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TOWARDS A PAN-CANADIAN RESEARCH AGENDA FOR E-LEARNING

A Literature Review

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TOWARDS A PAN-CANADIAN RESEARCH AGENDA FOR E-LEARNING:

A LITERATURE REVIEW

INTRODUCTION

Many national and international studies, reports and policy documents have argued that e-learning has the potential to substantially change, and improve access to, the quality of formal and informal learning and training; thereby increasing both the effectiveness and efficiency of both learning and teaching. This has led many countries to develop strategies, plans, programs and funding to insure that they take maximum advantage of the affordances of these pedagogical and technological advances. For example, the governments of Australia,[1] Ireland,[2] and the United Kingdom,[3] among others have articulated means by which they intend to support and accelerate use of e-learning throughout their national jurisdictions. A 2001 UNESCO report points out that "government has a critical role to play with respect to planning and managing the development of e-learning in post-secondary education and training." (Bates, p. 30)

Such strategies are typically multifaceted; calling for support for e-learning content development, professional development and learner support. Inevitable they also note the need for substantive and ongoing research and evaluation. This research is usually designed both to explore and develop new modules, pedagogies and technologies and to rigorously assess e-learning activities and interventions so that best practices are e4readily identified and mistakes are quickly rectified.

The constitutional barriers to federal involvement in education have hindered the creation of an equivalent national strategy has not been articulated in Canada. Nonetheless there are initiatives in-place in provinces and at local levels designed to explore and exploit the affordances of e-learning at all levels of formal and informal education. There has been some effort to stimulate research, evaluation and development of Canadian e-learning. Notably, the 2001 *E-learning E-volution* a report of the Advisory Committee for Online Learning {Advisory Committee for On-line Learning 2001 #890 /d}was established jointly by the federal government and Council of Ministers of Education. This report highlighted the strategic importance of online learning to all Canadians and pointed out that that the "Canadian commitment to learning research and development does not measure up" (p. 10) They argued that new research programming is essential and that "this research should be broadly multidisciplinary and issue-orientated as well as problem and results"(p. 10).

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[1] http://www.flexiblelearning.net.au
[2] www.ncirl.ie/downloads/research_and_innovation/SFI_reportFINAL.pdf`
[3] www.dfes.gov.uk/publications/e-strategy/

A university based research institute is hardly in a position to create national or even provincial policy. However, we are vitally interested in both fueling interest in a Pan Canadian E-learning strategy and in ensuring that all of our efforts related to this task are both informed by, and benefit from quality research. To help mobilize the energy and resources necessary for the creation of a vibrant e-learning research initiative, The Canadian Institute of Distance Education Research (CIDER) has commissioned this literature review of "research agendas". It is hoped that this initial work will; be used to propel and inform the creation of a Pan-Canadian E-Learning Strategy and accompanying a Research Agenda for E-Learning.

This literature review was designed to answer two foundational questions:

1. What constitutes a "research agenda, generally;" and

2. What is the current state of the literature surrounding research agendas in e-learning generally, and in Canada, specifically.

The terms "research agenda" and "e-learning" appear in numerous guises in the literature. Therefore, before creating a Pan-Canadian Research Agenda on e-Learning, we will propose specific definitions of both terms – "research agenda" and "e-learning" – that are appropriate to the research goals and appropriate methodologies of CIDER and other Canadian researchers.

DEFINITIONS

E-Learning

The term "e-learning" appears in the literature as more or less synonymous with "distance education." We feel this definition is problematic, however, because there was once a time when distance delivery of learning materials was made without the aid of electronic information technologies (such as surface mail correspondence courses). In addition, a great deal of information technology-mediated teaching and learning also occurs in face-to-face learning environments. Moreover, while they are closely interrelated, information/communication technology-supplemented face-to-face
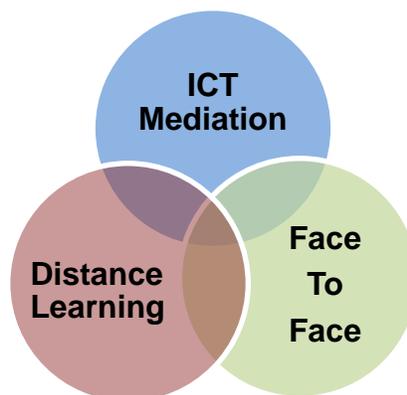
learning is still a research area distinct from information technology-based distance education.

This definition becomes even more confused when the terms "synchronous" and "asynchronous" are mixed in.

The common feature of all these learning situations is that of information/communication technology (ICT) mediation. Figure 1 shows the overlapping areas created by the consideration of face-to-face learning and distance learning, both with IT mediation. So called 'blended learning' sits at the intersection of Face-to-Face and ICT based forms of education in the Venn diagram above.

While, the Venn diagram in Figure 1 is intended only as a theoretical technique it illustrates areas common to all three scenarios: the intersect of IT mediation, distance learning, and face-to-face Learning. We propose that for this discussion that:

1. This intersect is called e-learning or distributed learning; and,
2. We use the terms "e-learning' and "distributed learning" interchangeably.

In this view, *distance learning* becomes a pure form of distributed learning/ e-learning, just as aspects of IT-mediated face-to-face learning form a subset of distributed learning/ e-learning. This allows us to discuss distributed learning/ e-learning as taking place either on or off campus, with the common defining feature being information and communication technologies. The use of *distributed learning*, in this sense, is also congruent with many other defining documents in this area, such as the EDUCAUSE series of reports *Distributed Education: Challenges, Choices and a New Environment*.

Research Agenda

Other terms used to describe research agendas include research plans; new approaches to research; emerging topics; new paradigms; research programs; research priorities; future directions for research; areas of need; research handbooks, and so on. Many documents with the specific title "research agenda" do not meet the criteria established below, while many documents with other titles, such as those terms listed above, do meet the criteria.

