifelong learning. For universities, providing free access to course materials is not only a means of attracting students and showcasing the university’s research, but also reflects the fact that such institutions rely on taxpayers’ money. The importance of OER for individual scholars is two-fold, as we can both develop and share OER and use existing OER to enhance our own teaching. With respect to creation, OER are a way of communicating one’s knowledge to the broader community and can also be used to enhance one’s scholarly reputation. As users, academics can draw on a vast array of existing materials and use, and in some cases modify existing OER,³ to create more effective learning environments both in the classroom and online.

OER include a wide range of educational resources from course materials such as syllabi and lecture notes to streaming videos, podcasts, and any other materials that are intended for teaching and learning. OER also include tools for developing, managing, and distributing educational content and implementation resources that allow the open publishing of material such as the Creative Commons licensing system.⁴ In addition to covering a wide range of teaching and learning materials, a diverse range of facilities and services exist to encourage the use of OER. Repositories and directories for OER and OCW such as the Open CourseWare Consortium⁵ and the OER Commons,⁶ allow for locating OER material. Individual universities are also increasingly providing access to courseware materials. The most prominent example of a university initiative is MIT’s OpenCourseWare site.⁷ Discipline specific portals also exist, such as MathWorld,⁸ which provides both access to and the ability for academics to contribute free mathematical resources. Finally open universities have emerged that not only encourage the development of OER but also use such materials to provide open education, an example of which is the pan-national African

Virtual University.⁹ While no comprehensive statistics are available, there has been considerable uptake in the development of OER. For example, MIT’s OpenCourseWare portal averages 1 million visits each month,¹⁰ and the Open CourseWare Consortium provides access to over 6,600 courses from 65 institutions including MIT, Tufts University, the University of Michigan, and the University of California, Irvine among others.¹¹ The OER Commons has over 32,000 resources available including materials for the primary, secondary, and tertiary levels.¹² In Canada, major OER projects include BCcampus¹³ a provincial initiative for allowing the open use of higher education materials within British Columbia, and Athabasca University, which in 2011 was awarded the UNESCO/Commonwealth of Learning Chair in OER.¹⁴

For more information about OER, see the UNESCO and Commonwealth of Learning *Basic Guide to Open Educational Resources* (2011) and the UNESCO *OER portal*. While slightly older, the OECD’s 2007 examination of OER, *Giving Knowledge for Free (available electronically through Western Libraries)*, provides a detailed and nuanced discussion of many of the crucial elements of OER. Finally for those interested in creating and using OER, it is important to have an understanding of the various licensing mechanisms and conditions. While not all OER use a Creative Commons (CC) license, most do and detailed explanations of the various CC licenses are available through the *Creative Commons website*.

¹UNESCO, *Forum on the Impact of Open Courseware for Higher Education in Developing Countries: Final Report*, (UNESCO, Paris 1-3 July, 2002, CI/INF/IS/2002), annex 5: http://portal.unesco.org/ci/en/files/2492/10330567404OCW_forum_report_final_draft.doc/OCW_forum_report_final_draft.doc

²Creative Commons, “About Licenses,” (n.d.): <http://creativecommons.org/licenses/>

³It is important to note that not all OER can be modified or adapted. Users must consult each individual OER’s license to determine its terms of use.

⁴OECD – Centre for Educational Research and Innovation, *Giving Knowledge for Free: The Emergence of Open Educational Resources*, (OECD, Paris, 2007), 30-31.

Enhance Your Learning...

Continued from page 8

⁵Open CourseWare Consortium, "Open CourseWare Consortium Homepage" (2012): <http://www.ocwconsortium.org/>

⁶OER Commons, "Homepage," (n.d.): <http://www.oercommons.org>

⁷MIT – OpenCourseWare, "Free Online Course Materials" (2012): <http://ocw.mit.edu/index.htm>

⁸Wolfram MathWorld, "Homepage," (2012): <http://mathworld.wolfram.com/>

⁹African Virtual University, "OER@AVU," (n.d.): <http://oer.avu.org>

¹⁰MIT – OpenCourseWare, "Site Statistics," MIT (2012): <http://ocw.mit.edu/about/site-statistics/>

