A Study of How the Academic Field of Educational Technology Has Developed in Canada

Rocci Luppicini

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Abstract

The purpose of this research is to advance knowledge of how the academic field of educational technology has developed in Canada. It identifies key events and trends to provide new insights into the academic field of educational technology. The study focuses on the field in Canada from 1968 to 2006 and addresses one main research question:- How has the academic field of educational technology in Canada reached theist current state? Qualitative research methodology was employed to gather and analyze data from key individuals in the field in Canada and from relevant documentation. Data sources included: A purposive sample of 25 semi-structured interviews with leading stakeholders and also carefully selected documents (i.e., program information, faculty curricula vitae, and research on educational technology development in Canada). Text analyses were used to produce robust descriptions of the phenomenon under investigation. Based on interview data and supporting document data, the findings are:- First, the development of educational technology academic programs at the majority of universities studied was shaped by educational technology developments outside degree programs, especially those involving affiliated research centres and media service units within the universities. Second, it was found that there is a great diversity in how the educational technology degree programs developed at the 12 universities investigated. Third, the evolution of educational technology outside Canada, particularly in the United States, was perceived by faculty participants to influence the emergence of educational technology in Canada. Canadian universities built upon technological innovations achieved in the United States, but also built a field with uniquely Canadian characteristics.

Interpretations generated from the data analysis suggest that the trend toward online and blended degree program creation in Canada from 2000 to the present offers an important new direction for educational technology program development. The best available criteria were followed to maximize the trustworthiness of the findings. A broad range of evidence was used to establish the greater plausibility of these findings over competing alternatives. Knowledge obtained from this study should prove useful to administrators, researchers, university students studying educational technology, and instructors in educational communications and technology academic programs.

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Works such as these are not created simply by researching, writing, and editing. They emerge from human beings who need to be continually nurtured, cared for, and encouraged. From my mentor, Gary Boyd, I learned about professional integrity and the art of communication. From my father, I learned how to work hard and enjoy small pleasures in life. From my mother, I learned how to be humble and loyal. From my grandmother, I learned to not take myself to seriously. And from My wife, Ginger, I learned that anything is possible. She provided continual support throughout this long process. She understood when I was preoccupied, frustrated, and lost in thought. She reassured me during project setbacks and kept me balanced. For that I am most grateful.

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Chapter One – Introduction

Disclaimer

This study relies heavily on interviews for its data. As a result, although it reports many dates, "facts" and events, these were supplied and verified by the interviewees and might differ from those reported in other sources.

About the Chapter

This chapter introduces a study of the history of the academic field of educational technology in Canada. It begins by describing the early development of this field in both the United States and Canada. The discussion of the Canadian context continues with a look at the current state of the academic field. The last section describes the purpose of the study, including the guiding questions, scope of the study, its limitations and its significance.

Emergence of the Academic Field of Educational Technology in the United States

"Educational technology is the study and ethical practice of facilitating learning and improving performance by creating, using, and managing appropriate technological processes and resources" (Association for Educational Communications and Technology, 2004, p. 1). Educational technology first appeared in the United States in the early 1920s with audiovisual instruction and in efforts to incorporate notions of objectives-driven learning from Frankin Bobbitt, Edward Thorndike, and others into curricula and

instruction (Saettler, 1968). Since then, this academic field has experienced significant development in terms of government support, professional association support, and the emergence of graduate degree programs.

Audiovisual media and instruction were among the earliest developments in the academic field in the United States. Audiovisual instruction in the form of radio broadcasting, sound recording, and sound motion pictures emerged in the 1920s and 1930s. In the 1930s, educational technology evolved through work on behavioural objectives and formative evaluation. This work helped refine procedures for writing instructional objectives in terms of behaviours (Reiser, 1987). In the 1940s and 1950s, training, programmed instruction, instructional television, and educational broadcasting became important. In the 1960s, formative and summative evaluation and systematic design of instructional materials emerged and by the 1970s, instructional development centres were created within universities (Bludnicki, 2001). Since the 1980s, computer technology and instructional design developed significantly. Also, in the 1980s, computer- based instruction and new instructional design models emerged as microcomputers were first introduced. In the 1990s, performance technology became important and the educational use of computers increased. By 2000, Internet technologies and virtual learning environments were popularized.

Before degree programs emerged, beginning in 1948, government support and professional associations facilitated the emergence of the academic field of educational technology. From its inception the 1920s, the United States government nurtured the emergence of the academic field of educational technology by sponsoring research and development activities and forums for communicating scientific developments in the

academic field such as journals and conferences. A number of federal government agencies supported educational research, such as the United States Office of Education (USOE), National Science Foundation (NSF), the Office of Economic Opportunity (OEO), and the National Institutes of Mental Health (NIMH). During WWII and thereafter, support for educational research and training came from the Office of Naval Research (ONR) and the Department of Defence (DOD). Beginning in the early 1970s, some government support of educational research was added when the National Institute of Education (NIE) and Office of Child Development (OCD) were created.

Professional associations nurtured the emergence of the academic field of educational technology through publications, conferences, and the creation of a community of educational technologists. Founded in 1923 as the United States Department of Audiovisual Instruction (DAVI) and later renamed the Association for Educational Communications and Technology (AECT), AECT is the longest running proponent of educational technology in the United States and provides an umbrella organization for a variety of areas of interest within educational technology. It has produced multiple publications, hosted national conferences, and formed committees to advance definitions of the academic field, policies for professional standards of ethics and program accreditation standards. Other significant professional associations were founded including, the American Society for Training and Development (ASTD) in 1944, the International Society for Performance and Instruction (ISPI) in 1962, the Society for Applied Learning Technology (SALT) in 1972, the Association for the Advancement of Computing in Education (AACE) in 1981, and the International Society for Technology in Education (ISTE) in 1989.

Beginning in 1948, educational technology, as an academic field, emerged through the creation of graduate programs. The first graduate degree program (called Instructional Communications) was founded at Syracuse University in 1948 (Bludnicki, 2001). By 1989, the number of graduate programs increased to 170 with an average of four full-time and two part-time faculty positions per program (Johnston, 1989). By 2000, there were 223 graduate-level degree programs in educational technology (Petersons Publishing, 2000) and 61 doctoral programs (Branch & Fitzgerald, 2000).

Emergence of the Academic Field of Educational Technology in Canada

The following overview of the emergence of educational technology, as an academic field, focuses on the role of government support, professional association support, and the evolution of graduate degree programs in encouraging the field's development. Early developments in Canadian educational technology began with the institutionalization of audiovisual departments within universities and provincial departments of education to provide instructional assistance in the 1930s and 1940s. Audiovisual instruction evolved in the 1940s and 1950s as audiovisual education services were offered to K-12 schools. For instance, in 1950, Newfoundland's Division of Audio-Visual Education within the Newfoundland Department of Education cooperated with the Canadian Broadcasting Corporation in making school radio programs for classroom supplements and teacher training.

Beginning in the 1960s, the Canadian government nurtured the emergence of the academic field of educational technology by sponsoring research, development activities, and forums for communicating scientific developments in the field (including

publications and conferences). A number of federal government agencies, such as: the Canadian Council for Research in Education (CCRE), National Research Council of Canada (NRCC), the Office of Learning Technologies (OLT), Social Sciences and Humanities Research Council (SSHRC), and Industry Canada, supported educational research.

In the late 1960s and throughout the 1970s, computer-assisted instruction facilities were created within a number of Canadian universities and provincial departments of education for conducting research and teaching activities. A number of large-scale initiatives were supported by the government, including the National Authoring Language (NATAL) standards development and computer-assisted learning applications in the 1970s and 1980s. Throughout the 1980s, dominant areas of research and development included standard authoring language applications, computer simulations, intelligent tutoring systems and distance education. From the beginning of the 1990s to 2006, new developments have included distance education, educational applications of computer-mediated communication (CMC), and learning object standards.

From the 1990s onward, the government supported large scale initiatives to improve Canada's broadband Internet capabilities, and to develop learning object repositories (Luppicini, 2006). In 1993, CANARIE Inc. (Canada's advanced Internet development organization) was established to develop Canada's broadband Internet. School Net was created in 1994 to connect all public schools in Canada through the Internet. Can Core was established in 2000 to develop metadata standards and provide a framework for developing learning object repositories (See Luppicini, 2006 for a review).

Professional associations nurtured the emergence of the academic field of educational technology in Canada through publications, conferences, and the creation of a community of educational technologists. The Association for Media and Technology in Education in Canada (AMTEC) was formed in 1971 by the merging of Educational Media Association of Canada (EMAC), the Canadian Science Film Association (CSFA), and the Educational Television and Radio Association of Canada (ETRAC). The Association for Media and Technology in Education in Canada (AMTEC) is the longest running proponent of educational technology in Canada. Other significant professional associations which nurtured the field were founded, including, the Conseil interuniversitaire des professeurs en technologie éducative (CIPTE) in 1972, the Association pour le développement et l'application de la technologie en education (ADATE) in 1977, the Canadian Association of distance education (CADE) in 1983, the Canadian Society for Training and Development (CSTD) in 1979, and Le Réseau d'enseignement francophone à distance du Canada (REFAD) in 1988. There were also a number of significant provincial associations such as the Educational Computing Organization of Ontario (ECOO), founded in 1979.

The creation of graduate degree programs in educational technology came in response to a demand for educational television producers, school media system managers, and teacher training in audiovisual instruction (Luppicini & Maibroda, 2003, p.12). The first program in Canada emerged in 1968 when Concordia University founded its master's degree in English. Since 1968, 12 Canadian universities have created degree programs in educational technology under several titles: Concordia University (Educational Technology), Acadia University (Learning and Technology), Memorial

University (Information Technology), University of Calgary (Educational Technology), Athabasca University (Distance Education), University of Alberta (Instructional Technology), University of Saskatchewan and (Educational Communications and Technology), Laval University (Technologie éducative), Tele-university of Quebec (Formation à distance), and University of Montreal (Technologie éducationnelle), University of British Columbia (Technology Studies Education), and Royal Roads (Distributed Learning). Overall, early developments in the academic field of educational technology in Canada began with the institutionalization of audiovisual departments in the 1930s and 1940s. From the 1960s to present, the academic field has been shaped through government agencies, government supported initiatives, the founding of professional associations related to educational technology, and the development of graduate degree programs in educational technology universities across Canada.

Current State of the Academic Field of Educational Technology in Canada

The academic field of educational technology in Canada began in 1968 at Concordia University, with the founding of the first educational technology degree program. As of 2006, 12 institutions across Canada offer graduate programs. Over 70 full time educational technology faculty members offer Master's and doctoral programs across Canada. This point of development was reached through expansion, development, program changes and fluctuations. This thesis explores the question of how the academic field of ed. tech. arrived at the point it is at now.

Since its beginnings in the late 1960s, the development of educational technology in Canada is marked by change, particularly over the past 15 years. For example, in 2001

the University of Montreal ended the master's and doctoral programs after thirty-one years of operation. In 1994, the University of Calgary established a master's and doctoral level degree programs in educational technology. New master's level graduate degree programs were created in 2000 at the Acadia University, Royal Roads University, and Memorial University. In addition, the number of Canadian universities offering doctoral programs in educational technology over the last fifteen years has increased from three to four.

However, over the same period, reductions in full-time faculty positions occurred at several Canadian universities offering master's and doctoral programs in educational technology. This was largely due to federal budget cuts under the Liberal government of Canada. Since 1990, multiple Canadian universities have reduced their full-time faculty member contingency including Concordia University, Laval University, the University of Alberta and University of Montreal.

Other noteworthy signs of change in the field are evident. For example, membership in some professional associations has fluctuated. The ADATE and the CIPTE are presently inactive after thirty years of activity. Other associations like the AMTEC and the CADE have had minor membership fluctuations over the last fifteen years while remaining intact. The AMTEC membership has fluctuated between 300 and 350 (Doctor Kees Hof, Personal Correspondence, October 8, 2004) while the CADE's membership is somewhat higher with approximately 600 members (CADE, 2006). It is worth noting that in 2006, the AMTEC and the CADE effectively merged some of their operations, principally the organization of annual conferences (Doctor Dennis Dicks, Personal Correspondence, August 30, 2006).

It is useful to compare the current status of educational technology in Canada with trends in the United States because the United States is generally considered to be the most advanced country in this academic field in addition to being geographically close to the Canadian institutions under study. In comparison with the Canadian context, the academic field of educational technology, as an academic field, appears to be growing in the United States. A recent survey indicated that the number of American graduate programs continues to increase, up from 177 in 1987 to 223 in 2000 (Peterson, 2000). A general overview of United States doctoral programs published in the Educational Media and Technology Yearbook in 2000 listed 61 universities with Ph.D. programs (Branch & Fitzgerald, 2000). At the same time, membership in American-based associations was relatively stable or increased within International Society for Performance Improvement (10,000 approximately), American Society for Training and Development (70,000 approximately), and Association of Educational Communications and Technology (5000 approximately).

If Canadian universities are currently implementing major changes to their degree programs in educational technology, the question arises as to how such changes were initiated. Something interesting appears to have been happening within the academic field of educational technology in Canada that has not occurred in the United States. In Canada, the first degree program in educational technology appeared years after its equivalent in the United States and no major increase in the number of Canadian doctoral level programs and some program closures over the last 10 years. In contrast, the number of graduate degree programs in the United States has increased substantially over the past

ten years. This unique situation in the academic field in Canada suggests that changes have occurred worth studying.

About this Study

This study seeks to understand the development of the academic field of educational technology in Canada from the perspective of individuals who helped create, change, and close degree programs in educational technology. More specifically, the following question directed this study: How has the academic field of educational technology in Canada arrived at the point it is at now?

This study emerged from this guiding question seeking to advance understanding of a phenomenon rather than to confirm or disconfirm posited hypotheses. The phenomenon under investigation is the state of the academic field of educational technology in Canada, concentrating on the creation and evolution of degree programs at Canadian universities through the views of faculty and related documents.

Study Scope and Limits

The study focuses on the experiences of the educational technology faculty members who contributed to creating, changing, and discontinuing degree programs within the academic field in Canada. This study explores the views of faculty in educational technology in Canada and supporting documentation. It does not include academic programs and associations dedicated to the development of computers in education, which is a distinct field in itself. The study covers the period from 1968 to

2006. The year 1968 was selected as the starting point because it was a watershed for the field in terms of professional association and program development. In that year, educational technology degree programs were first introduced in Canadian universities. Concurrently, ETRAC and EMAC were formed in 1968, which, in turn, merged with CSFA to become AMTEC, a major national association for educational technology activities.

Significance of Study

This study is significant for three reasons: (1) it provides new insights into past developments by building on previous studies (see Bernard & Lundgren (1991)), (2) it gauges the state of an academic field that is currently undergoing significant change, and (3) it provides a basis for conducting future research. Previous historical studies about the development of the academic field in Canada focus on the development of specific academic programs but no study has explored academic educational technology activity across Canada. This study should help to inform a wider audience of the nature and value of the educational technology profession and enable leaders in the academic field to develop better strategies for managing educational technology development within changing circumstances. Finally, this study could prove significant in providing a basis for conducting future comparative research studies by offering an in-depth examination of developments within the academic field of educational technology in one country to compare and contrast with developments in another.

Chapter Two - Methodology

About the Chapter

This chapter outlines the research methods used to conduct the study and explains methodological choices made. It then describes a qualitative study using interview data and document data to explore the development of the academic field of educational technology in Canada. The chapter concludes with an overview of procedures designed to ensure the trustworthiness of the study's findings.

Choice of Research Methods

As noted in the previous chapter, this study attempts to understand how the academic field of educational technology has developed in Canada since the creation of the first graduate degree program in1968 and, from that understanding, to contribute insights about its evolution and current state. Specifically, this study is divided into three sections: (1) it documents the history of the academic field of educational technology in Canada, with an emphasis on the past fifteen years, after the last major study on the field was completed (Bernard & Lundgren-Cayrol, 1991); (2) it assesses the current state of educational technology in Canada from the viewpoints of educational technology faculty who contributed to creating and discontinuing degree programs; and (3) it offers insights into why the academic field is in the state it is now. To this end, the study draws on qualitative research methods.

Qualitative research methods are appropriate given the number of actors and institutions involved, the span of years, and the uniqueness of each institution studied.

Because only 12 universities offer (or offered) educational technology programs in Canada, the sample was too small to seek quantitatively generalizable inferences. Furthermore, because some of the likely sources of data were the recollections of faculty members and documents about educational technology programs, research, and associations, the data would not have not easily lent itself to a quantitative analysis. Strauss and Corbin (1998) note that, in such situations, "qualitative methods can be used to uncover and understand what lies behind any phenomenon about which little is yet known...[and] provide intricate details of phenomena that are difficult to convey with quantitative methods" (p. 17).

The decision to choose qualitative research methods is validated by the fact that similar studies in the past have also used qualitative methods. Maher (2002) studied the development of the academic field of adult education in the United States. Her study uses qualitative methods, highlighting historical documents and oral history interviews with senior adult education faculty members reflecting on past events, and generating valuable insights concerning the current state of that academic field. In a similar vein, this qualitative study uses oral history interviews and document data.

Description of Study

Data collected.

As noted at the beginning of this study, the following research question guided this study: How has the academic field of educational technology in Canada arrived at the point it is at now? To answer this research question, both interview data were required from individuals who have an 'insider' perspective on aspects of the academic

field of educational technology and documents that are not assessable in the public realm (Trice & Beyer, 1993). Interview data was collected from educational technology faculty members who contributed to creating and discontinuing degree programs. Documents including academic program documentation, faculty participant curriculum vitae, and research on educational technology programs and professional associations in Canada was collected in order to contextualize the academic field of educational technology in Canada. Government documentation was also consulted. These documents are described in detail below.

Because the focus of the study is the development of academic educational technology in Canada, the first source of data for this study is 'insider' information on the academic field from individuals within the field in Canada. The selection of participants to interview was determined by representational and informational concerns. That is to say, efforts were made to interview educational technology faculty who were involved in the creation and discontinuation of programs at all the institutions being investigated. Participants were, therefore, educational technology faculty members selected according to the following criteria: (1) faculty member affiliation (present or past) to one of the Canadian universities which offered or offer degree programs in educational technology, (2) faculty member affiliation when the target academic programs were created, and (3) faculty member affiliation for the current year or the last year in which new enrolments were allowed.

The most senior current faculty members (or senior faculty members during the last year new students were admitted before a program was suspended) were interviewed within an educational technology degree program at each targeted university. Failing

this, the second senior faculty member at the program's creation was interviewed. Failing this, the third senior faculty member at the program's creation was interviewed. In the event that there were two or more faculty members with senior rank, the faculty member with the most years of work experience at the targeted university was interviewed. I also interviewed the senior faculty member at the point in time when the educational technology degree program(s) was created at each targeted university. This group of educational technology faculty form an occupational subculture that transcends organizational boundaries, developing their own cultural forms within the organization that are not public knowledge (Trice & Beyer, 1993).

The number of people interviewed in the study was determined by representational and informational considerations. A minimum number of two interviewees for each of the 12 institutions were selected to ensure adequate coverage of each institution. In addition, interviews proceeded until no new information appeared to be forthcoming (Patten, 1990). Consequently, 25 participants were interviewed to ensure adequate coverage of the academic field of educational technology in Canada. The interviews were semi-structured, primarily conducted by telephone, and recorded on audio tape. There is little evidence documenting differences of content depth or breadth across interview mode (Graves, 1983). As a result, I chose telephone interviews over face-to face ones when face-to face interviews were not financially feasible (Eisner, 1998; Maher, 2002).

An initial draft of interview questions was reviewed by educational technology faculty members from the University of Laval and Concordia University. Subsequently, modifications were made to the interview questions and a pilot interview with one

participant was conducted to determine the effectiveness of the instrument and the usefulness of the information gathered. As a result of the pilot interview, one additional question was added to address the unique contributions to the field in Canada. Following further recommendations from educational technology faculty members from Concordia University, the list of interview questions was adapted to each participant in the study.

From faculty member participants, I gathered data on their backgrounds and viewpoints on how the academic field of educational technology evolved, their involvement with university degree programs at Canadian universities, summary of accomplishments (both their own and those perceived by others), and views on the future of the academic field by means of the following questions:

- Please tell me how you got involved in the academic field of educational technology.
- In your opinion, how did the educational technology program(s) evolve where you worked? What was your role?
- What do you consider to be the main contributions to the educational technology academic field from you and colleagues in your program? (I.e., research accomplishments, innovations).
- What service projects have you and your colleagues been involved with within your university community?
- In your opinion, did external factors influence the academic field of educational technology? Which ones? (I.e., professional associations, government, private sector).

- Name five key events in the development of educational technology in Canada?
- In your opinion, what constitutes the academic community of educational technology? (I.e., which people, what fields).
- Describe how you feel others in the university perceive the academic field of educational technology? How do others in the community you serve perceive it?
- What professional associations are you affiliated with? What associations would you rank as the most important to the development of the educational technology academic field in Canada?
- What are your thoughts about the future of the academic field of educational technology in Canada?

In addition to insider information, another source of information about the development of the academic field of educational technology was documentation that educational technologists have produced. These documents explain how educational technologists view themselves and their academic fields. Sources about an academic field typically include their records of research, such as refereed journals and documentation about research. Sources also include the documented history of academic programs and professional organizations, such as newsletters, program guides, and bulletins (Trice & Beyer, 1994). In the present research study, document selection was determined by the type of information I hoped to get from the documents, document

accessibility, and document manageability. To capture information about participants' contribution to the academic field, I reviewed curriculum vitae (provided by participants prior to interview) in relation to interview data from the 25 participants. To capture information about the history of academic degree programs, I examined program information from 12 universities in Canada, along with existing research on academic programs.

Educational technology programs were selected according to the following criteria: (1) degree programs acknowledged by the main national association for educational technology (AMTEC), (2) list of degree programs published in the annual Athabasca University Directory of Canadian university programs, (3) degree titles and similar titles from Canadian universities acknowledged by AMTEC.

It is important to note that the analysis did not include data connected to certificate and diploma programs, which typically have fewer overall educational technology courses and fewer courses dedicated to educational technology theory. Degree programs in communication and media studies were omitted due to the fact that these were more general in scope and not directly linked to education. Similarly, degree programs in computers in education were omitted, since these have a longstanding history of their own that is connected to a different academic tradition. Finally, the analysis did not include undergraduate degree programs in educational technology due to the fact that none exist in Canada.

Program information collected included type of degree, degree name, courses offered, required courses, faculty contingency, and number of other programs offered within the academic department or unit. Where possible, program information was

sampled at five year intervals beginning with 1969-1970 to 2004-2005 in addition to sampling program information from 2006. Public access to program information from previous years was available during normal business hours at the university archives on site or through telephone request. The review of educational technology program information consisted of documents derived from Concordia University, Acadia University, Memorial University, the University of Calgary, the University of Alberta, the University of Saskatchewan, Athabasca University, the University of British Columbia, Royal Roads University, Laval University, Tele-university of Quebec, and the University of Montreal. Accessing program information from the current academic year (2005-2006) was possible by checking the 2005- 2006 university calendars and university websites for academic program.

Document data collected about the academic field also included research on educational technology programs and professional associations in Canada. Finally, provincial and federal government documentation was also consulted in relation to the interview data from participants. This included annual reports and documentation from government agencies connected to educational technology projects. In total, approximately 200 documents were selected for review to ensure document manageability. All documents utilized in the study were catalogued.

Data analysis.

The study employed qualitative methods for analyzing the data based on general interview coding procedures drawn from Creswells (2003) *Research Design: Qualitative and Quantitative Approaches*. First, an analysis was performed on interview data and

documents from each institution separately. For example, interviews and documents from Concordia University were analyzed separately from interviews and documents from Memorial University. Next, an analysis was performed on interview data and documents from the 12 universities together. The purpose of the analysis was to identify major developments and possible trends. Following the 25th interview, there appeared to be theoretical saturation with no new information emerging. Overall, data analysis strategies supported the study by focusing on self-report interview and documentation data revolving around the development of the academic field of educational technology in Canada.

Ensuring trustworthiness of the data.

To make sure that the conclusions of this study could be relied upon by other researchers, I employed a number of procedures to ensure the trustworthiness of the study. Trustworthiness in qualitative studies differs from reliability and validity in a quantitative study which concern the generalizability of findings, the ability of findings to be replicated, their accuracy, and freedom from investigator bias (Lincoln, 2003). Trustworthiness was important to this qualitative study in ensuring methodological rigor and the accuracy of evidence. To ensure the accuracy of evidence, data was triangulated. Multiple sources were used, including several interviews and documents, so that descriptions of phenomena were not merely the opinion of a single participant or a group of participants, but also validated by the documents (Denzin & Lincoln, 2000). Member checks were performed throughout data collection and analysis as a second procedure to ensure the accuracy of evidence, meaning that all interviews were returned

to study participants for verification and modification if necessary. In addition, institutional profiles were also subject to member checks through verification of profile content with the senior faculty participant from each of the 12 institutions included in the study. To address the possibility of researcher bias, I participated in an ongoing exercise of memo writing throughout the study. In these memos, I record reflections about the study, thoughts about the interviews and phenomena observed, and opinions stated by participants. This allowed me to discern possible problems and biases that may influence my interpretation of findings.

Chapter Three – Historical Context and Literature Review

About the Chapter

The purpose of this chapter is to discover in the literature what is known about the development of the academic field of educational technology in Canada and to identify theoretical frameworks that might inform this study. The first two sections provide historical context through a general description of the academic field of educational technology and developments in the United States (because the United States is geographically close to Canada, much larger, and generally considered to be the most advanced in the field) and Canada. The third section provides a literature review of key definitions and fundamental challenges within the field. It introduces educational technology as an occupation with an organizational culture worthy of study.

Developments in Educational Technology in the United States

Providing a comprehensive review of all developments in the field of educational technology is beyond the scope of the present study. For reasons of space and clarity, this section provides highlights of the main areas of educational technology with an emphasis on developments from 1968 to 2006. Highlights were derived from a substantial body of research providing a more detailed account of educational technology development in the United States (Anglin, 1995; Davies & Schwen, 1971; Ely, 1983; Eraut, 1989; Finn, 1972; Gagné, 1987; Hawkridge, 1978; Reiser, 1987; Saettler, 1968, 1990). This helped the current project in providing a historical context for the academic field of educational technology.

Research and development.

A prominent area of early research and development was programmed instruction (PI) and teaching machines. Much of this research was conducted during the 1950s and died out in the late1960s. During this period, major areas of programmed instruction research revolved around addressing instruction effectiveness, learner pacing, reinforcement strategies, and long-term effects (see Saettler, 1990 for a review). Although there was great interest in programmed instruction, largely due to monumental works such as Skinner's (1958) *Teaching Machines* and the *Technology of Teaching*, programmed instruction was largely superseded by computer assisted Instruction (CAI) in the 1970s (Lockee, Moore, & Burton, 2004).

In the 1960s and 1970s, a number of informative educational and instructional (ETV, ITV) television research reviews were published in the United States. Much of the early television research stemmed from government interest in the potential of instructional television to advance military training (Saettler, 1990). Federal support of television research spread to other types of television research when debates arose over the possible effects television had on learning as well as its impact on violence in children and adolescents. Various foundations including the Spencer Foundation, Ford Foundation, National Science Foundation, and Markle Foundation funded research in the areas of media effects and instructional television. In addition, Action for Children's Television and other television awareness groups influenced policy and research on educational television. Moreover, federally financed closed-circuit instructional television projects in Pennsylvania, Washington State, and Colorado, along with the

development of the Children's Television Workshop (CTW), spurred a large body of television and media research and the creation of university research initiates like the University of Kansas' Centre for Research on the Influence of Television, Princeton's National Centre for Children and Television, and Harvard's Project Zero (Saettler, 1990).

In 1968, a number of federal government agencies supported educational research programs, including those of the United States Office of Education (USOE), the National Science Foundation (NSF), the Office of Economic Opportunity (OEO), and the National Institutes of Mental Health (NIMH). Beginning in the early 1970s, some government support of educational research shifted when the National Institute of Education (NIE) and the Office of Child Development (OCD) were created. Other government agencies, such as the Office of Naval Research (ONR) and the Department of Defense (DOD) supported targeted educational research projected related to computer-aided instruction (CAI) and programmed instruction (Saettler, 1990).

A major part of the federal government's role in supporting educational research in 1968 and later can be traced to the Educational Research and Development Centres and Regional Research Laboratories, the Educational Resources Information Centre (ERIC), and a variety of government sponsored research and legislation (Saettler, 1990). Beginning in 1964, government funded educational research and development centres were established in a number of universities in the United States. The idea behind government sponsored research and development centres was to centralize educational research operations within universities in order to provide more cost effective ways to further educational research. This centralization was strongly opposed and opposition to research and development centres stemmed from individual loss of control over research

and resistance to a more industrial model of research production (Travers, 1973). There was also opposition from individuals within universities who viewed the independent research and development centres as competition (Saettler, 1990).

Once the research and development centres began to close, the U.S. Office of Education created larger regional research laboratories with governing boards consisting of representatives from colleges and universities, state departments of education, public and private schools, cultural organizations, and industry. The aim was to create a national chain of regional laboratories to advance research and development of instructional methods, educational teaching materials, and curricula. One of biggest challenges in the planning phase of the regional laboratory project revolved around debates over how many laboratories to create, where to put them, and who should be in control of them. Controversy surrounding the mandate and operation of the regional laboratories led to the closing of five laboratories in 1969, and by 1973 only ten laboratories remained. Travers (1997) believes that lack of educational research expertise amongst senior project members was a contributing factor to the closures. Other contributing factors mentioned by Travers include, lack of meaningful communication between various sectors represented and over-reliance on standardized pre-packages educational production.

The creation of the Educational Resources Information Centre (ERIC) in 1964 through the support of the Office of Education was an important development in educational technology information resource sharing. Under the direction of Harold Haswell, ERIC began in 1964 with the mandate to create information services for educational research so that experts in various fields could access documents and

contribute to the development of their fields of education. In 1966 universities were allowed to bid for various clearinghouses (originally 12 were proposed) under three year contracts. The Clearinghouse of Educational Media and Technology was based at Stanford University with W. Schramm acting as director from 1967 to 1973. In 1973, under the direction of Lewis Mayhew, the Clearinghouse of Educational Media and Technology was expanded to include the Library and Information Sciences and renamed the Clearinghouse on Information Resources. In 1976, this clearing house changed location to Syracuse University with Donald Ely as director. In 1971, assessments of ERIC reported over one million users of ERIC resources annually (Fry, 1972). In 1980, a second assessment indicated 2.7 million users of ERIC resources with availability at over 3000 locations across the United States, over half of which were located at higher education institutions. In the 1970s and 1980s, budget limitations were the major obstacle for ERIC, leading to increased difficulties in operating the system (Saettler, 1990). In 2004, the ERIC clearinghouses weres taken over by the United States Department of Education.

In the late 1960s and early 1970s major developments in educational technology began with the introduction of computer-assisted instruction (CAI) research. This was partly a result of TICCIT (Time-shared, Interactive, Computer-Controlled Information Television) and PLATO (Programmed Logic for Automated Teaching Operations) projects launched by the National Science Foundation (NSF) with budgets of 10 million dollars and much corporate support. A main area of research interest was to compare the effectiveness of CAI instruction to traditional forms of instruction. A large portion of available research from this period was carried out using mainframe computers and is

summarized with meta-analysis research methods (Kulik, Kulik, & Bangert-Drowns, 1985). In the 1980s, technological advances allowed microcomputer CAI research to develop, giving rise to a body of research from the early 1990s to present under the heading of CMC (computer-mediated communication).

In the 1980s, distance education is one of the few areas of educational technology where the United States was not a leader. While other countries such as Australia, Canada, and England had well developed policies governing the implementation of distance learning using communication infrastructures to deliver programs partly over broadcast media, the United States government did not with the exception of the Public Broadcasting System (PBS), which was founded as a general educational broadcasting system. However, in recent decades, the United States has become a prominent player in distance education, after retreating from educational TV broadcasting. By 1989, virtually all states were involved in some sort of distance learning program (Office of Technology Assessment, 1989). In the 1990s, widespread interest in the potential market for distance education spurred rapid growth in online degree programs from for-profit and non-profit providers. National interest involvement in distance education increased throughout the 1990s, leading the U.S Congress to create the Web-based Education Commission in 1998. This was followed by the 2000 publication of a report recommending that E-learning become a top priority in United States education policy. Subsequently, the newly created Internet Equity and Education Act of 2001 allowed students to use federal loans to pay for a college education via the Internet. From the 1990s to present, development in distance education in the United States has been and continues to be strongly based around the growth of corporate universities and other commercial

institutions selling academic programs. Overall, research developments in educational technology from the 1960s to present within the United States highlight the high level of government support, a strong focus on technological innovation, and numerous initiatives to apply technological innovation to educational applications.

Professional associations.

Professional associations in the United States nurtured the academic field of educational technology through publications, conferences, and the creation of a community of educational technologists. Key associations include the Association for Educational Communications and Technology (AECT), the National Association of Educational Broadcasters (NAEB), the American Society for Training and Development (ASTD), the International Society for Performance and Instruction (ISPI), and Professors of Instructional Design and Technology (PIDT).

The history of the AECT can be traced back to the United States Department of Visual Instruction founded within the National Education Association (NEA) in 1923. In 1947, the Department of Visual Instruction changed its name to the Department of Audiovisual Instruction (DAVI) and was eventually renamed the Association for Educational Communications and Technology (AECT) in 1971. The AECT was a main contributor to the development of educational technology in the United States and continues to be the longest running proponent of educational technology in the United States.

Over the course of its existence, the AECT contributed to the development of the academic field of educational technology by providing an umbrella organization for a variety of areas of interest in educational technology. It further contributed to the field through the following activities: Producing multiple publications, hosting national conferences, forming committees and task forces to advance definitions of the field and policies for professional standards of ethics and setting academic program accreditation standards. In terms of publications, the first professional journal sponsored can be traced back to 1953 when the *Audiovisual Communication Review* was first published. In 1963, it was renamed the *Educational Communication and Technology Journal* (ECTJ) when the importance of audiovisual instruction declined. Beginning in 1977, the *Journal of Instructional Development* (JID) was also published by the AECT. By 1989, both the JID and ECTJ were merged under a new journal called *Educational Technology Research and Development* (ETRD), which continues today as an official journal of the AECT. In addition to journals, the AECT also published a magazine. The AECT publication, *Audiovisual Instruction* (originally called *Instructional Materials*) began in 1956. In the 1970s, it changed its name to Instructional Innovator and finally to *Tech Trends* in 1985. A number of other journals have been sponsored by the AECT, including, the *Quarterly Review of Distance Education* (QRDE) and the *Interpersonal Computing and Technology Journal* (IPCT-J). The IPCT-J deals with computer-mediated communication and pedagogical issues related to the use of computers and technology in educational settings. In summation, the AECT was a major contributor to the development of educational technology in the United States along with a variety of other professional associations.

The American Society for Training and Development (ASTD) can be traced to a meeting of the American Petroleum Institute in 1942. At that time, the United States was at war and training was crucial in meeting increased production demands and replacing workers away at war. In 1943, it was decided that raising the standards and building the reputation of the industrial training profession should be the main focus of the ASTD. In 1964, the association changed its name to the American Society for Training and Development. From 1968 to 2003, the ASTD expanded its industry and public policy focus to become a world leader in workplace learning and performance. As of 2006, the ASTD has over 70,000 members from thousands of organizations--multinational corporations, small businesses, government, academia, and product and service suppliers in over 100 countries. Over this period of time, the ASTD has contributed to the advancement of training and development through publications, conferences, survey research, and other resource development. The main publication, the *Training and Development Magazine* (T+D Magazine) began in 1947 as the Journal for Industrial Training. This publication caters to training and development professionals and line managers in business, government, academia, and consulting. Other publications sponsored by the ASTD include: The *ASTD Buyer's Guide and Consulting Directory*, the *ASTD Training Manual and the Training and Development Handbook.*

Following the creation of the ASTD, the International Society for Performance and Instruction (ISPI) began in 1962 when it was known as the National Society for Programmed Instruction (NSPI). At the time, the main interest of the NSPI was to allow opportunities for educational researchers to exchange knowledge on programmed instruction. Gradually, membership interests became more focused on performance and

its improvement. In 1974, it changed its name to the National Society for Performance and Instruction (NSPI) and was later renamed the International Society for Performance Improvement (ISPI). As of 2006, the ISPI has over 10,000 members throughout the United States and other countries from business, educational institutions, government, health services, banking, and the armed forces. The NSPI Journal was the official journal of the association until 1981 when it became known as Performance and Instruction. When the NSPI changed its name to the ISPI, the journal name changed to *Performance Improvement* (PI). These developments marked a broadening of the field from a focus on programmed instruction to a focus on performance.

Next, the International Society for Technology in Education (ISTE) began in 1989 and was expanded in 1992 when the National Educational Computing Association (NECA) was incorporated. The International Society for Technology in Education has a worldwide membership and publishes a yearly *100 Members List* of corporations committed to advancing the effective use of technology in education. The organization provides services to improve teaching and learning through effective use of technology in K–12 education and teacher education. In terms of publications and activities, the ISTE holds the National Educational Computing Conference (NECC) and sponsors a number of journals and periodicals. In 1973, the Learning and Leading with Technology newsletter was created in order to share ideas on integrating technology into the curriculum and the classroom. In addition, the quarterly *Journal of Research on Technology in Education* (JRTE) has published articles that relate to educational computing since 1968. In 1984, the *Journal of Computing in Teacher Education* (JCTE)

was created. It publishes articles on in-service training, research in computer education, and certification issues.

The Professors of Instructional Design and Technology (PIDT) began in 1984 as an informal organization for professors of educational technology. The organization was created without a board of directors, a constitution, or membership fees. The inaugural conference began at Indiana University and was originally an invited gathering. From there, the PIDT grew in the 1990s and is open to any academician in the field. Since 1997, the conference has been hosted on an alternative basis by the instructional technology program at Virginia Tech and the University of Northern Colorado alternating. In addition to professional participation, universities can send up to three graduate students provided at least one faculty member from the institution is attending.

At the 1989 Professors of Instructional Design and Technology conference, Knick reported that the AECT decreased in size and influence throughout the 1980s while the ASDT and the ISPI increased in size and influence, particularly with respect to graduate student membership (Knick, 1989). According to Knick, this was due to a decrease in employment opportunities for educational technology graduate in public schools and an increase in opportunities in industry and the military.

Graduate program development.

Graduate programs in educational technology emerged in 1948 with Syracuse University awarding its first doctoral degree in 1951 (Bludnicki, 2001). In a survey of graduate curricula in educational communications and technology, Johnston (1989)

reviewed developments from 1985 to 1989. According to the survey, the number of programs increased to 170 with an average of four full-time and approximately two part-time faculty positions per program. There was no common core curricula required and no common program title. In terms of administrative context, almost one third of the programs surveyed had changed their department affiliation since 1985, and many programs changed affiliation more than once. Graduate program development in educational technology became a growing concern in the late 1980s. Individuals involved in graduate program development in educational technology addressed issues in graduate education beyond applications to public education (Johnston, 1989). By 2000, there were 223 graduate level degree programs in educational technology (Peterson, 2000). As of 2006, 62 institutions in the United States offered doctoral programs in educational technology. Bludnicki (2001) provided an extensive review of graduate programs and their growth in the United States.

In the United States, educational technology programs are offered under a wide variety of titles, including educational technology, instructional development, educational media, instructional technology, and instructional systems. A general list of United States institutions offering doctoral programs is available in the 2000 Educational Media and Technology Yearbook (Branch & Fitzgerald, 2000).

Development of the Academic Field in Canada

This section explores significant elements in the development of the academic field in Canada: - government support, professional association support, and the emergence of degree programs. There is a body of published research on Canadian

educational technology (Bernard & Lundgren-Cayrol, 1991; Lundgren-Carol, 1989; Moore, 1972; Wilkinson, 1987). Highlights are drawn from this published research and related work to provide a historical context for the academic field of educational technology in Canada.

Research and development.

The emergence of the academic field of educational technology began later in Canada than it did in the United States and focused on audiovisual resource development. The University of Alberta was at the forefront of research and development in educational technology within Western Canada. In 1915, the Division of Visual Instruction of the Department of Extension at the University of Alberta created the first visual library in Canada. It first housed slides, and later developed a collection of films. The institutionalization of audio-visual departments within universities and provincially based departments of education was a major development in Canadian educational technology development. Visual media departments within Canadian universities continued to spread as library slide collections began to expand in the 1920s and 1930s to include films and audio aids. In 1927, additional audio aids were added to visual services with the creation of the University of Alberta Radio Station CKUA. Subsequently, other radio stations in Alberta, Saskatchewan, and Manitoba were created. The first provincial network (called the Foothills Network) provided the first inter-provincial connection between different stations. Ten stations were involved in the Foothills Network broadcasted inter-university debates, forums, and sports news (Wilkinson, 1987). In the 1940s and 1950s, the National Film Board and its associated local volunteer network the

National Film Society provided appreciable support for school use of educative film. Widespread institutionalization of audiovisual departments within universities and provincial departments of education occurred Toronto Catalogue for Visual Education was first published (Wilkinson, 1987).

Audiovisual instruction evolved rapidly in the 1950s and then, in the 1960s, spread out as educational radio and film services offered to universities and schools. In 1950, the Newfoundland Division of Audio-Visual Education within the Department of Education cooperated with the Canadian Broadcasting Corporation in making school radio programs for classroom supplements and teacher training. Through the support of the Newfoundland Film Board (formed in 1949), Newfoundland offered visual education services for schools and supplied projectionists who would travel to isolated settlements in remote areas to show films. In the 1950s, the Provincial Association of Protestant Teachers of Quebec and the Canadian teachers Federation devoted a great deal of resources towards building film libraries. In the 1960s, the Quebec Department of Education, the Greater Montreal School Board, McGill University, and Sir George Williams University came together to produce English television programs for schools. This was done under Quebec School Television until it was discontinued in the early 1970s.

In the late 1960s and throughout the 1970s, computer-assisted instruction facilities were created within a number of Canadian universities and provincial departments of education for conducting research and teaching activities. Beginning in 1968, university-based research initiatives in the area of educational technology began appearing. The computer-assisted Instruction (CAI) facility at the University of Alberta

established in 1968 was among the first of its kind outside the United States (Hunka, 1972). The CAI facility operated within the University of Alberta Division of Educational Research and Services. It was used in research and teaching activities. Another forerunning application CAI outside the United States occurred in Quebec in 1969. In 1969, the Quebec Department of Education was heavily involved with CAI. The instructional laboratory within the Quebec Department of Education employed eleven teachers and nine computer specialists to carry out CAI activities using 1500 IBM computers (Lee, 1972). In the 1970s, a number of projects in individualized instruction were carried out at institutions like Concordia University, where CAI lessons were developed for physics, computer instruction, education, chemistry, engineering, and French-as-second language courses (Boyd, 1976). From 1970 to 1976 at Concordia, a resource based learning project was developed for teaching French-as-a second language. Audio and video course instruction materials were produced, tested and modified in the first year of the project. These materials were implemented from 1971 to 1976. During this period, over 1500 students were instructed with the CAI system developed with overall satisfactory results for student performance and acceptance (Boyd, 1976).