The term "agenda" has both a connotative and denotative aspect, both of which are vital to our definition of the term "research agenda." An agenda can simply refer to a list of items to be discussed at a meeting, in which case the meaning is denotative (i.e., simply descriptive). Similarly, individuals use the term "research agenda" to describe their research activities or publications. In these cases, there is little difference between a "research agenda" and a list of publications in a CV. This literature review contains examples where the term "research agenda" simply refers to a 'laundry list' of research topics currently being undertaken in some area. With respect to e-learning, Peter Cookson's article, *Research on learners and learning in distance education: A review* is

an example of such a practice (Cookson, 1998). However, in order to plan and direct research and evaluate its outcomes, a research agenda must be more than simply descriptive, it must also be *prescriptive.* In its simplest form, a *prescriptive research agenda* sets out a list of proposed research activities based on some rationale and illustrates the interrelationships between these component parts.

Typically, the term "research agenda" (or one of its synonyms) can be applied to the following situations:

- It is used to describe the research activities, interests, or goals of an individual scientist or scholar. In this meaning, the term "research agenda" refers to a list of past and intended research activities pursued by one person. As such, a personal research agenda can form part of an academic's curriculum vitae, or would form part of someone's research plan articulated in support of a research grant or academic job application. The personal research agenda can be an important tool for assessing whether or not a research grant applicant meets the criteria of the research funding agency, or to determine if a professorial applicant has research interests that are in line with the research profile of a particular university department (Simonson, 2004).

- A research institute, think-tank, or university department may articulate a "research agenda" as a set of research interests or priorities that characterize its academic mission (Princeton Engineering Anomalies Research, 2006). At universities and colleges, such research agendas can be found not only at the departmental or faculty level, but also at the institutional enterprise level (Malaspina University-College, 2002).

Public and private research funding agencies list guidelines for the research areas they will consider funding. In Canada, federal research funding agencies such as the Social Sciences and Humanities Research Council of Canada (SSHRCC) and the Natural Sciences and Engineering Research Council (NSERC) list a general set of guidelines broadly outlining the research topics they will fund (NSERC, 2005).

- A specialist or group of specialists, or members of a research association or committee representing a particular discipline, announce a research agenda relating to that specific discipline. The agenda can grow out of a group publication of papers, a survey of practitioners, the result of an individual's efforts, or conference proceedings, or a perceived need or political intent to affect change. In the field of e-learning, a typical example would be the research agenda published in the *Proceedings of the Invitational Research Conference in Distance Education; Towards Excellence in Distance Education: A Research Agenda,* sponsored by the American Centre for the Study of Distance Education (Kearsley, 1995). It is with this type of research agenda with which we will be primarily concerned.

This is a generalized list only. Some of the examples cited in this present review do not quite match any one criterion, while some others are hybrids of two or more types.

On an institutional level, universities and colleges, faculties and departments often use the term "research agenda" to describe their research priorities. The rationale for such priorities is based on such rationales as institutional mandates, strengths/interests of faculty, funding opportunities (especially with respect to applied research) and other circumstances. On an institutional level, research agendas are usually set out in strategic research planning documents. As an example, Malaspina Community College (Nanaimo, British Columbia) outlines six areas of applied research that form the foundation of its research agenda (Malaspina University-College, 2002). A university department of Women's Studies will have a self-defining research agenda, in a general sense. Similarly, a private Christian theological seminary will have a similarly circumscribed research agenda.

With respect to e-learning, a similar institutional example can be found in Tony Bates' planning paper, *Map of Research into E-Learning at UofC,* which was commissioned by the University of Catalonia, Spain, in 2003 (Bates, 2004). This agenda is instructive, because it demonstrates the difference between an institutional research agenda and what we might call a pan-disciplinary research agenda, based on the discipline of e-learning research. After being briefed on University of Catalonia's main functional areas, and after consulting with the university's research and administrative personnel, Bates created a research agenda that outlined three areas of e-learning research. It is important to note that Bates created the agenda based upon what he termed were the University's "three main functional areas," as well as his consultations with the University's personnel (Bates, 2004).

Another important use of the term research agenda arises from public and private funding agencies. It is here where we see why it is important to acknowledge the *prescriptive* function of a research agenda. It is highly unusual to find a research funding agency that will fund purely speculative research. In most cases, speculative research funding is usually only found in public funding agencies. In Canada, this would include the Social Sciences and Research Council of Canada (SSHRCC), or the Natural Sciences and Engineering Research Council of Canada (NSERC). Private agencies, businesses, and corporations primarily fund applied research – which typically makes privately funded research agenda highly prescriptive. This has been the topic of much debate, for example the concern over how large pharmaceutical companies can have an unseemly influence over the research agendas of the medical research units of our universities. Even agencies such as SSHRCC and NSERC have fairly prescriptive research agendas in that they will only fund research that meets fairly strict methodological and disciplinary guidelines (NSERC, 2005; SSHRC, 2005).

In fact, it is interesting to see how a public research funding agency can drive the creation of a research agenda as a result of its own prescriptive research agenda. In 2005, the SSHRCC announced a new research funding program, entitled "Strategic Research Clusters Development Grants." Application guidelines clearly stated the type of research agenda the program was prescribing. A "strategic research cluster was defined as: "A national (Canadian) network of researchers in the social sciences and/or humanities that fosters collaboration or otherwise contributes to a particular issue, theme or content area" (SSHRCC, 2005).

The SSHRCC guidelines continued by describing the types of projects that might be funded, as well as expected outcomes, such as:

> *Successful strategic research clusters are expected to: focus on issues, themes, and content areas on which Canada has a "head start," an existing critical mass of expertise, and specific opportunities for research and research training* (SSHRCC, 2005).