¹¹Open CourseWare Consortium, "Advanced Course Search," (n.d.): <http://www.ocwconsortium.org/en/courses/search>

¹²OER Commons, "Homepage," (n.d.): <http://www.oercommons.org>

¹³BCcampus, "Homepage," (n.d.): <http://www.bccampus.ca/>

¹⁴Athabasca University, "UNESCO/COL Chair for Athabasca University Announced at Government House," (31 Jan. 2011): <https://unescochair.athabascau.ca/node/11>

Resources for Open Educational Resources (OER)

OER Search Engines:

- » Global Learning Objects Brokered Exchange (GLOBE) Alliance: www.globe-info.org
- » Folksemantic: www.folksemantic.com
- » Open CourseWare Consortium: www.ocwconsortium.org

OER Repositories:

- » MIT's OpenCourseWare: ocw.mit.edu
- » Open Learn (The Open University, U.K.): openlearn.open.ac.uk
- » China Open Resources for Education (CORE): www.core.org.cn/en

OER Directory Sites:

- » OER Commons: www.oercommons.org
- » Commonwealth of Learning: www.col.org/resources/crsMaterials/Pages/OCW-OER.aspx
- » OER Africa: www.oerafrica.org

mental health @ western

KEY CAMPUS RESOURCES FOR STUDENT MENTAL HEALTH

On March 2nd, the Teaching Support Centre hosted its inaugural information session entitled Focus on Graduate Education at Western. We featured a panel discussion on Introduction to Graduate Student Mental Health Issues in which the following resources were discussed.

Mental Health @ Western

<http://uwo.ca/uwocom/mentalhealth/>
A website with rich resources for all members of the Western community, including students, students' families, staff, and faculty members.

Mental Health First Aid Canada

http://www.uwo.ca/humanresources/facultystaff/h_and_s/mentalhealth/training.htm
A two-day training course based on the model of medical first aid that teaches participants how to help someone showing signs of a mental health problem or experiencing a mental health crisis. The course is held at Western and is intended for faculty and staff.

Anh Brown – Western's new Campus Student Case Manager

anh.brown@uwo.ca

Anh's role primarily focuses on working with students who may be considered to be 'at-risk' due to a variety of mental health, behavioural, and/or unforeseeable circumstances. Anh does not do any counselling with the students, but rather works with them to assess the situation, identify what their needs are, connect them to appropriate resources both on and off-campus, and follow-up to ensure that they are able to stay on track.

Blended (Hybrid) Course Design

BY KIM HOLLAND, INSTRUCTIONAL DESIGNER, TEACHING SUPPORT CENTRE

I'm going to define Blended Learning as the thoughtful integration of face-to-face and online instructional forms to achieve your pedagogical outcomes. The scale can range from a component in a course to a whole university degree.

The simple addition of an online component (use of OWL) does not, in and of itself, mean you have a blended course or program. For example, Allen and Seaman 2011, have suggested that a simple measure of the amount of content delivered can be used to define blended instruction (fig.1). This results in an uncomplicated metric for the blended course/program definition while all nuances of the potential transformational nature of this instructional mode are lost or not considered. It is this 'thoughtful integration' that needs to be considered and applied into your pedagogy where the synergies of both face-to-face and online can be realized.

The use of any new technology has the potential to be a disruptive change in the status quo. The introduction of blended course design invites, and may even require, reconceptualization of the current learning paradigm. This new blended mode could allow instructors to imaginatively redesign their course to fit the needs of the learner. Dziuban *et al.* 2004 state, "Blended learning should be viewed as a pedagogical approach that combines the effectiveness and socialization opportunities of the classroom with the technologically enhanced active learning possibilities of the online environment, rather than a ratio of delivery modalities."²

The implementation of blended pedagogy change may result in your experiencing resistance from your peers, administration, and even students who have certain expectations of what a course should be. Be strong and recite this:

All truth passes through three stages. First, it is ridiculed. Second, it is violently opposed. Third, it is accepted as being self-evident. Arthur Schopenhauer

The blended model of instruction could be considered the natural result of a changing educational landscape (fig. 2). Technological innovation has given rise to online instruction and its growing importance is evidenced by