Beginning in the 1960s, the Canadian government supported the academic field of educational technology by sponsoring research and development activities and forums for communicating scientific developments in the academic field such as publications and conferences. A number of federal government agencies supported educational research, including, the Canadian Council for Research in Education (CCRE), the National Research Council of Canada (NRCC), the Office of Learning Technologies (OLT), the Social Sciences and Humanities Research Council of Canada, and Industry Canada. The

Canadian Council for Research in Education (CCRE) sponsored the "Education and the New Technology Symposium" and published a symposium proceedings in 1968. In 1969, the National Research Council of Canada (NRCC) formed the Associate Committee on Instructional Technology to bring together specialists from the various disciplines involved in the academic field of instructional technology in order to formulate requirements and establish guidelines for research and development. This committee sponsored a series of Canadian Symposia on Instructional Technology. As described by Doctor Boyd, a number of other large scale initiatives were supported by the government including, the National Authoring Language (NATAL) standards established by the National Research Council's Associate Committee on Instructional Technology in the early 1970s. The NATAL standards were applied in testing CAL applications in laboratory settings. A NATAL prototype tested on a wide range of CAL applications was found to reduce programming effort and allow greater programming flexibility (Braham, Henneker, & Hlady, 1980).

Also in the 1960s and 1970s, there was growth in communication satellite technology, which had the potential to overcome geographic distances by delivering educational radio and television in both official languages across Canada. The establishment of distance education agencies and educational institutions in Canada began in 1968, with the founding of Radio Quebec. Radio Quebec began as a provincial educational communications agency with a mandate to offer credit courses to complement classroom instruction along with courses on educational programming. In the 1970s, the development of other provincial agencies followed, including: Ontario Educational Communications Authority (later to renamed TV Ontario) formed in 1970

and Access Alberta formed in 1973. Founded in 1972, the Tele-university of Quebec and Athabasca University were the first dedicated educational institutions in Canada. The creation of North Island College and the Open Learning Institute followed in the mid-1970s (Rogers, 1993). TV Ontario, the Knowledge Network, and Television éducative du Quebec (TEVEC) employed direct-broadcast satellite services in the late-1970s to broadcast educational programs to several aboriginal communities in the north of Quebec, Ontario, Alberta, and British Columbia for the first time (Davies, Day, Jelly, & Kerr, 1978). However, due to high implementation costs and limited availability of research funding, satellite communications services in education were restricted. As a result, programs were affected. For instance, Memorial University created an extensive telemedicine distance education networks in the 1970s which was significantly reduced in scope in the 1980s due to lack of research funding (Roberts, House, McNamara, & Keough, 1993).

In the early1980s, the field of educational technology in Canada was moving away from audiovisual and TV instruction into an educational communications and technology focus. This was partly a result of significant growth in the size and number of universities across Canada throughout the 1960s and 1970s that placed demands on university teaching. Technology was viewed as a means of providing teachers with teaching tools to deal with the rising number of university students. Finding ways to teach more efficiently to greater numbers of students became a major priority. From 1980 to 1981, articles in *Media Message* highlighted the effective use of media and message design, but computer-assisted instruction (CAI) quickly became a buzz-word in the field of educational technology. From the 1990s and onward, the federal government

supported large scale initiatives to improve Canada's broadband Internet capabilities and to develop learning object repositories (Luppicini, 2005). Another major area of current educational technology teaching and research activity concerns computer-mediated communications (CMC) and synchronous computer supported collaborative learning (CSCL). Next, CMC became a major focus of educational research over the last fifteen years and remains so.

Professional organization of educational technology.

Various professional associations emerged to support the academic field of educational technology in both official languages. In 1957, a campaign was launched to organize the Canadian Audio-Visual Association (CAVA) to be affiliated with the DAVI (Wilkinson, 1987). The same year, the DAVI Board of Directors changed the constitution to make it an international organization and inducted the CAVA as an affiliate. The CAVA published *CAVA News* (from 1958 to 1963), a newsletter for the audio-visual domain in Canada. In 1963, *CAVA News* was replaced by the *Canadian Audio-Visual Review*. In 1969, the CAVA was renamed the Educational Media Association of Canada (EMAC) and the purpose of EMAC was to promote instruction and audio-materials at all levels of education. The *Canadian Audio-Visual Review* was replaced by the *Educational Media Magazine* to reflect the association name change.

In 1968, the Educational Television and Radio Association of Canada (ETRAC) was formed as a result of federal government recognition of growing interest in educational broadcasting. The purpose of the ETRAC was to provide information about the role of radio and television in education and to foster the study, investigation,

research and evaluation of any and all aspects of educational radio and television (Wilkinson, 1987). In 1970, the ETRAC held a conference in affiliation with EMAC and the Canadian Science Film Association (CSFA). At this conference, the three participating associations formed the Canadian Educational Media Council (CEMC) in order to coordinate and expand the activities of Canadian media associations (Wilkinson, 1987). The CEMC activities included the publication of *Media Message* and the annual Canadian Educational Communications Conference. *Media Message* was a newsletter distributed to all members on mailing lists of the CSFA, the ETRAC, and the EMAC. It provided council activity reports along with reports on developments in the audio-visual domain. The council lasted two years before the CSFA withdrew. In 1973, the ETRAC and the EMAC united to form the Association for Media and Technology in Education in Canada (AMTEC). *Media Message* continued to be published until 1981 when it was replaced by the *Canadian Journal of Educational Communication.* In 1982, AMTEC changed the journal name to the Journal of Educational Communications and Technology. The change reflected increased interest in information processing theories, social learning theory, and motivation theories for explaining how students learned (Lewis, 1996). In 1986, major editorial policy changes were made to the journal. A well structured editorial board was established to ensure each manuscript was reviewed by at least two reviewers using a double blind system. There were also changes in terms of content published. From 1986 to 1989, major publication topics were: formative evaluation, computer mediated communication, and the future of the field (Bernard & Shaw, 1996). In 2002, the *Canadian Journal of Educational Communication* was renamed the *Canadian Journal of Learning and Technology.*

Initially created to support growth in Quebec, the professional associations based in Quebec grew to support the academic field of educational technology for all French-speaking Canada. The Association pour le développement de l'audio-visuel et de la technologie en éducation (ADATE) green out of the Société du développement de la technologie de la technologie en éducation (SDTE). The main aim of the SDTE was to regroup Anglophone and Francophone audio-visual experts from education and industry sectors into a cohesive organization. In 1970, the STDE formed with to provide a forum for exchanging ideas and techniques related to audio-visual instruction. In part, it sought to overcome language barriers in Canada. The association published a monthly bulletin called *Frequence* and organized information sessions, instruction, and conferences on new developments related to audio-visual instruction from 1970 to 1971 (Frequence, 1971). Despite the short period of its existence, the SDTE provided services to audio-visual and communication experts, film directors, technicians, instructional designers and technologies. Also courses offered by the SDTE in programmed instruction were recognized by the University of Montreal and the University of Quebec. In 1977, the ADATE was created to promote research and development in audiovisual communications and educational technology. In the early 1980s, the ADATE changed its name to the "Association pour le développement et l'application de la technologie en education." In 1980, the first concerted effort to address concerns and discuss strategies for professionalizing the field of educational technology occurred at the ADATE annual conference (ADATE, 1981). In 1991, the ADATE published the only existing professional manual for educational technologists in Canada. The professional manual was introduced to guide professional activities corresponding to the analysis of questions

related to the development, application, and evaluation of educational resources. The manual was written in French and was divided into eight sections describing the need for a professional organization, professional activity, code of conduct, job descriptions, list of competencies, professional development standards, and certification criteria (ADATE, 1992).

In 1983, the Canadian Association of Distance Education (CADE) formed for individuals involved in the planning, design, development, and distribution of distance education from all areas of education (Landstrom, 1993). It operated in both official languages and catered to individuals with backgrounds in government, technology, public education, and the private sector. Beginning in 1986, the CADE sponsored the publication of the *Journal of Distance Education.* It is published four times a year. The CADE merged with the AMTEC in 2006.

Graduate programs.

In total, 12 universities in Canada offer (or offered) degree programs in educational technology (12 M.A. Programs, five Ph.D. Programs). The first degree program in Canada appeared in 1968. Degree programs in educational technology within Canadian universities were offered under several names in Canadian universities including: Instructional Technology, Learning and Technology, Instructional Design, Media and Educational Communications, Distance Education, Technologie éducative, Technologie éducationnelle, Education and Information Technology. English degree programs in educational technology were created at Concordia University (Educational Technology), University of Calgary (educational technology), Athabasca (Distance

Education), University of Alberta (Instructional Technology), Memorial University (Education and Information Technology), Acadia (Learning and Technology), University of Saskatchewan (Educational Communications and Technology), and University of British Columbia (Studies in Technology Education), and Royal Roads (Distributed Learning). French degree programs in educational technology were created at the following universities: Laval University (Technologie éducative), Tele-University of Quebec (formation à distance) and University of Montreal (Technologie éducationnelle).

Conceptualizing the Academic Field of Educational Technology as a Quasi-Professional Occupation Worthy of Study

The first part of this chapter provided an overview of what is already known about the field of educational technology in the United States and Canada. My study is intended to build on this work by contributing new research on the academic field of educational technology in Canada. Before introducing my research, it is necessary to define key terms to set study parameters. For this reason, this study defines educational technology and describes it as a quasi-professional occupation.

The most recent definition from the Association for Educational Communications and Technology (AECT) views educational technology as a field of academic study as well as practice: "Educational technology is the study and ethical practice of facilitating learning and improving performance by creating, using, and managing appropriate technological processes and resources" (Association for Educational Communications and Technology, 2004, p.1). By using the AECT definition to help decide what to include and exclude, this research study focuses on the academic field of educational

technology within Canada. In this study, the category 'academic faculty' includes faculty members who contributed (past and present) to creating, changing, and discontinuing degree programs within the academic field in Canada.

Defining the notion of 'occupation' was important to this study and there are many different definitions of the term available. This study follows Trice and Byer's (1993) description of occupation as a type of organizational culture or subculture based on a job or profession. Occupations can form within organizations or in society more generally.

A professional occupation must meet specific criteria for the existence of a profession. Several organizations have contributed to defining standards and competencies in the academic field of educational technology including: the Association for Educational Communications and Technology (AECT), the International Society for Performance and Instruction (ISPI), the Canadian Society for Training and Development (CSTD), and the International Board of Standards for Training, Performance, and Instruction (IBSTPI). Also, educational technology program descriptions derived from university websites were consulted to provide lists of competencies expected of program graduates. According to the AECT (1977), the defining criteria for the educational technology profession are as follows: theory and research, unique intellectual technique, practical application, training and certification, standards and ethics, leadership, association and communications, acknowledgement as a profession, concerned profession, and relationship to other professions (p.35). Formalized criteria for standards and ethics, and an acknowledgement of educational technology as a profession

in Canada are not yet clearly established. For this reason, the study of educational technology in Canada is described in this study as a quasi-profession.

Based on Trice and Byer (1993), this study assumes that educational technology in Canada arose as an occupational subculture within the overall occupational culture of the Canadian universities in which it developed. I realized, as did Trice and Beyer (1993), the value of studying occupational culture and the professionals within it because "the access to knowledge that is intrinsic to the performance of tasks is the fundamental basis for occupational control over the conduct of work."

In reference to the occupational subculture under investigation in this study, there is a small body of published research on Canadian educational technology upon which to build (Bernard & Lundgren-Cayrol, 1991; Moore, 1972; Wilkinson, 1987) and a gap in knowledge to fill because no research has covered the academic field developments in educational technology occurring in Canada over the last fifteen years. To this end, this study helps to inform a wider audience of key developments in the educational technology profession in Canada from the perspective of senior faculty members who helped shape it.

Summary

From the 1940s to the 1960s, major developments in United States educational technology revolved around media research and programmed instruction. By1968, the graduate programs in educational technology were well established in the United States and educational research centres and regional laboratory facilities were created for conducting research. Throughout the 1970s and 1980s, the ERIC Clearinghouse

development provided essential resources to education researchers. Throughout the 1980s and 1990s, government legislation related to television standards and distance education was passed. From the beginning of the 1990s to 2006, the growth of professional association activities and professional standardization efforts in a number of areas were widespread.

Major developments in Canadian educational technology prior to 1968 revolved around the institutionalization of audio-visual departments and creation of educational radio networks. In 1968, the first graduate program in educational technology was introduced in Canadian higher education. In the late 1960s and throughout the 1970s, computer-assisted instruction facilities were created within a number of Canadian universities for conducting research and teaching activities. Throughout the 1980s, a major research focus on standard authoring language applications was predominant along with research on computer simulations, intelligent tutoring systems and distance education. From the beginning of the 1990s to 2006, telecommunication initiatives and research on educational applications of CMC were predominant themes in the research literature. With respect to the evolution of Canada's major national educational technology associations, several publications and organizational changes have emerged, including the recent merger of AMTEC and CADE.

In reviewing the literature on educational technology in Canada, it was found that there are no formalized criteria for standards or acknowledgement of educational technology as a profession in Canada. Based on work from Trice and Byer (1993), I describe the study of the academic field of educational technology in Canada as the study of a quasi-professional occupation.

Chapter Four - Canadian Universities with Degree Programs In Educational Technology

About the Chapter

This chapter profiles Canadian universities offering masters and doctoral degree programs in educational technology. In this study, traditional degrees are those offered primarily on campus for a period of five years or more. In this chapter, seven universities are covered: Concordia University, Laval University, the University of Montreal, the University of British Columbia, the University of Calgary, the University of Saskatchewan, and the University of Alberta. The graduate degree programs at these universities are an essential part of the academic field of educational technology, and in order to grasp the current state of this academic field, it is necessary to examine how the graduate degree programs developed. In addition, the history of educational technology goes beyond the degree programs themselves. This chapter also examines the connections between this wider history and the growth of the programs.

This chapter outlines the founding and development of these programs in order to contextualize their development within the wider university context. To this end, senior educational technology faculty members from the programs were interviewed and their curriculum vitae were examined. Overall, the study participants represent both founding members and current senior faculty in the educational technology programs. In addition, supporting documentation was consulted. Based on the faculty interviews and supporting documentation, a timeline of key events in the development of educational technology is included for each institution, followed by an in-depth discussion.

Concordia University

Concordia was the first university in Canada to offer a graduate degree in educational technology when it established a master's program in 1968. Thirteen years later, in 1981, it became the first Canadian university to offer a Ph.D. in the field. Interviews and personal correspondence with three key faculty members[1] and supporting

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[1] The first participant, Dr. Gary Boyd, is a founding faculty member of the program and supervises the dissertation committee for this project. Dr. Boyd was hired when the M.A in Educational Technology was created and received a Ph.D. in Geophysics from the University of British Columbia in the same year. Doctor Boyd works in a number of research areas including educational/cultural cybernetics, collaborative cyber-systemic modeling, distance education and flexible learning support research and intelligent tutoring systems. As the first director of the master's program in educational technology, Doctor David Mitchell, was selected as a second founding faculty member. Doctor Mitchell holds a Ph.D. in Multi-disciplinary Behavioral Sciences in Education from the Case Western Reserve University in Cleveland. Participation from two founding faculty members was required to provide adequate coverage of the longest running educational technology programs in Canada. Finally, to include at least one participant who did not serve on my committee, I chose to interview Doctor Richard Schmid who was program director from June through December 2003. Doctor Schmid completed a Ph.D. in Educational Psychology at Arizona State University in 1977. He was hired by Concordia University's Department of Education Graduate Program in Educational Technology in 1978. He worked as an associate professor for the Department of Education Graduate Program in Educational Technology from 1981 to 2001. He occupied a number of

documentation[2] reveal that the degree requirements developed as the number of faculty members fluctuated and as the initial goals, philosophy, and student base evolved.

It is worth noting that more information was available concerning Concordia's educational technology programs than those of the other universities studied. This is partly attributable to the fact that Concordia offers the longest running master's and doctoral programs in Canada. Also, access to university archives and special collections for outside researchers, which was not an obstacle at Concordia since both my supervisor and myself are affiliated with Concordia University. Table 1 provides a timeline of key events in the development of educational technology at Concordia University

Table 1: Timeline of Key Events in the Development of Educational Technology at Concordia University

Date	Event
1967	A proposal for a joint graduate program in special education was rejected by the provincial government of Quebec and a second proposal for a graduate program in educational technology offered by Sir George Williams University was approved (An initial proposal for a SGWU-CIT joint program with Syracuse university was converted into the new SGWU Education Dept. proposal).

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administrative positions during his career including Department of Education Acting Chair (1981, 1986, 1988), Educational Technology Programs Director (1985 to 1988, 1992 to 1993, 2003), and Department of Education Chair (1994 to 2001). Doctor Schmid has been active in a number of research areas including the role of writing in the acquisition of basic reading skills, application of technologies to improve pedagogy and training in the workplace and in schools.

[2] This documentation includes A History of Concordia University (2006), Concordia Department of Education (2006), Luppicini and Maibroda (2003), Singer (2004), and selected Concordia Calendars (1968 to 2006).

1968	The University established the first master's degree in educational technology in Canada. The educational technology degree program was a joint program with the CIT, subsequently moved wholly into the Department of Education in 1972.
1971	Jack Bordan (Vice Principal Academic for Sir George Williams) initiated University restructuring.
1971	The newly positioned education technology program established two option areas: Research and Development of Educational Media and Educational Television Production.
1970s to 1980s	Course concentrations in computing expanded.
1980s	Shift in program philosophy to a hands-on problem solving approach associated with human performance technology.
1980s	Curriculum changes occurred with the educational technology programs.
1982	The Centre for System Research and Knowledge Engineering was created at the University (CSRKE) by Doctor Mitchell with Doctor Gordon Pask..
1981	The doctoral program in educational technology was established.
1983	Diploma in Computer Assisted Instruction introduced to meet the need for computer literacy in classroom practices.
1988	The Centre for the Study of Learning Performance (CSLP) was created in the Department of Education at the University.by Doctor Abrami and associates.
1989	New options were introduced for the master's degree in educational technology.
1989	The credit load of the master's degree in educational technology was reduced by one third (90 to 60 credits).
1996 to 1997	Five of the full-time educational technology faculty members applied for positions elsewhere and left.
2004 to 2006	Faculty numbers increased by three.
2006	CSLP is well entrenched with over 50 principal members, 16 support staff, and over 40 graduate students.

Origins of Canada's first educational technology degree program.

GAB Moore and Mark Braham had a central role in creating the M.A. program with John Macdonald acting as the enthusiastic supporter (Doctor Mitchell, Personal Correspondence, January 7, 2007). In 1967, Doctor GAB Moore and Mark Braham attempted to set up an educational television (educational communication) graduate

program in conjunction with Syracuse University. However, this plan was altered by the Vice Principal Academic, Doctor John MacDonald, when it was discovered that the provincial government in Quebec would support educational television graduate program but not the joint program that was initially proposed (Doctor Boyd, Personal Correspondence, January 9, 2007).

Educational technology became an academic field in Canada in 1968 with the establishment of a master's degree at Sir George Williams University in Montreal. In 1969, Doctor Mitchell became the first Director of the Graduate Program in Educational Technology at Sir George Williams University[3].

The M.A. in Educational Technology: A joint creation.

The M.A. in Educational Technology was created jointly by a university-wide service unit, the Centre for Instructional Technology (CIT), and the newly formed Department of Education. The idea was that educational technology students would produce educational television for the university in a 'situated learning' format. The CIT provided educational technology resources and expertise. The Department of Education provided the faculty members needed to sustain the degree program.

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[3] Founded in 1959, Sir George Williams University merged with Loyola University to form Concordia University in 1974. The program founded in 1968 thus became a Concordia University program, where it continues to exist today.

The educational technology program at Concordia University was established in response to a need for educational television in Quebec. In an interview with reporters from the *Concordia University Graduate Magazine*, Doctor Boyd stated that,

> We started out in educational television programming because that was what Quebec wanted to fund. They had seen the TEVEC experimentation in the Saguenay work very well as educational television and wanted us to turn out educational television producers for Radio-Quebec (now Tele-Quebec). That is why they approved our program at Concordia (Luppicini & Maibroda, 2002, p.12).

Founding program philosophy.

In the early days, the philosophy underlying the new educational technology degree program coincided with the academic interests of the faculty members. In 1968, the underlying philosophy of the master's program was based on general systems theory and cybernetics, and was created by the educational technology faculty members teaching in the program. Doctor Braham was, for instance, a philosopher of education who valued systems philosophy and general systems theory. In a similar vein, Doctor Mitchell and Doctor Boyd both were interested in cybernetics and systems research theory and had engineering backgrounds (Luppicini & Maibroda, 2003). They shared the notion that systems philosophy and systems modeling, operational research and systems, and cybernetics and systems were required understandings for educational technologists. Mitchell was pushing operational systems and research. As a result, a program was deigned with required courses in philosophy and cybernetics, which remained until the late 1990s.

The new M.A. program was 90 credits and the aim of the program was to "introduce a high degree of professional and academic competence into the rapidly developing field of education (Sir George Williams Graduate Studies Calendar, 1969, p. 24). The program catered to professional educators, and students were required to complete an internship (See Appendix A). Initially, M.A. students were expected to have a teaching license or at least teacher training. That was changed in 1970 (Doctor David Mitchell, Personal Correspondence, January 9, 2007). This 90 credit M.A. program with mandatory thesis (or thesis-equivalent) and internship was very demanding of students. According to Doctor Schmid, "Most graduate programs are unlike ours. Until we introduced the internship option in the late 1980s our students had to complete both a thesis and a small internship. The expectations placed on the students and the kind of support that faculty had to provide was huge."

In terms of faculty, the Department of Education had ten full-time faculty members listed in 1968 and the M.A. in educational technology was the only graduate program offered. The faculty members at this time teaching in the educational technology program (with the exception of Doctor John MacDonald) were all at the rank of assistant professor, namely, Doctor John MacDonald, Doctor Harold Entwistle, Doctor Mark Braham, Doctor Martha Crampton, Doctor Chester Davis, Doctor George Moore, Doctor Gary Boyd, Doctor Edward Bakony, Doctor J. Harrison, and Doctor Steven Ford (Sir George Williams Graduate Studies Calendar, 1969, p. 25).

Beginnings of change: movement to the Department of Education.

Despite being created jointly, the program eventually ended up solely within the Department of Education. The partnership between the CIT and the Department of Education proved to be difficult to sustain. As indicated by Doctor Boyd,

> The Centre for Instructional Technology (CIT) supplied film, television, and computer courses. That was how it started out but the partnership was a little rough. There were complications with regard to tenure track faculty. The only way to have tenure track faculty was to have them in the Education Department. There were a lot of complications and it became apparent that the program would have to be in the Education Department with continuing contribution from the CIT but not a joint program.

In 1971, Doctor Jack Bordan became Vice Principal Academic, succeeding Doctor Doug Burns Clarke. According to Doctor Boyd, "He wanted clear separation of academic programs from service departments. So all faculty became Education faculty." In the same year, C. R. James and T.S. Allan were added as new faculty bringing the faculty contingency to eleven members.

Creation of a Ph.D. program.

In 1981, Concordia became the first Canadian university to offer a Ph.D. in educational technology in English. Doctor Mitchell and Doctor Pask had a particularly strong role in establishing the Ph.D. Doctor Mitchell established The Centre for System

Research in 1981 after receiving a very large research contract from the U.S. Army Research Institute for the Behavioral Sciences. The A.R.I. awarded this contract so that Dr. Gordon Pask's previously funded work, as an independent investigator in England, could be continued in a university environment within North America (Doctor Mitchell, Personal Correspondence, January 9, 2007). Faculty hiring, research money from the military, and faculty activities were thought be connected to getting the Ph.D. off the ground. According to Doctor Boyd," This centre helped us to get a doctoral program. It gave us an additional resource for funding and provided international visibility." However, it is worth noting that the Ph.D. proposal was created in 1978 and approved by rhe MEQ in 1981 (Doctor Mitchell, Personal Correspondence, January 9, 2007).

Prerequisite courses for the Ph.D. program were Educational Cybernetics, Philosophical Aspects of Educational Technology, Learning and Instructional Theories, Quantitative Methods and Research Design I, and either Quantitative Methods and Research Design II and Measurement and Evaluation in Education or Educational Systems Analysis (Concordia Graduate Studies Calendar, 1984, p. 115). A broad range of other courses were offered as mandatory and elective courses (See Appendix A).

Program evolution.

Since their establishment, both the M.A. and Ph.D. degree requirements have shifted to accommodate the changing needs of students and respond to market demands. This is reflected in degree requirement and course changes. In 1971 (the same year in which the program moved fully to the Department of Education), the program established two options areas: Research in and Development of Educational Media (Option A) or

Educational Television Production (Option B). Students taking option A completed a thesis and students taking Option B completed a project (involving the production and evaluation of educational materials). In addition, courses on systems analysis and educational cybernetics were added to the course offerings. In 1972, Option A was changed to "Research and Development of Educational Technology" and Option B was changed to "Production and Evaluation of Educational Materials (Sir George Williams Graduate Studies Calendar, 1972, p. 45). In the late 1970s, a Diploma in Instructional Technology was introduced to provide professional training to teachers, corporate and industrial trainers, media consultants and others interested in instructional technology (Concordia Graduate Studies Calendar, 1979, p. 101). Other changes occurred in required and elective courses offered (See Appendix A). Particularly, the course concentration in computing continued to expand in the end of the 1970s and throughout the 1980s. Doctor Boyd indicated,

> Over the years we slowly migrated from the advent of Apple II computers we got at the end of the mid-1970s. In the Audio Visual Department I got Amiga computers and some special terminals that allowed students to do CAI work on mainframes. In the mid-1980s we began doing a lot of work with PC's and brought in Macs.

In 1989, an internship option was added to the Master's degree as an alternative to the thesis (or thesis equivalent) requirements that existed from 1968 to 1988. This major change was effected in response to an increasing demand for instructional designers and trainers for business and industry (Bernard & Lundgren-Cayrol, 1991, p. 164). At the same time, the 90 credit M.A. was reduced to 60 credits.

In the early 1990s, the M.A. in Educational Technology offered required courses in Educational Cybernetics, Philosophical Aspects of Educational Technology I, Learning and Instructional Theories, and Quantitative Methods and Research Design I. The list of elective courses did not change until the mid-1990s (See Appendix A). Major changes in M.A. program offerings occurred with the curriculum restructuring implemented in 1997 (Dicks, 2001). In the revised (and current) program, the required courses were Learning Theories, Fundamental Methods of Inquiry for Educational Technology, Human Performance Technology. As Doctor Schmid explains,

> Theories of learning, research methods, cybernetics and systems theory, and instructional design, were central to the program when I first came here and they are still central. The one big difference in required focus came in the 1990s when Philosophy and Cybernetics became elective courses rather than required courses because at the time we had too many required credits and something had to go.

During 1990s, a number of courses were dropped and added to the M.A. in Educational Technology due to changes in faculty interests and student demand (See Appendix A). In 1997, Doctor Baggaley, Doctor Coldevin, Doctor Mitchell, Doctor Tovar and Doctor Walker left the Department (Concordia Graduate Studies Calendar, 1999, p. 123). At this time, several faculty members left or were seeking positions elsewhere. Of the five who left that year, two had no jobs to go to, one did and one apparently hoped to work as a consultant (Doctor Mitchell, Personal Correspondence, January 9, 2007). Over the next few years, the number of educational technology faculty complement decreased but began to increase again with the appointment of Doctor Saul

Carliner in 2004 (Concordia Graduate Calendar Publication, 2004). In 2005, Doctor Johannes Strobel and Doctor Bryn Holmes joined the program as assistant professors, returning the faculty complement to its historic level of nine full-time positions in the late 1980s. In 2005, Frederica Martin assumed the position of Internship Coordinator, newly dedicated to managing internship related aspects of the master's program.

Influence of external organizations.

Throughout its history, the growth of educational technology at Concordia University was helped by interaction with organizations external to the Department of Education within the university, organizations external to the university within Quebec, and organizations external to Quebec within Canada. Examples pointed out by Doctor Boyd included, CIPTE, which allowed us to coordinate our offerings with other Quebec Universities, along with and ADATE, AMTEC and the NRC subcommittee on Instructional Technology (Gary Boyd, Personal Correspondence, January 23, 2007). Like the CIT university-wide media and television service department, which helped to found the educational technology program, research centres also helped the field to grow. Beginning in the 1980s, research centres were created by faculty members within the Department of Education. The Centre for System Research and Knowledge Engineering was created by Doctor Gordon Pask, Doctor David Mitchell and Doctor Gary Boyd to provide international visibility for educational technology at Concordia University, promote systems research, and promote the development of tools like CASTE (Course Assembly System and Testing Environment) and ThoughtSticker. In 1988, the Centre for the Study of Learning and Performance (CSLP) was created in affiliation with the

Department of Education. According to the CSLP mission statement, the objectives of the Centre are

> to increase the theoretical and practical understanding of the factors that promote and hinder the learning and performance of complex skills; to provide training and support to educators and administrators; to provide the educational community with material and intellectual resources regarding new ideas in education; and to train students who have an interest in learning and performance and who are enrolled in graduate studies within the departments with which the centre and its members are affiliated (Centre for the Study of Learning and Performance, 2006).

Between 1988 and 2006, the CSLP has grown to consist of over 50 principal members, research collaborators or associates, 16 support staff and over 40 graduate students (Centre for the Study of Learning and Performance, 2006). According to Doctor Schmid, "the CSLP has changed our profile from a Department that had a reasonable amount of research to a dominant Department with a dominant program at the national and international level. The research centre contributed to the growth of the programs by providing resources and opportunities for graduates to acquire relevant research experience.

Expanding student base.

The types of students enrolling in the program followed a similar evolutionary course to the programs themselves. When the M.A. in Educational Technology was

created in 1968, it catered to professional educators concentrating in Educational Media Coordinators for school boards schools & colleges or educational television producers (Concordia Graduate Studies Calendar, 1968, p. 24). Over the next decade, the M.A. program also catered to students interested in instructional technology and, later, computer assisted instruction. There were people from the military interested in instructional technology. Military people and graduate students from language teaching were among the first to become interested in computer-assisted instruction.

These areas of student interest mirrored developments in the program itself. In the 1970s, students concentrated on research and development of educational technology or the production and evaluation of educational materials (Concordia Graduate Studies Calendar, 1972, p. 45). As the program grew and diversified, so did the students. Doctor Boyd recalls, "Beginning in the late 1970s the number of students interested in training began to climb. We were getting people from the military interested in training. At the same time interest in media coordination and educational television went down". In the 1980s the M.A. program was intended to qualify people for "careers as learning consultants, producers and evaluators of educational media, designers of instructional materials and systems, managers of learning resources and educational planners" (Concordia Graduate Studies Calendar, 1984, p. 113). Coinciding with the introduction of the internship option in 1989, student recruitment in the 1990s extended well beyond students working in the education sector because there was a growing demand for instructional designers and trainers in business and industry (Bernard & Lundgren-Cayrol, 1991, p. 164). This trend continues in the present.

A changing philosophy.

As changes in student interests occurred, so too did changes in the program philosophy over the same period. In particular, there was a major shift in philosophy from systems philosophy to a immediately more practical orientation revolving around instructional design and human performance technology.

In the 1980s, there was a shift in program philosophy to a more hands-on, problem-solving approach associated with human performance technology (HPT). This marked a change in orientation from the previous cybernetic focus supported by Doctor Boyd and Mitchell. As Doctor Boyd explains, this shift was deemed necessary in order to keep the programs operating: "The survival of our educational technology programs has depended on our training and HPT students have kept us in business." Because of the growing connection between the educational technology programs and HPT, a number of changes were made to the curriculum in 1997. In particular, the cybernetics emphasis was dropped because it was felt that students did not have the necessary background in cybernetics. As the current department chair at the time, Doctor Schmid explains,

> With all due respect to Doctor Boyd and Doctor Mitchell, I cut philosophy and cybernetics as required courses for a course in instructional design. They felt that these courses were more fundamental to academic preparation for educational technology because any monkey could learn to use the Dick and Carey model of instructional design. The problem was that students were not predisposed to philosophy and cybernetics and they wanted hands on courses that dealt with real problems.

This focus on practice-oriented problem solving remains relatively unchanged in 2006, especially in the M.A. program. This is reflected in the continued presence of the internship option within the M.A. program and its practical focus.

Today's programs.

The current Master's program is aimed at "preparing a new breed of educator who can identify educational problems and apply new developments in psychology, information/communication and technology, management theory or systems analysis to solve them" (Concordia Department of Education, 2006). From this description, it is clear that the emphasis on practical problem solving is maintained.

In harmony with the wide range of student backgrounds, the M.A. in Educational Technology does not have prerequisite courses listed but does require a Bachelor's degree. In terms of program content, there are three required courses and a variety of elective courses offered (See Appendix A). The required courses, like the program description, also have a practical orientation geared toward HPT, research methods and theories. These contrast markedly with the program's original focus on cybernetics and systems theory and instead reflect the new program philosophy described above.

The Ph.D. in Educational Technology provides "opportunities for advanced study both in the theoretical foundations of educational technology and its application in practice" (Concordia Department of Education, 2006). The 90 credit Ph.D. in Educational Technology lists three prerequisite courses (the required courses in the M.A. program), three required courses, and elective tutorials in a variety of areas (See Appendix A).

The recent growth from 2000 to 2006 in the number of educational technology faculty members at Concordia contributes to the breadth of research interests and research opportunities within the programs. There are currently nine full-time faculty members working in the program. Individual faculty members have specialized areas of research interest and expertise (See Appendix M).

Conclusion.

Overall, it appears that the programs evolved into what we see today through interaction and influence from outside the degree programs. First, developments both within and outside the Department of Education helped shape the evolution of the programs, particularly in the programs' early years. Without the developments that occurred outside the Department of Education, the master's program would not have gotten off the ground. Second, the Department of Education's current M.A. and a Ph.D. emerged from a history of interaction with external organizations, evolving program goals and requirements, and diversification of student interests and program philosophy. Finally, the influence of educational technology developments beyond the graduate programs themselves was significant. In particular, both the service and research units supported the program development through the contribution of expertise, personnel, resources and opportunities for graduate student research. The general goal throughout the longstanding history of interactions and external influences was to improve public education and lifelong human performance development by using the leverage and coverage offered by new technology (Gary Boyd, Personnel Correspondence, January 24, 2007).

Laval University

Graduate programs in educational technology (Technologie Éducative) were established at Laval University in 1976 and continue in 2006. To learn more about the programs, I interviewed Doctor Jean-Pierre Fournier and Doctor Thérèse Laferrière and examined their curriculum vitae,[4] and drew upon supporting documentation.[5] At Laval

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[4] Doctor Fournier has been a faculty member at Laval University since 1978. He was selected to represent the past senior faculty member. Doctor Fournier received an M.A. in Science of Education from Indiana University in 1970 and his Ph.D. (Technologie Éducationnelle) from the University of Montreal in 1981. He began as an assistant professor at Laval University in 1978 and served as the Director of educational technology programs from 1986 to 1990 and from 1992 to 1996. Over the past thirty years, he has been a consultant for a number of organizations around the world. Doctor Fournier has a number of research areas, including knowledge management within organizations, program development, individualized instruction, and educational technology in developing nations and has over 100 publications. He was also a member of a number of professional associations including ADATE, CIPTE, and the E-Learning Guild.

Doctor Thérèse Laferrière is a full professor at Laval University and has held a number of administrative positions at the Faculty of Education of Laval University: chairperson of the Educational Psychology Department (1982 to 1983), Associate Dean for undergraduate and graduate studies (1983 to 1987), and Dean of Education (1987 to

University, influences from professional associations affiliated with the university helped to connect the programs and graduate students to the labour market during the 1970s and 1980s. However, in the 1990s, program development was influenced by a reduction in the number of educational technology faculty members and a diminished influence of professional associations. Table 2 provides a timeline of key events in the development of educational technology at Laval University

Table 2: Timeline of Key Events in the Development of Educational Technology at Laval University

Date	Event
1970s	Education technology programs began developing in the Faculty of Educational Sciences (Faculté des sciences de l'éducation).
1971	Laval professor, Philippe Marton, founded a professional association to advance different areas of educational technology in Quebec called Conseil interuniversitaire des professeurs en technologie éducative (CIPTE).
1975 to 1976	Reorganization of masters' and doctoral programs in the educational sciences resulted in the creation of educational technology as a distinct program.
1976	The master's degree in educational technology (Technologie Éducative) was

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1995). She was selected to represent a current senior faculty member. Doctor Laferrière received an M.Ed. (Classroom processes) at Laval University in 1974 and a Ph.D. from Boston University (Humanistic and Behavioural Studies) in 1978. She began teaching at Laval University in 1979, and since then, has written on many aspects of teacher education and professional development. Like Doctor Fournier, she has been and is a member of a number of professional associations including, the Canadian Society for Studies in Education (CSSE), and the Canadian Association for Teacher Education (CATE).

[5] This includes Côté (2005), Hamann (1997), Laval Educational Technology (2006), Laval University (2006), Faculté des sciences de l'éducation (2006), and Le règlement des 2e et 3e Cycles (1976 to 2006).

	established at the University.
1978	The Association pour le development et l'application de la technologie en education (ADATE) founded with a mandate to promote research and development in audiovisual communications and educational technology.
1983	Groupe de recherche sur l'apprentissage interactif multimediatise (GRAIM) founded by Philippe Marton.
1990s	Recession in Quebec resulted in government cutbacks to university funding.
1990s (mid)	An early retirement trend was triggered which resulted in a number of faculty members leaving the Department of Educational Technology at the University.
1994	The University merged the departments of Technologie Éducative and L'enseignement et L'apprentissage.
2006	Faculty numbers remain diminished.

Origins of educational technology at Laval University.

In the early 1970s, educational technology programs developed from existing program options at Laval University within the Faculté des sciences de l'éducation (Faculty of Educational Sciences). Graduate studies in educational technology could be pursued as the option in Pedagogie (Pedagogy) within the master's and doctoral program in educational sciences. Changes within the Faculty of Educational Sciences in the 1975 to 1976 academic year resulted in the reorganization of the master's and doctoral program in educational sciences and the creation of educational technology as a distinct program. At this time, the program options in Pedagogy, Physical Education and Orientation were replaced with three education program fields: Psychopedagogie (Educational Psychology), Didactique (Teaching), and Technologie Éducative (Educational Technology). Major modifications in the graduate program calendar included program names and course changes (See Appendix B). In 1976, the master's program in educational technology developed with a North American and European influences. According to Doctor Fournier,

We had faculty who have studied in the United States, in Canada, and in France. Early influences were European and more recent influences are from the United States and Canada. The Masters program began under Doctor Marton and Doctor Lachance, who were educated at the École Normale Supérieure St. Cloud in France. At that time, it was where many Québecois went to study the audiovisual field.

The M.A. in Technologie Éducative (Educational Technology) offered two different program types: Type A option permitted students to acquire professional training in instruction and to perfect relevant teaching methods and required 33 credits of coursework with a 12 credit research paper and Type B option provided students with training in educational research and required the completion of original research or demonstration of leadership in some area of teaching and required 21 credits of coursework with a 24 credit thesis (Le règlement des 2e et 3e Cycles, 1976, p. 187). Prerequisites for admission were a Bachelor's in Education or another degree with at least 30 credits from the domain of Education.

In 1976, the Master's in Technologie Éducative (Educational Technology) had two required courses and a variety of electives (See Appendix B). In the same year, the Département de Technologie Éducative established the first official doctoral program in educational technology offered in Canada. According to the calendar, the program objectives were to train researchers able to contribute original knowledge in the area of education, to train university professors, and to introduce new models of instruction (Le règlement des 2e et 3e Cycles, 1976, p. 196). Prerequisites for admission were a Master's in Educational Sciences or another degree judged to be equivalent. The doctoral program

consisted of a 61 credit dissertation and 21 credits of coursework (See Appendix B). In 1976, the founding faculty members of the Master's in Technologie Éducative were Doctor Marton, Doctor Brien, Doctor Lemieux, Doctor Fleury, Doctor Ste-Marie, Doctor Lachance with Doctor Lachance acting as the first program director of the Educational Technology Masters Program (Le règlement des 2e et 3e Cycles, 1976, p. 194). By 1979, Doctor Fournier and Doctor Laferrière were hired (Le règlement des 2e et 3e Cycles, 1979).

The Faculty of Education was organized in such a way as to allow faculty members to teach in one or more programs at a time. Doctor Laferrière explained,

> It was a rather small program when it began. There were seven departments at the time including the Educational Technology Department. We had a sort of bilateral structure at Laval with the programs on one side and the departments on the other. The programs were never directly connected to the departments but at the graduate level they were closely related. For instance, somebody from educational technology could teach a course in Educational Psychology.

This organizational structure of the departments helped to nurture the educational technology programs by allowing faculty members from other programs to teach within the educational technology programs.

Beginning in the 1970s, professional associations nurtured the educational technology programs by helping to connect them with the labour market (Fournier, 1987). Laval University faculty members created two associations to advance different areas of educational technology in Quebec, namely the Conseil interuniversitaire des

professeurs en technologie éducative (CIPTE) and the Association pour le développement et l'application de la technologie en education (ADATE). The Conseil interuniversitaire des professeurs en technologie éducative can be traced to 1971, when Doctor Philippe Marton from Laval University brought together a group of Quebec university professors working in the domain of educational technology. The purpose of the initial meetings was to exchange information, discuss problems related to the development of the field and coordinate curricula from educational technology programs. The Association pour le développement et l'application de la technologie en education (ADATE) was founded in 1978 with the general mandate to promote research and development in audiovisual communications and educational technology. This practitioner focused association helped to connect graduate students in educational technology programs with the educational technology workforce.

Founding program philosophy.

The program philosophy at Laval University was initially rooted in both European and North American traditions. The founding professors of the programs, Doctor Marton and Doctor Lachance, came from a French tradition and studied at the École Normale Supérieure St. Cloud in France. Other early professors, such as Doctor Fournier and Doctor Brien, were educated in the United States and Canada. Because of the American influence, behaviourism was a dominant program philosophy.

Program evolution.

The program offerings remained relatively unchanged throughout the 1980s with no major changes to the curriculum (Le règlement des 2e et 3e Cycles, 1984, 1989). From 1986 to 1990 and 1992 to 1996, Doctor Fournier was the Director of educational technology programs. As he explains, "My role, as director of programs during eight years, was to adapt the masters program to the evolution of the labour market. The CIPTE and the ADATE were the connexions with the labour market." One of ADATE's major activities in the 1980s and 1990s was to begin developing a professional identity with an aim to establish Quebec accreditation for individuals in the domain of audiovisual and educational technology. Unfortunately, this was not successful due to lack of support from the provincial government of Quebec. Doctor Fournier explained that,

> The Quebec Office of Professions informed us in 1991 that it was not possible for educational technology to be recognized as a profession because we were specialists within the teaching profession, which was not a recognized professional order. At that time, we were called media coordinators and most of us had master's degrees.

Despite the failed attempts to have educational technology be recognized as a profession, the number of educational technology faculty members grew during the 1980s. Major changes from the 1990s to the present, revolved around faculty retirements and departmental mergers. By the end of the 1980s, a number of new faculty members were hired to teach within the M.A. and Ph.D. Programs in Technologie Éducative. The

new faculty included Doctor Duchastel, Doctor Lapointe. Doctor Provost, Doctor Rhéaume, Doctor Pelletier, Doctor Imbeau, and Doctor Fountain.

As was the case with other Quebec universities, cutbacks in the 1990s led to early retirement for many educational technology faculty members at Laval. Doctor Fournier, in describing his reaction to the retirements, remarked that, "Now ten of them are retired... I feel like I'm dancing on the beach with Zorba the Greek and saying "quel beau désastre."" At the same time, there were departmental mergers which affected the educational technology programs. As Doctor Laferrière explained,

> Certainly the merger between the departments in the Faculty in Education in 1994 had an impact. There was a cutback in the number if faculty members in educational technology. I was in favour of the merger. I believed that educational technology and Educational Psychology could merge in a way that would be good for both.