Successful applicants were, of course, selected partly on how well their proposed research agenda matched that of the SSHRCC program. One application, for example, sought funding for a strategic research cluster that grouped researchers in the area of Science and Technology Studies with those from the History and Philosophy of Science (McOuat, 2005). It is interesting to speculate whether or not the research agenda sparked by such a cluster would have arisen in the absence of the SSHRCC program; but for our purposes, it provides an example of how one type of prescriptive research agenda drives the creation of a new, and more speculative research agenda.

Examples such as the SSHRCC example above, illustrate the prescriptive nature of any viable research agenda. Consider the internationally-respected Canadian Institute for Advanced Research (CIAR). Their research agenda is comprised of two levels. The first level provides the agenda's overall scope and rationale, summarized by four general statements:

- CIAR selects research areas that tackle fundamental questions challenging our understanding of the natural world and of human society.

- The breadth and scope of these questions reach beyond the capability of individual researchers, disciplines, or universities.

- CIAR funds only people, not infrastructure, keeping costs relatively low.

- Program members benefit from the tremendous intellectual stimulation afforded them, and Canada gains by retaining some of the best scholars and welcoming others back home (Canadian Institute for Advanced Research, 2006).

The reader is then invited to follow a link to a secondary, more detailed list that outlines the eleven specific disciplines that make up their research agenda.

Examples such as these, while instructive, do not completely round out our discussion of a Pan-Canadian research agenda for e-learning. For our purposes, a "research agenda" must be more than a simple list of past or current research projects. It must also be more than a prescriptive list of the research priorities of any one group, institution, or funding agency: it must address the discipline as a whole. In addition, a "research agenda" must also contain background on the need for the agenda; it must have a rationale for inclusion of the agenda items; it must have some implementation planning; it must contain an evaluative component, and; it must carry a message beyond a simple descriptive list that connotes a methodology and even an ideology of the agenda. As Liles, Johnson and Meade (2006) state:

> *An active research agenda implies that hypotheses are being generated which address the fundamental question of the discipline. The agenda stands the test of time, with many researchers and practitioners in the discipline continually expanding the research that builds upon itself. The research agenda is complex and substantial enough to be divided into subareas. Multiple sub questions are formulated to guide the research necessary to contribute to the body of knowledge which addresses the fundamental question asked by the discipline* (Liles, Johnson, Meade, & Underdown, 1995, cited in Liles, et al., 2006)

While the example above demonstrates how a research agenda must articulate a *preferred set of activities*, it is also important to add that by doing so the agenda may communicate something more than this. The research agenda can be indexical of a point of view, or ideology. Take for example, the South African-based "Agenda Feminist Media Project" (AGENDA, *n.d.*). Activities of this organization include a research journal, a national radio programme, internships, and a research writing program. A look through its various research projects and journal issues provides a clear idea of the *bias* of Agenda's research agenda. The same holds true for the research arms of all manner of think tanks, private and public foundations, private corporations, and public institutions. Consider, for example, the conservative political bias of the research agenda of the Canadian, Vancouver-based Fraser Institute, whose research agenda for environmental studies includes such statements as: "Greenhouse gas regulations have the potential to impose high costs on Canadian citizens and drastically increase the regulatory state, while providing little or no environmental benefit" (Fraser Institute, 2006).

Similarly, in the world of academia, research agendas also connote their disciplinary ideology, or bias. For example, the mission statement of the US Federal Social Sciences Research Council (SSRC) states, in part, that:

With partners around the world, we mobilize existing knowledge for new problems, link research to practice and policy, strengthen individual and institutional capacities for learning, and enhance public access to information. We bring necessary knowledge to public action (SSRC, 2006a).

In the aftermath of the 2006 Hurricane Katrina disaster, the directors at the SSRC decided that it was important to explore the event from a social sciences perspective. To do this, they employed the device of the distinguished scholars forum, or experts group, to set a social sciences research agenda with respect to Katrina. The SSRC (2006b) had this to say on its information page about the forum:

As analyses and "spin" of the Katrina crisis grow, we confront the sort of public issue to which a social science response is urgently needed. Accordingly, the SSRC has organized this forum addressing the implications of the tragedy that extend beyond "natural disaster," "engineering failures," "cronyism" or other categories of interpretation that do not directly examine the underlying issues – political, social and economic – laid bare by the events surrounding Katrina (Alexander, 2006; SSHRC, 2006b).

The implicit bias of a social sciences perspective becomes clearer when we consider the specific items listed in the Katrina research agenda:

- Structures of vulnerability, including the race, class, gender, and age of those suffering most;
- Political projects that have distorted the pursuit of "homeland security;"
- Bias that has sent federal resources disproportionately to rural areas and suburbs rather than cities;
- The physical infrastructure on which cities depend (and its vulnerabilities);
- Costs of "privatization" and cuts in government capacity;
- Law enforcement and public order (Alexander, 2006).

A research agenda for any topic will reflect the topicality of the perspective and methodology afforded by a particular discipline. A research agenda, however, will often betray a bias or ideology beyond this – one that may or may not be intentional; or one that usually is but not explicitly stated.

Besides the obvious social science bias of the research topics themselves, the list also creates a message – not explicitly stated – that there were grave deficiencies in the response to Katrina, and that most of these deficiencies were the result of poor leadership and inadequate performance by all levels of government. This Katrina research agenda is essentially based on an implicit enthymeme that the Katrina tragedy was mostly the result of poor social policies. For example, the research agenda of an

engineering study investigating the structural failure of the region's levees would be entirely different and necessarily less subjective.

