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A Tangled Web:
Thoughts on Pedagogy in On-Line Teaching

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See table of contents

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IN MAY 2000 Diane Cunningham, the Ontario Minister of Education, announced proposed legislation that would allow the creation of private universities and enable colleges to grant degrees. The two main reasons she gave for this initiative were that many Ontario post-secondary students were leaving the province to pursue their desired studies or they were staying in Ontario and going on-line with university courses from post-secondary institutions outside the province.[1]

To be sure, there is no shortage of choices when it comes to on-line post-secondary courses. An article in *Maclean's* noted that there were approximately 17,000 such courses posted on the world wide web from various institutions around the world, with more than 2,700 in Canada alone.[2] *Maclean's* also noted that, by 2002, the number of post-secondary students taking on-line courses in the United States is predicted to rise from five per cent to 15 per cent (to more than two million students) and the value of the on-line learning "market" in North America will reach $8.3 billion. To respond to this growing need, traditional universities including Oxford University, Harvard University and the University of Chicago as well as many Canadian universities have initiated on-line courses. Three universities in this country specialize in offering on-line courses – Athabasca University, British Columbia's Open University and the Télé-Université du Québec.[3] With the proposed Ontario legislation, and recent initiatives such as the 1999 opening of Unexus, the "world's first private, internet-based, degree-granting university"[4] in Fredericton, the trend seems to be towards more and more education in the on-line format from both public and private post-secondary institutions, especially as an increasing number of students are mature students returning to university to continue their education.[5]

Traditional public universities are thus being affected in several ways by the rise of on-line courses. If students choose on-line courses (especially those offered by other universities) over classroom courses, decreased enrollment in traditional classes at public universities may lead to lower levels of government funding. On the other hand, on-line teaching might be used by the public universities to cut costs themselves, as hard-pressed university administrators opt for their institutions to share on-line "super courses" such as English 1000 or Sociology 1000 to reduce their labour costs in putting on courses. All of this would not only lead to a fundamental change in the general nature of university education (i.e., replacing the face-to-face contact between instructors and students), but it would also deprive many young, struggling scholars of the chance to earn even a paltry living and build their curriculum vitae. Governments might also take a more intrusive role in post-secondary education as

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1 "As It Happens", CBC Radio, 1 May 2000.
2 These figures do not include the thousands of more traditional courses which have an on-line component.
3 "Back to School Online", *Maclean's*, 6 September 1999, pp. 22-4.
4 "World's First Private Internet University Open for Business", *Atlantic Business*, 10, 6 (1999), p. 44.
5 The *Maclean's* article notes that 40 per cent of individuals working towards degrees in the United States are over the age of 40. See "Back to School Online", p. 23.

they push on-line "education" as an important way to better train the workforce in a globalized economy, and this would further contribute to both the appropriation of the concept of education by "training" and the increasing corporatization of universities.

   All of these developments or possibilities arising from on-line courses point to profound changes for traditional, public universities. It is, indeed, with apologies to Sir Walter Scott, a very "tangled web". However, I want to focus my remarks on just one small aspect of this "tangled web", an aspect which, at least to my knowledge, has not received a lot of public discussion – how might one teach most effectively in an on-line environment?

   I find this question especially pertinent, as I am in the process of developing my first on-line course – "Introduction to Canadian History" at the University of New Brunswick. The issue of teaching effectiveness is not, of course, restricted to on-line teaching. My own classroom teaching experience, first in political science and then in history, has caused me to reconsider the pedagogical model, the lecture approach, that I had been using. This was by far the most common model I was exposed to as a university student. The various courses which I have taught in recent years have had different weekly formats: three one-hour classes, two one-and-a-half-hour classes or one three-hour class. The more I taught, the more uncomfortable I became with merely lecturing – while trying to encourage ad hoc class discussions – and what I perceived as the passivity among my students. For one thing, I disliked the notion that I was the "expert" with the knowledge whose task it was to fill up the students with the knowledge I possessed. Second, I was often impressed by the contributions many of my students could make when they were given the opportunity. Added to this was the need for more classroom variety, especially in the longer, three-hour classes. Some students, no matter how well I prepared and lectured and tried to promote class discussions, were simply tuning out after an hour or so of the lecture and passively absorbing just some of what I was trying to convey.[6]