The merger, combined with the reduction in the number of educational technology faculty which followed, did not benefit the educational technology programs. Doctor Fournier recollects that,

> If you look at the field of educational technology, back in the golden age Laval once had 12 professors and now we have only four full-time professors and three are near retirement. If Laval does not hire new people in the next couple of years we will be unable to go on doing the job. The reason we are able now is because we have support from professors from other universities, like the Tele-university of Quebec, who help supervise our students and the interuniversity agreement that allows students to take courses at other universities.

As described earlier, the evolution of educational technology programs at Laval University in the 1970s and 1980s was influenced by the presence of professional associations and a major research centre. However, the influence of such associations declined in the late 1980s. This decline coincided with the developments of the 1990s in the programs, which included faculty retirements, university cutbacks to program funding, and mergers of departments. These diminished the number of faculty to the point that it was not possible to offer educational technology programs without help from faculty at other universities.

Influence of external organizations.

A number of other notable developments helped to promote educational technology development in the 1980s and 1990s at Laval University. In 1983, Doctor Marton founded a major research centre within the Faculty of Educational Sciences called the Groupe de recherche sur l'apprentissage interactif multimédiatisé (GRAIM). This research centre focused on researching and developing multimedia applications to advance education. Between 1983 and 1997 GRAIM developed 36 multimedia learning systems for testing in universities, colleges, and schools. By 1997, GRAIM had over fifty researchers and affiliated research laboratories in Canada, France, and Belgium (CÔTÉ, 1997). In 1997, GRAIM researcher and doctoral student, Denis Harvey, published dissertation on CD-Rom, which was the first in Canada and in the French speaking world (Hamann, 1997). Also, Doctor Robert Brien contributed to the

introduction of a cognitive approach to instructional design in French speaking Canada through publications and research.

A changing philosophy.

During the mid-1970s and 1980s, the behaviourism from the United States tradition was supplanted by information processing approaches. Doctor Laferrière explains that, "At the time the educational technology program was dominated by neo-behaviourism and had a technocratic approach to teaching and learning. After this information processing came along. Later on educational technology came closer to pedagogy."

Information processing was the dominant program philosophy from the 1980s until the early 1990s.The last major change in program philosophy resulted in the adoption of a systems orientation to instructional design and development from the late 1990s to 2004. According to Doctor Fournier, "The programs evolved from media to instructional systems to emancipatory soft systems. From media utilization and management to design, implementation and management of learning environments was based on cognitive or socio-constructivist approaches."

Students.

Current students and graduates of Laval University's educational technology programs are not interested only in the education field, but rather seek to work in a

variety of areas. The systems approach taught within the program is broad and adaptable to a numerous areas.

At present, the Master's in educational technology is designed to provide students with research skills and professional competencies in the field of teaching (Laval University educational technology, 2006). A large proportion of students graduating from this program specialize in instructional design and graduate to work as consultants and instructional designers in a variety of areas. Doctor Fournier indicates that,

> We are quite involved in instructional development in higher education. According to a survey carried out in 2002, 20% of graduates are working at the university level as pedagogical consultants. At Laval University, there are former educational technology students developing courses at the Schools of Agriculture, Social Sciences and Medicine as well as in Administration, to name a few.

Many students adapt the skills learned in the program to diverse settings. A survey conducted by CIPTE in 2002 also indicated that 31 % of former students from educational technology programs in Quebec were working in the private sector, 37 % in teaching institutions and 32 % in public and parapublic organizations (Conseil interuniversitaire des pour le progrès de la technologie éducative, 2002).

Today's programs.

In 2006, the Faculté des sciences de l'éducation (Educational Sciences) offers both an M.A. and Ph.D. in Technologie éducative. The master's program is aimed at

providing students with research skills and professional competencies in the field of teaching. The programs offer two different program types. The Type A option permits students to acquire professional training in instruction and to perfect relevant teaching methods and required 33 credits of coursework with a 12 credit research paper. The Type B option provides students with training in educational research and required the completion of original research or demonstration of leadership in some area of teaching and required 21 credits of coursework with a twenty-four credit thesis (Laval University educational technology, 2006). Prerequisites for admission are a bachelor in Education or another degree with at least 30 credits from the domain of Education. The Master's in educational technology is a 45 credit degree with two required courses and a variety of electives offered (See Appendix B).

The doctoral program consists of a 69 credit dissertation and 21 credits of course work (See Appendix B). It provides training to researchers for contributing original knowledge in the area of education to train university professors and to provide new models of instruction (Faculté des sciences de l'éducation, 2006). Accordingly, prerequisites for admission are a Master's in Educational Sciences or another degree judged to be equivalent.

In terms of faculty and faculty research areas, there are currently five full-time faculty members within the educational technology programs with diverse research interests (See Appendix M). Overall, research activity at the University of Laval has been diverse and global in scope. According to Doctor Fournier, "During the last twenty years, faculty members established teaching laboratories in Turin, Lisbon, Macao, Clermont-Ferrand, Santiago... Seminars were conducted in North and West Africa."

Conclusion.

The evolution of educational technology programs at Laval leading up to their current state was influenced by several key factors, including, the presence of professional associations and a major research centre, the changing orientation of the programs, faculty retirements, university cutbacks to program funding, and mergers of departments. In the 1970s and 1980s, the programs were nurtured through affiliations with professional associations in Quebec, which played a key role in connecting programs and students to the labour market. While the CIPTE and the ADATE help connect graduate students to the labour market, the GRAIM centre provided research opportunities for faculty and graduate students. The influence of such associations declined in the late 1980s. This decline coincided with the developments of the 1990s in the programs, which included faculty retirements, university cutbacks to program funding, and mergers of departments. These diminished the number of faculty to the point that it was not possible to offer educational technology programs without help from faculty at other universities. Moreover, the changing orientation of the programs, from behaviourism through information processing to a soft systems approach, coincided with other changes in the programs noted above. In particular, the broadening of the program that was seen with respect to student interests and graduate employment trends is also reflected in the adoption of a broader, systems approach. Furthermore, interesting commonalities and differences can be seen between developments at Laval and other institutions offering similar programs. These will be discussed in chapter 6. The next section will explore those at the University of Montreal.

University of Montreal

Of all the universities whose histories are explored in this thesis, the University of Montreal stands apart because its programs in educational technology were the first to be dissolved. Interviews with two founding faculty members, Doctor Harold Stolovich and Doctor Jacques Viens. [6] along with available secondary literature, highlight provincial

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[6] Doctor Stolovitch was an educational technology professor at the University of Montreal from 1976 to 1997 and was selected as the past senior educational technology professor. Doctor Stolovitch received his Ph.D. in Instructional Systems Technology (Indiana University) in 1975. He served as the Program Head of Instructional Systems Technology within the Faculty of Educational Sciences from 1990 to 1997. He has a number of research areas including, learning systems, training, and human performance improvement.

Doctor Viens is the only current senior educational technology faculty member at the University of Montreal. He completed a Master's in Educational Technology (University of Montreal) and a Ph.D. in Cognitive Sciences and Computer Applications in Education (University of Toronto). He began as a teaching assistant at the University of Montreal and became a faculty member in the 1980s. He is currently a full professor at the University of Montreal in the Department of Educational Psychology and Adult Education (Département de Psychopédagogie et Andragogie).

government support for the creation of graduate programs in educational technology (Technologie Éducationnelle). Developments that occurred outside the University within the provincial government of Quebec in the 1960s and 1970s helped the University of Montreal's master's and doctoral programs in educational technology to get off the ground. The Master's degree program in educational technology (Technologie Éducationnelle) was formally founded at the University of Montreal in 1976 and the Ph.D. was established in 1987. However, university funding cutbacks and massive faculty retirements in the 1990s led to the discontinuation of the programs in 2001 with no new programs in educational technology emerging.[7] *A* timeline of key events in the development of educational technology at the University of Montreal appears in Table 3, followed by an in depth discussion.

Table 3: Timeline of Key Events in the Development of Educational Technology at the University of Montreal

Date	Event
1960s	The Quiet Revolution influenced curriculum offered in schools and universities in Quebec.
1963	Rapport Parent (the Parent Report) influenced introduction of audiovisual instruction at the University.
1967	The University initiated steps in the planning of a graduate program in audiovisual instruction.
1972	Faculty of Education Sciences was created at the University.
1976	The master's degree in educational technology (Technologie Éducationnelle) was established.
1987	The doctoral degree in educational technology (Technologie Éducationnelle) was established.

[7] Documentation consulted includes the Faculté des sciences de l'éducation annuaire (1972 to2001). Technologie éducationnelle (2001), University of Montreal University Website (2006), University of Montreal Annual Report (1997), University of Montreal Archives (1970,1978, 2001), and the Rapport Parent (1963).

1988	The University underwent restructuring. The faculty of Education was restructured into three departments. Educational technology programs now fell under the Department of Studies in Education and Administration).
1990s (late)	Government cutbacks in Quebec started a massive early retirement trend of senior faculty.
1997	Four education technology faculty members left the University.
2001	Graduate programs in Educational Technology (Technologie Éducationnelle) were discontinued.

Origin: Program emergence in the wake of the Parent Report

In the 1970s, the creation of audiovisual instruction and educational technology programming at the University of Montreal stemmed from larger government interests beginning in the 1960s. Doctor Stolovitch explains,

> In the 1970s, the Quebec government funded a lot of audiovisual resources in the schools and did multimedia drives as a result of the Parent Commission and Report in the 1960s. This occurred at the time of the Quiet Revolution in Quebec and emphasized that schools should open themselves up to the world via the use of media. The funding that followed from this gave a tremendous impetus to the use of media for learning which encouraged a lot of teachers to get certificates in audiovisual teaching methods.

The *Rapport Parent* (henceforth referred to as Parent Report) helped to promote the importance of audiovisual teaching and learning. It argued for a complete reform of the Quebec educational system at all levels with a much greater emphasis on technology integration in teaching and instruction. As indicated in the Parent Report,

> Au-delà de l'enseignement primaire, l'éducation doit être conçue de manière à répondre aux aptitudes de chaque élève et aux exigences de l'économie et de la technologie modernes, à l'intérieur d'une certaine unité pédagogique que peut faciliter l'unité administrative. Les élèves doivent être orientés, à la fin du cours élémentaire, vers les études qui répondent le mieux à leurs goûts et à leurs dispositions ; les uns vers les études spéculatives, les autres vers des activités plus concrètes (Rapport Parent, p. 114).

> Beyond teaching, education must be conceived so as to foster the aptitudes of each pupil and meet the demands of the modern economy and technology. This has to be done inside a teaching framework supported by an administrative framework. The pupils must be oriented by the end of the elementary education towards the studies which answer best their tastes and their aptitudes, be those speculative studies or more concrete activities (Author Translation).

Within the call for reform, the Parent Report called for a greater appreciation of technology in education applied to technical and professional training. It also connected technology to larger societal goals as indicated in the following passage,

> La civilisation contemporaine appelle, comme on l'a vit, une revalorisation de l'enseignement technique ; celui-ci réclame de l'étudiant un aussi haut niveau d'intelligence que les autres types d'enseignement et des qualités de précision, d'adresse manuelle, parfois des aptitudes artistiques, que sont loin de posséder tous les élèves plutôt doués pour les études théoriques. Il existe à l'égard de l'enseignement

technique des préjugés tenaces qu'il importe de déraciner. C'est pourquoi nous insistons pour que l'enseignement professionnel ou technique, au lieu de constituer un secteur fermé sur lui-même, soit incorporé, au niveau de la direction supérieure, au système général d'éducation (Parent Report, p. 114).

Contemporary civilization is seeing a revaluation of the teaching of technology in that it is now viewed as demanding as high a level of intelligence from students as other types of teaching. Teaching technology requires qualities of precision, manual skills, and sometimes artistic aptitudes distinct from qualities required of students pursuing theoretical studies. However, with regard to technical teaching there are still difficult prejudices that are important to uproot. This is why we insist that professional or technical teaching, instead of constituting a sector closed on itself, be included with higher education planning within the general system of education (Author Translation).

In 1967, due to the impact of the Parent Report and growing interest within the University of Montreal for audiovisual instruction, initial steps in the planning of a graduate program in educational technology were carried out by a university committee with the aim to address radio, television, and other techniques related to audiovisual instruction (Comité sur la radio, la télévision et les autres techniques audiovisuelles d'enseignement de l'Université de Montréal). The committee, led by Léo Dorais and Dean Gabriel LaRocque, met with a mandate to define, coordinate, and plan the development of radio and televised instruction as well as all other aspects of modern

technology as it applied to university teaching (Division Des Archives, 2006). This created a need for university instruction in educational technology (originally audiovisual instruction). Doctor Stolovitch explains,

> The results of the Parent Report had a huge influence in the early 1970's in opening the schools and universities to the use of media for learning. This was one the drivers for creating educational technology programs originally called audiovisual instruction or audiovisual learning, which began in the early 1970s as certificate and diploma programs for teachers.

Initiatives of founding faculty.

On the whole, the influence of educational technology developments beyond the graduate programs themselves was minimal. Although there were educational technology developments outside the programs, the University of Montreal did not directly create service or research units specifically targeted to educational technology advancement. Instead, however, a number of faculty members participated in professional groupings and research collectives throughout the educational technology programs' history. For example, several faculty members worked with counterparts from Laval University and Concordia University in the Conseil interuniversitaire des professeurs en technologie éducative (CIPTE). This association provided a forum for educational technology professors. Later in 2000, the Centre Interuniversitaire De Recherche Sur Le Téléapprentissage (CIRTA), under the initiative of the Laboratoire en informatique cognitive et environnements de formation (LICEF), provided a network for professors

and researchers from Quebec universities for studying the mediation of teaching via media. As stated by the CIRTA,

> Le CIRTA est issu d'une initiative du Centre de recherche LICEF et de plusieurs groupes, équipes et personnes provenant de plusieurs établissements universitaires québécois, qui désiraient se regrouper à l'intérieur d'une structure commune abritant des recherches sur le téléapprentissage et partager des activités ainsi que des ressources (CIRTA, 2006).

> CIRTA resulted from an initiative by the LICEF and groups of people coming from several Québécois universities wishing to create a common structural framework for shared activities and resources pertaining to distance education research (CIRTA, 2006).

One factor that facilitated the development of educational technology programs at the University of Montreal was the presence of Dean Gabriel LaRocque. Doctor Stolovitch indicates that, "What favoured the development of the domain in the 1960s and 1970s was the presence of the Dean of Education at University of Montreal, Gabriel LaRocque who supported the programs and put wind in the sails of educational technology." Dean LaRocque emphasized the importance of educational technology and facilitated the creation of the program. The positive influence of CIPTE from the 1970s to the 1990s helped to attract public attention to educational technology and provide faculty with an academic social network. Although CIRTA did have a positive influence in stimulating research activity in educational technology at other Quebec universities,

educational technology programs at the University of Montreal were already in the process of closing in 2000 when CIRTA was established.

"Eclectic programs."

In terms of organization, the Faculty of Educational Sciences was created in 1972 and offered programs (pédagogie audio-visuelle) to advance audio-visual instruction and educational uses of technology (Section de pédagogie audio-visuelle et de technologie éducationnelle). According to the directory of the Faculty of Science of Education Calendar for 1972, the professors who pioneered this section were Doctor Gabriel LaRocque (Ph.D. in Instruction, University of Paris), Doctor Pierre Bordeleau (B.Ed. in Teaching, University of Montreal), Doctor Pierre Perrusse (M.A. in Educational Science, Indiana University), Doctor Joan Tierney (M.A. in French, Seton Hall), and Doctor Etienne Wermester (M.A. in Psychology, University of Paris).

In 1976, the section was renamed the Section de technologie éducationnelle (educational technology) and this was where educational technology programs were first offered. The educational technology programs at the University of Montreal were broad in focus with an eclectic faculty throughout the 1970s and 1980s. As Doctor Viens describes,

> What was unique about the University of Montreal programs was that they were very eclectic, mixed, and had a systemic orientation to technology integration. We had professors with academic backgrounds in cinema, semiotics, linguistics, and communications. Some individuals were working on message design and were more

designers than academics with a scientific approach. There were also professors with a specific educational technology focus like Doctor Stolovitch from Indiana University and Doctor Perusse.

In 1976, the educational technology section was one of eight sections within the Faculty of Education. This section offered a M.A. and a M.Ed. in Technologie Éducationnelle (Faculté des sciences de l'éducation annuaire, 1979). According to the Calendar, the M.A. program had 12 credits of required courses and the M.Ed. had twenty-one credits of required courses. The remaining courses were selected from a list of course electives (See Appendix C). The educational technology section also offered a doctoral program in educational technology (Technologie Éducationnelle). The Ph.D. had comprehensive examinations, a dissertation component, six required courses and elective courses selected from the list of course electives for the master's-level programs (See Appendix C).

Students.

From their inception, the programs catered primarily to teachers. Doctor Stolovitch points out that teachers were taking audiovisual learning certificates and diploma programs even before the creation of the educational technology programs. This was particularly evident in the M.Ed. in educational technology. The M.A catered to students from education and prepared them for careers as researchers and candidates for the doctoral program (Faculté des sciences de l'éducation annuaire, 2001).

European philosophical roots.

In the 1970s, the underlying philosophy of the programs was based in a European tradition of communications, media, and semiotics. As indicated by Doctor Stolovitch,

> When I arrived it was very much media centered -- media in learning. My colleagues were more interested in television, film, and the interpretation of images than performance outcomes. There was a strong influence from France and a psychoanalytic bent. Semiotics was a powerful field of study along with audiovisual communication.

The European influence during the 1970s meant that there were courses in film interpretation and semiotics that were not present in other educational technology programs. This was unique to the University of Montreal.

Program evolution: The growing importance of instructional design and performance

Throughout the 1970s and 1980s, the philosophy of the program expanded to make room for instructional design and performance-based approaches brought by faculty members educated at universities in the United States. From the early 1990s to 2001, much of the European based program philosophy from the 1970s and 1980s was replaced with American-influenced systematic approaches to instructional design and performance. The diversity of the programs rooted in European and American influences

narrowed as American influenced supplanted European influences and faculty members educated in Europe began retiring. Doctor Viens recollects,

> From this eclectic division, the area of instructional design began to be more vocalized while some of the other faculty members became less active and began to retire. This trend took place in the early 1990s during the big wave of educational cutbacks. At this time there was a trend in teacher education and technology integration from those working from more systematic and systemic perspectives.

The American influence led to a shift in course offerings. Course related to semiotics and film interpretation were replaced by courses in instructional design.

Demise of the educational technology at the University of Montreal.

In 1988, the Faculty of Education was restructured into three departments: the Département de didactique (Department of Teaching), the Département d'études en éducation et d'administration de l'éducation, (Department of Studies in Education and Administration) and the Département de psychopédagogie et d'andragogie (Department of Educational Psychology and Adult Education). From 1988 to 2001, the educational technology programs were offered within the Département d'études en education et d'administration de l'éducation (University of Montreal Division of Archives, 2001). Within this department there were general areas of educational study and research which all programs addressed, including strategies and problems, critical perspectives, research

methodologies, and reflections on instructional practices and instrumentation (Faculté des sciences de l'éducation annuaire, 1994).

The broad focus of the programs and faculty members from the 1970s to the early 1990s led to the creation of two branches within educational technology: (a) educational technology as a systematic area of study and (b) educational technology as a multidisciplinary approach to education. This was partly due to faculty members' views of educational technology. According to Doctor Viens,

> Essentially, we had two streams of faculty, those who were formed in the educational technology domain and those who came to educational technology from a variety of different backgrounds. So there was an eclectic perspective of educational technology at the University of Montreal. Some worked on topics like communications and creativity and others worked on more traditional educational technology from a systematic or systemic perspective.

As was the case with other universities in Quebec in the 1990s, the University of Montreal had to deal with provincial government cutbacks in education. One result of the cutbacks was a massive retirement of senior faculty in the mid-1990s. This had a serious impact on the educational technology programs by removing key faculty members required to teach courses and manage educational technology programs. Doctor Stolovitch indicates,

> In 1997, all the Quebec universities were given wonderful retirement packages. The retirement package offered at the University of Montreal was particularly attractive. Those that had put in a certain number of years and were of the right age were offered

the opportunity to retire. Quebec universities do not have a mandatory retirement age in the academic world. At the time the University of Montreal was getting top heavy as a university so the government gave a lot of money for the senior faculty to retire. It was an attractive, one-time-only offer that was difficult to resist and one that many of us took. Four of us left, Dean Gabriel LaRoque, Doctor Andre Morin, Doctor Pierre Perusse, and myself.

Internal university politics appeared to play a role in educational technology faculty hiring. Four senior faculty members retired in the mid-1990s and additional faculty members hired after 1997 specialized in areas outside educational technology. This was connected to limited university funding for faculty renewal and strong internal competition among programs for limited faculty positions. Doctor Stolovitch indicates, "At that point any positions that were open were grabbed by groups with more political power such as teacher training. And it was a two for one arrangement with one person hired for two retirees. It was mostly people leaving."

The retirement trend in educational technology faculty at the University of Montreal led to the discontinuation of the programs when there were no longer enough faculty members to continue offering the programs. In 1997, Gabriel Laroque, Andre Morin, Pierre Perusse, and Doctor Stolovitch left the University of Montreal on early retirement. Their departure left a void in the educational technology programs. As indicated by Doctor Stolovitch, "When we left, it left a vacuum." In 2001, enrollment to all educational technology programs was suspended. At this time, four educational technology professors remained at the University, two of whom died by 2005, Doctor

Doctor Max Giardina (R.I.P. 2005), Doctor Claire Meunier (R.I.P. 2004). Pierre Bordeleau and Doctor Jacques Viens (Faculté des sciences de l'éducation annuaire, 2001) remain at the University of Montreal.

In terms of program offerings from the 1990s to 2001, the aims of the M.Ed. and M.A. in educational technology were to allow students to advance their knowledge in educational research and educational practice. As laid out in the M.Ed. program description in 2001,

> Cette option entend répondre à la mission d'enseignement de l'Université de Montréal en donnant aux étudiants une formation qui les conduise à la fine pointe des connaissances scientifiques et des pratiques professionnelles en éducation; permettre de mieux comprendre les enjeux de l'éducation dans le monde d'aujourd'hui, de réaliser des projets qui ont une signification dans leur milieu et d'approfondir leurs compétences professionnelles (Technologie Éducationnelle, 2001).

> This option addresses the teaching mission of the University of Montreal by providing students with training to help them comprehend advanced scientific knowledge and professional practices in education. It is intended to allow students the opportunity to better understand educational issues in today's world, to carry out projects which are relevant to their environment, and to deepen their professional competences (Author Translation).

The abovementioned M.Ed. program description highlights the strong focus on education and the practical orientation of the program. This program option was focused on applications in educational settings and highlighted the practical elements of educational technology through project work.

The M.A. program was oriented towards research on all aspects of technology and learning, including theory, media production and evaluation. It was broader in focus than the M.Ed. option. This program had a broad focus and provided a base for doctoral work as indicated in the 2001 program description,

> Le programme de M.A. en Technologie éducationnelle est un programme de formation à la recherche et par la recherche. Il vise à fournir une formation par la recherche au candidat qui veut développer une compétence à agir comme technologue de l'éducation. Il vise aussi à initier le candidat à la recherche en technologie éducationnelle. À cet égard, il constitue une voie privilégiée d'accès au doctorat. La technologie éducationnelle étudie tout ce qui touche aux moyens technologiques de l'apprentissage : la conception, la production, l'utilisation et l'évaluation des médias d'apprentissage; les principes d'organisation, de planification et d'application de ces médias en éducation; les techniques d'animation par l'audiovisuel (Technologie Éducationnelle, 2001).

> The M.A. Program in Educational Technology is a program which producers researchers by doing research. It aims at providing research training to students who want to develop the competences required of educational technologists. It also aims at introducing students to research in educational technology. In this respect, it provides

a privileged path of access to the doctorate. The study of educational technology encompasses all technological aspects of learning: design, production, the use and evaluation of training media, principles of organization, planning and applications of media in education, and audio-visual instructional techniques (Author Translation).

Both the M.Ed. and M.A. in Educational Technology were 45 credit programs and the Ph.D. in Educational Technology had 90 credits. The M.Ed. program required the completion of a project and course work. The M.A required the completion of 30 credits of research and a thesis, as well as the completion of 15 credits of course work. It was a prerequisite that students possess a bachelor's degree in educational sciences or another degree judged by the Faculty to be equivalent. There were three required courses and a number of electives offered. The Ph.D. required the completion of comprehensive examinations, a dissertation, and coursework (See Appendix C). In terms of faculty and faculty research areas, during the last five years of operation (1996 to 2001), six full-time faculty members taught educational technology at the University of Montreal (See Appendix M). In summary, educational technology programs at the University of Montreal underwent important changes between 1976 and 2001 according to study participants and supporting documentation.

Conclusion.

At the University of Montreal, Program development fluctuated in the 1990s when there was a reduction in the number of educational technology faculty members.

Doctor Boyd noted in his interview that faculty retirement and policy reorientation caused educational technology degree programs to be discontinued in 2001.On the whole, political events in Quebec helped shape developments in the field of educational technology. The effects of the Parent Report following the Quiet Revolution in the 1960s led to the creation of educational technology degree programs in the 1970s and 1980s. Subsequently, in the 1990s, the Separation Movement led to efforts by some Quebec universities to cut costs by offering early retirement packages to faculty members. This, in turn, led to a massive retirement trend that led to a shortage of educational technology faculty members at the University of Montreal and the discontinuation of the degree programs in 2001.

The University of British Columbia

The University of British Columbia was founded in 1908. Programs in educational technology (Technology Studies Education, Educational Technology) started in 1996 and continue in 2006. Although technology studies in education are often based in the field of vocational and industrial education, technology studies in education at the University of British Columbia are more closely aligned with the field of educational technology as defined in this study. To learn more about the programs, I interviewed Doctor Stephen Petrina[8] and Doctor Don Krug[9]. In addition, supporting documentation

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[8] Doctor Petrina is the senior faculty member of the Technology Studies Education (TSE) Programs. He was the first educational technology faculty member at the University of British Columbia in 1996. Doctor Petrina completed a Ph.D. at the University of

was consulted[10]. The discussion that follows describes how educational developments outside the degree programs in the 1980s, combined with program developments in the 1990s, led to the creation of a campus based master's and doctoral degree in technology studies education in the mid-1990s, along with an online master's degree in educational

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Maryland in 1994. He was hired by the University of British Columbia in 1996. He acted as the TSED program director from 1996 to 2001. He has published over 100 articles and his research areas include Cultural and New Media Studies, Science and Technology Studies, Intellectual Property Rights, Academic Freedom, Online Education Communication, and Critical Pedagogy (University of British Columbia Department of Curriculum, 2006).

[9] Doctor Krug received a Ph.D. in Curriculum and Instruction from the University of Wisconsin (Madison). He is an associate professor in the Department of Curriculum Studies with research interests in the following areas: Educational Technologies, Virtual Learning Environments, Pedagogical Interface Design, Simulations, Critical Inquiry, and Curriculum Integration (University of British Columbia Department of Curriculum, 2006).

[10] Documentation reviewed includes Logan, H. (1958), Technology Studies Education at University of British Columbia (2006), University of British Columbia Act (1996), University of British Columbia Department of Curriculum, (2006), University of British Columbia Archives (2006), and selected University of British Columbia Calendars (1994 to 2006).

technology in 2000. A timeline of key events in the development of educational technology at the University of British Columbia appears in Table 4, followed by an in depth discussion.

Table 4: Timeline of Key Events in the Development of Educational Technology at the University of British Columbia

Date	Event
1980	The University purchased 100 Apple II's.
1980s	Doctor Westrom led the Apple II project.
1980s to 1990s	There were departmental mergers within the Faculty of Education at the University.
1995	Program area was created called Technology Studies.
1996	The master's degree in educational technology was established.
2002	The online master's degree in educational technology was established. It was established as a joint venture between the University and the Institute Tecnologico de Monterrey.
2002	The University founded the Office of Learning Technologies.
2000 to 2006	There were numerous faculty member changes in the Faculty of Education due to retirement.

Educational computing roots.

Educational technology programs at the University of British Columbia were rooted in early developments 1980s, which provided expertise and faculty member support which facilitated the creation of the master's program in 1996. As indicated by Doctor Petrina,

> The program actually began in the early 1980s with the introduction of the Apple II computers into the teacher education program. In 1980 the University of British Columbia purchased 100 Apple II computers. At the time a number of faculty members including Doctor Marvin Westrom were involved. Doctor Westrom took on the Apple II project. The idea was to introduce the pre-service teachers to Apple II's

and to travel with these computers around the province to introduce the Apple II's to other teachers. That was the beginning of the Department of Mathematics and Science Education.

Doctor Westrom pioneered educational computing at the University of British Columbia. In 1976, he began as a faculty member in the Faculty of Education at the University of British Columbia and taught methods of teaching computing studies in secondary schools and the uses of computers for instruction within the undergraduate program for nearly three decades (Doctor Marvin Westrom, Personal Communication, February 19, 2006). In the early 1980s, the educational computing focus was one of the foundations for later developments that led to the creation of Technology Studies in Education through departmental mergers in the 1980s and 1990s.

"Departmental mergers."

In the 1980s and 1990s, the departmental mergers influenced development of the Technology Studies Programs. Doctor Petrina indicated that, "in the early 1980s the Faculty of Education at the University of British Columbia had 22 separate departments and now there are four. It was just consolidation after consolidation and our department was part of this trend to consolidate." In 1980, computers applications became part of the Mathematics and Science Education Program. Then this department merged in the mid-1980s with the Department of Visual and Performing Arts. Then in 1995, this became the Department of Curriculum Studies and I was hired in 1996 where there were about

five faculty members. When the Department went through the merger in 1995, they created a program area called Technology Studies. It included computer applications and technology education. The merger led to a diversification of educational technology programs. As indicated by Doctor Petrina,

> As part of the merger we were forced to be more interdisciplinary and it has had a lot more advantages than disadvantages. There is an interdisciplinary approach to educational technology through cognition and AI and research areas in their sub-disciplines and a more interdisciplinary emphasis on digital media design over the past couple of years.

Broad program scope.

Since 1996, a variety of undergraduate and graduate level educational technology (Technology Studies Education) programming was offered through the Department of Curriculum Studies at the University of British Columbia. Technology Studies Education (TSE) had two streams: Technology Education and Computing Studies (Technology Studies Education at the University of British Columbia, 2006). In addition, the online Master's in Educational Technology (MET) was created in 2002 as a joint program with Instituto Tecnológico de Monterrey. It contributed to broadening the scope of educational technology program development at the University of British Columbia by adding a stronger media focus. As indicated by Doctor Petrina, "Because of the merger and because of the new online degree we were forced to become more versatile than if we were only face-to-face. We are now moving into areas that are more media oriented like

digital design and less towards traditional educational technology or instructional design software."

The Master's of Educational Technology (MET) established in 2002 was unique in multiple ways. First, it was not offered by any of the departments. Instead it resided within the Faculty of Education in a service unit called the Distance Education and Technology Unit, formerly the Office of Continuing Studies. Second, the program was a cross-institutional program. Doctor Tony Bates, Director of the Distance Education and Technology Unit, designed the Master's of Educational Technology (MET) to be a joint program offered with the Tec de Monterrey. Doctor Krug recalls, "When Doctor Tony Bates was with the Distance Education and Technology Unit, he had built up a friendship with people from Tec de Monterrey to offer courses together or share by advertising from both institutions to build up a population. From this developed the idea that there should be a partnership." In 1996, the Distance Education and Technology Unit and Tec de Monterrey offered a five course post-graduate certificate in distributed learning (Adnan Qayyum, Personal Correspondence, April 19, 2007).

In 2000, at the request of Tech de Monterrey, a joint degree program was discussed with the Distance Education and Technology Unit. Subsequently, the Faculty of Education at the University of British Columbia became involved (Adnan Qayyum, Personal Correspondence, April 19, 2007). This led to the creation of the MET degree program in 2002.

From 2002 to 2006, the Master's of Educational Technology (MET) was offered as an online degree within the Faculty of Education independent from graduate programs offered in the Department of Curriculum Studies. Doctor Krug indicates, "It functions

separately from what we are doing in the Department of Curriculum Studies which is much more local, deals with people attending the university, and is almost all face-to-face although it does deal with issues around distance education."

External influences within the University.

The relationship between educational technology academic programs and educational technology related service units is complex. Doctor Krug explains, "In the past, the University of British Columbia has had small pocket projects in different faculties that serviced its own educational needs." One of the main relationships came from the Distance Education and Technology Unit developed by Tony Bates to help coordinate faculty services. The connection between academic and service units provided expertise and resources which assisted the development of the Master's of Educational Technology (MET) in 2002. Subsequently, in 2002, the Office of Learning Technologies was created at the University based on a report for the Vice President Academic and Provost, Barry McBride (Adnan Qayyum, Personal Correspondence, April 19, 2007). Although, the Office of Learning Technologies was not originally created to oversee the Distance Education and Technology Unit, this became part of its mandate in 2004 after organizational restructuring (Adnan Qayyum, Personal Correspondence, April 19, 2007).

Changes occurred from 2002 to 2006, as new professors were hired to replace retiring ones. In 2002, Doctor Krug came into the program as Doctor Ricky Goldman and Doctor Westrom left. Doctor Goldman took a job in the United States and Doctor Westrom retired. In 2006, the Department of Curriculum Studies had three regular full-

time faculty members within the TSED area, namely, Doctor Samia Khan, Doctor Don Krug, and Doctor Stephen Petrina.

Students.

The Technology Studies Education (TSE) programs were designed to be broad in scope and flexible to accommodate students with diverse schedules. Little information was available on the students and student recruitment. In terms of program enrolment in the TSED programs there are currently eight M.A. students (seven fulltime, one part-time), seven M.Ed. students (two full-time, five part-time). There are also 11 full-time students enrolled in a Ph.D. Program.

Program philosophy.

The underlying philosophy of the programs had an American influence with an emphasis on instructional design and interdisciplinary studies. Doctor Petrina recalls, "I was at the University of Maryland in 1987 and one of my mentors and supervisors was an instructional designer from Ohio State University who had worked with Doctor Edgar Dale. Doctor Edgar Dale was a giant at Ohio State who wrote a lot of the early books on audiovisual education." This was important in providing the TSED and MET programs a grounding in the field of educational technology, rather than in vocational and industrial education.

In 1996, when educational technology was introduced into the Department of Curriculum and Instruction as Technology Studies Education (TSED) the underlying

philosophy of the programming became multidisciplinary in nature and oriented towards the education of responsible citizens. It was based on the view that the mission of technology education was intended to help people develop and question knowledge and skills that empower them to participate in all facets of technological development in practical and political areas (Technology Studies Education at the University of British Columbia, 2006).

Current program details.

Since 1996, the Department of Curriculum Studies has offered educational technology when it was introduced into the Department of Curriculum and Instruction as Technology Studies Education (TSED). It was much broader in scope than traditional educational technology programs and offered courses along multiple strands. As stated by Doctor Krug,

> One area is general technology studies focusing on political, historical, and philosophical notions of the role technology plays in society. The second area has to do with media studies, media literacy, and the use of rich media within educational contexts. The third area is more in line with educational technology like ICT and its relationship to schools.

A number of graduate programs in educational technology (Technology Studies in Education) are offered in the Department of Curriculum Studies. There was a doctoral degree designed to be an advanced research degree. It is a 90 credit program with little

information available on the types of courses required, "The Doctor of Philosophy (Ph.D.) degree is an advanced research degree. Courses in the Ph.D. program are elected through consultation with an advisor" (Technology Studies Education at the University of British Columbia, 2006). The M.Ed. and M.A. are 30 credit degree programs offered. In terms of focus, the M.A. degree has a research emphasis requiring a thesis and the M.Ed. has a practitioner focus requiring the completion of a major project. Both offered a number of required and electives courses (See Appendix D). The online MET is offered as a joint program between the University of British Columbia and the Instituto Tecnológico de Monterrey. It offers a number of required and elective courses (See Appendix D).

The online MET offered as a joint program between the University of British Columbia and the Instituto Tecnológico de Monterrey is in its fourth year of operation in 2006. As indicated by Doctor Petrina, "Their presence did not add quality to the program but it has potential. There are only seventeen of the 189 students enrolled from the Instituto Tecnológico de Monterrey. There is potential to enrich the program but they have not enrolled a lot for a number of reasons including financial."

In terms of innovation, the University of British Columbia was the first Canadian University to have a joint online master's degree in educational technology shared with an institution outside Canada. As indicated by Doctor Petrina, "we are one of the first institutions off the starting block with a full online masters' MET. This speaks for itself in terms of the institutional contribution we have made." In terms of current faculty and faculty research areas of interest, there are currently eight full-time faculty members with varying research interests (See Appendix M).

Conclusion.

On the whole, educational technology programs at the University of British Columbia appeared to have been influenced by educational technology developments outside the programs from the 1980s to present. In particular, the Apple II initiative within the Faculty of Education in the 1980s and collaboration through the Distance Education and Technology Unit, played a key role in the formation of the programs in their current state by providing expertise and a context supportive for the educational use of technology. Traditional and online educational technology degree programs were created between 1996 and 2002 and continue in 2007

University of Calgary

Graduate degrees in educational technology were not offered at the University until 1995. However, educational technology components were present in the Department of Education from the early 1980s. To learn more about the educational technology programs at the University of Calgary, I interviewed senior educational technology faculty members, namely, Doctor Bruce Clark,[11] Doctor Susan Crichton,[12] and Doctor

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[11] Doctor Clark received his M.Sc. in Instructional Technology in 1979 and his Ph.D. in Instructional Design, Development and Evaluation from Syracuse University in 1984. Doctor Clark was the first educational technology professor hired at the University of Calgary in 1983. Doctor Clark acted as the Executive Director for the Institute for

Gail Kopp.[13] Curriculum vitae from faculty participants were also consulted. Another major source of information about the development of the academic field of educational technology was the collection of documents that educational technologists have produced[14]. It will be shown that, beginning in the 1990s, developments both within and

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Computer Assisted Learning at the University of Calgary from 1985 to 1988. Since 1999, he served as the Associate Dean for the Division of Teacher Preparation. Doctor Clark has a number of research areas including, evaluation of distance learning, teacher training and instructional design.

[12] Doctor Crichton completed a Ph.D. at the University of Sydney, Australia in 1998. Doctor Crichton has designed and delivered a range of ICT-related courses and curricula for over 20 years. She is specialist in technology enhanced delivery of school subjects and developed web-based curriculum for secondary schools and for adult learners in the community. She worked at various distance education schools in Canada and has led workshops in innovative instructional designs to support student-centred approaches for online learning.

[13] Doctor Kopp completed a Ph.D. at the University of Calgary in 2000 and has over twenty years of experience in analysis, design, development, evaluation, and validation of instruction for adults in industry, aerospace, university, and disadvantaged adult populations. She has worked and published extensively on effective and efficient use of technology, instructional strategies for the classroom, and distributed learning, especially computer-based training, simulations, and virtual reality.

[14] Consulted documentation includes the Graduate Division of Educational Research (2006), Information Commons (2005), Learning Commons (2005), Learning Commons Internal Review (2005),University of Calgary Annual Report (2003), and University of Calgary Calendar (1994 to 2006).

outside the Department of Curriculum and Instruction helped nurture the evolution of the programs through connections between educational technology services and the educational technology programs. Specifically, university restructuring, developments in educational technology in affiliated service units, faculty member assistance on service projects. and faculty expertise on committees led to the creation of the Graduate Division of Educational Research and the establishment of graduate degrees in educational technology. A timeline containing the key events in the development of educational technology at the University of Calgary appears in Table 5.

Table 5: Timeline of Key Events in the Development of Educational Technology at the University of Calgary

Date	Event
1983	The University established areas in the Faculty of Education that focused on computer applications, school library, and school media specialist.
1980s (early)	The Faculty of Education had multiple components of educational technology instruction scattered across multiple areas.
1980s (early)	Decisions were made at the University to eliminate programs that were viewed as outdated.
1980s (early)	The media specialist program in Education began to be dismantled.
1990s (mid)	Developments at the University resulted in university expansion and the advancement of technology driven initiatives.
1994	In the University, the Faculty of Education underwent restructuring.
1994	Graduate Division of Educational Research was created at the University.
1995	The master's degree in educational technology was established within the Graduate Division of Educational Research.
1995	The doctoral degree in educational technology was established within the Graduate Division of Educational Research.
1997 to 2005	There was a hiring boom at the University in the Department of Education.
1998	The Learning Commons was founded at the University.
1999	The Information Commons opened to provide information services, technology and expertise to support the scholarly use of information resources.
2002	The Calgary Centre for Innovative Technology (CCIT) was created.

Present	There are planned expansions in educational technology at the University which reflect demands in education but actual developments are still being discussed.

Initiatives independent of educational technology graduate degrees.

There were a number of major developments in the use of educational technology at the University of Calgary independent of the formal educational technology programs beginning in the 1980s. In 1981, the University of Calgary Press was established. In 1984, the university purchased a $17 million supercomputer. By the mid-1990s, developments at the University of Calgary resulted in university expansion and the advancement of technology driven initiatives. In an effort to centralize teaching support services, the Learning Commons was created in 1998. The idea was to merge three separate units: Multimedia development, distance education support, and teaching/learning support. As stated in the internal review of 2005, "The original intent was to centralize these services with an ethos of promoting and supporting both, effective teaching and learning, and professional development" (Learning Commons Internal Review, 2005). The Learning Commons provided leadership and support to faculty and graduate students by offering faculty development workshops, consulting services, mentoring, and the Summer Institute for new faculty. Also, in 1999, the Information Commons opened to provide information services, technology and expertise to support the scholarly use of information resources (Information Commons, 2005). The most recent major development in the use of educational technology at the University of Calgary occurred in 2002 when the Calgary Centre for Innovative Technology (CCIT) was created. This centre had the mandate to support multidisciplinary initiatives of

faculties including: Engineering, Science, Medicine, Kinesiology in collaboration with industry, government agencies and other universities.

There are overlaps between educational technology services and the educational technology programs in terms of faculty member assistance and expertise on service projects. As indicated by Doctor Crichton,

> Because the University of Calgary has gotten as big and centralized their services, I think we get to inform a lot of policy and are being asked increasingly about how we might want to shape server security and what kind of things we need. I know one or two of us have been instrumental in piloting Illuminate software for synchronous component and replacing Centra which had been the backbone. We did this for a couple of years in the faculty and now the whole university is doing it. I think we are being seen as providing a role for innovation in trying out different software, testing out applications, and making recommendations.

Overall, the establishment of publishing and computing resources, combined with later technology service units dedicated to providing informational and educational support, helped create a suitable content for the creation and development of educational technology programs.

Origins: Programs spread across departments.

Educational technology programs at the University of Calgary emerged from separate programs of instruction offered in at least two departments within the Faculty of Education. Doctor Clark explains,

> What existed in Calgary when I came were actually programs split down the middle. The one I came to was a dying educational media program. It had two thrusts. One was a school library program and the other was targeted for school media specialists. It operated inside the Department of Curriculum and Instruction. Inside the Department of Educational Psychology was a separate program called Computer Applications in Education.