The Katrina example demonstrates how the connotations of a research agenda can go beyond a disciplinary bias to connote ethical or political ideologies as well. Consider the research agenda publicized by the US Department of Homeland Security, which was created in the aftermath of September 11, 2001. The siege mentality of this research agenda can be understood in statements to the press describing the Homeland Security's intended research agenda, such as: "Our Department must drive improvement with a sense of urgency. Our enemy constantly changes and adapts, so we as a Department must be nimble and decisive" (US Homeland Security, 2005). The political ideology behind the agenda is also apparent, even making it unnecessary to specifically identify the "enemy."

With respect to a pan-Canadian research agenda for e-learning, we must address or acknowledge the biases inherent in such an enterprise. These include:

- That e-learning (or distributed learning) is a discipline in its own right;
- That there are distinctly Canadian aspects to e-learning;
- That such pan-Canadian perspective is necessary to distinguish those e-learning issues peculiar to Canada from those of e-learning generally;
- That a social sciences-based research methodology is appropriate;
- That e-learning/ distributed learning includes both distance learning and ITC-mediated face-to-face learning;
- That enough issues remain unresolved as to warrant the creation of such a research agenda

To summarize, for the purposes of the CIDER project, we will define a "research agenda" as being a collective effort designed by and for researchers so as to provide guidance, coherence and support for the collective products of that research. The set of research activities to be carried out by an individual, an interest group, or an institution, are therefore not part of our definition. Second, a research agenda must be more than a simple "laundry list," or literature review, of research topics. Examples such as Cookson (1989), cited above do not meet our definition of research agenda. As in the Canadian Institute for Advanced Research (2006) example above, items on a research agenda must have a specific disciplinary and methodological rationale for their inclusion. Third, a research agenda must be prescriptive, as opposed to being simply descriptive. Fourth, a research agenda must connote an appropriate disciplinary methodology and perspective.

Proposed Definition for CIDER Agenda

In light of the preceding discussion, we can see that in creating a "research agenda" we will be essentially engaging in "meta research," or, research about research. We also

propose that a "research agenda," in any given discipline, can be defined as an ongoing process consisting of six interdependent activities. In creating a research agenda, we:

1. *Quantify* what research has previously been done;
2. *Evaluate* that research;
3. *Describe* new research needs on the basis of the quantification and evaluation;
4. *Prioritize* the new research needs in a "Research Agenda";
5. *Perform* and evaluate the new research; and by so-doing,
6. *Redefine* the Research Agenda.

The development, implementation, evaluation, and redefinition of a research agenda is an ongoing iterative process and is the foundation of all scholarly disciplines.
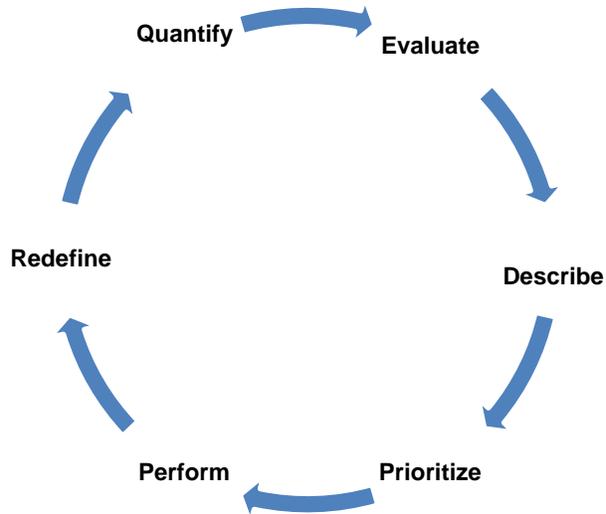

Figure 1
Six-step model for a Research Agenda

Maintaining a research agenda is an organic and ongoing activity. This is an essential characteristic: our proposed model of the six-step research agenda can also be described as a continual feedback loop. The amount of activity and continuous evolution of a research agenda is an index of the robustness of the discipline – as compared, for example, to a research agenda for Alchemy, which we suggest, could be described as having "completed" its research agenda.

To suggest that a research agenda is "ongoing" does not necessarily imply that all six steps are carried out simultaneously or even sequentially. Research agendas can consist of either characteristic or both. For example, a research agenda could feature two or more of the steps from Figure 1 being carried out simultaneously, with some steps being de-emphasized or combined with others.

Academic research groups, research centres, policy organizations, think-tanks, or other research organizations continuously engage in parallel meta-research relating to one or more of steps. Additionally, any vibrant discipline will have numerous researchers simultaneously articulating their own agendas, often with little interaction or active opposition to other groups.

HOW & WHY RESEARCH AGENDAS ARE CREATED

Generally, research agenda arise from three types of research scenarios, which can be summarized as follows:

New Horizons

A new situation or phenomenon emerges, which represents a new and specific dimension for an established discipline. This scenario is most common in applied research. Recall the previous hurricane Katrina example where, in the aftermath of hurricane Katrina, the US Social Science Research Council (2005b) funded a collection of research papers (such as the paper by Alexander, 2006), from eminent American social scientists which sought to create a research agenda exploring the response to and aftermath of Katrina from a social and public policy point of view. Another example would be Amat, Blake and Oliveras' (1999) assertion that economics needed to create a specifically Spanish research agenda. In such cases, research agendas are proposed to address the research questions arising from the new phenomenon in question.