   During this period, I also participated in the teaching diploma programme at the University of New Brunswick,[7] and this provided me with exposure to alternative, student-centred pedagogies, including co-operative learning and problem-based learning. Co-operative learning, briefly stated, consists of short lectures by the instructor to provide the necessary background and information so that students, in groups of between two and six, can subsequently work together and help teach each other in completing tasks such as the answering of questions, collective analysis of readings and/or reflection on the material covered to that point in a class. The instructor acts more as a facilitator than an expert and seeks to help integrate the conclusions of the various groups as the class nears its conclusion.[8] Problem-based

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6 For a comparison of the relative efficacy of lectures and other approaches to teaching, see Donald Bligh, *What's the Use of Lectures?* (London, 1972) and Donald Bligh, ed., *Teach Thinking by Discussion* (Surrey, 1986).

7 Offered by the University of New Brunswick Teaching and Learning Centre, the "Diploma in University Teaching" aims at introducing the participant to a variety of pedagogical approaches so as to promote a more critical appreciation of the issues surrounding teaching in a university setting. The format includes workshops, lectures, readings, e-mail discussion groups, "mentor supervised teaching" and the completion of a teaching dossier.

8 Co-operative learning can also, of course, span more than one class in dealing with larger issues. A good summary of co-operative learning, together with detailed discussions of pedagogical issues and

learning is similar, but learning is structured around addressing one major problem or a series of related issues, and students are asked to work, often collaboratively, to resolve the problems or issues. Problem-based learning has been widely used in a variety of post-secondary situations, including the education of medical, nursing, forestry and education students. It can vary from one, very open-ended, major problem that might occupy students for a whole term to much more focused work on a specific, limited issue which might span only one class.[9]

There are some limitations with these alternative pedagogies, but I believe they possess considerable potential for instructors who are comfortable with utilizing them. Large class sizes (i.e. more than 40 students) make co-operative group learning awkward, aside from brief, informal groups of two or three students working together where they are sitting. The physical geography of the classroom may not be conducive to group work, especially if chairs are bolted to the floor and lined up in narrow rows all facing the instructor. An instructor may also have more trouble covering as much content material as in the traditional lecture model of teaching, as considerable time is spent on processing by the students. Large, open-ended problems may sometimes be relatively "inefficient" in the transmission of knowledge as students search for answers; such problems may also cause some students considerable discomfort as they are used to the lecture model where they are given the knowledge by an expert instructor.

Yet even with these potential problems, alternative pedagogies such as co-operative learning and problem-based learning can provide valuable strategies for making learning in the classroom more effective. This is particularly true in terms of providing much-needed variety, a structured way for students to participate and interact with their peers and the encouragement of a student-centred, active learning environment. These alternative pedagogies also help provide more varieties of learning experiences, thus promoting a greater respect for the diverse ways in which students learn best. Not all students learn most effectively by sitting and listening to someone talk or lecture; some students gain great benefit, for instance, from a more experiential approach.[10] In addition, research on learner retention demonstrates the efficacy of alternative pedagogies compared to the lecture model; after 24 hours

examples of how one might implement this approach, is Philip C. Abram et al., *Classroom Connections: Understanding and Using Co-operative Learning* (Toronto, 1995).

9 There are many sources of information on problem-based learning. See, for example, Neal A. Glasgow, *New Curriculum for New Times: A Guide to Student-Centred, Problem-Based Learning* (Thousand Oaks, California, 1997) and Michael Peterson, "A Team-based Approach to Problem-based Learning: An Evaluation of Structured Team Problem Solving," *Journal on Excellence in College Teaching*, 7, 3 (1996) pp. 129-53. The journal *Teaching History*, which aims at "providing history teachers at all levels with the best and newest teaching ideas for their classrooms", also explores approaches such as problem-based learning. There are, in addition, several excellent websites with discussions of this topic. See, for example, "Problem-Based Learning Initiative" <<http://www.pbli.org/>> which provides a definition of problem-based learning, a discussion of the experience with it at the Southern Illinois University School of Medicine and specific examples of problem-based learning applied to medical education. There are also problem-based learning discussion groups, links to other problem-based learning sites and additional resources from the November 1998 issue of the *National Teaching & Learning Forum*.