Although the University of Calgary did not have a formal educational technology program in the early 1980s, the Faculty of Education had multiple components of educational technology instruction scattered across multiple areas. Doctor Clark started working at the University of Calgary in 1983. Educational technology was a part of multiple programs but was not a program in itself. He indicates, "What you would find if you looked in the University of Calgary literature of those days is an official description of computer applications, school library, and school media specialist. Internally we were talking about educational technology." Consequently decisions were made to eliminate programs that were viewed as outdated. As stated by Doctor Clark, "Part of the reason for bringing me here was to make some decisions concerning the media specialist program. Essentially what I ended up doing was killing it." At this point in time, there was no

longer a market for media specialist positions in schools. Doctor Clark describes the transition from a focus on media specialization to instructional design and development during the 1980s and 1990s,

> I basically devoted my efforts to replacing the media specialist program with an instructional design and development program. We were modestly successful in doing that. If you step ahead 12 years from when this was done, we finally accomplished a merger of computer applications and the instructional design and development program to give us a comprehensive program in educational technology within a larger entity now called the Graduate Division of Educational Research.

Before the specialization in educational technology was created, educational technology programming was offered within the Department of Curriculum and Instruction. Educational technology courses were offered in the Department of Curriculum and Instruction within the master's and Ph.D. level degrees (University of Calgary Calendar, 1994, p. 71). At this time, the prerequisites for entering graduate programs within the Department of Curriculum and Instruction were a teaching certificate, teaching experience, and a written statement of intent from each student. Under this framework, there was little organizational support Doctor Clark recalls, "At one point, there was only me, myself, and I holding the program together. Then we received additional funding from Alberta Learning for our course-based master's program."

Before the Graduate Division of Educational Research was created in 1994, the Faculty of Education had four departments: Curriculum and Instruction, Policy and

Administration Studies, Educational Psychology, and Teacher Education and Supervision. Faculty members were appointed to one department and taught both graduate and undergraduate courses in that department until new leadership changed how the Faculty was organized. In an effort to improve academic diversification, a new dean abolished most of the departments. Doctor Clark recollects,

> Roughly 12 years ago, a dean by the name of Ian Winchester arrived on the scene with a vision for teacher education roughly modeled on McMaster's medical program, and a sense that the departmental divisions in the graduate programs were counter-productive from a scholarly point of view. He wiped out the departmental structure except for Educational Psychology for which the departmental designation mapped on some of the certification requirements. All the rest of the faculty were simply cross appointed to two Divisions: the Division of Teacher Preparation and the Graduate Division of Educational Research.

There were advantages and challenges with the new organizational structure that affected the development of educational technology at the University of Calgary by removing departmental divisions and existing courses. Doctor Clark explains, "It had some good points in resolving who was and wasn't responsible for teaching in the teacher preparation program, and it broke down some of the artificial barriers that had grown up in graduate work." At the same time, as Doctor Clark indicates, "Since he [Dean Winchester] arbitrarily abolished all existing courses at the same time, it posed some challenges for getting things going again." Other challenges arose from external influences present before the program was offered. Doctor Crichton reflects,

> Before I came on board, our educational technology program looked at the AECT Standards, the need to map courses to those standards, and questioned whether a program should recognize a standard or be certified. This was certainly driven by the public point of view of what educational technology ought to be. I think now we are feeling less pressure to do that and there is enough diversity and divergence in the field which allows for multiple perspectives on what educational technology should be.

Consolidation within the Graduate Division of Educational Research.

In 1994, the Graduate Division of Educational Research (GDER) was established. It had three full-time educational technology professors, namely, Doctor Bruce Clark, Doctor Robert Heyman, and Doctor William Hunter. Beginning in 1995, educational technology was offered as a specialization in the M.A., M.Sc., M.Ed., Ph.D., and Ed.D. degree programs. According to the Calendar the M.Ed. was a course-based program while the M.Sc. and M.A. were thesis-based (University of Calgary Calendar, 1999, p. 60). Doctor Clark explains that the reason why there were multiple masters' level degree types was historical in nature:

> Educational technology in the Division is a merger of the Computer Applications Program that once existed in Educational Psychology, and the Educational Media/Instructional Design program that once existed in Curriculum and Instruction. Educational Psychology offered the M.Sc. and Curriculum and Instruction offered the M.A.

The merge into educational technology brought together people and tools under one program. As indicated by Doctor Kopp, "The program evolved a lot like Rogers' diffusion of innovation model. We started off with the self interests and tools." The merge brought together resources and people with different areas of expertise. According to Doctor Crichton,

> How we got so big here was Michelle, Bruce, and Bill had applied for access money to build our program and the engaged in some really strategic hiring because the person who came right after me, Doctor Kopp, who brought a lot of interesting industry work and instructional design back-ground, virtual reality stimulation, those kinds of things and then each of the hires after that – to the point we are at now – brought a very specific focus and energy to the program with the very organized view from those original three people, that people were not to overlap, they were to be complimentary but hold a particular stake in a domain within educational technology.

In terms of degree requirements, the M.A. and M.Sc. were research degrees requiring the completion of nine credits of coursework, a master's thesis and oral examination. The M.Ed. was a course-based degree a minimum of 36 credits of coursework and the completion of an oral examination. According to the Calendar, all master's-level degree programs required the completion of one course in educational research along with a course, Conceptualizing Educational Technology, which was a seminar to familiarize students with the terrain of educational technology (University of

Calgary Calendar, 1999, p.60). All master's level degrees offered a variety of electives (See Appendix E).

Doctoral specializations in educational technology had two different orientations and target groups of students. As found in the University of Calgary Calendar (1999), the Ph.D. was intended to "prepare university-based scholars for careers in research and teaching" and the Ed.D. degree was intended for "practicing professionals in an educational institution" (p.61). Doctoral level degree programs required the completion of a doctoral seminar, a comprehensive examination, doctoral thesis (or equivalent), a required course and electives (See Appendix E).

Up until 2006, the development of educational technology programs at the University of Calgary was characterized by Doctor Clark as a continual challenge. He states, "In thinking of my time here at the University of Calgary, we probably had four peaks in the last twenty years where the government wanted to transform institutions. Expectations get created beyond what can be delivered and everyone does their best to rise to the occasion." In 2006, the Division of Educational Research had nine full-time educational technology professors listed: Doctor Michele Jacobson, Doctor Susan Crichton, Doctor Bruce Clark, Doctor Randy Garrison, Doctor Eugene Kowch, Doctor Qing Li, Doctor Jennifer Lock, and Doctor Hanan Yaniv. The addition of educational technology faculty members in recent years demonstrates growth. In terms of major developments, the combination of dedicated core faculty members, the gradual growth of available funding, and additional faculty hiring contributed to the remarkable growth of educational technology degree programs at the University of Calgary.

In summation, the underlying drivers of program development in educational technology at the University of Calgary was connected to its historical development within the university. According to Doctor Clark,

> I think one of the major historical influences on the nature of the educational technology program had less to do with national roots and much more to do with the fact that it was housed in the Department of Curriculum and Instruction rather than in the Department of Educational Psychology. Even though the Computer Applications Program was in Educational Psychology, the lasting influence in GDER has been Curriculum and Instruction.

Students.

The educational technology programs at the University of Calgary are offered within the Graduate Division of Educational Research and cater to a broad student body with interests in the public and private sectors, as indicated in the Calendar:

> The programs are designed for scholars, professionals and researchers including: teachers in primary and secondary schools, school administrators, post-secondary educators and administrators, community development educators, adult and lifelong-learning educators, health educators, training professionals, educators in public service and government, professionals in community rehabilitation (Graduate Division of Educational Research, 2006).

Students taking the M.Ed. specialization in educational technology are trained to manage the application of technology within education and training. The M.Ed. program is available on campus and online. Students taking the M.A./M.Sc. specialization in educational technology are trained to become researchers in the field. In particular, the diversity of the educational technology programs caters to students wishing to focus on areas in demand within the job market like instructional design. Doctor Clark explains,

> What has happened with the onset of free trade and western corporations being increasingly taken over by people south of the border is that trading models and expectations from south of the border are coming in. Consequently, there is a much greater interest in instructional design now as a field than there was twenty years ago. It has been great for us since there has been a steady flow of our graduates into the job market. That is, in part, a result of the change in the market forces.

Program philosophy.

When questioned on current philosophical influences, Doctor Clark indicates, "I'd have to say that non-Canadian influences are a mix of American, British, and European, with a touch of pragmatics coming in from Australia and New Zealand." Doctor Clark explains,

> The original computer applications program here was definitely aligned with the British, and the traditional educational technology program was aligned with the Yanks--simply a function of where the professors came from or at least studied. In

> form, our doctorate is more British in that it doesn't have much in the way of coursework attached and is mostly research associated with the dissertation.

The program philosophy within the graduate programs is also connected to faculty member perspectives and program offerings at the undergraduate level. Doctor Kopp reflects, "I think the program philosophy comes a lot from the undergraduate program in terms of its inquiry based, learner focused, and experiential approach. I think you will find differences among different faculty members, but I also think that it is part of the richness and diversity of our program." In a similar vein, Doctor Crichton remarks, "I think each of us now holds a wonderful point of view that our over-arching opinion would be technology as tool, technology as innovation, technology as enabler of inquiry." Moreover, the fact that the majority of faculty members were hired after 1997 reflects a program philosophy in a state of change. Doctor Crichton speculates,

> I would say that our program philosophy is evolving. I have only been here for four years and at the beginning there were only three professors. Today, I have eight colleagues that are full-time and two or three adjunct colleagues. I'd say we are yet to state what our philosophy is and we are still working on it.

Today's programs.

The Graduate Division of Educational Research offers graduate level programs in multiple degree types, namely, M.Ed., M.A., M.Sc., Ph.D., Ed.D. degrees in Educational Technology (Graduate Division of Educational Research, 2006). In 2006, educational

technology programs were largely unchanged from previous years. As was the case ten years earlier, educational technology was offered as a specialization in the M.A., M.Sc., M.Ed., Ph.D., and Ed.D. degree programs (University of Calgary Calendar, 2006). In terms of course offerings, all master level degree programs required the completion of a course in educational research and a course entitled "Conceptualizing educational technology." Doctoral students are required to complete the seminar for first year Ph.D. and Ed.D. students. The remaining courses for masters' and doctoral level students are selected from a list of electives (See Appendix E).

In terms of faculty and faculty areas of research interest, there are currently nine full-time faculty members with varying areas of research interest (See Appendix M). A high number of faculty members in educational technology allow various research agendas to be pursued that include "distance education, professional development, policy and leadership, adaptive technologies, problem solving, and gender issues. As indicated by Doctor Kopp, "We really have a broad range of expertise and it will be interesting to see where the combinations take us in the academic field." Doctor Clark adds, "At the moment, we have nine full-time faculty members, most of whom are young and whose skills complement each other. So it has been an interesting evolution and now we have enough faculty horsepower."

There are planned expansions in educational technology at the University of Calgary which reflect demands in education, but actual developments are still being discussed. As indicated by Doctor Kopp, "We are going to see changes in how we educate, how we train people, and how we work. At the University of Calgary, there are

plans for expansion but there are many issues, such as availability of faculty and the system that comes into play."

Conclusion.

It can be seen that educational technology programs at the University of Calgary initially spread across departments and evolved quickly from the 1980s to their current position within the Graduate Division of Educational Research. The lack of a single core philosophy, creation of multiple educational technology degree types, program funding increases, and faculty growth all contributed to the development of educational technology degree programs. In comparison to the other Canadian universities studied, educational technology programs at the University of Calgary have had the greatest positive growth in the last ten years in terms of program variety and faculty hiring.

University of Saskatchewan

The graduate program in educational technology (educational communications and technology) at the University of Saskatchewan was officially recognized in 1981, and continues in 2006. The program is salient in that it is the only surviving M.Ed. in Educational Technology in Canada. Like the University of Calgary, the University of Saskatchewan initially offered educational technology courses without degree programs. Its programs are unique, however, in that since their inception, they have moved repeated

among academic departments and units. In the late 1980s there was a departmental amalgamation of Educational Communications, Continuing Education and Vocational Education, followed by an expansion of course offerings within the M.Ed. in Educational Communications and Technology. Beginning in 2000, programs were also nurtured by the establishment of a university teaching and learning centre along with the creation of a new position called the Associate Vice President of Educational Communications and Technology. These developments provided educational technology services and increased attention to the role of technology in Higher Education. A timeline of key events in the development of educational technology appears in Table 6, followed by an in depth discussion. These are based on based on interviews with two faculty members and supporting documentation. [15] The first interviewee, Doctor Barry Brown, [16] was the

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[15] Reviewed documents included University of Saskatchewan Archives (2005), University of Saskatchewan Calendar (1968 to 2006), University of Saskatchewan Facts(2006), University of Saskatchewan Graduate Studies Educational Communications and Technology (2006),University of Saskatchewan Instructional Development Committee Reports (2005), University of Saskatchewan Teaching and Learning Centre (2005).

[16] Doctor Brown has over forty years of experience teaching in a number of areas including, audio visual instruction, educational film and television, organizational management, and the administration of media systems. Doctor Brown worked extensively as a consultant for the Saskatoon Board of Education, Saskmedia and Department of Continuing Education, and the Saskatchewan Newstart Incorporated. He has extensive service experience on university committees and advisory boards connected

founding faculty member of the M.Ed. program and the senior faculty member when it was created, while the second, Doctor Richard Schweir,[17] was the program coordinator in 2006 and was selected to represent a current senior faculty member. A timeline of key events in the development of educational technology at the University of Saskatchewan appears in Table 6.

Table 6: Timeline of Key Events in the Development of Educational Technology at the University of Saskatchewan

Date	Event
1964	Doctor Brown help set up the Division of Audio Visual Services at the University.
1968	The Department of Educational Communications and Technology was created by the University.
1970	The Education Building was constructed with state-of-the-art facilities.
1973	The Department of Educational Communications and Technology became the Department of Educational Communications.

to educational technology including, Audiovisual Committee of Council, advisory to the Division of Audiovisual Services, Instructional Development Committee of Council, and the University Representative Council. Research interests include instructional development, distance education, and telecommunications.

[17] Doctor Schwier teaches in a number of areas including: Instructional design, theory and philosophy of educational technology, multimedia design, media literacy. He researches the role of educational technology in education and society, instructional design, visual design, technology-supported learning environments and virtual learning communities. Doctor Schwier has served on multiple review boards including *Educational Technology Research and Development*, *Educational Technology and Society*, and the *Canadian Journal of Educational Communication*. Doctor Schwier has published over one hundred scholarly articles and was a past editor for the *Canadian Journal of Educational Communication* (1990 to1993).

1970s (late)	There was an increase in faculty numbers.
1979	Media Studies for Teachers, and Individual Study in Communication were added to the undergraduate course offerings.
1981	The master's degree in educational technology (educational communications and technology) was established by the University.
1989	There was a departmental amalgamation of three departments: Educational Communications, Continuing Education and Vocational Education.
1989	The master's degree in educational technology expanded course offerings.
1993	The Department of Vocational, Continuing, and Adult Education dissolved due to frozen budgets.
1993	Decisions were made resulting in Continuing Education and Communications moving into separate departments.
1993	The master's degree program in educational technology was resituated in the Department of Curriculum Studies.
2000	The Gwenna Moss Teaching and Learning Centre was established and reported to the Vice-President (Academic).
2001 (verify)	The University created the Associate Vice President of Educational Communications and Technology to bring attention to the role of technology in higher education.
2006	The Curriculum Studies Department had four faculty members specializing in educational technology.

Origins: The influence of Prof. Barry Brown

According to Doctor Schwier, "At the University of Saskatchewan Doctor Barry Brown is the person who made it happen here. He was the educational technology program here. He built it from the ground up." Due to his air force training in electrical engineering, Doctor Brown became the first chief television engineer for the University of Saskatchewan. He set up the Division of Audio Visual Services in 1964.

By 1968, Doctor Brown was working in the College of Education. At this time, he was asked to create a Department of Educational Communications and Technology. According to Doctor Brown, "I was hired in 1968 and taught a couple of classes within the College of Education." The first courses offered included Communication and

Educational Technology, Audiovisual Production, and Introduction to Motion Picture and Television Production. As indicated by Doctor Brown, "From 1968 to 1973, we were a program and then became a department. In 1973, we achieved the status of the Department of Educational Communications."

Early program details.

In 1970, the Education Building was constructed. It contained standard classrooms, special rooms, and a lecture theatre with a seating capacity of over 300. The education building was equipped with a number of centres. In addition to a science instruction centre and a physical education centre, there was also the Instructional Resources Centre, and the Education Television Centre. As stated in the University Archives,

> The Instructional Resources Centre contains a Reserve Library initially of 10,000 volumes with study space for 400 students, a Curriculum Library of 2,000 volumes with study space for 300 students, and an Instructional Resources Laboratory. The Education Television Centre in the building includes two small production studios, a conference room, a photographic dark room and laboratory, a large storage room, a graphic arts area and a mobile production unit garage (University of Saskatchewan Archives, 2005).

It was here that the University of Saskatchewan's educational technology degree program was first offered.

In 1975, additional courses were added to the undergraduate course offerings, namely, Still Photography in Education, Organization and Administration of Media Centres, Advanced Cinematography in Education. By the late 1970s, Doctor Phil Hummel, Doctor Richard Schwier and Doctor Leonard Proctor were added as faculty members. In 1979, Media Studies for Teachers, and Individual Study in Communication were added to the undergraduate course offerings. The undergraduate inclusion of educational technology courses remained relatively constant with no graduate course offerings available. As indicated by Doctor Schwier,

When I came here [University of Saskatchewan] in 1978, there was largely an undergraduate focus with a number of elective courses in the undergraduate program. And then, for a period of time there was one required educational technology course in one of the programs. But over time, the undergraduate focus remained the same--fairly minimal with a concentration on using media in the classroom, producing media, and some media literacy.

Founding of a master's program.

In 1981, the Master's of Education (thesis) in Educational Communications and Technology was first offered in the Department of Educational Communications and Technology (See Appendix F). In 1989 there was a departmental amalgamation of three departments, Educational Communications, Continuing Education and Vocational Education. According to Doctor Schwier:

> We were a very small department. Therefore, we were vulnerable. Budget cuts were happening and things like that. As a result, we welcomed the opportunity to join with Continuing Education. There was a small group for what would now be called "The Practical and Applied Arts" but was then called Vocational Education. These were three smaller departments amalgamated into one.

M.Ed. students.

The M.Ed. in Educational Technology was designed to be flexible to accommodate students with diverse schedules. As stated by the University of Saskatchewan Graduate Studies Educational Communications and Technology,

> Our program caters to students who want to pursue studies part-time or at a distance. Several of our courses feature a combination of online, weekend and guided independent learning opportunities for students who require flexible scheduling. We also include courses from other excellent institutions in programs for our students (University of Saskatchewan Graduate Studies Educational Communications and Technology, 2006).

Graduates from the M.Ed. in Educational Communications and Technology have opportunities to work in distance education, instructional design, training, educational television, media education and computer-based learning. As indicated by the University of Saskatchewan Graduate Studies Educational Communications and Technology (2006),

"Our graduates have followed careers in education, government, and corporate sectors, and some have started their own consultancies and businesses."

Program philosophy.

From the 1960s onward the underlying philosophy of the programming had an American influence with an emphasis on instructional design and development. Doctor Brown, Doctor Schwier, and Doctor Proctor did doctoral degrees at Indiana University. In terms of program direction, the orientation of program at the University of Saskatchewan was multidisciplinary in nature:

> Educational technology is multidisciplinary in nature, applying learning theory to the design of learning environments, the development of educational systems, and the improvement of educational communication through the appropriate use of resources (University of Saskatchewan Graduate Studies Educational Communications and Technology, 2006).

As the excerpt indicates, the graduate program is an M.Ed. program catering mainly the education sector, yet there is a broad multidisciplinary orientation that is valuable for areas within and outside education.. This reflects the philosophy informing educational technology at the University of Saskatchewan throughout its history.

Program evolution.

In 1989, the M.Ed. in Educational Communications and Technology expanded course offerings (See Appendix F). In 1993, there was a departmental dissolution. Doctor Brown recollects, "The Department [Department of Vocational, Continuing, and Adult Education] flew apart because of frozen budgets." Consequently, the graduate program was resituated in the Department of Curriculum Studies. Decisions were made resulting in Continuing Education and Communications moving into separate departments. As indicated by Doctor Schwier, "We were moved into Curriculum Studies at that time, and this coincided with a major undergrad program change where they concentrated on some of the things we were doing." According to the 1994 Calendar, the list of courses included, Historical and Theoretical Foundations of educational technology, Principles and Practices of Authoring Interactive Instruction, distance education Theory and Practice, Designing Materials for Individualized instruction, Organization and Administration of Media Centres, Advanced Cinematography in Education, Television in Education, Use of Media as an Aid to Cross-Cultural Communication, Adult Basic Education, Individual Reading- Special Problem in School Subjects, and the Seminar in Curriculum Research.

After the department was dissolved in 1993, the M.Ed. in Educational Communications and Technology was able to develop new course offerings. As indicated by Doctor Schwier,

In the 1990s, the undergraduate program was becoming so restricted and we saw an opportunity to just move almost entirely into a graduate program. It just made sense and there wasn't a strong graduate program. Ours was there but we really hadn't concentrated

on building it. And so as a group we decided to introduce three new courses and to build a stronger graduate program intentionally.

In 1994, online course options were available through a program called "The Technology Enhanced Learning Portfolio." Doctor Brown remembers, "We started early with online courses. My first course online was called "Distance Learning: Tools and Strategies." In 1994, this was our first course online." This was made possible through a province-wide government initiative. As mentioned by Doctor Schwier,

> There is a Campus Saskatchewan now where all of the post secondary institutions in the province are trying to build courses that are available centrally and online and as part of that effort, we've taken several of our grad courses and we've built them in distance learning formats. We've been exploring various blended approaches combining face-to-face learning with distance learning and a variety of interactive things online.

In 2001, the University of Saskatchewan created a new position to bring attention to the role of technology in Higher Education. Doctor Brown explains, "The whole area of educational communications has enjoyed a steady growth since 1973 with a much-expanded role. In our case, we created a position called Associate Vice President of Educational Communications and Technology. That is a recognition that occurred three years ago."

Faculty members have been actively involved through affiliations with university service centres and committees. Doctor Schwier notes, "We have done everything from peer consulting through our Gwenna Moss Teaching and Learning Centre to guest

lecturing in teaching courses in higher education to open door initiatives where other professors can come in and sit in on our classes and watch them." In 2000, the Gwenna Moss Teaching and Learning Centre was established and reported to the Vice-President (Academic). The Centre, "offers programs, services, and resources to encourage, enhance, and support teachers, teaching and the scholarship of teaching and learning at the University of Saskatchewan (University of Saskatchewan Teaching and Learning Centre, 2005).

Educational technology faculty members have also participated in a number of technology and teaching related committees from 1968 to 2006. For instance, the Instructional Development Committee was established in1994 to improve the quality of instructional programs through research and evaluation of university teaching (University of Saskatchewan Instructional Development Committee Reports, 2005). Doctor Brown indicates,

I have been on the technology committees at the University since 1968 as chair of the Division of Audio Visual Services Academic Committee. I was the first chair of the Academic Support Services Committee for the University. This was the amalgamation of the Division of Educational Media and Technology, Informational Technology Services, and the library. That brought completely separate departments together. This has helped weld the area of informational technology into a more coherent mass than it was before.

In 2006, the Curriculum Studies Department had four faculty members specializing in educational technology, namely Doctor Barry Brown, Doctor Larry Proctor, Doctor Richard Schwier, and Doctor Dirk Morrison. There were two Educational

Communications and Technology programs of study, Post Graduate Diploma (PGD), and the Master's of Education (thesis and non-thesis options). The Post Graduate Diploma (PGD) was a thirty credit diploma discontinued in 2005 (University of Saskatchewan Graduate Studies Educational Communications and Technology (2006).

In terms of faculty and faculty areas of interest, there are currently four full-time faculty members with varying areas of research interest (See Appendix M). From the mid-1990s to 2006, one major area of research interest revolved around aspects of online learning. As Doctor Schwier indicates, "More recently we've become involved in Communities of Practice, virtual learning communities and how they can be fostered, and instructional designers as agents of social change."

Current program details.

The College of Education offers an M.Ed. in Curriculum Studies with a focus in educational technology. The M.Ed. program offers theoretical and practical experiences culminating in a scholarly project or research thesis. The M.Ed. degree (thesis option) requires a minimum of twenty-one credits of graduate level coursework and a thesis (University of Saskatchewan Graduate Studies Educational Communications and Technology (2006).

In terms of program enrolment, there were thirty-five students in the M.Ed. program in the 2005 to 2006 academic year, thirty part-time students and five full-time students. In 2006, the M.Ed. (thesis) program provided "theoretical and practical experiences culminating in a major research thesis. The M.Ed. degree requires a

minimum of twenty-four credit units of graduate level coursework and a thesis supervised by a faculty member in the program and a committee (University of Saskatchewan Graduate Studies Educational Communications and Technology, 2006). Courses are offered in a variety of areas (See Appendix F). A proposal for a doctoral program submitted to the University in 2002 awaits approval. Doctor Brown explains,

> At the University of Saskatchewan we have a doctoral program outline in a document in the College of Graduate Studies. The only hold up is that they do not feel we have the human resources and funding to handle another graduate program in conjunction with what we are doing now in the master's area. That has been frozen for three years. We could move with a program but there is a freeze on faculty hiring.

Conclusion.

The M.Ed. in Educational Technology emerged from the influence of faculty expertise, university support, and an ongoing student need for a technology focused masters degree in Education. The development of educational technology service units and active participation from educational technology faculty on university committees for technology within the university have also helped nurture the program. Educational technology courses and other educational technology related developments began in the late 1960s. The M.Ed. program in Educational Technology was officially recognized in 1981. Between the 1990s and 2006 the educational technology degree programs continues to flourish, with a proposed doctoral program awaiting approval.

University of Alberta

The University of Alberta was founded in 1906 with a campus bordering the North Saskatchewan River in Edmonton. While the act establishing the university was passed in 1906, the president, first classrooms and students did not appear until 1908. The graduate program in educational technology (M.Ed. in Instructional Technology) was recognized in 1994 but was then suspended in 2005. To learn more about the educational technology (instructional technology) program offered within the Faculty of Education, I interviewed Doctor Craig Montgomerie[18], one of the founding faculty members of the program and Doctor David Mappin[19], the current program coordinator. I also examined

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[18] Doctor Montgomerie received an M.Ed. in Educational Administration from the University of Alberta in 1973 and a Ph.D. from the University of Alberta in 1981. He began working as a program analyst from 1967 to 1968. He began teaching in the Department of Educational Administration from 1978 to 1981. He taught in the Department of Educational Administration at the University of Alberta from 1978 to 1994 and in the Department of Educational Psychology from 1994 to 2006.

[19] Doctor Mappin received an M.Ed. in Educational Administration from the University of Alberta in 1986 and a Ph.D. from the University of Alberta in 1996. He began working at the University of Alberta Audiovisual Media Centre in the Faculty of Education from 1965 to 1967 and from 1970 to 1994 (Centre renamed Instructional Technology Centre in 1982). From 1994 to 1996, he served as a Multimedia developer and researcher within the Division of Technology in Education. From 1996 to 2006, he taught as an associate

curriculum vitae from faculty participants and supporting documentation[20]. These sources reveal that although academic aspects of educational technology were present at the University of Alberta as early as the 1960s, the Master's program was not formalized until the 1990s. Failed attempts to sustain centralized service units for educational technology from the 1980s to 2006 meant that these did not provide adequate resources and expertise for academic program development, as was the case at other universities. The slow start of the programs combined with the failure of service units to provide external support for the program illustrate the lack of widespread acceptance of educational technology on the campus, which led ultimately to the program's demise in 2006. These developments are summarized in the timeline found in Table 7.

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professor within the Department of Educational Psychology and acted as Coordinator of the Instructional Technology Program from 1997 to 2006.

[20] Documentation reviewed included, Learning first: An agenda for technology integration at the University of Alberta (1996), Rural Advanced Community of Learners (2005), Technology in Learning Executive summary (1995), University of Alberta Archives (2005), University of Alberta Department of Educational Psychology (2006), University of Alberta Division of Technology in Education (2006), University of Alberta E-Learning Report (2005), University of Alberta Faculty of Education (2006), University of Alberta GFC Policy Manual (2006), University of Alberta Faculty of Education Report (2002), University of Alberta Instructional Technology (2006), selected University of Alberta Calendars (1995 to 2006), University of Alberta University Secretariat (1994), and University of Alberta Senate Task Force (2005).

Table 7: Timeline of Key Events in the Development of Educational Technology at the University of Alberta

Date	Event
1960s (early)	The Department of Secondary Education offered programming in audiovisual communications and teaching.
1960s (early)	A program developed in audiovisual communications and research into teaching using television.
1960s to Present	The University has never created a unified service centre for instructional support.
1963	The Audiovisual Media Centre was established within the Faculty of Education to offer audiovisual materials, equipment and services in Education.
1969	Faculty in Educational Psychology expressed interest in getting an IBM 1500 into the Faculty of Education.
1969	The University purchased the first IBM 1500 for academic purposes in Canada.
1970s	The Department of Educational Psychology was at the nexus of computer related developments in instructional technology and graduate level training for pioneers in educational technology.
1970s	Doctor Steve Hunka pioneered CAI research in Alberta.
1973	Founding of Alberta Educational Communications Corporation (ACCESS) which provided educational broadcasting to rural areas of Alberta.
1980s	Efforts to create centralized service centres at the university level were not successful.
1982	The Audiovisual Media Centre was combined with the Curriculum Materials Preparation Area in the Faculty of Education to form the Instructional Technology Centre.
1980s (mid)	The Instructional Technology Centre ran the teleconferencing bridge for the University.
1990s (early)	The University undertook departmental restructuring which aimed at equalizing department sizes.
1990s (mid)	The ATL Partnership Program promoted the creation of instructional CD-ROMs and course Web sites.
1990s	The underlying conditions for creating a formalized instructional technology program were established by bringing together individuals from three departments within the Faculty of Education.
1994	The Division of Technology in Education (DTE) was established in the Faculty of Education.
1995	The master's degree in educational technology (Instructional Technology) was established in the Department of Educational Psychology.
1996	The University created the Academic Technologies for Learning (ATL) to promote multimedia production.
1996 to 2005	ATL services moved away from multimedia production and Web development to focus on designing blended learning environments.
1999	The M.Ed. in Instructional Technology was divided into two streams, multimedia development specialist stream and the school technology coordinator stream.
2005	The M.Ed. in Instructional Technology was suspended.

2005	Due to the restructuring of University e-learning support units, ATL closed.
2000 to 2006	Educational Technology faculty retired, cutting their numbers almost in half.
2006	A moratorium was placed on the M.Ed. in Instructional Technology.

Limited external support.

Centralized service centres do not exist at the University of Alberta. In 1963, the Audiovisual Media Centre was established within the Faculty of Education to offer audiovisual materials, equipment and services in Education. The early coordinators were Mr. John Fritz (1963 to 1965). Mr. Wayne Dralle (1965 to 1969), and Mr. Kenneth Bowers (1969 to 1982). Doctor Mappin recollects that,

> From the 1960s to present time, the university never had a unified service centre for instructional support. It was always fragmented. Parts of it were in the Technical Services Division. Parts of it were attached, at least for a while, to the vice president's office. Bits of it were in computing network services. There was even a spin-off radio and television department for a while that was independent.

Beginning in 1973, educational technology faculty at the University were involved in educational broadcasting and the production of educational programs with the founding of Alberta Educational Communications Corporation (ACCESS). Although ACCESS was an important development in providing educational broadcasting across the province, there was no evidence of a strong connection between ACCESS and educational technology academic or service units at the University of Alberta.

During the 1980s and 1990s, efforts to create centralized service centres at the university level were not successful. In 1982, the Audiovisual Media Centre was combined with the Curriculum Materials Preparation Area in the Faculty of Education to form the Instructional Technology Centre and Doctor Mappin was appointed director (University of Alberta Archives, 2005). In the mid-1980s, the Instructional Technology Centre ran the teleconferencing bridge for the university. Doctor Mappin explains, "In the early 1990s, there was an effort from the person in charge of the instructional support system to leverage that into a centralized support unit for the entire university but it failed." In 1994, the Division of Technology in Education (DTE) was established in the Faculty of Education to provide instructional technology services in support of the instructional and research activities.

In 1996, the University of Alberta created the Academic Technologies for Learning (ATL) with the mandate to support faculty use of technology in their teaching. Main areas of activity included project development, instructional materials production, program evaluation, and training. In the mid-1990s, the ATL Partnership Program promoted the creation of instructional CD-ROMs and course Web sites. Over time, ATL services moved away from multimedia production and Web development to focus on designing blended learning environments, conducting applied research on teaching and learning with technology and offering professional development sessions for instructors. Due to the restructuring of University e-learning support units, ATL closed in March 2005 (University of Alberta E-Learning Report, 2005).

Origins: A program without a home.

The emergence of the instructional technology program at the University of Alberta can be traced to developments in multiple departments. In the early 1960s, the Department of Secondary Education offered programming in audiovisual communications and teaching. It is worth noting that this program graduated a large number of masters' and doctoral level students in audiovisual communications (Doctor David Mappin, Personal Correspondence, May 1, 2006). As indicated by Doctor Mappin,

> The people in Secondary Education were interested in teaching in classrooms and research on that. That resulted in a program in audiovisual communications and research into teaching using television. We had one of the first videotape machines for education in Canada. We had a mobile truck with three cameras as early as 1965.

The early professors from Secondary Education in audiovisual communications were recruited within three years of one another and came from Indiana University. Concurrently, there were people in the Educational Psychology Department working on computer applications in education. Doctor Mappin explains,

> There was another group in Educational Psychology interested in getting an IBM 1500 into the Faculty of Education. A number of individuals like Doctor Hunka, Doctor McGuire, Doctor Romaniuk, and Doctor Montgomerie developed 1500 IBM Coursewriter II software and did a lot of important research in that area.

In the 1970s and 1980s, the Department of Educational Psychology was at the nexus of computer related developments in instructional technology and graduate level training for pioneers in educational technology. This as largely due to the work of Doctor Hunka, who pioneered CAI research in Alberta (Hunka, 1972). Doctor Montgomerie wrote a number of programs for the IBM 1500 in association with Doctor Hunka from this Department. According to Montgomerie:

> There were graduate students interested in instructional technology as an area of educational psychology. There were a number of people that finished a Ph.D. in educational psychology when their area really was educational technology and learning. Pioneers in educational technology like Doctor Romaniuk and Doctor Westrom took their doctorates in educational psychology, which was really a degree in some kind of instructional psychology and computer based education.

In the mid-1990s, the underlying conditions for creating a formalized instructional technology program were established by bringing together individuals from three departments within the Faculty of Education. This was partly a result of administrative interests in reorganizing the Faculty of Education. As maintained by Doctor Montgomerie,

> In the early 1990s within the university, it was not possible to have small departments and big departments. The university decided that everyone had to be the same size and they made changes. First, the School of Library Studies came within the Faculty of Education. Secondly, some of the small departments got merged together and the Department of Educational Administration and the Department of Foundations got

merged together and the Department of Adult and Vocational Education for broken up and spread across other departments. So there was a major reorganization within the Faculty and through this all, the IT people came together.

At the time the Faculty of Education was reorganizing itself, a group of faculty members put a proposal forward which resulted in the creation of the M.Ed. with an instructional technology specialization. Doctor Montgomerie reflects,

In about 1995, the dean looked at all the people in educational technology. There was a small group in adult education. There was myself in educational administration and there were Doctor Hunka and Doctor Romaniuk in educational psychology. The dean was looking at reorganizing the faculty and we put a proposal forward to bring us all together and have a specialization within the Department of Educational Psychology.

In 1995, the M.Ed. specialization in Instructional Technology was created in the Department of Educational Psychology. Doctor Montgomerie, Doctor Romaniuk, Doctor Wright, and Doctor Szabo were full-time faculty working within the program. Doctor Mappin was half-time in this program and half-time in the Department of Educational Policy Studies. In terms of program requirements, the M.Ed. in Instructional Technology program required a minimum of thirty credits at the graduate level including one required course (Introduction to Methods of Educational Research), additional courses as required by the advisory committee (See Appendix G), and the preparation and defence of an approved thesis or major project (University of Alberta Calendar 1999, 377). The instructional technology program was designed for students who were, "professionals

holding an approved four-year degree in education or related field with a successful career background. The minimum admission requirements for the M.Ed. was an undergraduate degree" (University of Alberta Calendar 1999, 377). In 1999, the M.Ed. in Instructional Technology was gradually divided into two streams, namely multimedia development specialist stream and the school technology coordinator stream. The decision to proceed, the development of the web-based courses, and the changes and refinements to the wording in the calendar happened over a two or three year period (Doctor David Mappin, Personal Correspondence, May 1, 2006). Students following each stream were required to take five (later six) required courses and a selection of course electives (See Appendix G).

In summary, educational technology programs at the University of Alberta appeared to have evolved from the 1960s to 2005 through educational technology developments outside the programs, which contributed resources, expertise, and research opportunities that nurtured program development. Program development fluctuated between the 1990s and 2005 when there was a reduction in the number of educational technology faculty members and limited support from educational technology developments outside the program within the university. This led to the program's suspension in 2005. The lack of centralized educational technology service units combined with the ongoing challenge of scattering educational technology courses between academic departments led to the eventual suspension of the program. The only other university within this study to suspend educational technology programs was the University of Montreal. Unlike the University of Montreal, the suspension of the

educational technology program at the University of Alberta was not influenced by university cutbacks in funding.

Students.

Within the Department of Educational Psychology, a diverse set of student interests are represented. According to the Department website, "Recent graduates of the department are employed in Canada and abroad, in a variety of settings, including universities, colleges, school boards, government agencies, hospitals, industry, clinics, and in the private practice of psychology" (University of Alberta Department of Educational Psychology, 2006). In particular, the M.Ed. in Instructional Technology prepared students for work as school technology program coordinators and professional developers of multimedia products. The program was broad in scope to provide students opportunities work in a variety of work settings including," elementary and secondary education, postsecondary education, private sector training and human resource development, government, and the military" (University of Alberta Instructional Technology, 2006).

Current program status.

By the beginning of 2006, Doctor Romaniuk and Doctor Szabo retired, leaving Doctor Mappin and Doctor Wright as full-time faculty members in the instructional technology area and Doctor Montgomerie is an emeritus faculty member. It is worth noting that Dr. Carbonaro was also associated with the instructional technology program

since the late 1990's and is currently working with the Dean's office to develop a distance education program (Doctor David Mappin, Personal Correspondence, May 1, 2006).

Subsequent to the program's suspension in 2005, the Faculty of Education placed a moratorium on admissions to the M.Ed. the following year. According to the official statement provided on the program's website, the moratorium was imposed not to end the program altogether, but rather to redirect it "pending program revisions" (University of Alberta Instructional Technology, 2006).

In addition to the M.Ed. specialization instructional technology, a recent trial doctoral program specialization in instructional technology also now has a moratorium on new admissions. Doctor Mappin indicated, "I have had about ten doctoral students in a program on a trial basis but we have also had a number of retirements and people on sick leave with no replacements. We have a moratorium on admitting new students at the masters and doctoral level."

According to Department of Educational Psychology website, "The Ph.D. programs in the Department are designed to educate scholars, researchers, educational consultants, and clinicians." No further information on the Ph.D. specialization in Instructional Technology was available on the website (University of Alberta Department of Educational Psychology, 2006).

In terms of faculty and faculty areas of research interest, there are currently three full-time faculty members with varying areas of research interest (See Appendix M).

Conclusion.

To conclude, before its inception in the 1990s, the educational technology degree program was nurtured through educational technology course offerings and educational technology developments within University of Alberta from the 1960s to 2005. Most recently, in 2005, the degree program in educational technology was suspended with no changes occurring in 2006. The program lacked support within the university as well as a department to host it. Consequently, the program had a late start. Within this context, the program proved unsustainable, leading to the moratorium. These events affected the development of educational technology in Canada by removing the educational technology graduate degree from a Canadian university with a history of educational technology development spanning almost 40 years.

Chapter Conclusion.

As seen in this chapter, educational technology programs in Canada are diverse and unique in their development and current state. This chapter profiled the following Canadian universities offering master and doctoral programs in educational technology: Concordia University, Laval University, the University of Montreal, the University of British Columbia, the University of Calgary, the University of Saskatchewan, and the University of Alberta. Basic program information from the seven universities profiled is summarized in Table 8.

Table 8: Canadian Universities with Traditional Graduate Programs

Institution	Degrees	Title	Credit	Thesis	Project	Years of

			s			Operation
Concordia	M.A.	Educational Technology	60	yes	yes	39
	Ph.D.	Educational Technology	90	yes	no	26
Laval	M.A.	Technologie éducative	45	yes	yes	31
	Ph.D.	Technologie éducative	90	yes	no	22
University of Montreal	M.A.	Technogie éducationnelle	45	yes	yes	30*
	Ph.D.	Technogie éducationnelle	90	yes	no	14*
University of Calgary	M.A./M.Ed./ M.Sc.	Educational Technology	45	yes	yes	13
	Ph.D./Eddy	Educational Technology	90	yes	no	13
University of British Columbia	M.E.T.	Educational Technology	30	no	no	5
	M.A.	Technology Studies Ed.	45	yes	yes	11
	Ph.D.	Technology Studies Ed.	90	yes	no	1
University of Saskatchewan	M.Ed.	Educational Communicati ons and Technology	42	yes	yes	26
University of Alberta	M.Ed.	Instructional Technology	42	yes	yes	12*

*Denotes suspended or discontinued programs

Table 8 illustrates how there is no one standard type or variety of educational technology degree program across Canadian universities studied. More universities offer

M.A. programs than M.Ed. or M.Sc. programs and almost all universities studied with ongoing programs have a Ph.D. program or are in the planning stages of a Ph.D. program as is the case with the University of Saskatchewan. The titles of programs also vary from university to university. It is also interesting to note that there is no standard number of degree program credits for master's level degree programs, which vary from 30 to 45 credits. Thus, universities vary greatly in terms of years of operation, as well as the degree types and program titles. This is analyzed further in Chapter 6.

Chapter Five - Canadian Universities with Blended and Online Programs

About the Chapter

This chapter profiles Canadian universities offering blended or online programs in educational technology. The chapter is divided into five parts, each of which explores one of the following universities: Acadia University, Athabasca University, Memorial University, Royal Roads University, and the Tele-University of Quebec. For the purposes of this dissertation on the development of educational technology in the Canadian academic context, program and faculty data was sampled from Canadian university websites, university calendars and published documentation on the relevant graduate programs.

Athabasca University

In 1978, Athabasca University was granted self-governing status through the Alberta Universities Act and in 1984, it relocated from Edmonton to Athabasca. The graduate degree program in educational technology (Distance Education) was officially recognized in 1994 and continues in 2006. This section highlights how gradual developments from the 1970s onward led to the creation of the first Master's of distance education in Canada. From Athabasca's faculty, I interviewed Doctor Bob Spencer[21] and

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[21] After graduating with a Ph.D. in Psychology from the University of Kansas, Doctor Spencer took a job in a state mental hospital working as a clinical psychologist. In 1979, he was hired as a research assistant by Athabasca to investigate motivation and attrition

Doctor Jon Baggaley.[22] To capture information about the history of academic degree programs, I examined curriculum vitae from the faculty participants along with supporting documents.[23] The main findings are summarized in a timeline found in Table 9.