New Discipline

If we take our first scenario and stretch it to its extreme, what often emerges is a sub-area of a discipline that becomes important enough to be regarded as an independent discipline in its own right. As well, a new discipline will sometimes emerge when a phenomenon that traditionally has been scrutinized through one disciplinary methodology is subjected to a different methodology. This often has the advantage of seeing the subject from a new perspective. An example would be what has been called the "human dimensions of environmental change. Traditionally, climate change has been studied from the natural sciences perspective. However, researchers recognized the need to study the impact of climate change on human populations, and a new discipline, the "human dimensions of global environmental change," emerged (Jochimsen, 1998)

There is probably no such thing as completely "new" discipline. Rather, the disciplines we describe as new or emerging are either offspring of a parent discipline or disciplines, or disciplines that have emerged when a phenomenon traditionally researched by one discipline is addressed through the methodology of another. Other research agendas resulting from the establishment of a "new" discipline are:

1. **Text mining.** Text mining has been described as a methodology that attempts to discover new, previously unknown information by applying techniques from natural language processing, data mining, and information retrieval. Text mining seeks to identify and gather relevant textual sources, to analyze these to extract facts involving key entities and their properties, and to combine the extracted facts to form new facts or to gain valuable insights (The Joint Information Systems Committee, 2004).

2. **Networked Systems of Embedded Computers.** *EmNet* technology can be considered as an outgrowth of computer science. At the same time that networks of embedded computers have become increasingly pervasive, people who use them have become increasingly oblivious to their presence. This gives rise to situations where users of these systems are increasingly less likely to have a high degree of technical expertise, creating a whole set of new research areas surrounding human factors, privacy, vulnerability to malicious use, and so on. This emerging discipline requires its own research agenda, because: "What differentiates *EmNets* and necessitates a new research agenda is that the solutions that have been worked out in areas for more general computing and information technology systems will not work for *EmNets*." (National Research Council, 2001,

Interdisciplinary

Our third scenario arises when a new discipline is created though the marriage of two or more disciplines. This has given rise to a host of new disciplines, which are variously described as being interdisciplinary or multidisciplinary. However, we propose that the term "multidisciplinary" is most correctly used when it describes research that separately employs the methodologies of two or more disciplines, such as studying environmental pollution from a health sciences as well as an economics standpoint. In this scenario, a new discipline is not really created; both disciplines remain separate as they both provide their unique approach to the problem (thus creating a multidisciplinary approach). The distinction becomes clearer if we consider the inconsistency of the term "multidisciplinary discipline."

An "interdisciplinary discipline," on the other hand, can represent a truly "new" discipline. An interdisciplinary methodology is created when the terms of reference of one or more disciplines are applied to another discipline, creating a truly hybrid discipline. Mathematical Economics is such an example. Communication Studies is another. Communication Studies is a good case in point, simply because one can trace its history from its origins in the mid-twentieth century as a sub-discipline of such areas as linguistics, anthropology, and social sciences, to its emergence in the latter part of the century as a separate discipline in its own right. Also, there are many similarities between the structure of Communication Studies and E-learning Research.

The study of communication can be traced back to ancient Greece, where its origins as the study of Rhetoric are found in the works of Aristotle and others. As the disciplines of anthropology, linguistics, cognition, and human physiology emerged, they too developed research areas in communications. The advent of information theory, electronic communications, and computer science added a whole other dimension to the study of communications. At the beginning of the 21st century, we have arrived at a point where communications studies have emerged as a new, overarching discipline. Ironically, some of the disciplines that gave rise to communications studies – such as

rhetoric and linguistics – are now often viewed as sub-disciplines of the discipline they parented (unless, of course, one is a linguist or a rhetorician).

E-learning, or Distributed Learning, arose through a similar process of interdisciplinary mixing. Before the advent of IT-based learning, pedagogy and related fields were the purview of educational theory. Once researchers began to assess the impact of technology-based learning, however, the field became much more complex. E-Learning emerged an interdisciplinary field of research in its own right, combining such disciplines as educational pedagogy, computer science, human factors, information theory, public policy (as related to educational opportunity), curriculum development, and software engineering, among others.

DEVELOPING THE RESEARCH AGENDA

The example of Communication Studies provides a good case study of the research agenda development model proposed in Figure 1. In 1983, the renowned communications theorist George Gerbner edited a groundbreaking special issue of the *Journal of Communications.* This issue, entitled "Ferment in the Field," was an anthology of articles by a wide variety of researchers in communications studies whose research careers had begun, for the most part, in other disciplines. The title's apt metaphor captured the common theme of all the articles: after several decades of research in communication studies, several key ideas had taken hold and were now steering the discipline in new directions. The overall message that emerged from the various articles was one of "stock-taking:" a reflection on the research directions to date, followed by suggestions for new research ideas which could form the basis for a new research agenda for the field, that would be taken up by the next generation of scholars (Gerbner, 1983).

Interestingly, "ferment in the field" has proven to be an enduring metaphor for the process of stock-taking research to date, followed by the creation of a new research agenda. Leonard Barchak's 1984 paper, *Discovering Communication Paradigms with Q Methodology: Ferment or Sour Grapes,* discusses how Kuhn's idea of paradigm shift has been appropriated by various researchers (Barchak, 1984). Sarosta and Chen (2003) discuss how the methodology suggested by the metaphor informs the field of cultural studies. Tucker, in what we hope was tongue-in-cheek, uses the metaphor to discuss the current state of research in agricultural communications (Sarosta & Chen, 2003; Tucker, 1996).

"Ferment in the field," then, describes the first step essential to the development of a research agenda: an assessment or "stock-taking" of the current research of a discipline. This literature review demonstrates that such stock-taking is carried out either by individuals or expert groups, as follows:

1. An individual or individuals performs an assessment of current research in his/her discipline and presents the results in a publication or at a conference (Of the 140 such assessments documented in this report, 40 are representative of this type. With respect to E-learning, examples of this approach include Berge, Jegede and Mishra (Berge, 2001; Mishra, 1998; Jegede, 1994). Berge has lots of references, but I only used the DEOSL one here, as it's the only one from 2001. You have listed one Berge paper without a year – maybe you meant this one? Please fix that reference (in references not cited list). Also, Berge co-authored a paper that same year, 2001, so please ensure that it wasn't this paper you meant to cite here. Finally, I found a URL to the Berge DEOSL paper, and have added that. From this point forward, I will put question marks beside all Berge articles, just to ensure the right ones are used in the appropriate areas.