10 Individual students, according to David A. Kolb, tend to favour one of the four "adaptive learning modes – concrete experience, reflective observation, abstract conceptualization, and active

students retain merely five per cent of material presented in a lecture, 15 per cent from audio-visual, 50 per cent from discussion groups and 90 per cent of material they have to teach to others.[11] My own experience with these pedagogies over a number of years is that they are valuable tools when used in a limited fashion to promote student participation in the consideration of a specific problem during one class. In fact, they have proved to be one of the most popular features of my classes in student evaluations, even when used in a very limited way in classes of upwards of 100 students.

When I first began to design a web-based course in history, I naturally brought this knowledge of and experience with alternative pedagogies with me. Yet as I surveyed the existing web-based courses at my institution – in engineering, economics, English, psychology and business – I became rather discouraged. Virtually all of these on-line courses, at least from a cursory examination, appeared to be basically lecture courses transferred to an on-line format; one course was even an apparent transcription of a textbook. To be sure, there were often photos and other multimedia components, but, for the most part, these courses appeared to be largely in a lecture format on the screen. Student participation seemed to be limited to e-mail correspondence with the instructor and on-line quizzes and tests with, occasionally, a chatroom for student use.

This absence of live interaction with an instructor and other students in these on-line courses (since these are "open access" courses and are done at any time by individual students), amplifies some of the worst aspects of the lecture model. In an on-line course, the instructor is not only the "expert" imparting the knowledge to "empty vessels", but he or she is also far removed in a remote location and seldom available for questions on a "real time" basis. Compounding this situation is the monotony of learning through computers. Research indicates that after 20 minutes of a lecture many students simply tune the instructor out, even in a face-to-face classroom situation.[12] It no doubt takes far less than 20 minutes of scrolling on a screen to achieve the same effect in on-line learning. For my own part, I dislike having to scroll through page after page of "lecture notes" or text on a computer screen. I would much prefer to read the same material in a book, one which I can easily browse through and carry around.

Given that my institution uses an "open access" approach to on-line learning, co-operative learning techniques will not be relevant in designing my on-line course. On the other hand, I think problem-based learning holds considerable potential. The study of history in this region, and Atlantic Canada studies generally, for instance, would seem to be ideally suited for a problem-based approach – on-line or face-to-face. There is a vibrancy to the scholarship on the region – lively historiographical debates with deep and genuine disagreements over controversial issues such as regional

experimentation". Based on studies on students' learning styles, he concludes, for instance, that learners who preferred the "reflective observation" learning style favoured lectures from an "expert" teacher, whereas learners who were prone to "active experimentation" favoured "small group discussions" and projects: David A. Kolb, *Experiential Learning: Experience as the Source of Learning and Development* (Englewood Cliffs, N.J., 1984), pp. 40, 200

11 Reavley Gair, "The Fifty-Minute Lecture", *Teaching Voices: University of New Brunswick Bulletin on University Teaching*, 19 (October 1994), p. 1.

12   Ibid., p. 2.

underdevelopment – which invites the application of a pedagogy such as problem-based learning. Moreover, there are a variety of materials which could be used in such inquiry to contribute to an interesting learning environment. These could include commentary from the instructor to guide the students and set up a problem, maps and other visual aids, excerpts from primary documents such as letters and government documents, selections from secondary analyses by scholars and follow-up questions and assignments from the instructor to ensure comprehension by the students. Suggestions of resources for further research (textual and on-line) and a printed reader with scholarly articles on the topic would also be useful.