Table 9: Timeline of Key Events in the Development of Educational Technology at Athabasca University

Date	Event
1970s	The University was influenced by (and influenced) the Open University in the United Kingdom, both began at the same time and adopted the same course model.
1990s	The University began developing graduate level education.

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in distance education. After that, he became an instructional designer at Athabasca and developed materials for distance education. In 1994, Doctor Spencer became the program director of the Masters' in Distance Education.

[22] Doctor Baggaley completed a Ph.D. in Psychology from Sheffield University in 1972 and became a lecturer at the University of Liverpool in Communication Studies until 1979. In 1979, he moved to Canada to teach at Memorial University. He started at Concordia University in 1983 and remained there until 1996. In 1996, Doctor Baggaley left Concordia for Athabasca University when he was offered the post of Doctor of Educational Technology. At Athabasca, Doctor Baggaley acted as Chair of Educational Technology from 1996 to 1998 and continues as a professor of educational technology in 2006. Overall, the study participants represent both founding members and current senior faculty in the educational technology programs at Athabasca University.

[23] Reviewed documentation included, Athabasca University Calendars (1994 to 2006), Athabasca University Faculty (2006), Athabasca University Profiles in Research (2003), Athabasca University Strategic University Plan (1999), Athabasca University Research Centre (2006), Canadian Institute for Distance Education Research (2006), Athabasca University Educational Media Development (2006), Davis (2001)

1994	The University created the Centre for Distance Education.
1994	The online master's degree in distance education was established in the Centre for Distance Education. It was the first graduate program offered at the University.
1998	The Centre for Distance Education began planning a doctorate program in distance education which was received with mixed results.
1999	The Department of Educational Technology was created to be involved in experimentation and promotion of technological advances in education.
1999	The University created the Learning Accreditation Centre.
2001	The Centre hired two new faculty members.
2001	The University got two Canadian research chairs, one in distance education and another in e-learning.
2004	The Canadian Institute of Distance Education Research (CIDER) was created to promote distance education research.
2005	The University received accreditation from the United States for the Master's in distance education program, becoming the first Canadian university to be awarded such accreditation in the country.
2006	There continues to be a plan to initiate the first doctoral program at the University.

"Guinea pigs": The first graduate degree program at Athabasca University.

Although Athabasca University was created in 1970, its focus was primarily on undergraduate education. It was not until the 1990s that Athabasca University began developing graduate level education. In 1994, the Master's in Distance Education (MDE) was developed within the newly created Centre for Distance Education. Doctor Spencer indicates,

> The Centre for Distance Education was created when a new president came aboard. At the time, the faculty members were primarily Ph.D. faculty working in academia for ten to twenty years. The president thought we had more of a role in the university then holding faculty member hands. He created this centre with the mandate of

developing the MDE program and to continue providing instructional design workshops for new staff.

Before the MDE was created, a proposal was submitted to the provincial government and publicized in the university calendar. As explained by Doctor Spencer: In the beginning, we had a proposal to develop the MDE in the government's hands about a year or two before they approved it. The university put a statement in the calendar stating that the university had an MDE proposal and courses under development. We got a lot of phone calls and emails – perhaps 200 to 300 people over the course of the year who were interested.

In 1994, the MDE was offered for the first time. At the time of implementation, it was a forty-two credit degree with a thesis or project option. The curriculum for the program included of five required courses, five elective courses, and 12 credits of thesis or project (See Appendix I). Students enrolled in a thesis or project (12 credits) which provided, "an opportunity for synthesizing and applying what has been learned in the course work" (Athabasca University Calendar, 1994).

The creation of the MDE was not without its challenges. As indicated by Doctor Spencer, "The MDE was the first graduate program at Athabasca University so we were kind of the guinea pigs." There were also internal challenges revolving around the mandate of the university to overcome. Even the general idea of offering graduate education at Athabasca was an issue, according to Doctor Spencer "many faculties strongly believed and some still believe that Athabasca should not be doing graduate education because our mission and mandate is to provide undergraduate education."

Programs offered in the Centre for distance education were designed to focus on the use of technology at a distance. Doctor Baggaley indicates, "The CDE's graduate programs teach in some depth the general and specific techniques of educational media and their use at a distance." Because programs are offered at a distance, online teaching is a key concern for all programs. According to Doctor Baggaley, "At institutions like Athabasca and the Tele-university of Quebec [the Tele-university of Quebec], a professor stands or falls in every course, every student-teacher interaction, on his ability to teach via the media." This highlights unique challenges of teaching within distance education institutions as Doctor Baggaley recalls,

> When I went to Athabasca, I really wanted to test the waters in using and teaching about the media on a day-to-day basis. Athabasca gave me a deeper and enriched understanding of the techniques and logistic problems of teaching people via media in that ultimate challenging area of distance education.

Program philosophy: British roots.

The underlying philosophy of the Master's program in Distance Education can be traced to British influences and later to American developments. Doctor Baggaley indicates, "Athabasca University itself was heavily influenced by the Open University in the United Kingdom, and vice versa, since both began at the same time in the early 1970s, and adopted the same seven stage course development model." There was also an American influence as indicated by Doctor Baggaley, "Over the years, Athabasca University's Centre for distance education has maintained that approach, while also becoming more influenced by American graduate studies traditions (e.g. the emphasis on

large numbers of course credits)." British and American influences remained in 2006. Doctor Baggaley explains, "At present it is a harmonious balance between the two traditions, based on the fact that there is a roughly equal numbers of British and Americans in the core faculty."

External support.

External support from a major research centre for distance education established within the University combined with MDE program accreditation from the United States provide added research infrastructure and international recognition that is unique to Athabasca University. In terms of the relationship between the MDE program and educational technology related service units, there are multiple connections which can be traced back to the founding of Athabasca University. Doctor Baggaley indicates, "Over the 35 years of the University's existence, the support units have traditionally cycled between centralised and decentralised, depending on whether or not the individual departments feel comfortable in using the appropriate new media to develop their course materials for themselves." Students and faculty created connections between the service and academic side. Doctor Spencer explains,

> Several instructional designer/web designers are course takers in the MDE program or are actually students. Thus, MDE program servers a bit of professional development function. Also, faculty members, from time to time, hold seminars for staff on new educational technology that we are using.

In 1999, Athabasca University created a Learning Accreditation Centre to "co-ordinate and administer the processes for: challenge for credit, prior learning assessment, and accreditation of workplace and labour training programs" (Athabasca University Strategic Plan, 1999). The Centre provides a means for students to gain credit for non-formal learning and learning that has occurred through workplace or labour training programs (Athabasca University Calendar, 2006). Athabasca University received United States accreditation for the Master's in Distance Education program, becoming the first Canadian university to be awarded such accreditation in the country (Athabasca University Newsroom, 2006). The accreditation was granted in 2005 by the Middle States Commission on Higher Education (MSCHE) following international criteria for higher education. Although external to the educational technology degree program, the Learning Accreditation Centre provided the mechanism by which the program received accreditation. This gives the program with an international profile as a recognized distance education program.

In support of faculty and graduate student research, the Canadian Institute of Distance Education Research (CIDER) was founded in 2004. It is considered "the research arm of the Centre for Distance Education at Athabasca University."[CIDER, 2006] According to the CIDER website, their research scope is broad, ranging from learning and teaching application, financial and issues of access, the strategic use of technology in distance education settings, and other factors that may influence distance education in Canada (CIDER, 2006). In addition to research, CIDER also publishes the *International Review of Research in Open and Distance Learning (IRRODL)*, which is a peer reviewed e-journal concentrating on promoting research, theory and current

practices in open and distance education. In 2006, IRRODL had over 7,000 subscribers (CIDER 2006).

Creating the doctoral program.

In addition to master's level programs in distance education, there has also been a drive to create a doctoral program in distance education. This has been slow in developing at Athabasca over the past twenty years, partly for political reasons. According to Doctor Baggaley,

> Athabasca was defined by the provincial government to specialize in distance education without any overlap or competition with the three other conventional universities in the province. That is partly why doctoral programs have not developed here before now. It could be argued that the University of Alberta or the University of Calgary is doing comparable work at the doctoral level.

Finally, in 1998, the Centre for distance education began planning a doctorate in distance education which was received with mixed results. The major opposition occurred around 1998 when it was submitted for internal review. At the time, there was opposition on one major point; how could the university approve a doctorate in distance education when they were sure how the MDE was doing? This was further complicated by concerns over having enough faculty members to offer an additional program. As indicated by Doctor Spencer,

We tried to go forward with the doctorate prior to our external review of the MDE and the proposal was tabled until after the external review was submitted to the university. Another concern was over whether or not we had enough faculty members to do both the MDE and the doctorate along with whether or not we had enough research to support a doctoral program.

One major obstacle to the proposed doctorate was eliminated when Athabasca hired two new faculty members. In 2001, there was an increase in faculty numbers within the Centre for distance education. Doctor Spencer remarks, "Athabasca University got two Canadian research chairs, one in distance education for Terry Anderson and another in e-learning for Heather Kanuka. These positions were assigned to my faculty, which strengthened our numbers." There is optimism from within the Centre for distance education that the doctoral program will be approved, adding a new dimension to the Centre. Doctor Baggaley indicates, "It looks like our proposal for a doctoral degree in distance education is going to go through next year. That would make it so far as our research tells us the first doctoral program in distance education and delivered at a distance in the world."

Today's program.

In 2006, the MDE program admission requirements entailed a baccalaureate degree from a recognized post-secondary education institution or equivalent experience. According to the 2006 Calendar, the primary focus of the MDE program "is on the fields

of distance education and training—learning that helps students overcome the barriers of time and space" (Athabasca University Calendar, 2006). The MDE program caters to "students who currently work or aspire to work in distance education and training and whose personal commitments demand a flexible and accessible graduate-level program, may find Athabasca University's MDE program the path to a more rewarding career" (Athabasca University Calendar, 2006). All MDE courses are delivered at a distance and up to six credits of the required courses and up to 15 credits of elective courses can be transferred from other institutions (Centre for Distance Education, 2006).

In terms of program design, the MDE program is intended to, "provide all students with a common base of skills, knowledge, and values regarding distance education and training, independent of the students' special area of interest." In terms of program breakdown, the MDE is a 42 credit degree with a thesis, project, or course based option available. Students following the thesis route are required to take the five required courses, five elective courses, and 12 credits of thesis work. Students following the project route are required to take the five required courses, five elective courses, and 12 credits of project work. Students in the course-based route must take the five required courses and nine elective courses (See Appendix I). At the end of course work, a written exam and an oral defence must be passed. The purpose of the required curriculum is to "review current knowledge, theory, and practice in distance education and training" (Centre for Distance Education, 2006). According to the Centre for Distance Learning (2006), "required courses provide students with the skills and knowledge that will facilitate their understanding and ability to analyze, synthesize, evaluate, create, and implement distance education and training courses, programs, and systems." In terms of

faculty and faculty areas of research interest, there are currently nine full-time faculty members with varying areas of research interest (See Appendix M).

Conclusion.

To conclude, since its inception in 1970, Athabasca University has acted as a leading institution for distance education. First, prior to the creation of its MDE program in 1994, it provided distance education in many subject areas to students internationally when no other Canadian universities were able to do so. Secondly, Athabasca University created the first Master's degree in distance education in Canada, which set a benchmark for universities across the country. Most recently, Athabasca became the first university in Canada to become accredited in the United States. All of these developments contributed to the development of educational technology in Canada by offering the field a new direction in program development and delivery.

Acadia University

Acadia University was founded in 1838. Graduate programs in educational technology (Learning Technology) were officially recognized in 2000 and continue in 2006. This section reveals how the online Master's in educational technology (Learning Technology) emerged in 2000 from a traditional undergraduate university. It also explores how a university-wide educational technology initiative, the Acadia Advantage continues to provide technology resources and interest in the online master's degree.

From Acadia's faculty, I interviewed Doctor Gary Hepburn[24] and Doctor Gregory MacKinnon.[25] To capture information about the history of academic degree programs, I

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[24] Doctor Hepburn completed a Ph.D. at the University of British Columbia in 1997. He was hired by Acadia as an assistant professor in 1999. From 2001 to 2002, he was the Acting Director of the Division of Continuing and Distance Education. He was selected as a recent leader because of his instrumental role as a current faculty member and his leadership role in the Division of Continuing and Distance Education. Doctor Hepburn specializes in research focusing on the design and use of online educational environments (OEE), particularly in formal and informal learning environments.

[25] In 1988, Doctor MacKinnon received his Ph.D. from the University of Waterloo in Bioorganic Chemistry. He began teaching in the public school system after his Ph.D. Eventually, he moved over to teach education in a teacher's college where he taught required science courses at the undergraduate level. At Acadia, he was the Coordinator of the Technology Education Program and is currently an associate professor in the School of Education. Doctor MacKinnon has research expertise in science curriculum development, the impact of instructional technologies on classroom instruction, and constructivist approaches in the classroom and laboratory. Overall, the study participants represent both founding members and current senior faculty in the educational technology programs at Acadia University.

examined curriculum vitae from faculty participants, along with the supporting documentation[26]. Key events are summarized in a time-line found in Table 10.

Table 10: Timeline of Key Events in the Development of Educational Technology at Acadia University

Date	Event
1999	Doctor Hepburn was hired at the University as an educational technology specialist. He was hired at a time when Acadia was beginning to develop a Master's in Education with an emphasis on learning and technology.
1999 (approx)	Discussions within the administration led to a collaboration between the School of Education and the Division of Continuing and distance education.
2000	The online Master's in educational technology (Learning Technology) was established as a joint program offered by the School of Education and the Division of Continuing and Distance Education.
2000	The underlying philosophy of the master's degree in educational technology at the University was connected to other traditions; it has a heavy lean toward the American model.
2005	A major university-wide technology integration project called the Acadia Advantage introduced.
2005	The University distributed computers to faculty and students to provide them with access to online learning resources and to deliver an enhanced educational experience.
2005	The Acadia Institute for Teaching and Technology (AITT) was created.

The online M.Ed in Learning and Technology.

In 1999, Doctor Hepburn was hired at Acadia as an educational technology specialist. He was hired at a time when Acadia was beginning to develop a Master's in

[26] Consulted documents includedAcadia Institute for Teaching and Technology (2006), Acadia Advantage (2005), Acadia Current Strategic Planning Documents (2005), Acadia Continuing Education (2001), Acadia Graduate Studies in Education (2006), Acadia School of Education (2006), Acadia Vice-President's Report to Senate (2001), and Acadia University Calendars (2000 to 2006).

Education with an emphasis on learning and technology. According to Doctor Hepburn, the online M.Ed. in Learning and Technology at Acadia emerged from stakeholder interests. According to Doctor Hepburn:

> Certainly we thought there was a need for this. We also thought this was an opportunity to leverage Acadia's specialization in educational technology. After all, we are a laptop university. At the time we started it we were ahead of most other universities and probably are still are in some respects. But the playing field has leveled since the beginning. There was a need and we wanted to leverage our expertise. There was also the element of financial interest and certain people thought it would be a popular program and quite profitable and it was.

Doctor MacKinnon remarked that students were also key stakeholders, "We saw a growing trend where people wanted to do masters in education but found it difficult to be on-site. They wanted flexibility."

Discussions within the administration led to a collaboration between the School of Education and the Division of Continuing and Distance Education. Doctor Hepburn recalls,

> Various groups were discussing the online Master's in learning and technology when I arrived. Some parts of administration were interested in developing it and other parts were less enthusiastic, not so much about the learning and technology focus but about whether or not the university should be putting its energy into graduate programs. But there were a number of groups, the principle groups being the School of Education and the Division of Continuing and distance education on campus.

Although expertise from faculty members from the Technology Education Program was relevant to this program, they were not involved in the beginning. Doctor MacKinnon's group did not take an active role in the first couple of years. He stated, "We had been through a lot of changes in the department so it wasn't a wise decision to get involved in another big project as we were rebuilding. Doctor Hepburn was the key faculty member in the planning of the M.Ed. in Learning and Technology as an online masters program. Initially the goal was to make it as much as possible an online program. Doctor Hepburn was hired at this time and became one of the principle planners and designers of the program. This evolved everything from deciding courses to selecting courseware. He explains,

> I had some experience in online design but because I had to get courses ready and nobody had any real experience it was quicker for me to do it myself. In fact, what happened is I became involved in pretty much all aspects, everything from program design, to getting the courses ready, to teaching the courses, and to admitting students. I had a finger in everything. It was interesting but a hectic time since a lot had to be done.

One of the main challenges in program planning was deciding how the program was going to develop in a context of limited time and resources. Doctor Hepburn notes that there were key members of administration interested in creating the new program but nobody was prepared to do it. The biggest challenge was to get it off the ground as quickly as possible. He states, "I wasn't given release from my other responsibilities to do

this. They wanted me to do this on top of my other activities and it was a busy time getting this organized and running."

In 2000, the online M.Ed. in Learning and Technology was a joint program offered by the School of Education and the Division of Continuing and distance education. It was the first Acadia degree program to be offered entirely online to teachers wanting to earn a master's degree studies in a period of two years. According to Acadia Continuing Education, the program was aimed at "critically explore how new technologies can be used to enhance learning environments and prepare students for the future" (2001). The program was designed to be flexible. "The Learning and Technology concentration combines a solid background in curriculum with special consideration of rapidly emerging technologies" (Acadia Continuing Education, 2001).

After the program got off the ground, new challenges emerged concerning the sharing of resources and the migration of faculty. In the beginning there was not any problem between Continuing Education and the School of Education but as time moved on the online degree program popular and this created a problem within the university with resource sharing and faculty member reorganization. Doctor Hepburn recalls,

> When we take people on loan from the School of Education to teach in the program there is a compensation problem about how the School of Education has its budget compensated. If we take someone out of the B.Ed. to teach more in the graduate problem then we have to replace the person in the B.Ed. program and that costs money. The other thing is that we tend to have a migration of faculty to the graduate courses and contract people teaching B.Ed. courses if we are not careful. Initially the

challenge was to get this program going as quickly as possible and then there were a lot of shifts in terms of what people were focusing on as time went on.

External initiatives: The Acadia Advantage initiative the Acadia Institute for Teaching and Technology.

In 2005, two initiatives external to the M.Ed. brought new levels of support to the degree program; the creation of the Acadia Advantage, a major university-wide technology integration project, and the founding of the Acadia Institute for Teaching and Technology (AITT), designed to help Acadia's faculty discover the most effective ways to use technology to improve learning for students—both contributed significantly to maintaining interest in educational technology at Acadia University by providing resources that enabled successful technology integration in all aspects of education at the university level.

The Acadia Advantage integrates the use of notebook computers across campus. This project enabled Acadia University to take the lead as the first university where all students have laptops. The University introduced this program as a means of providing students with the most up to date technological expertise available. According to the university's website,

> The Acadia Advantage is an exciting undertaking that enhances the University's teaching and learning environment. Acadia's students receive Dell™ Latitude™ D600 computers for use during the academic year, and their computers become an integral part of their learning experience. By participating in The Acadia Advantage, students

> will use today's technology to develop the advanced analytical skills they need to adapt to ever-changing study and work environments (Acadia Advantage, 2005).

The Acadia Advantage provided technology infrastructure and support serves that help sustain degree programs like the online educational technology degree, which depended heavily on technology support. The use of educational technology independent of the academic program is evident in the technology infrastructure incorporated across the Acadia campus. In terms of computer facilities and access, the Acadia Advantage initiative created seminar rooms that contain data projectors and data connections at students' seats. It also provided data connections in public areas scattered across the campus (Acadia Advantage, 2005).

With the introduction of the Acadia Advantage, Acadia University distributed computers to faculty and students to provide them with access to online learning resources and to deliver an enhanced educational experience. The University recognized that building a technologically enriched environment would require a significant investment in professional development and support. Therefore, the Acadia Institute for Teaching and Technology (AITT) was created to help Acadia's faculty discover the most effective ways to use technology to improve learning for students (Acadia Institute for Teaching and Technology, 2006). Doctor Hepburn explains,

> The way that Acadia is organized is that we have a unit called the Acadia Institute for Teaching and Technology (AITT). Although there is some controversy within the university as to what role they ought to play in educational technology leadership, this is a position they have been given to some extent and they tend to do that.

The Acadia Institute for Teaching and Technology (AITT) supports faculty and student driven education and technology initiatives. There are connections between educational technology services offered and academic units within the university as indicated by the Acadia Institute for Teaching and Technology,

> The AITT worked extensively with Acadia faculty members, Doctor Hepburn (School of Education) and Doctor Scott Follows (School of Business) to develop teaching and technology initiatives. Doctor Hepburn's project includes creating an on-line course in educational technology, as well as piloting a "Computers in Education" course. Doctor Follows heads the Acadia Centre for Virtual Learning Environments, and is working with the AITT to develop a virtual learning template for the continuing development of virtual learning courses (Acadia Institute for Teaching & Technology, 2006).

In addition of offering on-site training programs, AITT also offered off-site teacher training to enable "teachers to experience first-hand the challenges of using technology in their school, and to discover strategies to address these challenges" (Acadia Institute for Teaching & Technology, 2006).

Students.

In terms of students and recruitment, the M.Ed. (Curriculum Studies) focusing in Learning and Technology caters to educators. The Acadia Continuing Education website states,

It provides educators with opportunities to make strong connections between the coursework and the actual educational contexts in which they are involved. Students in this program are able to pursue specific interests through a project or thesis, as well as specific courses that are intended to allow a high degree of flexibility and self-direction. (Acadia Continuing Education, 2001)

Program philosophy.

Doctor Hepburn explains that the underlying philosophy of the M.Ed. in Learning and Technology at Acadia University was connected to other traditions, "Like most in Canada, it is between the United States and U.K. Ours has a heavy lean toward the US model though." No explicit program philosophy was stated in documentation or interview responses.

Current program details.

The Master's of Education in Learning and Technology was designed to support "the interwoven development of theoretical and practical understanding of learning and technology" (Acadia Graduate Studies in Education, 2006). Entrance requirements for this program include a B.Ed. degree or its equivalent and two years of successful teaching or related experience. As indicated on the website for graduate studies in education,

> The Learning and Technology Program focuses on the application of information and communication technologies to teaching and learning in schools and other

educational contexts. The emphasis of the program is on gaining an appreciation of the potential that technology holds for education as well as a critical understanding of the impact and implications of its application. (Acadia Graduate Studies in Education, 2006).

In terms of degree composition, the Master's of Education (Curriculum Studies) focusing on learning and technology is a thirty credit degree program with an emphasis on "gaining an appreciation of the potential that technology holds for education as well as a critical understanding of the impact and implications of its application" (Acadia Graduate Studies in Education, 2006). Students have the option of choosing a thesis, project or course route. The degree requires nine credits of required courses and twenty-one credit hours of elective courses (See Appendix H). The Master's of Education (Curriculum Studies) focusing on learning and technology entered its fifth year of operation in 2006 with no major changes to the curriculum and no apparent expansion in the number of faculty members teaching in the program. The program remains a joint program offered by the School of Education and the Division of Continuing and Distance Education. In terms of faculty members and areas of interest, there are currently three full-time faculty members with varying areas of research interest (See Appendix M).

Conclusion.

Overall, the establishment of the distance education Master's degree program at Acadia University in 2000 coincided with the subsequent major shift in university

technology services. The Acadia Advantage project and the founding of the AITT promoted technology across the university community. This provided a context conducive to the Acadia University's first online master's degree.

Memorial University

Memorial University College was created in 1925 and was granted university status in 1949. The master's program in educational technology (Information Technology) was created in 2000 and continues on 2006. This section outlines the founding and development of these programs in order to contextualize the programs' development within the wider university context. To this end, two key senior educational technology faculty members from the programs were interviewed and their curriculum vitae were examined.[27] In addition, supporting documentation was consulted[28]. It will be

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[27] In 1977, the first study participant, Doctor Marc Glassman graduated from the University of Georgia and was hired by the Faculty of Education at Memorial University. Based on innovative work at Memorial's Faculty of Medicine and their tele-medicine teleconference network, he began developing and teaching the Department of Curriculum and Instruction's first undergraduate courses offered at a distance via teleconference. This provided the opportunity for faculty members like Doctor Glassman, to use the technology to deliver courses. The second participant was an anonymous senior faculty member connected with the current educational technology program. She has expertise in teacher education and technology use for educational purposes. Overall, the study

seen how Memorial University advances in tele-conferencing in the 1980s, along with outside interest from UCCB facilitated the creation the online Master's in educational technology (Information Technology). Key events in the development of educational technology at the Memorial University appears in Table 11, followed by an in depth discussion.

Table 11: Timeline of Key Events in the Development of Educational Technology at the Memorial University

Date	Event
1980s to 1990s	The University made advances in using tele-conferencing in medicine and expanded it to education.
1980s	The Centre for Distance Learning and Rural Education within the Faculty of Education was created through an Office of Learning Technology grant.
1990s (approx)	The Centre for Distance Learning and Rural Education closed.
1997	The Education Department at the University began to offer online courses.
1990s (late)	Following the success of the online courses, initial steps were taken to launch a Master's in educational technology (information technology) as a joint program between Memorial and University College of Cape Breton (UCCB).
2000	The Centre for Distance Leaning and Innovation (CDLI) was created by the Newfoundland and Labrador Department of Education. The University was affiliated with CDLI.
2000	The master's degree in educational technology (information technology) was established as a joint initiative of the University and the University College of Cape Breton.

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participants represent both founding members and current senior faculty member connected to the educational technology program at Memorial University.

[28] Reviewed documents included Centre for Distance Learning and Innovation (2006), Memorial Faculty of Education Faculty Members (2006), Memorial Graduate Calendar (2000 to 2006), Memorial University Faculty of Education (2006), Memorial University President's Report (2002).

Program origins.

As stated in the Memorial University President's Report, "The program grew out of earlier discussions within the education faculty about developing a graduate-level program with a specialization in the area of educational technology outside the traditional versions of such programs" (Memorial University President's Report, 2002). The first online courses at Memorial were offered by biology in 1996 and education followed in 1997. Doctor Glassman recalls,

> In 1996, I saw a presentation from someone giving the first web course at Memorial. It was in biology. I figured I could do that and ended up designing the undergraduate course in education that Memorial put online. That was in 1997. Since then I designed six online literacy education courses and am working on a social studies education course. I become a tele-professor.

Online courses were successful, particularly in the area of teacher education where the geography of Newfoundland and Labrador created challenges. There were teachers spread across the province. In order to provide teachers with upgrading they needed to take university courses. There was no point in traveling hundreds of miles to take a course when Memorial University could offer them online courses. With the distance education courses, people could dial up online and take the web courses from their homes.

Following the success of the online courses, initial steps were taken to launch a M.Ed. in Information Technology as a joint program between Memorial and University College of Cape Breton (UCCB). As indicated by Doctor Glassman, "UCCB was not

certified by the province of Nova Scotia to offer graduate courses and they had a number of students who wanted to take graduate courses who came here. Newfoundland was closer to Cape Breton than Halifax and we offered various programs that they wanted."

According to an anonymous faculty member in the Faculty of Education, the program took existing courses that had been in the curriculum of teaching and learning program and expanded them into a stand alone program. Part of the motivation for this was that students interested in educational technology and informational technology needed more than they could get through a couple of courses within the curriculum of teaching and learning program. It was believed that a stand alone program would be appropriate. The same faculty member indicated that partnering with UCCB was a good option because UCCB had a diploma program but they did not have the necessary degree granting status and the depth for that program. Memorial had computers in education program within the curriculum of teaching and learning, but did not have the depth and resources to have a full program. Thus, Memorial University and UCCB decided to combine resources. The M.Ed. in Information Technology became a degree granted by Memorial as it was a university certified to offer graduate programs and UCCB was not. Students at UCCB were able to take some courses from their home institution without having to relocate. Doctor Glassman remarks, "For the UCCB students, half the courses were taught online and the other half could be taken at the UCCB campus or online taught by UCCB professors."

In 2000, the Master's of Education (Information technology) was first offered as a joint initiative of Memorial University and the UCCB in Nova Scotia. The program was designed to be deliverable on the Web and was intended as a part-time offering in

information technology as encompassing "computers, communications, networking and multi-media in a wide variety of educational settings (Memorial University President's Report, 2002). The senior faculty member indicated that the joint program was innovative and believed it acted as a model for the University of British Columbia-Mexico program and contributed across Canada in a wide variety of education and business settings.

In terms of program development and management, there is a cross-university steering committee responsible for program decision making. The Memorial Graduate Calendar states,

A steering committee comprised of three members from each of the Faculty of Education at Memorial University of Newfoundland and the Institute for Education at UCCB is responsible to the Associate Dean of Graduate Programs and Research, Faculty of Education, for selected aspects of the program. The latter include assessing student applications, recommending approval of instructors who are not regular faculty members at either UCCB or Memorial University of Newfoundland, and recommending course or program changes. This committee is to be co-chaired by the Associate Dean of Graduate Programs and Research, Faculty of Education, Memorial University of Newfoundland and the Director of the Institute for Education at UCCB (Memorial Graduate Calendar, 2006).

Program philosophy.

There is no official program philosophy for the M.Ed. program but the underlying philosophy of the program is perceived to be more aligned with the American tradition.

Doctor Glassman speculates, "I would think that the American model is more in line with the M.Ed. program. From what I have seen, there is a more pragmatic approach to this program, which is similar to many American models of an industry-centered approach to education."

Parallel initiatives.

A number of major developments in the use of educational technology at Memorial University independent of the master's degree program paralleled the growth of the program. As indicated by Doctor Glassman, "Several years ago, we had a centre for distance learning and rural education within the Faculty of Education which started through an Office of Learning Technology grant. It was intended to be a research institute for distance and rural education." The focus of this centre was research and it was envisioned as a place where all faculty members could come to share their research and get assistance. However, the centre did not have the necessary financial support. Doctor Glassman remarks, "The faculty refused to fund it and there was no new external funding so it closed."

In 2000, the Centre for Distance Leaning and Innovation (CDLI) was created by the Newfoundland and Labrador Department of Education. Memorial University was affiliated with CDLI. According to the CDLI's website, their team strives to "provide access to educational opportunities for students, teachers and other adult learners in both rural and urban communities within Newfoundland and Labrador" (Centre for Distance Learning and Innovation, 2005). One of the CDLI's major initiatives was to deliver high school courses to students in various parts of the province. Although, no formal

partnership with Memorial University was created, the CDLI did involved educational technology faculty members, who provided expertise.

Other service work performed by educational technology faculty members included educational technology committee work. An anonymous senior faculty member in the Faculty of Education notes that Doctor Bruce Mann and Doctor Elizabeth Murphy were additional educational technology faculty members who contributed significantly in committees that have to do with IT and educational technologies of all kinds throughout the university. This committee work dealt with projects such as the Memorial online portal development, and helped to link educational technology faculty to related educational technology service work within the University.

Students.

In terms of student recruitment, the Memorial Graduate Calendar indicates that "the program will be of interest to educators at all levels including K-12 teachers, school administrators, those in the post-secondary system, business and industry, as well as those in most other adult learning situations" Memorial Graduate Calendar, 2006). This is echoed in the Memorial University President's Report description of the program as one that is "aimed at a broad range of educators: K-12, post-secondary and industry training" (Memorial University President's Report, 2002).

Today's program.

According to the Memorial Graduate Calendar, the graduate program in educational technology (Information Technology) is offered in partnership with the UCCB and is designed to facilitate the educational use of information technology in a wide variety of settings (Memorial Graduate Calendar, 2006). It encompasses computer, communications, networking and multi-media applications. Admission requirements for the program include an undergraduate degree and a diploma or certificate in information technology from an accredited institution or equivalent as determined by the program steering committee. The Memorial Graduate Calendar states, "candidates who have successfully completed the UCCB graduate level Certificate in Education (Technology) will be given advanced standing credit for the nine UCCB EDU course credit requirements for the thesis route or 12 UCCB course credit requirements for the comprehensive course-route on this program" (Memorial Graduate Calendar, 2006). In addition, it is required that students have basic knowledge and skills with respect to information technology.

The master's program offers a thesis route and a comprehensive-course route. Students are required to complete a minimum of eighteen credit hours plus a thesis or thirty credit hours on the comprehensive-course route. In terms of program requirements, all students admitted to the program must complete Research Designs and Methods in Education. Students enrolled in the comprehensive-course route must complete one required course and two of the following three courses: Research on Computers in the Curriculum, Educational Software Prototyping and Evaluation, and Issues and Trends in Educational Computing. Students enrolled in the thesis route must complete three

required courses and three electives (See Appendix J). Additional courses are selected from graduate course offerings approved by the program steering committee to complete the required 30 credit hours for the comprehensive-course route (Memorial Graduate Calendar, 2006).

In terms of student enrolment, the joint program is rather small. The 2005 to 2006 enrolment records provided by the Faculty of Education indicated that there are six part-time and three full-time students enrolled in the M.Ed. in Information Technology. In terms of faculty and faculty areas of research interest, there are currently five full-time faculty members with varying areas of research interest (See Appendix J).

Conclusion.

The development of educational technology at Memorial University came in response to a need for two universities to provide graduate education in the area of educational technology. The Master's in educational technology (Information Technology) was created in 2000 and allowed students from Newfoundland and Nova Scotia to access a graduate-level program delivered at a distance. This program established best practices in Canadian university partnerships in the offering of graduate programs in educational technology that have not yet been followed elsewhere. Memorial's program is the only joint offered by two Canadian universities. Furthermore, it is one of only two joint programs offered in Canada (the other being that between the University of British Columbia and Tec de Monterrey, founded in 2002.

Royal Roads University

In 1995, Royal Roads was founded by an act of parliament in the British Columbia Legislature. The Master's in educational technology (Distributed Learning) was created in 2000 and continues in 2006 as the M.A. in Learning and Technology (renamed in 2005). To learn more about the program, I interviewed Doctor Doug Hamilton[29] and Mr. Roger Mundell[30]. I examined curriculum vitae from the faculty participants, along with supporting documentation[31]. This section highlights how limited

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[29] Doug Hamilton was selected as the senior faculty from when the program was created. He was the first director of the program and is currently the chair of faculty development at Royal Roads. According to his curriculum vitaee, he managed the development and operation of the program from 2000 to 2003. He supervised the design and delivery of new curriculum courseware, gathered both formal and informal feedback from learners to guide future program improvement efforts, and worked closely with program advisory board to ensure relevance of learning outcomes.

[30] From 1983 to 1998, Mr. Mundell was involved in a private sector online university, the Tele-learning Systems Electronic University in San Francisco. He has been at Royal Roads since 1999 and was selected as a current senior individual at Royal Roads. Mr. Mundell is the Director of Innovation and Commercialization at Royal Roads. As is the case with many of Royal Road's employees, Mr. Mundell brings private sector experience into this academic institution.

[31] Reviewed documents included Master's of Arts in Distributed Learning (2005), Master's of Arts in Learning and Technology (2006), Royal Roads Media Directory

university space for offering campus based instruction and educational technology developments within Royal Roads University led to the development of a blended Master's in educational technology. Key events in the development of educational technology at the Royal Roads University appear in Table 12, followed by an in depth discussion.

Table 12: Timeline of Key Events in the Development of Educational Technology at Royal Roads University

Date	Event
2000	The master's degree in educational technology (Distributed Learning or MADL) was created within the Organizational Leadership and Learning Division at the University.
2005 (mid year)	The University completed a six month review of all technology-based programs.
2005	New enrolments for the MADL program was suspended pending a program review.
2006	The MADL program was renamed the Master's of Arts in Learning and Technology (MALT).

Origins: Emergence of Canada's first blended learning university.

Since its establishment in 1995, Royal Roads has catered to students from all over Canada and internationally. Because blended programs required short-term residencies and a high reliance on technology, there was ongoing interest and growing expertise in the educational aspects of technology. This led to an invested effort in creating a new program dedicated to such considerations. Doctor Hamilton indicates,

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(2005), Royal Roads University (2006), Royal Roads University Calendar (2001, 2006), and School of Information and Society (2005).

> We needed to ensure that technology was accessible, usable, and promoted a community based learning model. At the same time we were learning so much about the role of technology and we were leaders in this area. We realized we should be capitalizing on this knowledge gained and teaching people to use technology more effectively in learning contexts.

"This is not a place for Luddites": Developments external to the degree program.

There were a number of major developments in the use of educational technology at Royal Roads independent of the Master's of Distributed Learning Degree (MADL). The use of educational technology outside the MADL was an important part of Royal Roads since its establishment. Doctor Hamilton explains,

> This is not a place for Luddites. We do all our scheduling and meetings using outlook online. When someone comes along that does not operate that way they find it to be a struggle. For us technology is a required strength and integrated across programs. There is a focus of study on how the technology relates to the various programs that goes beyond our program in distributed learning.

The relatively small size of Royal Roads, combined with its blended learning model created a unique university marked by growth through technological leveraging. As indicated by Mr. Mundell, "The dynamics of a well-established university were bound to slow things down but at Royal Roads using technology and leveraging through the use

of technology was the only way the university would survive." Much of the technological leveraging is integrated into teaching activities at Royal Roads. Mr. Mundell remarks,

> You cannot come and teach at Royal Roads without teaching online. Our academics at least have a willingness to teach online. This ranges from extremely enthusiastic through to reluctant but willing. Attitudes range from those who see it as a new tool with a lot of promise to those who see it as the replacement for pencil and paper.

Pervasive Technology across the University.

At Royal Roads, the application of technology was pervasive within its various units. Doctor Hamilton indicated, "Technology is the backbone to our programs and we cannot deliver them effectively without the use of technology. Everybody that comes to this university understands this." Therefore, the use of educational technology was university-wide from the beginning. According to Doctor Hamilton, "The University was built from the ground up to be a technology-based university. In order for us to be successful with blended learning, we had to ensure that there was seamlessness in the technology we were using."

At Royal Roads, there were strong connections between the academic programs and the use of educational technology elsewhere within the university. This was particularly salient in the case of university program evaluation and research. Doctor Hamilton indicates, "We just finished a six month review of all technology-based programs. This included the M.A. in Distributed Learning, the M.A. in Knowledge

Management, and the MBA in Digital Technologies." Mr. Mundell remarks, "Because of the nature of Royal Roads, the entire university is very collaborative. Since the early days in 1997, we literally used the evolving programs as research." Mr. Mundell explains,

> We were trying things on cohorts of students because we had no choice. For example, scalability was an issue. The economics of the university had 50 students in each cohort. No research up until that point had studied students in cohorts of 50 or more. Most reports argued that it couldn't work in cohorts larger than 25. So some of our work is about scalability and about finding ways to optimize the learning experience while getting the best leverage from technology. This work was collaboration between my group, the IT people, and the Faculty of Business.

Overall, the influence of educational technology developments beyond the graduate programs themselves included university service unit support, expertise, and resources. This can be observed across the development of the program. The focus of the following section is the program and its development.

The early Master's of Arts in Distributed Learning (MADL).

Doctor Hamilton played a major role the development of the Master's of Arts in Distributed Learning (MADL). Doctor Hamilton indicated that, "A seminal moment for me was when I was asked to take over a fledging new program in distributed learning partly because of my background in a successful program in leadership and training and

because of my background in technology." The MADL was originally planned as a Master's of Arts in Learning Technologies but obtaining provincial approval of the new program required modifications to the program name. Doctor Hamilton recollects,

> The idea was to develop a program and we wanted to call it a Master's of Arts in Learning Technologies. We turned in the proposal to the provincial review committee which reviewed new degree proposals. At the time there had been a series of policy studies in British Columbia that used the term distributed learning. Although the program was approved it was approved with the caveat that the program would be called distributed learning.

The MADL program was first offered in 2000 and focused on leadership and learning technologies which create new opportunities for learning. The master's degree was first offered within the Organizational Leadership and Learning Division in 2000. According to the 2001 Calendar, the Master's of Arts in Distributed Learning "is an outcomes- based distance program based on competencies which fall into the following categories: theoretical underpinnings; systems thinking and systems approach; distributed learning; the development process for learning technologies; management of learning technology and learning technology tools" (Royal Roads University Calendar, 2001). The program required the completion of 44 credits in two academic years (See Appendix K). Within the program students could specialize in either "the management of learning technology organizations, the production of learning technology products or the consulting process in support of learning technology organizations (Royal Roads Academic Calendar, 2001).

The MADL program started slowly. Doctor Hamilton indicated that:

> The program struggled in the beginning which gave me the opportunity to think through issues like: How do we make the program stronger, what we need to do in terms of curriculum development and faculty development, and how do we make the program unique but also consistent with the-learning philosophy we shared university wide.

One distinguishing feature of the program is the fact that it is competency based. It was designed to provide learners and their sponsors the assurances to have competencies in particular areas. Doctor Hamilton indicates, "Because many of the students are sponsored, this gives assurances to their sponsoring organizations that these are the skills that are important for a well rounded background in distributed learning and working with learning technologies." As a result, there is a program emphasis on teaching skills and knowledge that are required when working with learning technology, as well as the outcome orientation to reinforce this learning. Doctor Hamilton emphasizes,

> We really wanted our learners to be able to work inside organizations to ensure that they were making the right decisions when looking at different kinds of technology. We also wanted them to look at long-term impact of technology, not only short term success, so that the impact of technology implementation and engagement with technology related to learning could be sustained.

Another important aspect of the program is that it employs a blended faculty model. Royal Roads employs full-time and associate faculty who are practitioners with the necessary academic qualifications. According to Doctor Hamilton, "Associate faculty may be in other academic institutions, in government agencies, and in private industry. They have real practical experience that they are willing to share with learners in an ongoing way. In this field we are ahead of the curve in terms of the opportunities available." Doctor Hamilton believes that their blended faculty model pushes the development of new understanding and how these new understandings can be applied to practice and impact organizations. This sentiment was shared by Mr. Mundell who recalls, "I came to Royal Roads in 1996 partly because it looked like this university was going to push boundaries and do interesting things, which was appealing to me."

Program evolution.

In terms of program planning and revision, each program at Royal Roads has an advising board to provide advice as to what the curriculum should look like. From 2000 to 2004 Doctor Hamilton worked with the advisory board to revise the competency framework of the M.A. in distributed Learning. This was in response to a university decision to make changes to required program competencies to ensure that graduates were able to apply skills and knowledge. Doctor Hamilton remarks, "My role was to nurture the program, being a change agent, and being an evangelist for the program in many ways inside and outside the university."

One of the challenges of developing the MADL program revolved around the program name. As indicated by Doctor Hamilton, "Often when I am speaking at

information sessions people ask me what distributed leaning is. Even the learners wonder when they started in the program. I often talk about the role of a variety of learning technologies and substitute that for the term "distributed learning." The gradual institutionalization of the program name further complicated interests to change the program name. Doctor Hamilton acknowledges,

That has been a bit of a challenge for us over the years because once you name a program there is an affinity among the graduates for them name which makes it even more difficult to change it. It becomes institutionalized. We have struggled the last few years because it is not a term that is used in broad arenas of practice. It does not have an immediate connection or relevance to a large group of people like the terms "e-learning" or "educational technology."

Renaming the program.

In 2004, the Master's of Arts in Distributed Learning was offered in Division Organizational Leadership and Learning. In 2005, new enrolments for the MADL program was suspended pending a program review. According to Mr. Mundell, "As part of this research, Royal Roads is now reviewing the next evolution of learning strategies and management of knowledge in online environments. In 2006, the MADL program was renamed the M.A. in Learning and Technology (MALT).

In summary, the educational technology program at Royal Roads University appeared to have evolved quickly according to study participants and supporting documentation. Educational technology developments outside the programs contributed

resources and expertise that nurtured program development from its beginning in 2000 and continuing in 2006.

Students.