2. A group of experts, or representatives of a research association of a discipline, produce a collaborative publication or presentation outlining the current state of research in a discipline. Often, an experts group is brought together as an advisory committee for government agencies, academic societies, etc. The majority of the sources in this report – over 100 – represent this type of activity. In Canada, an example of such a group was the Advisory Committee for Online Learning, who in 2001 submitted an assessment of e-learning research in Canada to the Federal Government (Advisory Committee for Online Learning, 2001).

3. Two principle tools used in stock-taking or quantification are the conference and the survey. Forty of the research agendas listed in the references cited and references not cited sections used a conference as a focal point to quantify and evaluate previous research and then to propose new or refined research agendas. Another of the most common instruments used to quantify and assess needs for research is the survey. In the development of a research agenda, researchers, practitioners, and user groups are among those surveyed.

Research agendas are the logical follow-up to quantification and evaluation. While some sources in this review provide quantification (often in the form of a literature review), with little or no research agenda follow-up, many do include some sort of suggested agenda. These range from general statements that something should be done, to comprehensive agendas consisting of multiple projects, rationales, budgets, timelines, and so forth.

With respect to existing research agendas for e-learning with a specific pan-Canadian focus, there are a number of existing publications. Most of these, however, are short on quantification and assessment, instead consisting of vague statements about the necessity of more e-learning research, and short on specifics, calls for improved faculty development and rewards (for e-learning adoption), and, almost invariably, calls for increased research funding. When it comes for identifying specific areas of needed e-learning research, the Canadian sources identified in this review do little more than

offer a general description of and rationale for the needed research. For example, the 2001 report of the Advisory Committee for Online Learning (assembled at the behest of Industry Canada) was long on its emphasis that new, quality research was needed, but short on any specific research agenda, settling instead for statements like:

Such research should also focus on how people learn, how different people learn differently, how people engage in learning and continue it throughout their lives, and how learning is most effectively imparted. . . Quite apart from the "online" nature of learning, broader efforts to explore and understand the process of learning throughout life will require serious reflection and investment (Advisory Committee for Online Learning, 2001, p. 56).

The Report also contains an element common to many research agendas (especially Canadian ones submitted to government agencies): statements of the urgent need for new funding.

Our action plan sets out a variety of institutional strategies to ensure a high-quality online learning experience for Canadians. Yet the challenge is so great, involving a significant structural adjustment by our institutions, that we believe a large-scale move into high-quality e-learning will only occur if there is a substantial infusion of new funding to stimulate an expansion in high-quality online learning materials and substantially more learning research and learnware product development (Advisory Committee for Online Learning, 2001, p. 66).

Five years later, and despite the enormous growing importance of e-learning in Canada's postsecondary system, the need for research and development in e-learning has still not been effectively communicated to provincial and federal governments. In Bob Rae's 2005 report on the state of postsecondary education in Ontario, e-learning rates only a couple of sentences on Athabasca University, followed by a brief musing on whether there is a need for an Ontario-based institution "dedicated to distance and online education" (Rae, 2005).

CREATING A PAN-CANADIAN E-LEARNING RESEARCH AGENDA

Described below are the steps that to be taken in order to establish the pan-Canadian research agenda.

The Literature Review
Undertaking an exhaustive literature review is essential to establish models and best practices for research agendas generally, and to ascertain whether there is a gap in the research that a new pan-Canadian e-learning research agenda could fill. The literature review presented here has fulfilled the first step, and demonstrated that such a gap exists. There are – of varying quality – e-learning research agendas that do offer other

national perspectives, notably from India (Panda, 1992), Australia (Jegede, 1994), the United States (Diaz, 2000), even individual states (Rockwell, 1999), and several international perspectives (Duffy, 2004).

While these and similar agendas do not represent specifically pan-Canadian interests, they do identify all of the general research issues confronting e-learning research. Particularly valuable (among several excellent American sources) are four milestones:

Berge: A Tangled Web Indeed: The Difficulty of Developing a Research Agenda for Distance Education (Berge, 2001)

Earlier, I defined e-learning as strongly interdisciplinary. As we develop a pan-Canadian agenda, we should keep in mind Berge's acknowledgement of this, and the problems it can create, for establishing a coherent agenda:

> *The complex interdisciplinary nature of distance education is the reason it is both difficult to implement and sustain, and why it is difficult to develop a central, theoretical framework on which future distance education research can be based. Economists, business administrators, psychologists, sociologists, and a variety of others working from their own perspectives, in related disciplines, may successfully conduct research in distance education. Thus, organizing the literature in the field and making meaning of it is a difficult and confusing task. Consequently, there are many viable research paradigms that honor different ways of judging education research* (Berge, 2001, p. 16).

The most valuable aspect of Berge's 2001 work are its numerous tables and lists of Distance Education's research structure, its annotated survey of literature, lists of research areas requiring priority, lists of potential barriers, and so on. Such lists will be a valuable starting point for a pan-Canadian agenda, in that their contents can be re-examined from our own national perspective.