Let me give you a specific example from one of my courses, "The History of Prohibition and Rum-Running in Canada, 1827-1948", which I currently teach face-to-face at the University of New Brunswick. Half-way through the course an important issue is "Why did most Canadian provinces rapidly abandon legislated prohibition in the 1920s after only a few short years?" In an on-line, problem-based course, I might approach this topic in a number of ways. In an introductory section, I would review why prohibition came to be legislated federally as part of the war effort and the circumstances surrounding the post-war provincial plebiscites where all but two provinces (British Columbia and Quebec) kept prohibition. The students would then have access to a number of sources of information in order to develop an answer to the larger question. Maps of Atlantic Canada and the region's proximity to the eastern seaboard of the United States would illustrate how easy it was for rum-runners to bring illegal alcohol back into the Maritime Provinces and how Maritime boats might rendezvous on "Rum Row" with the boats of the American crime syndicates. Excerpts from participants' accounts of their involvement in rum-running or enforcement, such as Clifford Rose's *Four Years with the Demon Rum*, would demonstrate the highly political and cops-and-robbers nature of prohibition enforcement. Excerpts from scholarly articles, or better yet, articles from a course reader in their entirety, would demonstrate how rum-running was often "the employer of last resort", the ease with which prohibition measures were side-stepped, and how provincial governments came to see government control of legalized alcohol as not only necessary to curtail a growing sense of lawlessness but also as an important source of revenue for government coffers.[13] Finally, students would submit answers to a short list of questions to ensure their comprehension of the material, and subsequently each would prepare and submit his or her answer to the larger question.

Despite the benefits of this problem-based approach in on-line teaching, there are a number of potential problems. An instructor would have to work hard to ensure sufficient continuity between problems and that students did not lose sight of the "larger picture". There is the question of how much structure should be designed into the course, and how much should be expected of the students in terms of their exploration of the issues and the course. Should the course, for instance, be devised

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13 Clifford Rose, *Four Years with the Demon Rum, 1925-1929: The Autobiography and Diary of Temperance Inspector Clifford Rose,* E.R. Forbes and A.A. MacKenzie, eds. (Fredericton, 1980). See also E.R. Forbes, "The East Coast Rum-Running Economy", in C. K. Warsh, ed., *Drink in Canada* (Montreal and Kingston, 1993), pp. 166-71 and Arthur T. Doyle, "New Brunswick and Prohibition", *Atlantic Advocate* (January 1980), pp. 26-31.

to allow students to branch out and explore aspects of the topic which may not have attracted the attention of the instructor? If so, what, if any, limits should be placed on this aspect of the educational experience, and how can it be assessed fairly vis-à-vis other students who have taken or might take the course? What is the role of the students in the process of course design? If we, as instructors, are serious about creating an active, involved environment for student learning, is it fair to use entirely pre-set courses before we even know who our students are? What are their interests and strengths and their previous knowledge of the topic which they bring to the course, and how can these considerations be reconciled with the instructor's knowledge of the material? Conversely, how can a student who is genuinely not interested in problem-based learning be accommodated?

Alternative pedagogies such as problem-based learning or co-operative learning are by no means perfect, but I think they do provide a means to create a more open and effective learning environment – especially in an on-line environment. By making active student participation an integral part of the educational experience on the web, one moves beyond computer screen scrolling and the passive absorption of information. It affords students the opportunity to "do history" – to work with primary documents, to consider for themselves the merits of various scholars' arguments and to grapple with the topic and develop their own analyses. Such an approach will perhaps never be better than the classroom experience, with its live interaction with an instructor and other students. But it is a useful alternative to the lecture model pedagogy which is apparently so common in current on-line courses. Not only would this alternative, student-centred approach encourage a critical awareness of the issues under examination, but it should also help students to learn more and retain more of what they have learned. There is a Chinese proverb which underlines the importance of active involvement by students in their own learning:

> Tell me, and I may forget.
> Show me, and I may remember.
> Involve me, and I will understand.

Problem-based learning is one way of structuring active student involvement into an on-line course so that students will indeed "understand".

STEPHEN DUTCHER