According to the 2006 Calendar, students are expected to be "active in both private and public sector organizations" and "share a passion for improving human and organizational performance through practical application of knowledge and skills and the strategic use of learning technologies" (Royal Roads University Calendar, 2006). Students who enrol in this blended learning program are typically older than graduate students from other Canadian universities. As indicated by Mr. Mundell, a blended model does not appeal to the typical eighteen year old interested in an active social life. He states, "It sort of dictates the market, so you have typically students in the middle of their careers with families and who want to spend as little time as possible away from their jobs and families." Mr. Mundell believes that this was why the average student tends to be in their late thirties. Furthermore, the current demographic of the students brings a unique set of expectations and experiences into the program. According to Mr. Mundell,

> We see at one level here in that our students are career people in their thirties coming with expectations that they can work in virtual communities because they are doing this in their careers. For example, some people are used to having web-x in their workplace and expect to have it at Royal Roads. So, we have been forced to adapt by providing services like that.

Program philosophy.

There is no official program philosophy for the MALT program. According to Doctor Hamilton the underlying philosophy of the MALT program at Royal Roads is pragmatic and based on an action research model. According to Doctor Hamilton, "Our M.A. research focuses on an action research model. Not only do our learners have an academic thesis advisor but they also have an organizational sponsor. The intent of the research is to promote organizational change." Doctor Hamilton believes that the purpose of the research is not just for the sake of producing knowledge. He states, "We want to see that the research has an impact within an organizational setting."

The pragmatic program philosophy is not restricted to a single disciplinary focus. Doctor Hamilton commented that the program avoids promoting "the segmentation of the discipline and not looking at educational technology as having a disciplinary focus." As stated by Doctor Hamilton, "We look at it as inter-, cross-, and transdisciplinary. Our program is not intended to be a Master's of Education. It does not have the same focus. We try to attract a diverse-learning community with representatives from as many sectors as possible." Doctor Hamilton believes that there is enriched value of being able to share perspectives and learn across sectors for solving problems and developing innovating approaches.

Today's program.

The role of the M.A. in Learning and Technology is twofold: First, to share what is known about good practice and theoretical foundations and second, to keep abreast of

how to be innovative (Master's of Learning and Technology, 2006). Admission requirements are a bachelor degree or equivalent work experience in the appropriate area of study. The program is followed over a two-year period and includes three-week of on site residency, five Internet-based distance semesters, and a major research project which demonstrates an understanding and integration of the program competencies. In terms of program areas, students specialize in either the design and development of distributed learning programs, the management of distance learning systems or performance improvement methods in distributed learning organizations. In addition to completing core and required courses (See Appendix K), students are also required to submit a major project proposal and complete the major project. The project proposal requires that learners develop a substantive major project proposal before beginning the major project. In terms of faculty and faculty areas of research interest, there are currently three full-time faculty members with varying areas of research interest (See Appendix M).

Conclusion.

To conclude, in 2000, Royal Roads University became the first university in Canada to use a blended model, meaning that within each program, all students have required instruction on campus and a distance. With respect to educational technology programs, the MALT program offers educational technology instruction using this blended model. In addition, due to the small size of the university and its need for advanced technology to offer blended instruction, the development of educational technology at Royal Roads University occurred across the university's academic departments and service units. This wide-scale use of educational technology at Royal

Roads University helped to foster interest in the academic use of technology in education, which led to the creation of the MALT program. This adds diversity and flexibility to the Canadian field of educational technology by contributing an alternative approach to both traditional and fully online programs.

Tele-university of Quebec (Tele-university of Quebec)

The Tele-university of Quebec (Tele-university of Quebec) was created in 1972 as a distance education University. The graduate program in educational technology (Maîtrise en formation à distance) started in 2000 and continues in 2006. Mr. Michaud[32] and an anonymous senior educational technology faculty member[33] were interviewed and their curriculum vitae were examined. In addition, supporting documentation was consulted[34]. It will be seen that educational technology developments within in the early

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[32] Mr. Michaud has a background in adult education and group management. In 1984, he was hired at the Tele-university of Quebec as a student coordinator (spécialiste à l'encadrement des étudiants). Mr. Michaud's work included professional development in recruitment, along with planning and implementing academic programs and procedures.

[33] The anonymous faculty member was hired at the Tele-university of Quebec in the early 1980s and has served as a senior faculty member at the Tele-university of Quebec and is senior member of the Tele-university of Quebec's largest research centre.

[34] Reviewed documentation included Tele-university of Quebec chercheurs et champs de recherché (2005), Tele-university of Quebec maîtrise en formation à distance profil (2000,2006), Licef Lab (2006), and Roch (2005).

1990s within the Laboratoire en informatique cognitive et en environnements de formation (LICEF) promoted interest in establishing the education technology program in 2000. A timeline of key events in the development of educational technology at the Tele-university of Quebec appears in Table 13, followed by an in depth discussion.

Table 13: Timeline of Key Events in the Development of Educational Technology at the Tele-university of Quebec

Date	Event
1972	The founding of the University was inspired by the educational technology model of the Open University in the United Kingdom.
1970s to 1980s	There was internal conflict between faculty members and educational technology specialists due to the hiring practices of the University.
1982	The University changed hiring practices. Full-time faculty members were hired on a permanent basis.
1992	The Laboratoire en informatique cognitive et en environnements de formation (LICEF) was created by Gilbert Paquette. It is the official institutional research centre of the Tele-university of Quebec.
1990s (mid)	The University proposed a Master's of Distance Education to the Quebec Ministry of Education. It was rejected due to there were not enough technology courses.
1990s (late)	The University revised its proposal. Courses were taken from the Master's Diploma in Information Technology and Learning Environments and Master's of Distance Education (MDE) and incorporated in. This was approved.
2000	The master's degree in educational technology (Maîtrise en formation à distance) was established at the University.
2005	The University formed an association with the University of Quebec in Montreal (UQAM).

External influences from British roots to University research centers.

There were a number of major developments in the use of educational technology at the Tele-university of Quebec that were independent of the distance education master's programme. In 1972, the founding of TELUC was inspired by the educational technology model of the Open University in the United Kingdom where there is an educational technologist as the project manager in charge of course development.

Typically, the educational technologist gathered a team with a subject matter expert, a media specialist, etc. With this team, the educational technologist created courses. Once completed, the institution took the courses and broadcasts them to their students.

In the 1970s, the educational technology model relied on was not a typical model of a university where the professor was in charge of both the teaching and the subject matter used. According a senior faculty member and administrator at the Tele-university of Quebec, there was a conflict between faculty members and educational technology specialists in the 1970s and 1980s because the Tele-university of Quebec hired faculty members from other universities on contract to come and write courses as authors instead of teaching courses as full-time faculty members. This model was damaging to the Tele-university of Quebec's reputation as a serious academic university (Anonymous, Personal Correspondence, February 12, 2006). Subsequently, in 1982, TELUC decided to have full-time faculty and started to hire.

In 1992, one of the biggest developments occurred with the creation of the Laboratoire en informatique cognitive et en environnements de formation (LICEF) by Gilbert Paquette. It is the official institutional research centre of the Tele-university of Quebec:

> Le LICEF, c'est un laboratoire en informatique cognitive et en environnements de formation, mais c'est également le Centre de recherche de la Télé université Il regroupe près d'une centaine de personnes qui travaillent à développer des méthodes, des outils de conception et de réalisation de systèmes d'apprentissage. Par le LICEF, la Télé université est reconnue mondialement comme un joueur important dans le domaine de la recherche en formation à distance (Tele-university of Quebec, 2006).

> LICEF is a laboratory in cognitive data processing and teaching environments. It is also the research centre of the Tele-university. It gathers together nearly 100 people who work to develop methods, tools of design, and systems of training. Through the LICEF, the Tele-university is recognized universally as an important player in the field of research in distance education (Author's translation)

In terms of the relationship between the LICEF and the Tele-university of Quebec, the Tele-university of Quebec pays for the space, secretary, and administration fees. The LICEF is an administrative branch within the organizational structure of the TELUC. All of the researchers are professors in other departments and do research as part of their professional duties. As a result, at the Tele-university of Quebec, teaching is done within the programs, and the research is done at the LICEF. In addition, there are inter-university research centres dealing with educational technology. For instance, the Centre interuniversitaire de recherche sur le téléapprentisage (CIRTA) is a research centre connected to the Tele-university of Quebec and other universities in Quebec. The Centre develops and evaluates tele-learning theories, models, methods, systems and practices utilizing an interdisciplinary approach (CIRTA, 2006).

In 2005, the Tele-university of Quebec formed an association with the University of Quebec in Montreal (UQAM). UQAM is the sister institution of the Tele-university of Quebec. An association with the Tele-university of Quebec will allow UQAM to provide additional services to other constituencies in the region. According to Mr.

Michaud, the past program coordinator for the Master's in distance education, becoming a specialized school within UQAM is a good risk for the Tele-university of Quebec:

> I think the Tele-university of Quebec is now taking a good risk. Up until now the Tele-university of Quebec has always attempted to do much with little. It is a small institution in competition with other Quebec universities. The Tele-university of Quebec's decision to become associated with UQAM is an opportunity and a risk at the same time. There is the risk of becoming assimilated and consumed by UQAM but I think that the Tele-university of Quebec has a strong enough identity to hold itself together and to capitalize on greater resources present at UQAM. It will become a specialized school within UQAM. It will not become a small centre but will play a key role in distance education leadership at UQAM.

Overall, the influence of educational technology developments beyond the graduate programs themselves was significant with respect to service and research unit support within the university as well as inter-university agreements with the Tele-university of Quebec and the UQAM. These helped shape program development from 2000 to 2006. The focus of the following section is the programs and their development.

Origins: Developments preceding the Master's of Distance Education.

The Tele-university of Quebec's Master's of Distance Education developed gradually through faculty collaboration and diploma program expansion. According to Mr. Michaud, the Tele-university of Quebec's Master's of Distance Education originated

when a group of professors came together with educational technology and educational psychology backgrounds. They raised the following question, "We are a university that works entirely at a distance but we have never systematically considered what distance education means--So what constitutes distance education?" This group of professors decided to create a distance education program at the Tele-university of Quebec that would allow such questions to be explored. In tracing the development, Mr. Michaud indicates, "It started first with a graduate diploma in distance education in 1991. This program forced the Tele-university of Quebec to re-examine how it operated." One result of this was that the use of educational technology and teaching became centered on helping students learn and what strategies can be employed to help students learn. Mr. Michaud indicates, "We developed course content and teaching materials around student learning needs rather than focusing first on course content."

Planning the Master's of Distance Education.

Planning for the master's program began in 1991 and not without some challenges. According to a senior faculty member, when it was suggested to emphasize technology in the curriculum in the master's degree, the educational technologists involved in the program did not want a technology focus. As a result, there were no technology courses in the first Master's of Distance Education program proposal. When the proposal was sent to the Department of Education, it was rejected because there was not enough technology. Consequently, TELUC was forced to take some of the diploma courses from the Master's Diploma in Information Technology and Learning Environments and Master's of Distance Education (MDE). Mr. Michaud indicated that

the Tele-university of Quebec was able to get the Master's of Distance Education off the ground in 2000. He indicated," It came about when many of the diploma students became interested and it developed little by little. There was a thesis option and a research paper option with about a dozen courses offered yearly." There were no major curriculum changes between 2000 and 2006.

Students.

The program objectives are to train specialists in distance education to be able to work out solutions that adapt to the needs and the possibilities of their institution, community, or stages of a distance education. As such, students enrolled in the Master's in Distance Education have varied educational and work backgrounds. In 2006, the Master's in Distance Education (Maîtrise en formation à distance) had 172 students enrolled.

Program philosophy.

Tele-university is a distance education university where all programs have a community oriented philosophy where students have contact with their instructors, staff, and their student colleagues within a community of learning. As stated by the Tele-university of Quebec (2006),

> Considérés chacun individuellement à l'intérieur d'un réseau de services et de contacts qui les soutient dans leurs apprentissages, nos étudiants restent maître de leur formation. Jeunes ou moins jeunes, nous traitons avec eux d'adulte à adulte pour les aider à rencontrer leurs objectifs en leur permettant, où qu'ils soient, d'acquérir des

connaissances, de développer des savoir-faire et, finalement, de gérer leur propre plan de vie.

It is based on a community of learning approach where students are connected inside a network of services and contacts which supports them in their training. To this end, students are encouraged to achieve their objectives. This allowed them to acquire knowledge, develop know-how, to manage their own learning plan (Author's Translation).

The underlying philosophy of the Master's in Distance Education at the Tele-university of Quebec is reflected across the university through the organization of student support system. Mr. Michaud indicates, "At the Tele-university of Quebec we put a student's support system in place at the program level. Its operations and activities provide students with a sense of community between students and with the program resources."

Today's program.

The Tele-university of Quebec's Master's of distance education program has set of general program objectives to train specialists in distance education to be able to work out solutions adapted to the needs of their institution, community, or distance education contexts. It is also to master various tools of research to allow reflective practice and promote innovation (Tele-university of Quebec Maîtrise en formation à distance, 2006).

In addition, the Master's of Distance Education program also has a set of more specific objectives:

- Évaluer et adapter des théories et des méthodologies pour comprendre des problématiques de formation à distance;
- développer et évaluer des outils de recueil, d'interprétation, d'analyse et de synthèse de données pour traiter des problématiques liées à la distance dans l'établissement ou la communauté de l'apprenant;
- développer des modèles et des outils méthodologiques permettant de planifier, gérer, réaliser et évaluer des activités de recherche, de création ou d'intervention en formation à distance;
- développer des modèles et des outils d'analyse critique et d'évaluation des processus de médiatisation adaptés aux besoins et aux possibilités de l'établissement ou de la communauté de l'apprenant;
- développer des pratiques de formation adaptées aux besoins et aux possibilités de l'établissement ou de la communauté de l'apprenant (Tele-university of Quebec Maîtrise en formation à distance Profil, 2006).
- To evaluate and adapt theories and methodologies to understand problems of distance education;
- to develop and evaluate tools for collection, interpretation, analysis and synthesis of data to treat problems related to distance in the community of learning;

- to develop methodological models and tools to plan, manage, carry out and evaluate activities of research or create interventions in distance education;
- to develop models and tools for critical analysis and evaluation practices adapted to the needs and the possibilities of community of learning;
- to develop educational practices adapted to the needs and the possibilities of the community of learning via media (Author's translation).

The Tele-university of Quebec's Master's of Distance Education is a 45 credit degree with thesis and course based options available. Students following the course-based option are required to complete 45 credits of coursework. Thesis students are required to complete a thesis seminar and thesis (24 credits) and 21 credits of courses (See Appendix L). In terms of flexibility, the Master's of Distance Education at the Tele-university of Quebec allows exchanges with other universities. There are many exchanges with Athabasca and other universities like UQAM and Laval. The courses of Athabasca's Master's in distance education are fully recognised at the Tele-university of Quebec In terms of faculty and faculty areas of research interest, there are currently three full-time faculty members with varying areas of research interest (See Appendix M) and other professionals at the Tele-university of Quebec with overlapping teaching and research interests.

Although the Tele-university of Quebec does not offer a doctoral program in educational technology or distance education, it is worth noting that the Tele-university

of Quebec does offer a joint doctoral program focused on cognitive information processing with the University of Montreal (Doctorat en informatique cognitive, 2006).

Conclusion.

The Master's in Distance Education at the Tele-university of Quebec is the only program studied which developed from an existing diploma program. It was also influenced by development of educational technology within the main research centre at the Tele-university of Quebec, the LICEF. The master's program drew upon expertise and resources from the LICEF in creating the first distance education Master's degree offered in French. This greatly benefited the French-speaking community seeking higher education across Canada and broadened the field of educational technology in Canada.

Chapter Conclusion

Acadia University, Athabasca University, Memorial University, Royal Roads University, and the Tele-University of Quebec all offer online or blended graduate programs in educational technology. Like the programs examined in Chapter Four, these programs offer graduate-level instruction in educational technology. However, they differ from the campus-based degree programs in that they offer alternative modes of delivery with greater flexibility for students. Thus, the purpose of focusing on these five universities is to provide insight into the variety of online and blended educational technology programs offered in Canada and their modes of delivery. As a whole, these programs all encourage greater access to education in the area of educational technology

in a country that is geographically vast with a relatively small and dispersed population. For this reason, these programs form an important part of the field of educational technology in Canada due to the fact they have expanded the scope of educational technology to accommodate students living in remote areas.

As was the case with traditional educational technology programs, it was found that distance and blended programs varied in terms of their years of operation, degree types, required credits, and program titles. Basic program information from the seven universities profiled is summarized in the tables below. Table 14 provides a description of Canadian universities with online programs.

Table 14: Canadian Universities with Blended or Online Programs

Institution	Degree	Title	Credits	Thesis	Non-Thesis	Years of Operation
Acadia University	M.Ed.	Learning and Technology	30	yes	yes	6
Athabasca University	M.Ed.	Distance Education	42	yes	yes	12
Memorial University	M.Ed.	Information Technology	30	yes	yes	6
Royal Roads University	M.A.	Distributed Learning	30	yes	yes	6
Tele-University of Quebec	M.A.	Formation à distance	45	yes	yes	6

Chapter Six – Interpretation

About the Chapter

This chapter provides a synthesis of accounts of events at the universities studied in Chapters Four and Five. It examines the historical development of graduate degree programs in educational technology in Canada through the perceptions of faculty members within those programs. Because the academic field of educational technology in Canada is influenced by developments taking place at the local, national and international level, many of the faculty members interviewed describe events both in Canada and also in a broader, international context. Thus, this chapter presents a picture of the historical development of educational technology in Canada within an international context and in relation to events at the regional level within Canada. To this end, this chapter explores faculty perceptions of international, national, and local connections between this wider history and the development of the academic field in Canada. It will be seen that the development of the academic field in Canada was shaped by American technological innovations applied to the Canadian context, as well as by distinctively Canadian factors and unique factors particular to the 12 individual institutions studied within their local contexts.

Timeline of Faculty Perceptions of Key Events in the Development of Educational Technology in Canada

From the institution-specific findings analyzed in Chapter Four and Chapter Five, a synthesis is provided of faculty perceptions of key events related to the development of

educational technology with an emphasis on developments within Canada. General themes emerged concerning faculty perceptions of key events arising both outside and within Canada connected to the development of the academic educational technology within Canada. In this study, the key events are the events of international or national importance perceived to influence educational technology development within more than one province. Interview data and supporting document data were integrated to discern important events perceived by faculty member participants to affect the development in Canada from the 1960s to 2006. To this end, study participants identified a number of key events perceived to have an impact on the general development of educational technology in Canada including, general world events, inventions, the establishment of professional associations, publications, research development, and program developments. The emerging findings are juxtaposed with document data to confirm statements and dates where possible. Table 15 represents faculty perceptions of key events in the development of educational technology in Canada. The discussion that follows provides a portrait of key events from the perspective of faculty participants. In summary, these trends suggest that the development of the academic field of educational Technology of Canada has reached the state it is at now through key developments and trends arising in the United States.

Table 15: Timeline of Faculty Perceptions of Key Events in the Development of Educational Technology in Canada

Year	Event
1960s	The Quiet Revolution occurred in Quebec. This involved the separation of state and church.
1960s	PLATO systems were created through NSF funding.
1960	The United States Department of Audiovisual Instruction (DAVI) had been in operation for 37 years.

1960	The American Society for Training and Development (ASTD) had been in operation over 15 years.
1960	Graduate programs in educational technology have been established for over 12 years.
1962	International Society for Performance and Instruction (ISPI) founded.
1963	*Rapport Parent* (the Parent Report) was published in Quebec.
1967	The Challenge for Change Initiative was created.
1967	The IBM 1500 was introduced first in the United States and then to Canada.
1967	Seymour Papert's LOGO was a programming language that advanced AI, computing, and pedagogy for children.
1968	Radio Quebec was founded.
1968	The master's degree in educational technology was established at Concordia University. This was the first master's degree in educational technology in the country.
1968	TICCIT systems were created through NSF funding
1968	B. F. Skinner published, *The Technology of Teaching,* which was a seminal work to the programmed instruction movement
1969	The University of Alberta was the first to purchase the IBM 1500 for academic purposes in the country, followed by Laval University in Quebec.
1969	The United States government developed ARPANET for military use.
1970s	The Quebec government funded audio visual in schools and did multimedia drives as a result of the Parent Report.
1970s	NATAL, a Canadian authorware system specified by the National Research Council of Canada. was contracted out to IBM Canada, which failed to market it adequately.
1970	TV Ontario was founded.
1970s	Open University in the United Kingdom influenced distance education program development.
1970s (mid)	Affordable easily useable micro-computers were introduced in North America.
1971	The Association for Media Technology and Education in Canada (AMTEC) was established. It was the first national professional association for educational technology.
1971	The Conseil interuniversitaire des professeurs en technologie éducative (CIPTE) was founded at Laval University by faculty member Philippe Marton.
1971	United States Department of Audiovisual Instruction (DAVI) renamed the Association for Educational Communications and Technology (AECT).
1972	Doctor Steve Hunka pioneered Computer Assisted Instruction (CAI) research at the University of Alberta on the IBM 1500.
1972	Society for Applied Learning Technology (SALT) was founded in the United States.
1973	*Media News*, an AMTEC publication, was created.
1974	Satellite television was utilized for distance education purposes.
1976	The master's degree in educational technology was established at Laval

	University. This was the first master's degree in educational technology (Technologie Éducative) in French speaking Canada.
1976	The doctoral degree in educational technology was established at Laval University. This was the first doctoral degree in educational technology in French speaking Canada.
1976	The master's degree in educational technology (Technologie Éducationnelle) was established at the University of Montreal.
1977	The Association pour le development et l'application de la technologie en education (ADATE) was founded by Laval Faculty with a mandate to promote research and development in audiovisual communications and educational technology.
1978	The Telidon videotex system was created by the Communications Research Centre and National Research Council of Canada and introduced by Bell Canada. It did not gain widespread use.
1982	The Centre for System Research and Knowledge Engineering was created at Concordia University by Doctor David Mitchell and Doctor Gordan Pask.
1980	Seymour Papert's bestseller *Mindstorms* helped launch the LOGO movement
1980	Computer-based multimedia development was introduced in North America. (with the Commodore Amiga ™)
1980	Publication of Robert Taylor's *The computer in school: Tutor, tool, tutee,* which highlighted the role computers can play in education.
1981	Canadian Journal of Educational Communications, an AMTEC publication, was created.
1981	Quebec founded CANAL, the higher educational television network.
1981	The doctoral degree in educational technology was established at Concordia University. This was the first doctoral degree in educational technology in English speaking Canada.
1981	Association for the Advancement of Computing in Education (AACE) was founded in the United States.
1981	Microcomputers were introduced in the United States.
1983	The Canadian Association for Distance Education (CADE) was founded.
1983	The AMTEC Conference had participation from multiple Canadian professional associations including the CADE, the ADATE, and the CIPTE.
1983	Groupe de recherche sur l'apprentissage interactif multimediatise (GRAIM) was founded at Laval University by faculty member Philippe Marton.
1983	BIT NET was introduced in the United States.
1984	Development and deployment of CoSy CMC system at Guelph university, subsequently provided free to Concordia university. Later employed by the UK Open university and many others.
1987	The doctoral degree in educational technology (Technologie Éducationnelle) was established at the University of Montreal.

1980s (mid)	The master's degree in educational technology (Educational Communications and Technology) was established at the University of Saskatchewan.
1986	*Teachers and Machines* was published by Skinner in the United States.
1988	The Centre for the Study of Learning Performance (CSLP) was created in the Department of Education at Concordia University.
1989	International Society for Technology in Education (ISTE) was founded in the United States.
1990s	Economic inflation affected the federal government of Canada. They announced provincial funding cuts to combat high debt maintenance costs and to reduce interest rates.
1990s	Due to loss of federal funding, some provincial governments compensated by cutting funding to provincial ministries, including education.
1990s	Due to budget cuts within provincial ministries of education, funding to post-secondary education was reduced. Universities responded by merging departments and eliminating small departments and programs with inadequate political clout in the university.
1990s	Due to budget cuts to post secondary education, many universities offered attractive early retirement packages to compensate. This triggered an early retirement trend across the academic community and reduced the political clout of programs which lost full Doctors.
1990s (mid)	Quebec separation movement prolonged economic recession in Quebec. A massive early retirement trend emerged in the province together with mergers of educational technology departments into larger conglomerates.
1990s	Computer Mediated Communication (CMC) emerged, resulting in the development of online education.
1990s	Human Performance Technology emerged.
1990s	Personal Computer (PC) embraced the user-friendly Mac operating system technology.
1992	Handbook of Human Performance Technology was published.
1993	CANARIE Inc. was created by an initiative of the Canadian Liberal government to advance broadband technology.
1994	The master's degree in educational technology (Instructional Technology) was established at the University of Alberta.
1994	The master's degree in educational technology was established at the University of Calgary.
1994	The online master's degree in distance education was established at Athabasca University. This was the first online master's degree in distance education to be offered in the country.
1994	The doctoral degree in educational technology was established at the University of Calgary.
1995	Tele-learning NCE initiatives were introduced by the Canadian government.
1995	Easy-to-use client server technology emerged.
1996	The first laptop university in the country emerged (Acadia University).
1990s	Personal use of the Internet and online education was popularized.

(mid)	
1996	The master's degree in educational technology was established at the University of British Columbia.
1997	The free WebCT course management software was released by the University of British Columbia.
1997	GRAIM had over 50 researchers and affiliated research laboratories in Canada, France, and Belgium.
1998	The Learning Commons was founded at the University of Calgary.
1998	ISTE Standards were established by ISTE in the United States.
1999	A number of CANARIE sponsored initiatives were launched (including School Net and RACOL) to promote broadband use in education.
1999	The Information Commons opened at the University of Calgary to provide information services, technology and expertise to support the scholarly use of information resources.
2000	The master's degree in education (information technology) was established as a joint venture between Memorial University and the University College of Cape Breton.
2000	The master's degree in educational technology (learning technology) was established at Acadia University.
2000	The online Master's in distance education was established at Tele-University of Quebec.
2000	The online Master's in educational technology (Distributed Learning) was established at Royal Roads University.
2000s	Blended learning was popularized.
2000s	Synchronous online methods emerged.
2000s	Open Source software was popularized.
2001	University of Montreal closed all graduate degree programs in educational technology.
2001	Over Sold and Underused was published.
2002	The master's degree in educational technology was established as a joint venture between University of British Columbia and the Monterray Institute of Technology.
2002	The Canadian Journal of Educational Communications renamed Canadian Journal of Learning and Technology
2002	The Calgary Centre for Innovative Technology (CCIT) was created at the University of Calgary.
2002	Digital Diploma Mills was published.
2004	AECT Handbook of Research on Educational Communications and Technology was published
2005	The merger of the AMTEC and the CADE was proposed.
2005	Athabasca University received U.S. accreditation for the Master's in Distance Education program, becoming the first Canadian university to be awarded such accreditation in the country.

2005	University of Alberta places moratorium on its educational technology (instructional technology) program.
2005	The doctoral degree in educational technology was established at the University of British Columbia.
2006	The CSLP is well entrenched with over 50 principle members, 16 support staff, and over 40 graduate students
2006	CADE-AMTEC merger was accepted formally.
2006	Canadian Game Studies Association was founded at York University

Period from 1960 to 1967.

In the 1960s, the main international developments in the field of educational technology revolved around graduate degree programs, professional associations, and technological innovation. In 1960, the Programmed Logic for Automatic Teaching Operations (PLATO) system was first developed at the University of Illinois through National Science Foundation funding. It was a computer assisted instruction system using networked mainframe timesharing and terminals for higher education. The mainframe supported up to 1000 terminals for use by individual students. In 1960, graduate programs in educational technology had been established over 12 years earlier. Over the 1960s, the entrenchment of educational technology degree programs in American universities strengthened the academic field. Concurrently, professional associations promoting educational technology were well established. The U.S. Department of Audiovisual Instruction (DAVI) had been in operation for 37 years and the American Society for Training and Development (ASTD) for over 15 years. In 1962, the International Society for Performance and Instruction (ISPI) was founded, which helped to concentrate additional attention in educational technology to training and instructional

improvement. Another development arose in1967 when the first version of Logo Programming Language (a dialect of Lisp) was designed as a tool for learning (LOGO Foundation, 2005). However, the impact of LOGO only became widespread in the early 1980s with the publication Papert's *Mindstorms: Children, computers, and powerful ideas* (1980) and the availability of versions of LOGO for use on personal computers. As indicated by Doctor Crichton from the University of Calgary, "LOGO turned everything on its head in what it meant to teach and use technology." Overall, these developments contributed expertise, professionals, and technological innovations that nurtured educational technology developments in the Canadian context.

The main developments in educational technology from 1960 to 1967 arising within Canada focused on a provincial political reform and educational film. The Quiet Revolution in Quebec occurred when people in Quebec revolted against the dominant role of religion in provincial decision making, particularly in the area of education. This led to the creation of the Parent Commission and the publication of the Parent Report. This report was significant because it promoted greater attention to educational media which helped nurture the field by opening up schools to educational technology integration in a way that did not exist prior to the report. This provincial based event was also of national importance because it set a precedent for educational technology development in other provinces. The second major development was in educational media, particularly in rural areas. One notable event was the Challenge for Change Initiative of the National Film Board. It began in 1967 on Fogo Island off of Newfoundland. It was a hallmark participatory communications initiative (called the Fogo Process) implemented by Memorial University Newfoundland and the National

Film Board of Canada on Fogo Island which brought ten isolated settlements together to discuss problems using 16mm film technology (Snowden, 2005). The Fogo process was subsequently used in other parts of Canada in similar situations.

Period from 1968 to 1972.

Beginning in 1968, the Time-shared Interactive Computer-Controlled Information Television (TICCIT) system was developed in the United States as a CAI project based on personal computer and television technology. Through NSF funding, the TICCIT system evolved and was used in the early 1970s to teach university courses (TICCIT, 2006). Early CAI systems like PLATO and TICCIT were important forerunners to later widespread CAI applications in the 1980s with the advent of cheaper and more powerful personal computers. 1969 the creation of the Advanced Research Projects Agency Network (ARPANET) added significantly to educational technology in Canada. It relied heavy on later advances in computer network communications for teaching and learning purposes. The ARPANET was developed by the U.S. Department of Defence and was a precursor to the Internet (A brief history of the Internet, 2006)

In 1970s, the development of distance education institutions in Canada was a major area educational technology influenced by the Open University (OU) in the United Kingdom. Distance education program development at Athabasca University and the Tele-University of Quebec drew from the OU model. Further proliferation of the field occurred through key professional association developments. In particular, the U.S. Department of Audiovisual Instruction (DAVI) was renamed the Association for

Educational Communications and Technology (AECT) and the Society for Applied Learning Technology (SALT) was founded. The Association for Educational Data Systems (AEDS founded in the 1960s was also quite important (precursor to AACE). In summation, American technological innovation and British advances in distance education provided technology and expertise to support educational technology development in Canada.

Between 1968 to 1972, a number of important events occurred within Canada that helped shape the development of educational technology. During this time, computers were introduced in Canada for educational and research purposes. A provincial reform in Quebec continued to promote the use of technology in education, important associations and organizations were founded, and graduate degree programs in educational technology appeared for the first time. First, as indicated by Doctor Boyd, the IBM 1500 was introduced to Canada in 1968 when computer assisted instruction (CAI) facilities at the University of Alberta and Laval University were established. The facility at the University of Alberta was the first of its kind outside the United States (Hunka, 1972). The CAI facility operating within the Division of Educational Research and Services was important in promoting educational technology research and teaching activities. This initiative in Alberta was also important because it led to the creation of similar type facilities in Quebec and the development of a CAI facility at the Ontario Institute for the Study of Education (OISE) in Toronto where Doctor Olivier created a CAI authoring system called the"CAN-1" (The current CAN-8 is a descendent of that). Concurrently, in 1968, the establishment of the first master's degree in education technology at Concordia University started a development which led to the creation of educational technology

degree programs at other universities across Canada. Also, in 1968, the founding of TEVEC's successor, Radio-Quebec, along with TV Ontario and other broadcasters, marked an important moment in Canadian broadcasting. As indicated by Doctor Boyd from Concordia University, "The innovation that got us started was the founding of broadcasters, namely, Radio-Quebec, TV Ontario, and the Alberta Foothills." Canadian broadcasting helped promote the proliferation of educational broadcasting. This was extremely important in providing quality education to many areas in Canada which are geographically isolated. Early broadcasters had an influence across Canada as part of what Doctor Mappin from the University of Alberta describes as a "series of events that resulted in the creation of provincial television and media authorities."

In the 1970s a new development began with the introduction of portable videotape equipment (Notably the Sony Portapac ™). As Doctor Mappin from the University of Alberta explains, "This cracked open the use of media in schools like nothing before." Based on recommendations from the Parent Report, the Quebec government provided major funding to audio visual development. As indicated by Doctor Stolovitch from the University of Montreal, "In the 1970s, the Quebec government funded a lot of audiovisual instruction in the schools and did multimedia drives as a result of the Parent Commission and Report in the 1960s." According to Doctor Boyd, in the early 1970's, the National Research Council of Canada Associate Committee on Instructional Technology created a specification for a National CAI Authoring Language (NATAL). "A contract was let to IBM Canada to develop and market the language, but they did as little as possible because it competed with existing (inferior) IBM products" as indicated by Doctor Boyd. However, the standards for testing CAL applications in laboratory

settings proved very beneficial. A NATAL prototype tested on a wide range of CAL applications was found to reduce programming effort and allow greater programming flexibility (Braham, Henneker, & Hlady, 1980). It led to improvements in CAN, and to Concordia's CITCAN authoring language. In 1970, Athabasca University was founded. This was an important event in education technology because it used technology to provide instruction to thousands of people that were so remote they could never get an education at a traditional university. "The development of distance education in Canada in the early 1970s was important in helping Canada overcome geographical distances," as Doctor Baggaley from Athabasca University indicates. In the 1970s, the introduction of portable videotape equipment into Canadian schools was important to the field of educational technology because it encouraged media integration in schools, this was particularly important for advancing education in rural settings.

The creation of the AMTEC in 1971 was an effort to bring together the ETRAC and the EMAC was a major event that influenced educational technology in Canada. As stated by Doctor Mappin from the University of Alberta, "I think that the AMTEC had influence on educational technologist practitioners and promoted cooperation among them. I think that the AMTEC did have an influence on getting academics to know practitioners and getting practitioners to know each other." To this end, in 1973, the AMTEC began publishing *Media News*, which helped to provide an impetus for collaborative research projects in Canada.

Period from 1973 to 1977.

The main international development in this period was marked by the appearance of the new technology, in particular the Apple II. As stated by Doctor Boyd from Concordia University, "It meant a lot more work could be done on a stand-alone basis rather than being dependent on the vagaries of negotiations with the managers of the large time-sharing mainframes." Doctor Crichton from the University of Calgary indicates, "The Apple environment and desktop publishing was inclusive. The whole idea that you did not have to know anything to become a user was elegant" Overall, these developments marked the movement away from traditional audio-visual media and instruction to interactive computer-based instruction, along with methods and tools for doing it.

From 1973 to 1977, a number of important events occurred in Canada which helped shape the field of educational technology, including, the application of new technologies, the creation of two new degree programs, and professional association developments. Beginning in 1974, application of satellite television in distance education helped to promote distance education in Canada. Doctor Boyd from Concordia University indicates, "The use of satellite television by the Tele-university of Quebec and Athabasca pioneered distance education." In 1976, the academic field evolved with the addition of new graduate degree programs in Quebec. A master's and doctoral program in Educational Technology (Technologie éducative) was officially recognized at Laval. This was particularly important because this was the first educational technology doctoral program in Canada. In the same year, a master's program in educational technology (Technologie éducationnelle) was created at the University of Montreal. The following

year, the creation of a new professional association helped nurture within Quebec and across French speaking Canada. The Association pour le development et l'application de la technologie en education (ADATE) founded by Laval Faculty with a mandate to promote research and development in audiovisual communications and educational technology. This association played an important role in pushing for government for official recognition of educational technology as a profession in Quebec.

Period from 1978 to 1982.

The introduction of new computer technology was the main international development at this time because it allowed other key developments to take place which shaped the direction of educational technology. Beginning in the 1980s, multimedia applications education expanded its scope by offering new ways to provide instruction. Multimedia applications helped move audio visual media into an academic configuration through its connection to teaching and learning. This impacted the field significantly by bringing educational technology into traditional education, thus raising public awareness of educational technology. Doctor Brown from the University of Saskatchewan recalls, "That [multimedia] gave us the visibility and the wedge that brought us into mainstream education. It gave us meaning and respect in the academic community."

In 1981, the development in computer technology and networking continued with the introduction of the mass marketed IBM PC microcomputer and the introduction of BIT NET. Mass marketed microcomputers facilitated the proliferation of multimedia development. It changed things profoundly. The introduction of BIT NET (Because It's

Time Network) used IBM protocols to provide electronic mail and file transfer services within a computer network. This allowed researchers and academics in different locations to share information more easily than had been possible before this point. This development spread to Canada as Doctor Montgomerie indicated." The founding of the Association for the Advancement of Computing in Education (AACE) in 1981 nurtured this development in educational technology by providing a professional association for researchers and practitioners to concentrate on contributing to the application of computer in education. Overall, new technological developments and the founding of a professional association dedicated to advancing research on computer in education were applied within the Canadian context to leverage the academic field.

Between 1978 and 1982, educational technology was shaped by a number of events occurring in Canada, including, new technology development, a new publication, and a new organization. In 1978, the creation of a Canadian videotex system called Telidon, advanced tele-education Telidon was the result of a Communications Canada Research Centre program (Telidon, 2006). Telidon was supported by Bell Canada and other Canadian telephone companies. It was a videotex system consisting of data banks connected to a central computer, feeding home terminals with keyboards via telephone lines. The videotex units fed directly into ordinary TV sets for display purposes. Telidon was an improvement on British and French systems developed before Telidon. It was important to education technology in Canada because it advanced instruction at a distance by providing a means of using television sets as information displays capable of receiving a variety of written and crude graphic information and also providing limited interactive capabilities through the keyboard (Friends of CRC, 2005). Doctor Baggaley

from Athabasca explains, "It was an early example of Canada's expertise in bridging wide geographical spaces for educational purposes." Beginning in the 1980s, the Centre for System Research and Knowledge Engineering was created at Concordia University. This was important providing research funding and opportunities for graduate students and faculty. This provided Concordia University the necessary resources and international reputation to establish in 1981 the first Ph.D. program in Educational Technology in English Speaking Canada. In 1981,the *Canadian Journal of Educational Communications* was created, replacing *Media News* as the main AMTEC publication. This publication was influential in advancing academic exchange and communication in educational technology. Doctor Hepburn indicates, "This journal was considered to be the first major peer reviewed educational technology journal published in Canada. It was published by AMTEC and replaced *Media News*. Another advancement in educational television occurred in 1981 when Quebec founded the Corporation pour l'avancement des nouvelles applications des langages (CANAL). At this time Tele-university of Quebec took responsibility for running an educational television service in the province using Radio-Quebec as a gateway for its programming (Canal Savior, 2005).

Period from 1983 to 1987.

From 1983 to 1987, the main international developments revolved around the expanding public awareness of computer based instruction. From 1983 to 1987, developments helped to expand awareness of computer applications in education. In particular, Skinner's (1986), Teachers *and Machines,* provided a review of the classroom

use of technology since 1920. This helped to put computer applications in education at the forefront in the evolution of educational technology. . The Canadian computer conferencing system (CoSy) was also introduced in 1984. Also in 1984, Guelph hosted a conference on computer conferencing and electronic messaging. This helped promote greater public awareness of the potential of computer conferencing. As indicated by Doctor Boyd, "As part of the standard publicity efforts, various trade publications were notified, including BYTE Magazine." In 1987, the Macintosh II was introduced with Hypercard, which also increased educative opportunities for learners by offering an easy to use personal computer.

Between 1983 and 1987, a series of events within Canada helped nurture educational technology, including, professional association developments, the creation of a new research centre, and the establishment of two new graduate programs in educational technology. In 1993, the Canadian Distance Education Association (CADE) was established as a national professional association to promote research and development in distance education. In 1983, the AMTEC Confluence Conference in Montreal. This conference helped shape the field by bringing together separate professional associations from across Canada. Doctor Schwier from the University of Saskatchewan recollects, "So many people came together. There was a lot of cross talk between those groups at that time." Also in 1983, a new research centre was created called, the Groupe de recherche sur l'apprentissage interactif multimediatise (GRAIM). It was founded at Laval University by faculty member Philippe Morton and helped promote research in multimedia development. In the mid-1980s, the field was shaped by the addition of a master's and doctoral degree in educational technology (Technologie

éducationnelle) at the University of Montreal and the recognition of a master's degree in educational technology (Educational Communications and Technology) at the University of Saskatchewan. Beginning in 1986, an important development occurred in the organization of the AMTEC's main publication with Doctor Robert Bernard taking over as Editor. As stated by Bernard and Shaw (1996),

> In 1986, CJEC went through some fundamental changes, in terms of editorial policy, format and production process. In that year a working editorial board was established and each manuscript was reviewed by at least two and most commonly three peer reviewers using a double blind system (i.e., neither reviewer nor author knew the name of the other).

Doctor Robert Bernard (Editor, CJEC) helped to improve the academic quality and credibility of the *Canadian Journal of Educational Communications* by creating a rigorous publication review process. "Bob Bernard from Concordia took over the editorship of the *Canadian Journal of Educational Communications* and provided us a major step forward in establishing an academic journal in Canada" explains Doctor Mappin from the University of Alberta.

Period from 1988 to 1992.

From 1998 to 1992, international trends in computer based technology in education continued to expand and human performance technology was introduced to the field. Increased public attention to technology in education was marked by the founding

of the International Society for Technology in Education (ISTE) and concurrent development of CMC and online education. This was important to the development of educational technology because, as Doctor Viens from the University of Montreal explains that, "there was a popularization of educational technology as many people put their website and course materials online and believed themselves capable of integrating technology. This brought a level of legitimacy to the field." An anonymous faculty member from the Tele-University of Quebec remarks, "For the first time in the history of distance education, we could be in contact with our students seven days a week." Mr. Michaud from the Tele-University of Quebec adds, "From an education standpoint, it allowed students "to get free online access to documents and to contact their professors online." In the same period, there was increased computer platform compatibility as PC operating systems embraced some features of the Macintosh. As Doctor Hamilton from Royal Roads University explains, "We also saw advances in user friendly computing with Macintosh technology making its way into PC environments. We saw computers become more accessible and graphically enhanced, with richer media." Finally, the early 1990s saw the rise of Human Performance Technology (HPT). This enhanced the training and performance side of educational technology. Doctor Stolovitch from the University of Montreal asserts,

> I think the growth of human performance technology provided a different outlook. This group within educational technology realized that learning, while interesting, could not lead to significant performance changes without factoring in other variables. There was an interest among people from business to learn more about training.

Furthermore, in 1992 publication of the *Handbook of Human Performance Technology* helped popularize HPT as a key area in educational technology.

The period from 1988 to 1992 was a particularly important time for educational technology in Canada due to major events in Canada revolving around new research centre creation, federal government funding cutbacks, and university funding cutbacks. In 1988, the Centre for the Study of Leading Performance (CSLP) was created in the Department of Education at Concordia. This was an important development because it provided opportunities and resources which helped support research for faculty and students involved in the educational technology degree programs. The added resources and expertise helped provide stability and support to Concordia's degree programs in the difficult years that followed.