FIGURE 1

Proportion of Content Delivered Online	Type of Course	Typical Description
0%	Traditional	Course with no online technology used — content is delivered in writing or orally.
1 to 29%	Web Facilitated	Course that uses web-based technology to facilitate what is essentially a face-to-face course. May use a course management system (CMS) or web pages to post the syllabus and assignments.
30 to 79%	Blended/Hybrid	Course that blends online and face-to-face delivery. Substantial proportion of the content is delivered online, typically uses online discussions, and typically has a reduced number of face-to-face meetings.
80+%	Online	A course where most or all of the content is delivered online. Typically have no face-to-face meetings.

Going the Distance: Online Education in the United States, Sloan Online Survey¹

the number of students experiencing this mode of instruction. In the United States, "over 6.1 million students were taking at least one online course during the fall 2010 term; an increase of 560,000 students over the number reported the previous year."³ Changes in the student population and educational technology affordances demand that universities respond with blended modes of instruction. A majority of colleges and universities report that online learning was critically part of their long-term strategy.⁴

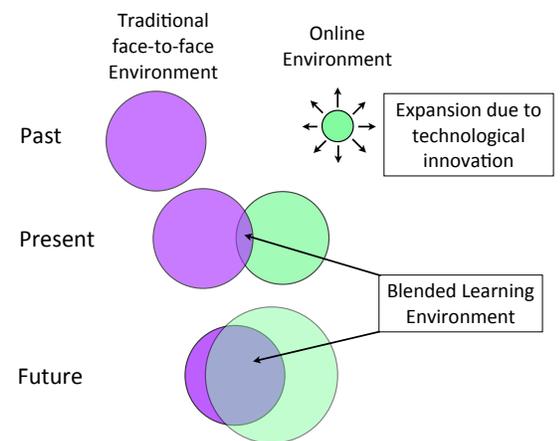
Bonk and Graham 2006, suggested that blended learning might be described in terms of four dimensions of interaction between face-to-face and online distributed environments.⁵ The dimensions are Space, Time, Fidelity, and Humanness (fig.3).⁵ Blended learning opportunities exist because technological innovation is played out in these four dimensions.

What will blended courses do for student learning and for the campus-learning environment? What are some of the potential benefits?

Greater ability to adapt to increasing diversity: More effective accommodation for learners and teachers with diverse ages, styles, expertise, nationalities, and cultures.

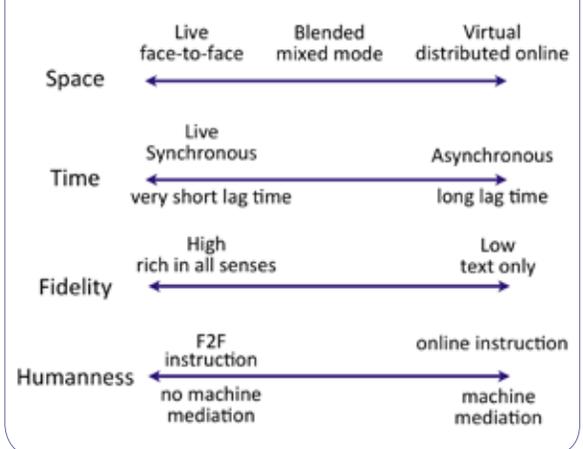
Pedagogical richness: A blended

FIGURE 2



(adapted from Bonk and Graham)

FIGURE 3



...continued on page 11

Blended (Hybrid) Course Design

Continued from page 10

learning approach focuses on interactive strategies that lead to an increase in the level of active learning, peer-to-peer learning strategies, and learner-centered strategies. The use of virtual realities allows for collaborative learning and problem solving to be applied in a more authentic manner.

On campus the blended format could help solve physical space issues: Capital construction projects are expensive to undertake and physical structures require ongoing costs for maintenance. Blended courses can help Western work more effectively with current space, while allowing for enrollment growth.

The blended format enables students to have greater timetable flexibility: With tuition and other university costs rising, most students are forced into the workplace. Blended and online courses provide students with the flexibility they need to hold down a job while still pursuing an education. Timetable flexibility also assists with students completing their degrees in a timely manner since course timetable conflicts are very common.