Institute for Higher Education Policy: What's the Difference? A Review of Contemporary Research on the Effectiveness of Distance Learning
(Phipps & Merisotis, 1999)

A key element of this comprehensive report is its quantification and evaluation of contemporary research on distance education (recall our model, Figure 1). Although the report was written two years earlier than Berge's 2001 paper, it provides an excellent critique not only of individuals' research, but of the methodology found in distance education as a whole. Among the report's key findings are possible shortcomings in contemporary distance education research, listed here, will be instructive for us as we build the pan-Canadian research agenda for e-learning:

- Much of the research does not control for extraneous variables and therefore cannot show cause and effect;
- Most of the studies do not use randomly selected subjects;
- The validity and reliability of the instruments used to measure student outcomes and attitudes are questionable;
- Many studies do not adequately control for the feelings and attitudes of the students and faculty – what the educational research refers to a "reactive effects" (Phipps & Merisotis, 1999, 18-22).

The report concludes with a list of over sixty references. Its criticisms of research methodology are borne out by several other sources included in this literature review, including this disparaging statement by Beaudoin (2004), again, something of a caveat for future research undertaken by CIDER:

> *Most so-called research in distance education is still evaluative or comparative and is often not useful or interesting to others than those connected with the program under review. We are studying distance education to influence decisions regarding practice, policy, strategy; yet, most data has limited external validity, does not formulate hypotheses, and does not offer results that can be reliably generalized to other situations. The practitioners complain that distance education research language is too abstract and without practical value, but scholars argue that practical concerns do not readily lead to important research questions* (Beaudoin, 2004, p 2).

5.1.4 Saba: Research in Distance Education: A Status Report (Saba, 2000).

Earlier, it was suggested that "meta-research" was a crucial component in the establishment of a research agenda. This is the main contribution made by Saba's paper, in which he examines the research methodology itself as opposed to specific findings of the research. Saba's paper provides a methodological taxonomy of distance education research, as it relates to the meta-theory of experimental research, comparative research, applied research, and theory-based research. The result is an encapsulation of how certain methodologies evolved in distance education research:

> *(In) education research, most classrooms are pre-selected by factors other than experimental requirements. As such, the concept of experimental research was modified, and acquired the name of quasi-experimental research to reflect this change. So far, distance education research has been dominated by quasi-experimental research which compares the effectiveness of distance education to classroom instruction, face-to-face education, or traditional education* (Saba, 2000, p. 2).

Saba has several valid criticisms of the research methodologies that characterize much of the current research in distance education research, which we should keep in mind as

we create the theoretical underpinnings of CIDER's pan-Canadian research agenda for e-learning:

> *Absent from most comparative research in distance education is a discussion of theoretical foundation of the field. Research questions are rarely posed within a theoretical framework or based on its fundamental concepts and constructs. Although research within a theoretical framework is not a requirement for inductive inquiry, a post facto theoretical discussion of research results would be helpful in making studies relevant to the work of other researchers, and possibly even to the practitioners in the field. Comparative researchers, however, have shown little or no interest in the theoretical literature of the field either before or after conducting their studies* (Saba, 2000, pp. 2-3).

EDUCAUSE

In many ways, the EDUCAUSE agenda is the best example of a model to be incorporated by the CIDER. Between 2000 and 2005, EDUCAUSE, in collaboration with the American Council on Education, commissioned and published a series of six monographs (EDUCAUSE, *n.d.*). Each monograph, written by a recognized expert or group of experts, examined a particular research area of distributed learning (which we have been equating with e-learning). The titles of each monograph and their abstracts are below:

1. *Distributed Education and Its Challenges: An Overview*
   The first report in the ACE/EDUCAUSE series Distributed Education: Challenges, Choices, and a New Environment. This report by Oblinger, Barone, and Hawkins (2001) identifies significant issues associated with distributed education and suggests a series of questions to help institutional leaders establish and validate their options. This report outlines topics that will be thoroughly addressed in future papers in the series, including issues of quality control and leadership.

2. *Maintaining the Delicate Balance: Distance Learning, Higher Education Accreditation, and the Politics of Self-Regulation*
   This is the second monograph in a series of papers on distributed education commissioned by the American Council on Education (ACE) and EDUCAUSE. This monograph by Eaton (2002) describes the impact of distance learning on the balance among accreditation (to assure quality in higher education), institutional self-regulation, and the availability of federal money to colleges and universities. The paper confronts the challenges of protecting students and the public from poor-quality higher education, and attending to quality in an increasingly internationalized higher education marketplace.

3. *Distributed Learning: New Challenges and Opportunities for Institutional Leadership*

This monograph by Hitt and Hartman (2002), the third in the ACE/EDUCAUSE series, focuses on the challenges faced by college and university leaders as their institutions begin to engage in distributed learning and the potentially transforming changes that lie along the way.

4. **Student Learning as Academic Currency**
   This fourth monograph, by Johnstone, Ewell and Paulson (2002), explores how distributed education challenges the credit hour as the standard measure of student progress. The authors describe a system based on alternate measurements of student learning that accommodates the asynchronous nature of distributed education. The paper also examines the institutional, state, and federal policy implications of an alternative measurement system.

5. **Partnerships in Distributed Education**
   This monograph, by Katz, Ferrara, and Napier, (2002), discusses how partnerships among higher education institutions and for-profit firms can be effective and desirable vehicles for implementing distributed education. It also addresses how these relationships often raise issues related to curriculum control, faculty autonomy, trademarks, technology expertise, courseware ownership, and revenue sharing.

6. **Barriers to Distance Education**
   Although technology has broadened the boundaries of higher education, significant barriers to distance learning remain. This paper by Levine and Sun (2002), the sixth and final monograph in the ACE/EDUCAUSE series Distributed Education: Challenges, Choices, and a New Environment, closely examines these obstacles, including those both inside and outside the academy.

Each of these monographs contains thorough research in its topic areas. Some of these issues, such as accreditation, have received little emphasis in the Canadian literature. If The Canadian Institute of Distance Education Research (CIDER) could produce a set of monographs similar to the EDUCAUSE series, but with a distinctly Canadian emphasis, this would go a long way towards our goal of a comprehensive Pan-Canadian e-Learning Research Agenda.