Cutbacks in provincial government funding to post secondary education were perceived by faculty participants to negatively affect the development of many educational technology degree programs by reducing available program funding to maintain program operations and reducing the number of educational technology faculty available to teach courses by offering early retirement packages to educational technology faculty and limiting the hiring of new educational technology faculty replacements. From the late 1980s to the early 1990s an economic recession affected the federal government of Canada which led to provincial funding cuts to combat recession. Due to loss of federal funding in the early 1990s, some provincial governments compensated by cutting funding to provincial ministries, including education. This, in turn, led to a decrease in funding to post-secondary education in most if not all

provinces. Many universities offered attractive early retirement packages to compensate and this triggered an early retirement trend across the academic community.

Period from 1993 to 1997.

The main international developments in this period involved the proliferation of computer-mediated communications in education, which helped provide instruction to rural parts of Canada. This was facilitated through the popularization of the World Wide Web and the advent of easy to use client server technology. Doctor Brown from the University of Saskatchewan explains, "At this time, I was in a small rural community. Being able to meet people and maintain relationships at a distance meant I could stay in a small community." Beginning in 1995, was the rise of easy to use client server technology, which was a computing system with a server, that provided information and services to clients who accessed server resources from their personal computers using client software. Overall, technological developments applied to education within the Canadian context helped advance educational technology, especially in rural areas where geographical distance challenges easy access to education and educational resources.

Between 1993 and 1997, educational technology was affected by a number of events arising in Canada, including, the creation of government sponsored initiatives, new technology development, political events, and the creation of new degree programs. In 1993 the creation of CANARIE Inc. (Canada's advanced Internet development organization) was established. It was important for Canada because it helped promote broadband technology by providing research and development funding for initiatives

contributing to use of broadband technology in a variety of settings. This was particularly important for the field given decreased provincial funding to education following the federal economic recession. This research funding helped sponsor a number of initiatives that allowed Canada to become one of the most connected countries in the world (Luppicini, 2005). Doctor Glassman from Memorial University indicates, "Through CANARIE, Canada was able to create the first optical network anywhere. As indicated by Doctor Montgomerie from the University of Alberta, "We were at the leading edge." In 1994, the establishment of new degree programs in educational technology helped further the field. A master's program (Instructional Technology) was established at the University of Alberta and the University of Calgary established a master's and doctoral specializations in educational technology.

Other important developments began in 1995, when Tele-learning NCE (Networks of Centres of Excellence) were established across Canada to promote networked learning, tools for education and training initiatives. This was important to the academic field of educational technology and distance education in Canada because it facilitated information sharing and community building for experts working in educational technology across the country. As indicated by Mr. Mundell from Royal Roads University, "it created a community that became a cluster." Tele-learning NCE was considered to be part of a crucial building block of the federal science and technology strategy (Networks of Centres of Excellence, 2005). As mentioned by Mr. Mundell, "It had a profound effect that I believe put Canada ahead in the world."

In the mid-1990s, the Quebec separation movement was a political event that influenced the evolution of educational technology by prolonging an economic recession

in Quebec, which led to the beginning of a massive early retirement trend in the province as universities attempted to cut costs. In 1996, Acadia University became the first laptop university in Canada. This nurtured the field by providing a benchmark across the country and stimulating research and development efforts to introduce technology in local schools. Doctor MacKinnon from Acadia University explains, "We have been working with other schools that were starting out in thinking about laptop technology in their classrooms." In the same year, the University of British Columbia established a master's specialization in educational technology (technology studies in education). This broadly focused degree contributed to the diversity of the field. In 1997, there were major course management software developments with WebCT. WebCT was developed as a faculty project at the University of British Columbia in 1994 and was released in 1997. Doctor Hepburn from Acadia University notes, "Products like these have been hugely influential on campus as course management systems to accompany face-to-face courses to make them hybrid or as a distance education platform." By 1997, the GRAIM had over 50 researchers and affiliated research laboratories in Canada, France, and Belgium which helped support educational technology at Laval University.

Period from 1998 to 2002.

The continuing international development in technology integration within education continued with the introduction of standards to guide the proper application of technology in education. Specifically, the release of the National Educational Technology Standards (NETS) standards from the International Society for Technology

in Education (ISTE) in 1998 provided educators with the first set of guidelines to encourage the appropriate use of technology to advance teaching and learning. Doctor Petrina from the University of British Columbia notes "I do think that in recent history ISTE standards had an impact on how we think about teaching and standards." The NETS initiate was designed to help educational leaders provide learning opportunities that produce technology-capable students (NETS, 2005). Beginning in the late 1990s, there was a popularization of blended learning which, according to Doctor Boyd, was " a laudatory name for the piecemeal introduction of adjunct computer-mediated communication into conventional university courses, which was all that could be conveniently afforded and stomached by faculty." Blended learning combines aspects of online and campus-based learning. This model provided support and legitimation through successful applications of online learning methods as a useful set of tools for traditional universities. In 2001 and 2002, important developments emerged in technology discourse with the publication of Larry Cuban's *Oversold and Underused* and David Noble's *Digital Diploma Mills.* These publications particular, helped nurture the field by extending interest in educational technology issues to a broader audience. Larry Cuban's *Oversold and Underused* examined how new technologies are being used in schools and whether the investment in hardware improved classroom learning. As indicated by Doctor Krug from the University of British Columbia, "This text described where I think we are at in terms of having infrastructure and computers but not a sense of how to use them." Another influential text was *Digital Diploma Mills.* This text helped to raise public awareness of the use and misuse of online methods in post secondary education.

Between 1998 and 2002, educational technology was shaped by events occurring in Canada, such as new technology initiatives, new approaches to teaching, and the creation of a number of new online and blended degree programs. In 1998, the University of Calgary created the Learning Commons followed by the creation of the Information Commons in 1999. This was an important because it provided instructional services, information services, technology and expertise to support technology in education and the scholarly use of information resources. This was also important because educational technology programs at the University of Calgary were expanding quickly to the point that it had the largest contingency of educational technology faculty members compared to other Canadian universities. In 1999, the School Net initiative was created. It was important because it allowed Canada to be the first country in the world to network schools across the country. School Net was a partnership between governments, the education community, and the private sector, which succeeded in making Canada the first country in the world to connect schools and public libraries to the Internet (School Net, 2005).

In 2000, there was growing popularization of blended learning that developed from the e-learning development in the 1990s. This helped to legitimize distance education by bring online methods into traditional universities as add-ons. In 2000, a major advancement in graduate degree programming occurred in distance education. New online degree programs were established at Memorial University, Acadia University, the Tele-university of Quebec, and Royal Roads. What is particularly interesting is that Memorial University established a joint programs. Memorial University created a joint program with the University College of Cape Breton

(information technology). In 2001, the *Canadian Journal of Learning and Technology* replaced the *Canadian Journal of Educational Communication.* In 2002, the University of British Columbia established an international joint program with Monterray Institute of Technology. Finally, the University of Calgary created the Calgary Centre for Innovative Technology (CCIT). This university-wide centre promotes multidisciplinary research partnerships and alliances with industry and funding agencies, researchers. This provides funding and research opportunities for faculty and students in educational technology and other degree programs.

Period from 2003 to 2006.

From 2002 to 2006, the main international developments focused on continuing evolution of blended learning along with the popularization of open source software, especially within post secondary education. The development in open source software was important in providing educational institutions with alternatives to expensive software applications created in the private sector for profit. In drawing from his experience, Doctor Spencer from Athabasca recalls, "There are external forces where companies like WebCT, offer you their product for next to nothing and get you hooked on it. Then, five years later, they charge you an astronomical amount to keep." It is noteworthy that WebCT originated and was made available free by UBC. It was only when UBC sold out to corporate interests that fees were introduced and ratcheted up. Doctor Boyd noted that "WebCT originated from and was made available free by the University of British Columbia. It was only when the university sold out to corporate interests that fees were introduced. "This perception has led to more institutions with

their own systems level programmers adopting open source software. As stated by Doctor Brown from the University of Saskatchewan, "We are moving towards Open Source."

The main development between 2003 and 2006 arising in Canada is the AMTEC merger with the CADE in 2006, which marks beginning of a new professional association to advance educational technology and distance education in Canada. In 2005, Athabasca University received U.S. accreditation for the Master's in Distance Education program, becoming the first Canadian university to be awarded such accreditation in the country. This sets an important benchmark for other online programs across Canada. Also, in 2005, there were notable degree program changes that affected the academic field in Canada. University of Alberta places moratorium on Instructional Technology Program and the University of British Columbia offers doctoral specialization in educational technology. Finally, expansion at a major research centre continues as the CSLP at Concordia University is well entrenched with over 50 principle members, 16 support staff, and over 40 graduate students. The most recent event discussed by participants was the proposed merger of AMTEC and CADE in 2005. The merger, accepted in 2006, is expected to combine professional association could as early as 2007 in an effort to better connect people involved in educational technology and distance education across Canada.

Summary of key trends.

Drawing together faculty perceptions of key international events in the development of educational technology reveals a number of trends. The first trend is a

general trend of perceived influence focusing mainly on events occurring in the United States. The majority of events mentioned by faculty participants are rooted in the United States including professional associations, publications, and the advent of new technology. This was particularly salient in the area of technology development. American innovations, such as ARPANET, LOGO, microcomputers, BIT NET, and the World Wide Web, were perceived as key events. One notable exception was in the area of distance education. In the case of distance education, faculty participants attributed the greatest influence to the Open University in the United Kingdom. It provides the model for initial program development at multiple institutions like the University of Athabasca and the Tele-University of Quebec. The second trend was in computer and computer network related developments. At first only local area networks (LANS) were introduced into schools. And later, wide area networks (WANS), including the Internet, were made accessible everywhere on university campuses. This trend was pervasive across the periods discussed beginning with acknowledgement of the ARPANET in 1969 to the founding of Association for the Advancement of Computing in Education (AACE) founded in 1981 and ending with mention of the rise of easy-to-use Mosaic ™ client server (WWW) technology, popularization of the Internet, synchronous online learning, blended learning, and open source software from the 1990s to present. From the early to mid-1990s, a third trend was in human performance technology (HPT). This was reflected in the professional association development, publications, and direct mention of HPT. By the 1990s, the International Society for Performance and Instruction (ISPI) had been operating and supporting HPT related development for almost 30 years. In the 1990s, HPT became popularized and led to the publication of the *Handbook of Human*

Performance Technology. This handbook first published in 1992 is now in its second edition and is considered to be one of the most comprehensive works on HPT in print. Finally, the development of blended learning and the advent of open source technology have expanded the scope of educational technology by providing new instructional approaches and tools to help shape the academic field.

Regarding key events arising within Canada, faculty perceptions of key development in educational technology in Canada reveals a number of trends. First, there was a trend in audiovisual instruction and educational film development from 1967 to 1981. This is exemplified by the Creation of the Challenge for Change Initiative in the 1967, the founding of Radio Quebec in 1968 and founding of TV Ontario in 1970, the introduction of portable video equipment in education during the 1970s, provincial government funded audio visual initiative in schools in 1970s, the creation of Telidon in 1978, and the founding of CANAL in 1981. This trend has two major thrusts. The first thrust was directed at the integration of audiovisual instruction in schools. This became a key component of teacher education programs at multiple Canadian Universities. The second thrust was on education film and video, particularly to assist teaching in rural settings. The founding of multiple broadcasters, the creation of educational television studios at some Canadian universities, and the creation of new multimedia technology capability of transmitting image based information across networks helped to nurture audiovisual instruction and educational film aspect of the academic field in Canada. A second trend focused on broadband technology advancement in the 1990s. CANARIE Inc. was created as an initiative of the Canadian Liberal government to advance broadband technology. It helped nurture a number of educational technology

developments including School Net and Rural Advanced Community of Learners Project (RACOL). In 1999, the creation of School Net and RACOL by CANARIE Inc. under the national E-learning program encouraged the use of broadband networks in education and training. In addition, the Tele-learning NCE initiative was sponsored by Canadian federal granting agencies. It created partnerships between university, government and industry with the goal of promoting Canadian research that contributed to economic and social benefits for all Canadians. It was important in connecting researchers at universities across Canada through broadband technology and infrastructure funding. A third trend was in distance education program creation beginning 2000. Although, Athabasca University and the Tele-University of Quebec had been operating for over 40 years, a newfound interest in online degree programs in the late 1990s led to the creation of multiple online degree programs in 2000 at various universities across Canada including the University of British Columbia, Memorial University, Acadia University, Tele-University of Quebec , and Royal Roads University. Taken together, these trends suggest that the development of the academic field of educational Technology of Canada has reached the state that it is at now through key developments and trends emerging in Canada.

Comparing Key Events Connected to the Development of Educational Technology

The discussion above used interview data and supporting document to chronologically identify important national and international events perceived by faculty member participants to affect the development of educational technology in Canada from the 1960s to 2006. The following two sections compare key events connected to the

development of educational technology to provide an additional level of analysis to further situate the phenomenon under investigation within a larger context. To this end, comparisons are drawn between international, national, and local events perceived to influence the development of the academic field in Canada in order to provide new insights. It is worth noting that the comparison of events in the United States and Canada are those perceived by faculty participants in this study and are not to be interpreted as overarching generalizations of educational technology development because of differences in language, demographics, political systems, and resource availability.

Comparing key international and national events related to the development educational technology

A number of relationships can be drawn between international and national events perceived by faculty participants to influence academic field development. One major difference noted is the emergence of educational technology in the United States: It occurred before it did in Canada. The development of both graduate degree programs and key professional associations occurred later in Canada compared to the United States. When Concordia University established the first degree program in Canada in 1968, degree programs had been operating in the United States for 20 years. Likewise, in 1971, when the AMTEC was create to provide a national association to promote educational technology in Canada, multiple professional associations had been contributing the development of educational technology in the United States were well established. The U.S. Department of Education had been in operation for 37 years. Notably, the Department of Audiovisual Instruction (DAVI) had been in operation for 48 years, the

American Society for Training and Development (ASTD) had been operating over 26 years and the International Society for Performance and Instruction (ISPI) had been operating for nine years.

One major similarity noted was that, both international and national developments highlighted the importance of computer network related events. On the American side, the development of new technologies like APRANET, the microcomputer, BITNET, and server-client interfaces were highlighted by faculty participants. On the Canadian side, the development of computer software, broadband technology and its applications were highlighted, including the creation of National Author Language (NATAL) standards, the establishment of CANARIE Inc., Tele-learning NCE initiatives, School Net, and RACOL. What is particularly interesting is that in both cases, new technology creation in both countries involved support from government departments or agencies.

In summary, comparisons revealed differences and similarities between educational technology developments in the United and Canada. The biggest difference between American and Canadian events perceived by faculty member participants to be connected to the development of the academic field in Canada focused on their differing stages of evolution. In general, key developments in graduate degree programs, professional associations, and technological innovations occurred in the United States prior to being introduced into Canada. In terms of similarity, both the United States and Canada have made considerable advancement in the area of computing and networking for educational uses. Computer related innovations in from the United States combined with broadband networking advancements through Canada's Canarie Inc. have helped shape the academic field of educational technology in Canada significantly by extending

the capacity of educational technologists to deliver online instruction across Canada with high speed broadband connections.

Comparing key national and local events connected to the development of educational technology in Canada

In building on differences and similarities between international and national events connected to educational technology development, there are important comparisons to be made between national and local developments in order to understand how the academic field developed in Canada.

One major national level occurrence that appeared across Canada revolved around the connection between degree programs in educational technology and educational developments outside degree programs within affiliated service units, professional associations, and research centres. At Laval University CIPTE and ADATE were associations founded by Laval Faculty in the 1970s supporting educational technology development. In the 1980s, the Groupe de recherche sur l'apprentissage interactif multimediatise (GRAIM) was founded at Laval University by faculty member Philippe Morton. At Concordia University (Sir George Williams University), the CIT service unit jointly offered a master's degree in educational technology with the Concordia Department of Education. In the early1980s, The Centre for System Research and Knowledge Engineering was created at Concordia University, followed by the creation of the Centre for the Study of Leading Performance (CSLP) in the late 1980s. At the University of Calgary, the Learning Commons and the Information Commons were created in the late 1990s and offered instructional services, information services,

technology and expertise. This was followed by the creation of the Calgary Centre for Innovative Technology (CCIT) in 2002 to promote collaborative research activities.

It is interesting to note that educational developments mentioned by faculty participants in connection with research centres, service units, and affiliated associations occur at universities that have not discontinued programs. Although, traditional educational technology programs closed in Quebec and Alberta, universities with educational technology developments external to degree programs such as Laval University, Concordia University, and the University of Calgary managed to avoid programs closures. Program closures occurred at the University of Montreal and the University of Alberta where there was not a strong indication of educational development outside the programs.

As was mentioned earlier in the chapter, there were also temporal gaps in provincial funding to post secondary education that were perceived by faculty participants to negatively affect the development of some educational technology programs in the 1990s. These cutbacks led to a reduction of available program funding to maintain program operations and a reduction in the number of educational technology faculty available to teach courses when some universities offered early retirement packages to educational technology faculty while limiting the hiring of new educational technology faculty replacements.

There were also unique events that occurred within specific provinces, particularly those surrounding Quebec. Beginning in the 1960s, the Quiet revolution in Quebec was the province in Canada where a political uprising of this magnitude occurred. The revolution led to the creation of the Parent Commission and the promotion

of technology and education reform. It is worth noting that Quebec had more educational technology degree programs than any other province in Canada. Furthermore, following the federal economic recession in the early 1990s, the Quebec separation movement prolonged economic recession in Quebec that was not experienced in other provinces. This led to additional cutbacks in education compared and a massive early retirement trend in the province that resulted in the closure of two educational technology programs at the University of Montreal.

In summary, within the Canadian context there are both shared and unique events connected to the development of educational technology at the institutions studied. The main shared event perceived by faculty member participants to be connected to the development of the academic field in Canada revolved around the contribution to educational technology academic degree programs from educational technology developments within affiliated research centres and service units within the larger university context. Faculty member participants in this study identified educational technology developments at all 12 of the universities studied. In terms of unique aspects of educational technology development, there were notable differences in key events perceived to affect the development of the field of educational technology, particularly in Quebec where the Quiet Revolution and Quebec Separation Movement occurred.

Chapter Summary

In this chapter, the 12 universities offering graduate degree programs in educational technology analyzed earlier are examined as a whole. In addition, they are analyzed in relation to international developments mainly in the United States and unique

local features of the Canadian field are outlined. It was seen that the evolution of educational technology in the United States influenced the emergence of educational technology, as an academic field in Canada. Canadian universities built upon technological innovations achieved in the United States and built a field with uniquely Canadian characteristics.

Overall, this study has collected and presented previously dispersed knowledge about the historical development of educational technology as an academic field in Canada. It has identified leaders and key events in the evolution of the field, beginning with the field's point of origin in 1968 at Concordia University. It has traced developments in professional associations connected to the academic field, graduate degree program developments, and educational technology developments outside degree programs within the larger context of the universities investigated.

Based on interview data and supporting document data, it was found that the development of educational technology academic programs at the majority of universities studied was shaped by educational technology developments outside degree programs, especially with respect to affiliated research centres and service units within the larger university. These developments played an important role in providing expertise, resources, and technology support services which helped nurture the development of academic degree programs. Temporal gaps in funding were perceived to negatively affect a number of educational technology programs. This was perceived by faculty participants to be connected to provincial funding cutbacks to post-secondary education in the 1990s, which led to many educational technology faculty members taking early retirement packages juxtaposed with limited hiring of new educational technology faculty

replacements. It was also found that there is a great diversity in how the educational technology degree programs developed at the 12 universities investigated. In particular, faculty participants perceived that degree programs developed in Quebec were shaped by a number of unique events which were not present in other provinces, such as the establishment of the Parent Commission following the Quiet Revolution in Quebec in the 1960s and the Separation Movement in the 1990s followed by a massive early retirement trend among educational technology faculty in Quebec. The study provides insight into the circumstances in which the field emerged and how the field has been shaped over the course of its development. It not only presents valuable information on the field; as understood by key participants, but it also provides opportunities for critical dialogue about the field and its possible future directions.

Chapter Seven – Discussion

About the Chapter

This chapter is divided into two sections to make sense of and evaluate all this historical self-report and document-based research. It begins with an integration of tentative conclusions about which factors were the most important at various stages in the development of educational technology graduate degree programs in Canada. The concluding section discusses study limitations and makes recommendations in an effort to add to the understanding of the evolution of academic programmes on educational technology in Canada. The discussion focuses mainly on the Canadian context with comparisons to the American context added where applicable.

Tentative Conclusions About Important Factors in the Development of Educational Technology Graduate Degree Programs in Canada.

As mentioned previously, the intent of this study was to provide a portrait of how the academic field of educational technology in Canada arrived where it is now. This portrait provides a foundation to base tentative conclusions about important factors influencing the educational technology graduate degree programs in Canada. In an effort to derive important factors from the data, this researcher perceived a need to distinguish graduate degree programs in educational technology offered at traditional institutions from those offered at distance education institutions. In conventional universities intra-institutional partnering was identified as a major factor connected to faculty perceptions of educational technology degree program viability. This factor appeared to affect

educational technology programs differently at traditional and distance education institutions.

Educational programs at a number of traditional institutions appeared to be affected by the presence or absence of strong partnerships with service and research units within the university. Partnering within university was a predominant theme discussed by participants in regards to cross-university initiatives to promote the use of technology, university-based research collaborations, university committees and advisory boards. The educational technology degree programs at the University of Calgary are currently flourishing with a moderate level of partnering taking place within the larger university. For instance Doctor Clark from the University of Calgary stated, "The real backbone, technology people, are calling on us to make recommendations on information technology purchases."

Regarding distance education institutions, a different type of partnering appeared to be an important factor influencing educational technology degree programs. This was the case at Acadia University, Athabasca University, and Royal Roads University where there appeared to be strong partnering connections with the private sector, which contributed to program success. For instance, the Dell-Acadia partnership allowed for Canada's first laptop university to capitalize on technology and invest in educational use of technology, including the creation of the online Masters' in Learning Technology. Doctor Krug from the University of British Columbia noted, "There are a number of software developing companies and other groups here which makes it a good place for developing partnerships and doing things that are more entrepreneurial." This seemed to suggest that private sector partnerships, in particular, are attractive for online and blended

programs which rely on advanced technology. Doctor Hamilton from Royal Roads remarked, "It is not possible to do anything on a large scale without partnerships, whether they be public institution partnerships or public-private partnerships. Inter-university partnerships like TELUQ-UQAM and MUN-UCB were also identified as key partnering relations for online academic program survival, especially with regard to resource and cost sharing between institutions. The same partnering trends were not apparent in partnerships involving traditional degree programs. Overall, tentative conclusions in this study suggest that different types of partnering and collaboration may play an important role in nurturing educational technology academic degree programs. However, the type of partnering that provides the greatest program viability takes institution type into consideration. Theoretical explanations derived in this study suggest that educational technology programs at traditional institutions may benefit from stronger partnerships with research and service units within the university structure, whereas, educational technology programs at distance education institutions may benefit from developing stronger partnerships outside their respective institutions. In line with participant responses, there is indication within the professional literature that partnerships have historically played an important role in distance education planning and implementation (Rogers, 1993).

Limitations and Recommendations

There were a number of study limits to take note of when reading this study. First, there were difficulties in locating a number of documents. As indicated by my research logs dating March 28, 2005, "Problems with the University of Alberta program

documentation requests. Requests were made for photocopied documentation from University Archives, The Office of the Registrar, and the University of Alberta Library. Finally, selected volumes were requested through interlibrary loan procedures where only some of the requested years were available." In addition the selection criteria for persons to be interviewed were adjusted in places where required. A researcher log from April 13, 2005, indicated:

> I met to review interview procedures and participant contacts. First, it was discussed that at some institutions the senior professor responsible for administering the program is not necessarily an educational technology professor (I. e., In this case, the senior person recommends the key contact person. Also, I interviewed the current senior professor in some programs if the same person was the senior person in the beginning (I.e., University of Calgary).

A second limitation revolved around the inclusion and exclusion of diverse online programs. According to the Canadian Virtual University (CVU) website, "Our universities offer 284 complete degrees, diplomas, and certificates and over 2300 individual courses available completely online or through distance education" (Canadian Virtual University, 2006). It could be argued that this was a study on its own. Although there were a number of online programs, it was the distance education degree programs which were of interest. This issue was addressed in my researcher log of November 4, 2005:

> There are 12 affiliated member institutions, namely, Acadia University, Athabasca University, the University College of Cape Breton, Laurentian University, Memorial

University, Nipissing University , the Royal Military College of Canada, the Tele-university of Quebec, the University of Manitoba, Thompson River University, Royal Roads University, and the University of New Brunswick. Of the 12 universities the institutions offering degree programs in distance education are as follows: Royal Roads (M.A. in Distributed Learning), Acadia University (M.Ed. in Learning and Technology), Athabasca University (M.A. in distance education), Memorial University (M.Ed. in Information Technology), and the Tele-university of Quebec (M.A. in distance education).

A third limitation arose from the occasional inaccuracies of information provided in oral history interviews. This limitation was partly circumvented by cross-checking. Also, this type of qualitative research emphasizes the role of the expected reader's knowledgeable interpretations as a key component of the research process. This is particularly important when dealing with oral history interviews with senior professional covering important events spanning decades. This view is shared by other researchers who rely on oral history type data. As indicated by Brown, Denning, Groh, and Prusak,

> If you can find people still alive who were around when the organization was created and who can really talk about it, my advice is to interview these people and tape the conversation on video. Talk to people who have stories to tell, and let the viewers make their own decision as to what this means (Brown, Denning, Groh, & Prusak, 2005).

Findings from this study suggest that there is a perception among educational technology faculty that the presence of educational technology support service and training developments outside the academic degree programs within the university holds tremendous promise for leveraging educational technology program development. Although not explicitly mentioned by all faculty participants in this study, there was a strong focus on educational technology developments within affiliated research centres and service units within the university. This raises a number of questions for future research:-. What benefits (if any) are provided by the presence of educational technology developments outside educational technology degree programs within affiliated research centres and service units? What advantages and disadvantages (if any) do affiliated research centres provide to educational technology program development? What advantages and disadvantages (if any) do centralized educational technology service units provide to educational technology program development? What advantages and disadvantages (if any) do decentralized educational technology service units provide to educational technology program development? Further, beyond considerations of educational technology research and service unit affiliation with educational technology degree programs, what else is essential to ensure the viability of educational technology degree programs? These questions arising from the current research study could be addressed in future research to help provide further insight into the development of the academic field of educational technology in Canada.

Findings from this study also suggest that there is a growing trend in the development of online and blended technology supported degree programs that holds great promise in the evolving academic field of educational technology in Canada.

Before 2000 there was one online degree program in educational technology (distance education) in Canada. By 2006, six online or blended degree programs in educational technology were created in Canada. This same trend in program creation did not occur for traditional campus-based educational technology degree programs. This raises the following question: Will the recent trends in online degree program creation supplant traditional campus-based educational technology programs? This question arising from the current research study could also be addressed in future research to help provide further insight into where the academic field of educational technology in Canada may be headed.

Finally, there is also the general question of the meaning of this academic field to the public and its identity for the professionals in it. This is an important question which remains open for future research on the development of educational technology in Canada. Although, not specifically addressed in this study, the interviews showed that participants in this study did not appear to have a clear and unified conceptualization of the scope and nature of the field of educational technology and its relevance for many classes' potential employers. In this study, some participants argued that educational technology was a field that arose from the use of audiovisual media in schools and colleges with corresponding needs for media coordinator and audiovisual director jobs, also which grew from military and industrial-commercial training staff requirements, and from educational television producer and director etc. Some participants viewed educational technology as a field concerned with engineering effective learning systems with the accent on the learning. There were also participants like Doctor Laferriere from Laval University, who noted that educational technology was not a distinct field on its

own." This perception raises important questions revolving around the conceptualization of academic educational technology in Canada. The question then, was, and is educational technology a reform movement in education and to what extent is it a diffusion of pedagogic innovations supported by newly available cheap-enough technology? Future research may extend qualitative research strategies used in this study to explore these fundamental questions and other questions which will surely continue to arise concerning the conceptualization of educational technology as an academic field in Canada.

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Appendix A - Concordia University List of Program Developments

Program	Year	Course Type	Course Name
MA, Ed Tech.	1969-70	Prerequisite	Nature and Function of Teaching
MA, Ed Tech.	1969-70	Prerequisite	Basic Psychological Processes
MA, Ed Tech.	1969-70	Prerequisite	Sociology of Education
MA, Ed Tech.	1969-70	Prerequisite	History of Education
MA, Ed Tech.	1969-70	Prerequisite	Philosophy of Education
MA, Ed Tech.	1969-70	Prerequisite	Statistical Methods in Psychology and Education
MA, Ed Tech.	1969-70	Required	Education and the Nature of Man
MA, Ed Tech.	1969-70	Required	Seminar in Psychological Theory
MA, Ed Tech.	1969-70	Required	Seminar in Sociology and Social Psychology of the School
MA, Ed Tech.	1969-70	Required	Teaching in a Subject Area Through Media
MA, Ed Tech.	1969-70	Required	Teaching at an Educational Level
MA, Ed Tech.	1969-70	Required	The Nature and Function of Instructional Communications
MA, Ed Tech.	1969-70	Required	Communication Theory and Research
MA, Ed Tech.	1969-70	Elective	Seminar and Workshop in Human Communication
MA, Ed Tech.	1969-70	Elective	Seminar in Research and Writing for Media
MA, Ed Tech.	1969-70	Elective	Laboratory in Television Production I
MA, Ed Tech.	1969-70	Elective	Laboratory in Television Production II
MA, Ed Tech.	1969-70	Elective	Seminar in Motion Picture Production I
MA, Ed Tech.	1969-70	Elective	Field Study in Instructional Communications
MA, Ed Tech.	1969-70	Elective	Development and Management of Instructional Communications Programmes
MA, Ed Tech.	1969-70	Elective	Aesthetics and Design in Instructional Communications
MA, Ed Tech.	1969-70	Elective	Seminar and Workshop: Dramatic Form For Visual Media
MA, Ed Tech.	1969-70	Elective	Instructional Technological Systems
MA, Ed Tech.	1969-70	Elective	Special Issues in Instructional Communications
MA, Ed Tech.	1969-70	Elective	Individual Educational Television Production
MA, Ed Tech.	1969-70	Elective	Thesis in Research in and Development of Educational Media
MA, Ed Tech.	1974-75	Required	Educational Cybernetics
MA, Ed Tech.	1974-75	Required	Philosophical Aspects of educational technology I
MA, Ed Tech.	1974-75	Required	Learning and Instructional Design
MA, Ed Tech.	1974-75	Required	Quantitative Methods and Research Design
MA, Ed Tech.	1974-75	Elective	educational technology and Society
MA, Ed Tech.	1974-75	Elective	Foundations of educational technology
MA, Ed Tech.	1974-75	Elective	Philosophical Aspects of educational technology II
MA, Ed Tech.	1974-75	Elective	Psychological Foundations of educational technology
MA, Ed Tech.	1974-75	Elective	Seminar and Workshop in Human Communication I
MA, Ed Tech.	1974-75	Elective	Seminar and Workshop in Human Communication II
MA, Ed Tech.	1974-75	Elective	Social Psychology of Education
MA, Ed Tech.	1974-75	Elective	Mass Communications Research
MA, Ed Tech.	1974-75	Elective	Graphic Communications
MA, Ed Tech.	1974-75	Elective	Theory of the Moving Image
MA, Ed Tech.	1974-75	Elective	Curriculum Development: Theory and Practice
MA, Ed Tech.	1974-75	Elective	Curriculum Development and Integrative Education I

MA, Ed Tech.	1974-75	Elective	Curriculum Development and Integrative Education II
MA, Ed Tech.	1974-75	Elective	Research and Evaluation in Educational Broadcasting
MA, Ed Tech.	1974-75	Elective	Measurement and Evaluation in Education
MA, Ed Tech.	1974-75	Elective	The Concept of Educational Planning
MA, Ed Tech.	1974-75	Elective	Educational Planning: A comparative perspective
MA, Ed Tech.	1974-75	Elective	Educational Systems Analysis
MA, Ed Tech.	1974-75	Elective	Instructional Systems Analysis
MA, Ed Tech.	1974-75	Elective	educational technology in Developing Nations
MA, Ed Tech.	1974-75	Elective	Educational Simulation and Gaming
MA, Ed Tech.	1974-75	Elective	Computer Based Systems
MA, Ed Tech.	1974-75	Elective	Seminar on research and Writing for Media
MA, Ed Tech.	1974-75	Elective	Laboratory in television and Evaluation for Education I
MA, Ed Tech.	1974-75	Elective	Laboratory in television and Evaluation for Education II
MA, Ed Tech.	1974-75	Elective	Television Workshop
MA, Ed Tech.	1974-75	Elective	Laboratory Course in Radio, Audiovision, Tape-recording and editing
MA, Ed Tech.	1974-75	Elective	Laboratory in Motion Picture Production and Evaluation
MA, Ed Tech.	1974-75	Elective	Advanced Readings and Researchin Educational Technology I
MA, Ed Tech.	1974-75	Elective	Advanced Readings and Researchin Educational Technology II
MA, Ed Tech.	1974-75	Elective	Special Issues in educational technology
MA, Ed Tech.	1974-75	Elective	Laboratory in educational technology
MA, Ed Tech.	1974-75	Elective	Administration of educational technology Units for Education and Training Systems
MA, Ed Tech.	1974-75	Elective	Development and organization of Educational Broadcasting
MA, Ed Tech.	1979-80	Required	Research and Evaluation in Educational Media
MA, Ed Tech.	1979-80	Required	Quantitative Methods and Research Design I
MA, Ed Tech.	1979-80	Required	Quantitative Methods and Research Design II
MA, Ed Tech.	1979-80	Elective	educational technology and Society
MA, Ed Tech.	1979-80	Elective	Foundations of educational technology
MA, Ed Tech.	1979-80	Elective	Educational Cybernetics
MA, Ed Tech.	1979-80	Elective	Philosophical Aspects of educational technology I
MA, Ed Tech.	1979-80	Elective	Philosophical Aspects of educational technology II
MA, Ed Tech.	1979-80	Elective	Psychological Foundations of educational technology
MA, Ed Tech.	1979-80	Elective	Learning and Instructional Design
MA, Ed Tech.	1979-80	Elective	Human Communication I
MA, Ed Tech.	1979-80	Elective	Human Communication II
MA, Ed Tech.	1979-80	Elective	Social Psychology of Education
MA, Ed Tech.	1979-80	Elective	Topics in Social Psychology of Education I
MA, Ed Tech.	1979-80	Elective	Topics in Social Psychology of Education II
MA, Ed Tech.	1979-80	Elective	Mass Communications Research
MA, Ed Tech.	1979-80	Elective	Planning and Producing Audio Visual Materials
MA, Ed Tech.	1979-80	Elective	Theory of the Moving Image
MA, Ed Tech.	1979-80	Elective	Curriculum Development: Theory and Practice
MA, Ed Tech.	1979-80	Elective	Topics in Curriculum and Instruction I
MA, Ed Tech.	1979-80	Elective	Topics in Curriculum and Instruction II
MA, Ed Tech.	1979-80	Elective	Computer Assisted Instruction
MA, Ed Tech.	1979-80	Elective	Measurement and Evaluation in Education
MA, Ed Tech.	1979-80	Elective	The Concept of Educational Planning

MA, Ed Tech.	1979-80	Elective	Educational Planning: A comparative perspective
MA, Ed Tech.	1979-80	Elective	Educational Systems Analysis
MA, Ed Tech.	1979-80	Elective	Instructional Systems Analysis
MA, Ed Tech.	1979-80	Elective	educational technology in Developing Nations
MA, Ed Tech.	1979-80	Elective	Educational Simulation and Gaming
MA, Ed Tech.	1979-80	Elective	Computer Based Systems in Education and Training
MA, Ed Tech.	1979-80	Elective	Seminar on research and Writing for Media
MA, Ed Tech.	1979-80	Elective	Laboratory in television and Evaluation for Education I
MA, Ed Tech.	1979-80	Elective	Laboratory in television and Evaluation for Education II
MA, Ed Tech.	1979-80	Elective	Television Workshop
MA, Ed Tech.	1979-80	Elective	Laboratory Course in Radio, Audiovision, Tape-recording and editing
MA, Ed Tech.	1979-80	Elective	Laboratory in Motion Picture Production and Evaluation
MA, Ed Tech.	1979-80	Elective	Advanced Readings and Researchin Educational Technology I
MA, Ed Tech.	1979-80	Elective	Advanced Readings and Researchin Educational Technology II
MA, Ed Tech.	1979-80	Elective	Special Issues in educational technology
MA, Ed Tech.	1979-80	Elective	Laboratory in educational technology
MA, Ed Tech.	1979-80	Elective	Administration of educational technology Units for Education and Training Systems
MA, Ed Tech.	1979-80	Elective	Development and organization of Educational Broadcasting
MA, Ed Tech.	1984-5	Required	Educational Cybernetics
MA, Ed Tech.	1984-5	Required	Philosophical Aspects of educational technology I
MA, Ed Tech.	1984-5	Required	Learning and Instructional Theories
MA, Ed Tech.	1984-5	Required	Quantitative Methods and Research Design I
MA, Ed Tech.	1984-5	Elective	educational technology and Society
MA, Ed Tech.	1984-5	Elective	Fundamentals of educational technology
MA, Ed Tech.	1984-5	Elective	Philosophical Aspects of educational technology II
MA, Ed Tech.	1984-5	Elective	Psychological Foundations of educational technology
MA, Ed Tech.	1984-5	Elective	Human Communication I
MA, Ed Tech.	1984-5	Elective	Human Communication II
MA, Ed Tech.	1984-5	Elective	Research and Theory in Adult Learning
MA, Ed Tech.	1984-5	Elective	Social Psychology of Education
MA, Ed Tech.	1984-5	Elective	Topics in Social Psychology of Education I
MA, Ed Tech.	1984-5	Elective	Topics in Social Psychology of Education II
MA, Ed Tech.	1984-5	Elective	Mass Communications Research
MA, Ed Tech.	1984-5	Elective	Planning and Producing Audio Visual Materials
MA, Ed Tech.	1984-5	Elective	Theory of the Moving Image
MA, Ed Tech.	1984-5	Elective	Curriculum Development: Theory and Practice
MA, Ed Tech.	1984-5	Elective	Topics in Curriculum and Instruction I
MA, Ed Tech.	1984-5	Elective	Topics in Curriculum and Instruction II
MA, Ed Tech.	1984-5	Elective	Principles of Educational Message Design
MA, Ed Tech.	1984-5	Elective	Formative Evaluation of Educational Materials
MA, Ed Tech.	1984-5	Elective	Quantitative Methods and Research Design I
MA, Ed Tech.	1984-5	Elective	Measurement and Evaluation in Education
MA, Ed Tech.	1984-5	Elective	The Concept of Educational Planning
MA, Ed Tech.	1984-5	Elective	Educational Planning: A comparative perspective
MA, Ed Tech.	1984-5	Elective	Educational Systems Analysis
MA, Ed Tech.	1984-5	Elective	Instructional Design

MA, Ed Tech.	1984-5	Elective	educational technology in Developing Nations
MA, Ed Tech.	1984-5	Elective	Educational Simulation and Gaming
MA, Ed Tech.	1984-5	Elective	Introduction to Educational Computing
MA, Ed Tech.	1984-5	Elective	Computer Based Systems in Education and Training
MA, Ed Tech.	1984-5	Elective	Small Computer Systems and Software for Teachers and Trainers
MA, Ed Tech.	1984-5	Elective	Computer Assisted Instruction
MA, Ed Tech.	1984-5	Elective	Modelling, Simulation and Intelligent Tutoring Systems
MA, Ed Tech.	1984-5	Elective	Selected Topics in Instructional Technology for Adult Education
MA, Ed Tech.	1984-5	Elective	Seminar on research and Writing for Media
MA, Ed Tech.	1984-5	Elective	Laboratory in Studio television production and Evaluation for Education I
MA, Ed Tech.	1984-5	Elective	Laboratory in Studio Television Production and Evaluation for Education II
MA, Ed Tech.	1984-5	Elective	Laboratory in Small Format Television Production
MA, Ed Tech.	1984-5	Elective	Laboratory in Audio production and Evaluation
MA, Ed Tech.	1984-5	Elective	Laboratory in Motion Picture Production and Evaluation
MA, Ed Tech.	1984-5	Elective	Advanced Readings and Research in Educational Technology I
MA, Ed Tech.	1984-5	Elective	Advanced Readings and Research in Educational Technology II
MA, Ed Tech.	1984-5	Elective	Special Issues in educational technology
MA, Ed Tech.	1984-5	Elective	Laboratory in educational technology
MA, Ed Tech.	1984-5	Elective	Administration of educational technology Units for Education and Training Systems
MA, Ed Tech.	1984-5	Elective	Development and organization of distance education
MA, Ed Tech.	1989-90	Required	Educational Cybernetics
MA, Ed Tech.	1989-90	Required	Philosophical Aspects of educational technology I
MA, Ed Tech.	1989-90	Required	Learning and Instructional Theories
MA, Ed Tech.	1989-90	Required	Quantitative Methods and Research Design I
MA, Ed Tech.	1989-90	Elective	educational technology and Society
MA, Ed Tech.	1989-90	Elective	Fundamentals of educational technology
MA, Ed Tech.	1989-90	Elective	Philosophical Aspects of educational technology II
MA, Ed Tech.	1989-90	Elective	Psychological Foundations of educational technology
MA, Ed Tech.	1989-90	Elective	Human Communication I
MA, Ed Tech.	1989-90	Elective	Human Communication II
MA, Ed Tech.	1989-90	Elective	Research and Theory in Adult Learning
MA, Ed Tech.	1989-90	Elective	Social Psychology of Education
MA, Ed Tech.	1989-90	Elective	Topics in Social Psychology of Education I
MA, Ed Tech.	1989-90	Elective	Topics in Social Psychology of Education II
MA, Ed Tech.	1989-90	Elective	Mass Communications Research
MA, Ed Tech.	1989-90	Elective	Planning and Producing Audio Visual Materials
MA, Ed Tech.	1989-90	Elective	Theory of the Moving Image
MA, Ed Tech.	1989-90	Elective	Curriculum Development: Theory and Practice
MA, Ed Tech.	1989-90	Elective	Topics in Curriculum and Instruction I
MA, Ed Tech.	1989-90	Elective	Topics in Curriculum and Instruction II
MA, Ed Tech.	1989-90	Elective	Principles of Educational Message Design
MA, Ed Tech.	1989-90	Elective	Formative Evaluation of Educational Materials