Blended learning provides the most effective education model: In 2010 the US Department of Education completed a meta-analysis of hundreds of separate studies that showed Blended Course Design offers the greatest opportunity for student success in a course.⁶

Students expect technology to assist with their learning choices: Today's students are online, swimming freely in this digital ocean, and are expecting their services to be on-demand and ubiquitous. Blended courses are in a format readily accepted and expected by new students.

Greater student and faculty satisfaction because of opportunities that blended learning affords.

In the future, given these benefits, we will see blending learning become the dominant mode of teaching. That future will be differentiated not based on whether blended learning is used but rather by how a course or program is blended. With careful planning and an up-front investment of time and expertise, blended mode delivers a cost-

effective, quality-rich educational model that can be applied today and into the future.

¹Allen, I. Elaine, and Seaman, Jeff, 2011. *Going the Distance: Online Education in the United States*, Sloan Online Survey, Babson Survey Research Group.

²Dziuban, C. D., Hartman, J., and Moskal, P., 2004. *Blended Learning*, Educause, Center for Applied Research, Issue 7.

³Allen, I. Elaine, and Seaman, Jeff, 2011. *Going the Distance: Online Education in the United States*, Sloan Online Survey, Babson Survey Research Group.

⁴Allen, I. Elaine, and Seaman, Jeff, 2011. *Going the Distance: Online Education in the United States*, Sloan Online Survey, Babson Survey Research Group.

⁵Bonk, C. J. & Graham, C. R. (Eds.), 2006. *Handbook of blended learning: Global Perspectives, local designs*. San Francisco, CA: Pfeiffer Publishing.

⁶U.S. Department of Education, Office of Planning, Evaluation, and Policy Development, 2010. *Evaluation of Evidence-Based Practices in Online Learning: A Meta-Analysis and Review of Online Learning Studies*, Washington, D.C.

Coming Events in TSC

May 14, 2012

Spring Perspectives on Teaching Conference

Keynote Speaker: Dr. Alastair Summerlee, President and Vice-Chancellor, University of Guelph on "Student Engagement: The Key to Deep and Effective Learning"

May 23, 24, 2012

Summer Teaching with Technology Institute

Provides instructors with information, tools, and support options for learning about and using educational technology.

May 23, 24, 25, 2012

Western Institute for Research on Teaching and Learning

Three-day hands-on workshop, designed to support faculty members, librarians, and archivists in the development of a research project on their own teaching.

August 7 – 10, 2012

Course on Teaching at the University Level

Intensive mini-course for faculty who are new to teaching (less than five years teaching experience) to develop their teaching talents and gain experience with a variety of teaching methods.

August 15, 2012

New Faculty Orientation - Teaching at Western

A day of information seminars and teaching tips to aid new faculty at Western.

August 24, 2012

Fall Perspectives on Teaching Conference

Keynote Speaker: Dr. Julia Christensen Hughes, Dean of the College of Management and Economics, University of Guelph, on "Integrity in the Academy: Imperatives, Incentives and Innovations"

August 28, 2012

Teaching with Technology for New Faculty

A one-day session on using technology in your instruction.

September 5, 2012

Graduate Student Conference on Teaching

Introduction to teaching at Western for graduate student teaching assistants.

For more information, visit the TSC Calendar of Events:
www.uwo.ca/tsc

International Faculty Forum

Join faculty colleagues with international interests and international experience at the Grad Club to network, share ideas, get ideas, and build community in an informal setting.

Whether you travel extensively for your research, explore international issues in your teaching or have recently joined Western from overseas, you will find a likeminded group of colleagues at the "conference room" at the Grad Club. Refreshments will be served. All welcome.

For more information please contact: Jennifer.Holburn@uwo.ca or Nanda.Dimitrov@uwo.ca

May 25th and June 22nd
3:00 - 4:30 p.m. at the Grad Club



MONTREAL
STLHE 2012 SAPES
LEARNING WITHOUT BOUNDARIES ?
APPRENTISSAGE SANS LIMITES ?
JUNE 19 - 22 JUIN

2012 STLHE Annual Conference

The STLHE 2012 Annual Conference will take place from June 19 to 22 in Montreal at the Centre Mont-Royal.