Methods of Quantification and Evaluation of Research

What do the experts think?

All of the research agendas (n = 131)[4] included in this study were created by an individual researcher, small teams, and groups, which I have earlier described as "experts group." Included were all sources with the criteria for a "research agenda" as

outlined above, including the various other titles summarized earlier in of this report? Experts groups range in size and definition from appointed panels of five or six, to entire memberships of an academic society or organization. The manner in which experts groups collectively defined and communicated proposed research agendas include: panels appointed by an educational organization, research institute or think-tank; collective publication of a book of essays or a special journal issue, results of a survey of experts, conferences and conference proceedings.

For the proposed pan-Canadian agenda on e-learning, such a vehicle will also be necessary as a next step. Suggestions include:

- A CIDER-sponsored publication of commissioned essays after the "Ferment in the Field" model;
- A CIDER-sponsored, more extensive publication of a series of monographs, modeled after the EDUCAUSE monograph series;
- Ensuring that the pan-Canadian research agenda on e-learning workshops and interactive paper presentations are put on the agendas of relevant national and international conferences, such as the Canadian Association of Distance Educators (CADE);
- Organizing a stand-alone conference on the topic of establishing a pan-Canadian research agenda for e-learning, publishing the proceedings, and obtaining feedback on the proceedings; and,
- Conducting a survey of experts or members of research associations of appropriate disciplines.

What do the users think?
A popular vehicle for e-learning evaluation research has been the user-group survey. The user group survey is also widely used in the establishment of research agendas generally. Of the research agendas considered (n = 131), twenty employed user group surveys. It is important to emphasize the distinction between a user group survey and a survey of experts groups. User group surveys must be very carefully rendered into the construction of a research agenda as the final research output of the agenda must meet real identifies as identified by these users. While a user group survey can suggest new items for a research agenda, the potential benefit is compromised if the researcher becomes so preoccupied with fulfilling his or her pre-existing research agenda to notice the potential value of the respondents' input. As Scherr and Wittman (2002) posit:

> *We are not automatically conscious of everything a student says; the "filter" of our own research interests blocks some student statements. Such a filter is not inappropriate for researchers; specialization is usually necessary for detailed analysis. However, to the extent that our research agendas are unexamined, they may control our attention inappropriately.*

Conscious consideration of possible research agendas widens the range of opportunity for productive research (Scherr & Wittmann, 2002).

Under the traditional academic model, research agendas are defined by academics themselves. But funding mechanisms are driven by academic curiosity, disciplinary values, and traditional peer review undertaken by applicants' academic 'peers'. Funding of new e-learning research and development is also often driven by user-group (i.e., learners) satisfaction with e-learning materials, whether this information is garnered from a controlled user-group evaluation, or course evaluation surveys, to exit surveys. Further, many e-learning researchers in universities and other institutions already 'interact' directly with other 'user groups,' such as government departments, by accepting contracts to undertake specific pieces of research or by serving in advisory capacities. While e-learning contract research brings researchers into contact with users, it does not meet the definition of interactive research. This is because the research agenda, rather than being jointly determined, is set solely by the 'user.' Goals are often influenced by shorter-term considerations and/or immediate policy needs.

When we consider surveying user groups for developing the pan-Canadian research agenda on e-learning, whether they are learners, instructors, or administrators, we must be cautious about involving users too early in the definition of a research agenda, as such involvement can result in neutrality being compromised. On the other hand, if users are not engaged from the beginning there may be less take-up of research findings. CIDER needs to consider how the range of relevant Canadian stakeholders, including 'voiceless beneficiaries' such as employers, community groups, and so on, are represented in the definition of research agendas.

As Scott and colleagues (1999) point out, ". . . researchers are concerned that user involvement in setting research agendas will result in short-term applied research programmes that will be indistinguishable from contract research and will not lead to the long-term accumulation of knowledge. Nevertheless, [we support] an openness and transparency in research agenda setting that is more characteristic of the interactive research style (Scott, Skea, Robinson, & Shove, 1999).

The Hidden Agenda
If we adopt the six-phase model of a research agenda as proposed in Figure 2 above, we could say with respect to our Pan-Canadian research agenda on e-learning, that we are now in the quantifying and evaluation stage. To complete these stages, we need to adopt some of the tools suggested above, such as the experts' group publication, conference, and user group surveys. The preceding discussion has outlined the necessary procedures and parameters.

Finally, we need to consider the question of *bias*, as introduced earlier. It must be emphasized that we do not mean *bias* in a negative sense, but only in the sense that we must acknowledge the disciplinary, methodological, institutional, and national interests

at play in such an undertaking. Some constituencies might argue that distance education, though necessary, will always be a poor substitute for face-to-face teaching practices.   As such, right from the start, our pan-Canadian research agenda on e-learning must contain a bias that e-learning is not by any means a necessary evil, but instead a vital component to all education and training environments. There must also be the bias that learners' user-group input is necessary, even in the earliest stages of research. Moreover, calling the undertaking a pan-Canadian agenda on e-learning demonstrates the most important bias.

Conclusion

This report has suggested an outline, rationale and the essential components of a Pan Canadian research agenda, as well as establishing the importance of such an agenda in the development of a wider E-Learning strategy for Canada. It has proposed a process to create such an agenda, and has provided models drawn from other jurisdictions and disciplines.

Our primary goal has been to solicit support, collaborative partnerships for undertaking the task. We have developed a strategy for garnering relevant ideas and priorities form researchers, educators, student leaders and policy makers. However, we are reluctant to proceed with this work without the collaborative support of other Canadian institutions, educators and governments.

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