The Conference will be co-hosted by a consortium of higher education institutions in Montreal including McGill University, Concordia University, Université de Montréal and Champlain College St-Lambert.



Conference website: www.mcgill.ca/stlhe2012sapes

Note: Western has an institutional membership with STLHE. This allows the Western community to join the Society at a reduced rate. For membership information, go to: www.stlhe.ca

Western Institute for Research on Teaching and Learning

**Wednesday, May 23, 2012 –
Friday, May 25, 2012**

Please join us for the inaugural edition of the Western Institute for Research on Teaching and Learning, a three-day hands-on workshop designed to support faculty members, librarians, and archivists in the development of a research project on their own teaching. In this interactive workshop, we will discuss the basics of doing research on teaching in higher education (e.g., developing a researchable question; quantitative, qualitative, and mixed research designs; ethical consideration in research on teaching; making your research public). Participants will also work individually and/or in small groups to develop their own projects. Experienced Scholarship of Teaching and Learning researchers will facilitate the institute and will also provide individual consultation as requested.

Enrolment is limited, so please register as soon as possible. To register, [click here](#).

SPRING PERSPECTIVES ON TEACHING CONFERENCE

Monday, May 14, 2012 • Social Science Centre, Room 2050 • 9:00 a.m. – 4:00 p.m.

KEYNOTE SESSION:

Student Engagement: The Key to Deep and Effective Learning

- Dr. Alastair Summerlee,
President and Vice-
Chancellor, University of
Guelph



CONCURRENT SESSIONS:

And the Moral of the Story is ...: The Use of Narrative in Teaching

- Nadine LeGros, Teaching Support Centre, Western
University

New OWL (powered by Sakai): New Learning Management System Implemented at Western

- A panel discussion with instructors who were part of the
winter pilot of the new OWL (powered by Sakai).

Promoting Student Socialization into a Discipline: A Curricular Innovation

- Tom Haffie and Tricia Gray, Biology, Western University

CONCURRENT SESSIONS:

Improving Wikipedia improves more than Wikipedia: Using the Wikipedia Canadian Education Program to promote critical thinking, information literacy, and communication skills

- Jonathan Obar, Telecommunication, Information Studies and
Media, Michigan State University, East Lansing
- Tom Haffie, Biology, Western University

CLOSING PLENARY SESSION:

Engagement and Deep Learning in the Disciplines: Examples from Exemplary Western Faculty

- Chantelle Richmond, Geography and First Nations Studies
- Christopher Viger, Philosophy
- Tim Wilson, Anatomy & Cell Biology

To view program/register, visit the Teaching Support Centre's website at:

www.uwo.ca/tsc

OCUFA

Ontario Confederation of University Faculty Associations
Union des Associations des Professeurs des Universités de l'Ontario

OCUFA Teaching and Academic Librarianship Awards

Call for Submissions

Each year the Ontario Confederation of University Faculty Associations (OCUFA) recognizes outstanding teachers and academic librarians in Ontario universities through its Teaching and Academic Librarianship Awards. Approximately seven awards are presented.

Nominations can be submitted by any group or individual within the university community. The deadline for nominations for the 2011-12 OCUFA Awards is May 21, 2012.

For nomination guidelines and information, please visit:

www.ocufa.on.ca

Academic Integrity Survey 2012: The 10 year Canadian Update

Be part of a Canada-wide survey conducted through the *Center for Academic Integrity* at Clemson University.

Help the university understand your perspective on academic misconduct and how we can support our culture of integrity here at Western.

More information coming soon...

May 23rd and May 24th 2012

9:00 am - 4:00 pm

TEACHING WITH TECHNOLOGY INSTITUTE

The Summer Teaching with Technology Institute's goal is to provide instructors with **information, tools,** and **support options** for learning about and using educational technology. Participants need not have any experience with instructional technologies to attend.



Registration:

http://www.uwo.ca/tsc/faculty_programs/technology_workshops.html

Jointly hosted by:

the Teaching Support Centre and the Instructional Technology Resource Centre