MA, Ed Tech.	1989-90	Elective	Quantitative Methods and Research Design I
MA, Ed Tech.	1989-90	Elective	Measurement and Evaluation in Education
MA, Ed Tech.	1989-90	Elective	The Concept of Educational Planning
MA, Ed Tech.	1989-90	Elective	Educational Planning: A comparative perspective
MA, Ed Tech.	1989-90	Elective	Educational Systems Analysis
MA, Ed Tech.	1989-90	Elective	Instructional Design
MA, Ed Tech.	1989-90	Elective	educational technology in Developing Nations
MA, Ed Tech.	1989-90	Elective	Educational Simulation and Gaming
MA, Ed Tech.	1989-90	Elective	Introduction to Educational Computing
MA, Ed Tech.	1989-90	Elective	Computer Based Systems in Education and Training
MA, Ed Tech.	1989-90	Elective	Small Computer Systems and Software for Teachers and Trainers
MA, Ed Tech.	1989-90	Elective	Computer Assisted Instruction
MA, Ed Tech.	1989-90	Elective	Modelling, Simulation and Intelligent Tutoring Systems
MA, Ed Tech.	1989-90	Elective	Selected Topics in Instructional Technology for Adult Education
MA, Ed Tech.	1989-90	Elective	Seminar on research and Writing for Media
MA, Ed Tech.	1989-90	Elective	Laboratory in Studio television production and Evaluation for Education I
MA, Ed Tech.	1989-90	Elective	Laboratory in Studio Television Production and Evaluation for Education II
MA, Ed Tech.	1989-90	Elective	Laboratory in Small Format Television Production
MA, Ed Tech.	1989-90	Elective	Laboratory in Audio production and Evaluation
MA, Ed Tech.	1989-90	Elective	Laboratory in Motion Picture Production and Evaluation
MA, Ed Tech.	1989-90	Elective	Advanced Readings and Research in Educational Technology I
MA, Ed Tech.	1989-90	Elective	Advanced Readings and Research in Educational Technology II
MA, Ed Tech.	1989-90	Elective	Special Issues in educational technology
MA, Ed Tech.	1989-90	Elective	Laboratory in educational technology
MA, Ed Tech.	1989-90	Elective	Administration of educational technology Units for Education and Training Systems
MA, Ed Tech.	1989-90	Elective	Development and organization of distance education
MA, Ed Tech.	1994-5	Required	Educational Cybernetics
MA, Ed Tech.	1994-5	Required	Philosophical Aspects of educational technology I
MA, Ed Tech.	1994-5	Required	Learning and Instructional Theories
MA, Ed Tech.	1994-5	Required	Quantitative Methods and Research Design I
MA, Ed Tech.	1994-5	Elective	educational technology and Society
MA, Ed Tech.	1994-5	Elective	Fundamentals of educational technology
MA, Ed Tech.	1994-5	Elective	Philosophical Aspects of educational technology II
MA, Ed Tech.	1994-5	Elective	Psychological Foundations of educational technology
MA, Ed Tech.	1994-5	Elective	Human Communication I
MA, Ed Tech.	1994-5	Elective	Human Communication II
MA, Ed Tech.	1994-5	Elective	Research and Theory in Adult Learning
MA, Ed Tech.	1994-5	Elective	Social Psychology of Education
MA, Ed Tech.	1994-5	Elective	Topics in Social Psychology of Education I
MA, Ed Tech.	1994-5	Elective	Topics in Social Psychology of Education II
MA, Ed Tech.	1994-5	Elective	Mass Communications Research
MA, Ed Tech.	1994-5	Elective	Planning and Producing Audio Visual Materials

MA, Ed Tech.	1994-5	Elective	Theory of the Moving Image
MA, Ed Tech.	1994-5	Elective	Curriculum Development: Theory and Practice
MA, Ed Tech.	1994-5	Elective	Topics in Curriculum and Instruction I
MA, Ed Tech.	1994-5	Elective	Topics in Curriculum and Instruction II
MA, Ed Tech.	1994-5	Elective	Principles of Educational Message Design
MA, Ed Tech.	1994-5	Elective	Formative Evaluation of Educational Materials
MA, Ed Tech.	1994-5	Elective	Quantitative Methods and Research Design I
MA, Ed Tech.	1994-5	Elective	Measurement and Evaluation in Education
MA, Ed Tech.	1994-5	Elective	The Concept of Educational Planning
MA, Ed Tech.	1994-5	Elective	Educational Planning: A comparative perspective
MA, Ed Tech.	1994-5	Elective	Educational Systems Analysis
MA, Ed Tech.	1994-5	Elective	Instructional Design
MA, Ed Tech.	1994-5	Elective	educational technology in Developing Nations
MA, Ed Tech.	1994-5	Elective	Educational Simulation and Gaming
MA, Ed Tech.	1994-5	Elective	Introduction to Educational Computing
MA, Ed Tech.	1994-5	Elective	Computer Based Systems in Education and Training
MA, Ed Tech.	1994-5	Elective	Small Computer Systems and Software for Teachers and Trainers
MA, Ed Tech.	1994-5	Elective	Computer Assisted Instruction
MA, Ed Tech.	1994-5	Elective	Modelling, Simulation and Intelligent Tutoring Systems
MA, Ed Tech.	1994-5	Elective	Selected Topics in Instructional Technology for Adult Education
MA, Ed Tech.	1994-5	Elective	Seminar on research and Writing for Media
MA, Ed Tech.	1994-5	Elective	Laboratory in Studio television production and Evaluation for Education I
MA, Ed Tech.	1994-5	Elective	Laboratory in Studio Television Production and Evaluation for Education II
MA, Ed Tech.	1994-5	Elective	Laboratory in Small Format Television Production
MA, Ed Tech.	1994-5	Elective	Laboratory in Audio production and Evaluation
MA, Ed Tech.	1994-5	Elective	Laboratory in Motion Picture Production and Evaluation
MA, Ed Tech.	1994-5	Elective	Advanced Readings and Research in Educational Technology I
MA, Ed Tech.	1994-5	Elective	Advanced Readings and Research in Educational Technology II
MA, Ed Tech.	1994-5	Elective	Special Issues in educational technology
MA, Ed Tech.	1994-5	Elective	Laboratory in educational technology
MA, Ed Tech.	1994-5	Elective	Administration of educational technology Units for Education and Training Systems
MA, Ed Tech.	1994-5	Elective	Development and organization of distance education
MA, Ed Tech.	1999-00	Required	Learning Theories
MA, Ed Tech.	1999-00	Required	Fundamental Methods of Inquiry For educational Technology
MA, Ed Tech.	1999-00	Required	Human Performance Technology
MA, Ed Tech.	1999-00	Elective	Fundamentals of educational technology
MA, Ed Tech.	1999-00	Elective	Educational Cybernetics
MA, Ed Tech.	1999-00	Elective	Philosophical Aspects of educational technology II
MA, Ed Tech.	1999-00	Elective	Psychological Foundations of educational technology
MA, Ed Tech.	1999-00	Elective	Human Communication
MA, Ed Tech.	1999-00	Elective	Research and Theory in Adult Learning
MA, Ed Tech.	1999-00	Elective	Topics in Learning Theories

MA, Ed Tech.	1999-00	Elective	Media and the Young Child
MA, Ed Tech.	1999-00	Elective	Theory of the Moving Image
MA, Ed Tech.	1999-00	Elective	Planning and Producing Audio Visual Materials
MA, Ed Tech.	1999-00	Elective	Principles of Educational Message Design
MA, Ed Tech.	1999-00	Elective	Formative Evaluation of Educational Materials
MA, Ed Tech.	1999-00	Elective	Educational Simulation and Gaming
MA, Ed Tech.	1999-00	Elective	Research Design and Methodology in Ed. Tech
MA, Ed Tech.	1999-00	Elective	Analysis of Quantitative Research in educational technology
MA, Ed Tech.	1999-00	Elective	Introduction to Qualitative and Case Study Research
MA, Ed Tech.	1999-00	Elective	Topics in Methods of Inquiry
MA, Ed Tech.	1999-00	Elective	Educational Systems Analysis
MA, Ed Tech.	1999-00	Elective	educational technology in Developing Nations
MA, Ed Tech.	1999-00	Elective	Introduction to Educational Computing
MA, Ed Tech.	1999-00	Elective	Computer Based Systems in Education and Training
MA, Ed Tech.	1999-00	Elective	Small Computer Systems and Software for Teachers and Trainers
MA, Ed Tech.	1999-00	Elective	Computer Assisted Instruction
MA, Ed Tech.	1999-00	Elective	Modelling and Simulation
MA, Ed Tech.	1999-00	Elective	Knowledge Engineering and Intelligent Computing
MA, Ed Tech.	1999-00	Elective	Design, Development and Production of Computer-Based Multimedia
MA, Ed Tech.	1999-00	Elective	Human Resources Planning and Policy
MA, Ed Tech.	1999-00	Elective	Laboratory in Studio television production and Evaluation for Education
MA, Ed Tech.	1999-00	Elective	Advanced Readings and Research in Educational Technology I
MA, Ed Tech.	1999-00	Elective	Advanced Readings and Research in Educational Technology II
MA, Ed Tech.	1999-00	Elective	Topics in Educational Informatics I
MA, Ed Tech.	1999-00	Elective	Special Issues in educational technology
MA, Ed Tech.	1999-00	Elective	Laboratory in educational technology
MA, Ed Tech.	1999-00	Elective	Design, Preparation, and Evaluation of Mixed Media Courseware for distance education
MA, Ed Tech.	1999-00	Elective	Designing and Developing Print-Based Instruction
MA, Ed Tech.	1999-00	Elective	Instructional Design I
MA, Ed Tech.	1999-00	Elective	Instructional Design II
MA, Ed Tech.	1999-00	Elective	Topics in Human Performance Technology
MA, Ed Tech.	1999-00	Elective	Administration of educational technology Units for Education and Training Systems
MA, Ed Tech.	1999-00	Elective	Fundamentals of distance education
MA, Ed Tech.	2004-5	Required	Learning Theories
MA, Ed Tech.	2004-5	Required	Fundamental Methods of Inquiry for educational technology
MA, Ed Tech.	2004-5	Required	Human Performance Technology
MA, Ed Tech.	2004-5	Elective	Developing Multi-Media Courseware for distance education
MA, Ed Tech.	2004-5	Elective	Designing and Developing Print Based Instruction
MA, Ed Tech.	2004-5	Elective	Educational Cybernetics
MA, Ed Tech.	2004-5	Elective	Human Performance Technology
MA, Ed Tech.	2004-5	Elective	Topics in Human Performance Technology
MA, Ed Tech.	2004-5	Elective	Topics in Learning Theories

MA, Ed Tech.	2004-5	Elective	Principles of Educational Message Design
MA, Ed Tech.	2004-5	Elective	Formative Evaluation of Educational Materials
MA, Ed Tech.	2004-5	Elective	Simulation & Gaming in Education and Training
MA, Ed Tech.	2004-5	Elective	Topics in Methods of Enquiry
MA, Ed Tech.	2004-5	Elective	Introduction to Educational Computing
MA, Ed Tech.	2004-5	Elective	Computer Based Systems in Education and Training
MA, Ed Tech.	2004-5	Elective	Computer-Assisted Instruction
MA, Ed Tech.	2004-5	Elective	Modeling and Simulation
MA, Ed Tech.	2004-5	Elective	Knowledge Engineering and Intelligent Tutoring Systems
MA, Ed Tech.	2004-5	Elective	Advanced Design, Development and Production of Computer Based Multi-Media
MA, Ed Tech.	2004-5	Elective	Planning and Producing Audio Visual Programs
MA, Ed Tech.	2004-5	Elective	Administration of educational technology Units for Education and Training Systems
MA, Ed Tech.	2004-5	Elective	Fundamentals of distance education
MA, Ed Tech.	2004-5	Elective	Philosophical Aspects of educational technology
MA, Ed Tech.	2004-5	Elective	Educational Systems Analysis
MA, Ed Tech.	2004-5	Elective	educational technology in Developing Nations
MA, Ed Tech.	2004-5	Elective	Human Resources Planning and Policy
MA, Ed Tech.	2004-5	Elective	Advanced Readings and Research in educational technology
MA, Ed Tech.	2004-5	Elective	Special Issues in educational technology

Program	Year	Course Type	Course Name
PhD, Ed Tech	1984-5	Prerequisite	Educational Cybernetics
PhD, Ed Tech	1984-5	Prerequisite	Philosophical Aspects of educational technology I
PhD, Ed Tech	1984-5	Prerequisite	Learning and Instructional Theories
PhD, Ed Tech	1984-5	Prerequisite	Quantitative Methods and Research Design I
PhD, Ed Tech	1984-5	Prerequisite	Quantitative Methods and Research Design II
PhD, Ed Tech	1984-5	Prerequisite	Measurement and Evaluation in Education
PhD, Ed Tech	1984-5	Prerequisite	Educational Systems Analysis
PhD, Ed Tech	1984-5	Required	educational technology Research Seminar I
PhD, Ed Tech	1984-5	Required	educational technology Research Seminar II
PhD, Ed Tech	1984-5	Required	Advanced Research Design and Quantitative Methods in educational technology
PhD, Ed Tech	1984-5	Required	Research Reports
PhD, Ed Tech	1984-5	Required	Doctoral Proposal
PhD, Ed Tech	1984-5	Required	Doctoral Comprehensives
PhD, Ed Tech	1984-5	Required	Thesis
PhD, Ed Tech	1984-5	Elective	Area Tutorials in Research Methods and Practice
PhD, Ed Tech	1984-5	Elective	Area Tutorials in Instructional Design
PhD, Ed Tech	1984-5	Elective	Area Tutorials in Human Resources Development
PhD, Ed Tech	1984-5	Elective	Area Tutorials in Educational Cybernetics, Systems Analysis & Design
PhD, Ed Tech	1984-5	Elective	Area Tutorials in Theory, Development and Research in Educational Media
PhD, Ed Tech	1984-5	Elective	Area Tutorials in distance education
PhD, Ed Tech	1989-90	Prerequisite	Educational Cybernetics
PhD, Ed Tech	1989-90	Prerequisite	Philosophical Aspects of educational technology I

PhD, Ed Tech	1989-90	Prerequisite	Learning and Instructional Theories
PhD, Ed Tech	1989-90	Prerequisite	Quantitative Methods and Research Design I
PhD, Ed Tech	1989-90	Prerequisite	Quantitative Methods and Research Design II
PhD, Ed Tech	1989-90	Prerequisite	Measurement and Evaluation in Education
PhD, Ed Tech	1989-90	Prerequisite	Educational Systems Analysis
PhD, Ed Tech	1989-90	Required	educational technology Research Seminar I
PhD, Ed Tech	1989-90	Required	educational technology Research Seminar II
PhD, Ed Tech	1989-90	Required	Advanced Research Design and Quantitative Methods in educational technology
PhD, Ed Tech	1989-90	Required	Research Reports
PhD, Ed Tech	1989-90	Required	Doctoral Proposal
PhD, Ed Tech	1989-90	Required	Doctoral Comprehensives
PhD, Ed Tech	1989-90	Required	Thesis
PhD, Ed Tech	1989-90	Elective	Area Tutorials in Research Methods and Practice
PhD, Ed Tech	1989-90	Elective	Area Tutorials in Instructional Design
PhD, Ed Tech	1989-90	Elective	Area Tutorials in Human Resources Development
PhD, Ed Tech	1989-90	Elective	Area Tutorials in Educational Cybernetics, Systems Analysis & Design
PhD, Ed Tech	1989-90	Elective	Area Tutorials in Theory, Development and Research in Educational Media
PhD, Ed Tech	1989-90	Elective	Area Tutorials in distance education
PhD, Ed Tech	1994-5	Prerequisite	Educational Cybernetics
PhD, Ed Tech	1994-5	Prerequisite	Philosophical Aspects of educational technology I
PhD, Ed Tech	1994-5	Prerequisite	Learning and Instructional Theories
PhD, Ed Tech	1994-5	Prerequisite	Research Design and Methodology in educational technology
PhD, Ed Tech	1994-5	Prerequisite	Analysis of Quantitative Research in educational technology
PhD, Ed Tech	1994-5	Required	educational technology Research Seminar I
PhD, Ed Tech	1994-5	Required	educational technology Research Seminar II
PhD, Ed Tech	1994-5	Required	Advanced Research Design and Quantitative Methods in educational technology
PhD, Ed Tech	1994-5	Required	Research Reports
PhD, Ed Tech	1994-5	Required	Doctoral Proposal
PhD, Ed Tech	1994-5	Required	Doctoral Comprehensives
PhD, Ed Tech	1994-5	Required	Thesis
PhD, Ed Tech	1994-5	Elective	Area Tutorials in Research Methods and Practice
PhD, Ed Tech	1994-5	Elective	Area Tutorials in Instructional Design
PhD, Ed Tech	1994-5	Elective	Area Tutorials in Human Resources Development
PhD, Ed Tech	1994-5	Elective	Area Tutorials in Educational Cybernetics, Systems Analysis & Design
PhD, Ed Tech	1994-5	Elective	Area Tutorials in Theory, Development and Research in Educational Media
PhD, Ed Tech	1994-5	Elective	Area Tutorials in distance education
PhD, Ed Tech	1999-00	Prerequisite	Learning Theories
PhD, Ed Tech	1999-00	Prerequisite	Fundamental Methods of Inquiry for educational technology
PhD, Ed Tech	1999-00	Prerequisite	Human Performance Technology
PhD, Ed Tech	1999-00	Required	educational technology Research Seminar I
PhD, Ed Tech	1999-00	Required	educational technology Research Seminar II
PhD, Ed Tech	1999-00	Required	Advanced Research Design and Quantitative Methods in educational technology

PhD, Ed Tech	1999-00	Required	Research Reports
PhD, Ed Tech	1999-00	Required	Doctoral Proposal
PhD, Ed Tech	1999-00	Required	Doctoral Comprehensives
PhD, Ed Tech	1999-00	Required	Thesis
PhD, Ed Tech	1999-00	Elective	Area Tutorials in Research Methods and Practice
PhD, Ed Tech	1999-00	Elective	Area Tutorials in Human Performance Technology
PhD, Ed Tech	1999-00	Elective	Area Tutorials in Human Resources Development
PhD, Ed Tech	1999-00	Elective	Area Tutorials in Educational Cybernetics, Systems Analysis & Design
PhD, Ed Tech	1999-00	Elective	Area Tutorials in Theory, Development and Research in Educational Media
PhD, Ed Tech	1999-00	Elective	Area Tutorials in distance education
PhD, Ed Tech	2004-5	Prerequisite	Learning Theories
PhD, Ed Tech	2004-5	Prerequisite	Fundamental Methods of Inquiry For educational Technology
PhD, Ed Tech	2004-5	Prerequisite	Human Performance Technology
PhD, Ed Tech	2004-5	Required	educational technology Research Seminar I
PhD, Ed Tech	2004-5	Required	educational technology Research Seminar II
PhD, Ed Tech	2004-5	Required	Advanced Research Design and Quantitative Methods
PhD, Ed Tech	2004-5	Required	Research Reports
PhD, Ed Tech	2004-5	Required	Doctoral Proposal
PhD, Ed Tech	2004-5	Required	Doctoral Comprehensives
PhD, Ed Tech	2004-5	Required	Thesis
PhD, Ed Tech	2004-5	Elective	Area Tutorials in Research Methods and Practice
PhD, Ed Tech	2004-5	Elective	Area Tutorials in Human Performance Technology
PhD, Ed Tech	2004-5	Elective	Area Tutorials in Human Resources Development
PhD, Ed Tech	2004-5	Elective	Area Tutorials in Educational Cybernetics, Systems Analysis & Design
PhD, Ed Tech	2004-5	Elective	Area Tutorials in Theory Development and Research in Educational Media
PhD, Ed Tech	2004-5	Elective	Area Tutorials in distance education

Appendix B - Laval University List of Program Developments

Program	Year	Course Type	Course Name
Graduate	1975-6	Elective	Socialisation I
Graduate	1975-6	Elective	Socialisation II
Graduate	1975-6	Elective	Seminaire de Recherche en Enseignement I
Graduate	1975-6	Elective	Seminaire de Recherche en Enseignement II
Graduate	1975-6	Elective	Seminaire de Recherche en Enseignement III
Graduate	1975-6	Elective	Objectifs et Evaluation
Graduate	1975-6	Elective	Evaluation De Programmes I
Graduate	1975-6	Elective	Evaluation De Programmes II
Graduate	1975-6	Elective	Intelligences Humanines et Artificielle
Graduate	1975-6	Elective	Apprentissage De Concept
Graduate	1975-6	Elective	Le Film Educatif
Graduate	1975-6	Elective	Recherche En Technologie De L'enseignement
Graduate	1975-6	Elective	Semimaire De Recherche En Technologie De L'Enseignement
Graduate	1975-6	Elective	Developpement Du Langage Chez L'Enfant I
Graduate	1975-6	Elective	Developpement Du Langage Chez L'Enfant II
Graduate	1975-6	Elective	La Communication Chez L'Enfant
Graduate	1975-6	Elective	Information et Communication
Graduate	1975-6	Elective	Intervention Pedagogique I
Graduate	1975-6	Elective	Conditions D'Apprentissage Selon Gagne I
Graduate	1975-6	Elective	Conditions D'Apprentissage Selon Gagne II
Graduate	1975-6	Elective	Apprentissage Chez Les Adultes
Graduate	1975-6	Elective	Le Rapport "To Improve Learning" II
Graduate	1975-6	Elective	Practicum en Evaluation
Graduate	1975-6	Elective	Recherche De Strategies en Television
Graduate	1975-6	Elective	Cours De Lecture II
Graduate	1975-6	Elective	Cours De Lecture V
Graduate	1975-6	Elective	Cours De Lecture VIII
Graduate	1975-6	Elective	Marshall McLuhan
Graduate	1975-6	Elective	Theories Behavioristes de L'Apprentissage I
Graduate	1975-6	Elective	Practicum: Analyse Behaviorale
Graduate	1975-6	Elective	La Notion De Stades Dans Le Developpement
Graduate	1975-6	Elective	Diagnostic Operatoire Du Raisonnement
Graduate	1975-6	Elective	Theories Behavioristes: Practicum
Graduate	1975-6	Elective	Medium & Message
Graduate	1975-6	Elective	Communication Filmique
Graduate	1975-6	Elective	Analyse et Evaluation De Documents Televisuels
Graduate	1975-6	Elective	Management des Ressources de la Technologie Éducative
Graduate	1975-6	Elective	La Prog. Tele. Comme System D'Ens. Individualise Par Telivision
Graduate	1975-6	Elective	Auto-Instruction: Analyse et Evaluation
Graduate	1975-6	Elective	Auto-Instruction: Developpement et Implantation

Graduate	1975-6	Elective	Ordinateur et Enseignement
Graduate	1975-6	Elective	Dialogue Homme-Machine
Graduate	1975-6	Elective	Implantations D'Environnements D'Apprentissage Medie
Graduate	1975-6	Elective	Enseignement Programme et Audio-Visuel
Graduate	1975-6	Elective	Enseignement Assiste Par Ordinateur
Graduate	1975-6	Elective	Approche Systemique et Enseignement Medie
Graduate	1975-6	Elective	Develop. Et Application D'Une Strategie Ped. Basee Sur La Tech.
Graduate	1975-6	Elective	Specificite et Choix Des Media Pour L'Enseignement
Graduate	1975-6	Elective	Production De Films D'Enseignement
Graduate	1975-6	Elective	Technologie Appliquee a L'Education
Graduate	1975-6	Elective	Recherche en Apprentissage
Graduate	1975-6	Elective	Langage Orale: Modeles et Prog. De Reeducation
Graduate	1975-6	Elective	Les Troubles D'Apprentissage De La Lecture
Graduate	1975-6	Elective	L'Actualisation Des Ressources Intellectuelles
Graduate	1975-6	Elective	Langage Oral et Ecrit: Modeles et Objectifs De Dev.
Graduate	1975-6	Elective	Practicum en Enseignement Correctif
Graduate	2006-7	Required	Approche systémique et analyse de besoins
Graduate	2006-7	Required	Planification de systèmes d'enseignement I
Graduate	2006-7	Elective	Méthodologie de la recherche: approche quantitative
Graduate	2006-7	Elective	Introduction à l'analyse qualitative
Graduate	2006-7	Elective	Méthodologie de la recherche en éducation
Graduate	2006-7	Elective	Épistémologie et éducation
Graduate	2006-7	Elective	Stratégies de réalisation de messages multimédias
Graduate	2006-7	Elective	Évaluation formative de l'apprentissage
Graduate	2006-7	Elective	La Programmation télévisuelle comme système d'enseignement
Graduate	2006-7	Elective	Organisation et mise en oeuvre de système de formation
Graduate	2006-7	Elective	Choix de méthodes et de médias d'enseignement
Graduate	2006-7	Elective	Lectures dirigées
Graduate	2006-7	Elective	Sujets spéciaux
Graduate	2006-7	Elective	Stage en technologie éducative
Graduate	2006-7	Elective	Atelier de production avancée I
Graduate	2006-7	Elective	Atelier de production avancée II
Graduate	2006-7	Elective	Pensée critique et enseignement
Graduate	2006-7	Elective	La Méthodologie des systèmes souples et recherche-action
Graduate	2006-7	Elective	Planification de systèmes d'enseignement II
Graduate	2006-7	Elective	Hypermédias et stratégies pédagogiques
Graduate	2006-7	Elective	Méthodologie des systèmes souples: practicum
Graduate	2006-7	Elective	La 5e discipline - Organisation apprenante
Graduate	2006-7	Elective	TIC et gestion de projets (en réseau)
Graduate	2006-7	Elective	Apprentissage en réseau: pratique internationale
Graduate	2006-7	Elective	Multimédia et stratégies pédagogiques I

Graduate	2006-7	Elective	Multimédia et stratégies pédagogiques II
Graduate	2006-7	Elective	Controverses et éducation: une introduction
Graduate	2006-7	Elective	Traitement et analyse de données qualitatives avec logiciels
Graduate	2006-7	Elective	Audit et diagnostic en formation
Graduate	2006-7	Elective	Expériences de recherche
Graduate	2006-7	Elective	Analyse et écriture de textes de genre universitaire
Doctoral	2006-7	Required	Examen de doctorat
Doctoral	2006-7	Required	Séminaire de recherche de doctorat

Appendix C - University of Montreal List of Program Developments

Program	Year	Course Type	Course Name
MA, Ed Tech	1977-8	Required	Séminaire de recherche
MA, Ed Tech	1977-8	Required	Programme de lectures individuelles
MA, Ed Tech	1977-8	Required	Structure et langage de la technologie éducationnelle
MA, Ed Tech	1977-8	Required	Approches systemiques en technologie éducationnelle
MA, Ed Tech	1977-8	Required	Statistique appliquee á l'éducation II
M.Ed, Ed Tech	1977-8	Required	Programme de lectures individuelles
M.Ed, Ed Tech	1977-8	Required	Recherche en pédagogie audio-visuelle et technologie éducationnelle
M.Ed, Ed Tech	1977-8	Required	Internat de formation en technologie éducationnelle I
M.Ed, Ed Tech	1977-8	Required	Structure et langue de la technologie éducationnelle
M.Ed, Ed Tech	1977-8	Required	Approches systématiques en technologie éducationnelle
M.Ed, Ed Tech	1977-8	Required	Rapport et travaux dirigés
M.Ed, Ed Tech	1977-8	Required	Internat de formation en technologie éducationnelle II
M.Ed, Ed Tech	1977-8	Required	Rapport et travaux dirigés II
MA or M.Ed	1977-8	Elective	Séminaire sur l' enseignement programmé
MA or M.Ed	1977-8	Elective	Technologie et enseignement programmé
MA or M.Ed	1977-8	Elective	Etude des aspects cognitifs de la cinématographie dans le domaine éducationnel
MA or M.Ed	1977-8	Elective	Organisation d' un média-centre
MA or M.Ed	1977-8	Elective	Administration at financement d'un média-centre
MA or M.Ed	1977-8	Elective	Pédagogie prospective at techniques audio-visuelles
MA or M.Ed	1977-8	Elective	Laboratoire de production avancée en audio-visuel
MA or M.Ed	1977-8	Elective	Evaluation de documents éducatifs audio-visuels
MA or M.Ed	1977-8	Elective	Séminaire de sémialogie
MA or M.Ed	1977-8	Elective	Théorie de la communication en éducation
MA or M.Ed	2000-1	Required	Séminaire de recherche
MA or M.Ed	2000-1	Required	Design pédagogique
MA or M.Ed	2000-1	Required	Fondements de la technologie éduc.
MA or M.Ed	2000-1	Elective	Étapes d'une recherche en éducation
MA or M.Ed	2000-1	Elective	Les méthodes quantitatives en éducation
MA or M.Ed	2000-1	Elective	L'analyse des données qualitatives

MA or M.Ed	2000-1	Elective	Séminaire de recherche
MA or M.Ed	2000-1	Elective	Design pédagogique
MA or M.Ed	2000-1	Elective	Fondements de la technologie éduc.
MA or M.Ed	2000-1	Elective	Étapes d'une recherche en éducation
MA or M.Ed	2000-1	Elective	Les méthodes quantitatives en education
MA or M.Ed	2000-1	Elective	L'analyse des données qualitatives

Program	Year	Course Type	Course Name
PhD	1977-8	Required	Séminaire de recherche
PhD	1977-8	Required	Séminaire de lecture individuelle
PhD	1977-8	Required	Grands problèmes du cinéma et de la télévision
PhD	1977-8	Required	Transformation de l' école: role de la télévision et de l'enfant
PhD	1977-8	Required	Séminaire avancée de sémiologie
PhD	1977-8	Required	Internat en technologie éducationnelle
PhD	2000-1	Required	Séminaire de recherche
PhD	2000-1	Elective	Étapes d'une recherche en éducation
PhD	2000-1	Elective	Les méthodes quantitatives en éducation
PhD	2000-1	Elective	L'analyse des données qualitatives
PhD	2000-1	Elective	Séminaire de recherche
PhD	2000-1	Elective	Design pédagogique
PhD	2000-1	Elective	Fondements de la technologie éduc.
PhD	2000-1	Elective	Étapes d'une recherche en éducation
PhD	2000-1	Elective	Les méthodes quantitatives en education
PhD	2000-1	Elective	L'analyse des données qualitatives

Appendix D - University of British ColumbiaList of Program Developments

Program	Year	Course Type	Course Name
M.A./M.Ed.	1999-00	Elective	Video Ethnography in Education Research: Culture, Technology and Interpretation
M.A./M.Ed	1999-00	Required	Education Action Research
M.A./M.Ed	1999-00	Required	Master's Seminar
M.A./M.Ed.	1999-00	Elective	Introduction to Curriculum Issues and Theories
M.A./M.Ed	1999-00	Elective	Curriculum Evaluation
M.A./M.Ed	1999-00	Elective	Texts, Politics, and Ideologies of Curriculum Development
M.A./M.Ed.	1999-00	Elective	Special Course in Subject Matter Field
M.A./M.Ed	1999-00	Elective	Curriculum Change and Implementation
M.A./M.Ed	1999-00	Elective	Curricula in their Historical Context
M.A./M.Ed.	1999-00	Elective	Problems in Education
M.A./M.Ed	1999-00	Elective	Graduating Paper
M.A./M.Ed	1999-00	Elective	Field Experiences
MET	2006-7	Elective	Methodology in Education
MET	2006-7	Elective	Design of Technology Supported Learning Environments
MET	2006-7	Elective	Foundations of educational technology
MET	2006-7	Elective	Applications of Learning Theories to Instruction
MET	2006-7	Elective	Planning and Managing Learning Technologies in Higher Education
MET	2006-7	Elective	Indigeneity, Technology and Education
MET	2006-7	Elective	The Business of E-Learning
MET	2006-7	Elective	Constructivist Strategies for E-Learning
MET	2006-7	Elective	Curriculum Issues in Cultural and Media Studies
MET	2006-7	Elective	Technology in the Arts and Humanities Classroom
MET	2006-7	Elective	Technology in the Mathematics and Science Classroom
MET	2006-	Elective	Text Technologies: The Changing Spaces of Reading and Writing

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MET	2006-7	Elective	Graduating Project
M.A./M.Ed.	2006-7	Elective	Video Ethnography in Education Research: Culture, Technology and Interpretation
M.A./M.Ed	2006-7	Required	Education Action Research
M.A./M.Ed	2006-7	Required	Master's Seminar
M.A./M.Ed.	2006-7	Elective	Introduction to Curriculum Issues and Theories
M.A./M.Ed	2006-7	Elective	Curriculum Evaluation
M.A./M.Ed	2006-7	Elective	Texts, Politics, and Ideologies of Curriculum Development
M.A./M.Ed.	2006-7	Elective	Special Course in Subject Matter Field
M.A./M.Ed	2006-7	Elective	Curriculum Change and Implementation
M.A./M.Ed	2006-7	Elective	Curricula in their Historical Context
M.A./M.Ed.	2006-7	Elective	Problems in Education
M.A./M.Ed	2006-7	Elective	Graduating Paper
M.A./M.Ed	2006-7	Elective	Field Experiences
Ph.D.	2006-7	Required	Doctoral Seminar

Appendix E - University of Calgary List of Program Developments

Program	Year	Course Type	Course Name
Masters, Ed Tech	1999-00	Required	Seminar
Masters, Ed Tech	1999-00	Elective	Interpreting Educational Research
Masters, Ed Tech	1999-00	Elective	Research Methods
Masters, Ed Tech	1999-00	Elective	Communication in Educational Administration
Masters, Ed Tech	1999-00	Elective	Change and Innovation in Education
Masters, Ed Tech	1999-00	Elective	Organizational Behaviour in education
Masters, Ed Tech	1999-00	Elective	Organizational Theory and Analysis in Education
Masters, Ed Tech	1999-00	Elective	Special Topics in Educational Leadership
Masters, Ed Tech	1999-00	Elective	Assessment of Classroom Learning
Masters, Ed Tech	1999-00	Elective	Teacher Evaluation
Masters, Ed Tech	1999-00	Elective	Program Evaluation
Masters, Ed Tech	1999-00	Elective	Special Topics in Assessment/Evaluation
Masters, Ed Tech	1999-00	Elective	Literacy Across the Curriculum
Masters, Ed Tech	1999-00	Elective	Research on the Reading Process
Masters, Ed Tech	1999-00	Elective	Foundational Research in Language Arts Teaching
Masters, Ed Tech	1999-00	Elective	Implications for Literacy
Masters, Ed Tech	1999-00	Elective	Special Topics in English Language Education
Masters, Ed Tech	1999-00	Elective	Philosophy of Education
Masters, Ed Tech	1999-00	Elective	Sociology of Education
Masters, Ed Tech	1999-00	Elective	Comparative Education
Masters, Ed Tech	1999-00	Elective	Culture and Gender Studies
Masters, Ed Tech	1999-00	Elective	History of Education
Masters, Ed Tech	1999-00	Elective	Bilingual and Multilingual Education
Masters, Ed Tech	1999-00	Elective	Second Language Reading and Writing

Masters, Ed Tech	1999-00	Elective	Aspects of Second Language and Culture
Masters, Ed Tech	1999-00	Elective	Conceptualizing educational technology
Masters, Ed Tech	1999-00	Elective	Instructional Design
Masters, Ed Tech	1999-00	Elective	Principles of Instructional Development
Masters, Ed Tech	1999-00	Elective	Telecommunications in Education
Masters, Ed Tech	1999-00	Elective	Special Topics in educational technology
Masters, Ed Tech	1999-00	Elective	Studying Curriculum
Masters, Ed Tech	1999-00	Elective	Curriculum Development, Implementation and Assessment
Masters, Ed Tech	1999-00	Elective	Introduction to Interpretive Curriculum Discourses
Masters, Ed Tech	1999-00	Elective	Aspects of School Curriculum
Masters, Ed Tech	1999-00	Elective	Professional Project
Masters, Ed Tech	1999-00	Elective	Critical Issues in Education
Masters, Ed Tech	1999-00	Elective	Special Topics
Masters, Ed Tech	2004-5	Required	Research Methods
Masters, Ed Tech	2004-5	Required	Conceptualizing educational technology
Masters, Ed Tech	2004-5	Elective	Conceptualizing educational technology
Masters, Ed Tech	2004-5	Elective	Instructional Design
Masters, Ed Tech	2004-5	Elective	Principles of Instructional Development Telecommunications in Education
Masters, Ed Tech	2004-5	Elective	Special Topics in Educational Technology
Masters, Ed Tech	2004-5	Elective	Project Management
Masters, Ed Tech	2004-5	Elective	Computer Based Learning
Masters, Ed Tech	2004-5	Elective	Performance Consulting
Masters, Ed Tech	2004-5	Elective	Evaluation of Technology Projects
Masters, Ed Tech	2004-5	Elective	Technology and Society
Masters, Ed Tech	2004-5	Elective	Designing Web Based Instruction
Masters, Ed Tech	2004-5	Elective	Introduction to AI in Education
Masters, Ed Tech	2004-5	Elective	Enhancing Technology Based Learning
Masters, Ed Tech	2004-5	Elective	Current Topics in Instructional Design
Masters, Ed Tech	2004-5	Elective	Leadership and Technology
Masters, Ed Tech	2004-5	Elective	Computer Based Learning II
Masters, Ed Tech	2004-5	Elective	Doctoral Seminar in Educational Technology
Masters, Ed Tech	2004-5	Elective	educational technology Directed Study A
Masters, Ed Tech	2004-5	Elective	educational technology Directed Study B
Masters, Ed Tech	2004-5	Elective	Educational Computing A (Directed Study)
Masters, Ed Tech	2004-5	Elective	Educational Computing B (Directed Study)
Masters, Ed Tech	2004-5	Elective	Instructional Design A (Directed Study)
Masters, Ed Tech	2004-5	Elective	Instructional Design B (Directed Study)

Program	Year	Course Type	Course Name
PhD	1999-00	Required	Seminar
PhD	1999-00	Required	Comprehensive Examination
PhD	1999-00	Required	Doctoral thesis
PhD	1999-00	Elective	Advanced Research Methods
PhD	1999-00	Elective	Directed Study
PhD	1999-00	Elective	Doctoral Seminar in Educational Leadership
PhD	1999-00	Elective	Advanced Seminar in Theory and Research in Literacy Education
PhD	1999-00	Elective	Research Seminar on Second Language Education
PhD	1999-00	Elective	Research Seminar on Current Issues in L2 Literacy
PhD	1999-00	Elective	Doctoral Seminar in Educational technology
PhD	1999-00	Elective	Conceptualizing Curriculum Research
PhD	1999-00	Elective	Conceptualizing Instructional research
PhD	1999-00	Elective	Advanced Study of Interpretive Curriculum Discourses
PhD	1999-00	Elective	Advanced Curriculum Study
PhD	2004-5	Required	Seminar
PhD	2004-5	Required	Doctoral Seminar in Educational Technology
PhD	2004-5	Required	Comprehensive Examination
PhD	2004-5	Required	Doctoral thesis

Appendix F - University of Saskatchewan List of Program Developments

Program	Year	Course Type	Course Name
M.Ed	1984-5	Elective	Organization and Administration of Media Centres
M.Ed	1984-5	Elective	Advanced Cinematography in Education
M.Ed	1984-5	Elective	Television in Education
M.Ed	1984-5	Elective	Individual Study in Communication
M.Ed	1989-90	Elective	Adult Basic Education
M.Ed	1989-90	Elective	Program Planning of Continuing Education
M.Ed	1989-90	Elective	Designing Materials for Individualized Instruction
M.Ed	1989-90	Elective	Adult Learning and Development
M.Ed	1989-90	Elective	Organization and Administration of Media Centres
M.Ed	1989-90	Elective	Advanced Cinematography in Education
M.Ed	1989-90	Elective	Comparative Continuing Education
M.Ed	1989-90	Elective	Television in Education
M.Ed	1989-90	Elective	The community Development Process
M.Ed	1989-90	Elective	Group processes and Communication
M.Ed	1989-90	Elective	Evaluation of Continuing Education
M.Ed	1989-90	Elective	Administration of Continuing Education
M.Ed	1989-90	Elective	Adult Counseling in Continuing Education
M.Ed	1989-90	Elective	Application of learning Principles on the Practice of Adult Education
M.Ed	1989-90	Elective	Selected Topics in Comparative Continuing Education
M.Ed	1989-90	Elective	Community Development Practices
M.Ed	1989-90	Elective	Trends and Issues in Continuing Education
M.Ed	1989-90	Elective	Research methods in Continuing Education
M.Ed	1989-90	Elective	Individual Reading and Study
M.Ed	1989-90	Elective	Seminar
M.Ed	1994-5	Elective	Historical and Theoretical Foundations of educational technology
M.Ed	1994-5	Elective	Principles and Practices of Authoring Interactive Instruction
M.Ed	1994-5	Elective	distance education Theory and Practice
M.Ed	1994-5	Elective	Designing Materials for Individualized instruction
M.Ed	1994-5	Elective	Organization and Administration of Media Centres
M.Ed	1994-5	Elective	Advanced Cinematography in Education
M.Ed	1994-5	Elective	Television in Education
M.Ed	1994-5	Elective	Use of media as an Aid To Cross-Cultural Communication
M.Ed	1994-5	Elective	Adult Basic Education
M.Ed	1994-5	Elective	Individual Reading- Special Problem in School Subjects
M.Ed	1994-5	Elective	Seminar in Curriculum research
M.Ed	1999-00	Elective	Historical and Theoretical Foundations of educational technology
M.Ed	1999-00	Elective	Principles and Practices of Authoring Interactive Instruction
M.Ed	1999-00	Elective	distance education Theory and Practice
M.Ed	1999-00	Elective	Designing Materials for Individualized instruction
M.Ed	1999-00	Elective	Organization and Administration of Media Centres
M.Ed	1999-00	Elective	Advanced Cinematography in Education
M.Ed	1999-00	Elective	Television in Education
M.Ed	1999-00	Elective	Special Topics

M.Ed	1999-00	Elective	Use of media as an Aid To Cross-Cultural Communication
M.Ed	1999-00	Elective	Adult Basic Education
M.Ed	1999-00	Elective	Individual Reading- Special Problem in School Subjects
M.Ed	2004-05	Elective	Historical and Theoretical Foundations of educational technology
M.Ed	2004-05	Required	Research Methods
M.Ed	2004-05	Required	Research Seminar
M.Ed	2004-05	Elective	Principles and Practices of Authoring Interactive Instruction
M.Ed	2004-05	Elective	distance education Theory and Practice
M.Ed	2004-05	Elective	Designing Materials for Individualized instruction
M.Ed	2004-05	Elective	Advanced Approaches to Instructional Design
M.Ed	2004-05	Elective	Organization and Administration of Media Centres
M.Ed	2004-05	Elective	Advanced Cinematography in Education
M.Ed	2004-05	Elective	Television in Education
M.Ed	2004-05	Elective	Individual Reading and Study
M.Ed	2004-05	Elective	Historical and Theoretical Foundations of educational technology
M.Ed	2006-7	Required	Research Methods
M.Ed	2006-7	Required	Research Seminar
M.Ed	2006-7	Elective	Principles and Practices of Authoring Interactive Instruction
M.Ed	2006-7	Elective	distance education Theory and Practice
M.Ed	2006-7	Elective	Designing Materials for Individualized instruction
M.Ed	2006-7	Elective	Advanced Approaches to Instructional Design
M.Ed	2006-7	Elective	Organization and Administration of Media Centres
M.Ed	2006-7	Elective	Advanced Cinematography in Education
M.Ed	2006-7	Elective	Television in Education
M.Ed	2006-7	Elective	Individual Reading and Study

Appendix G - University of Alberta List of Program Developments

Program	Year	Course Type	Course Name
MA, Instructional Tech (Multimedia)	2004-5	Required	Instructional Technology and Communication
MA, Instructional Tech (Multimedia)	2004-5	Required	Instructional Technology and Communication
MA, Instructional Tech (Multimedia)	2004-5	Required	Topics in Computer-Based Instruction
MA, Instructional Tech (Multimedia)	2004-5	Required	Designing Technology-Based Instruction
MA, Instructional Tech (Multimedia)	2004-5	Required	Advanced Computer-Based Instruction
MA, Instructional Tech (Multimedia)	2004-5	Elective	Internship in Instructional Technology
MA, Instructional Tech (Multimedia)	2004-5	Elective	Digital Elements for Multimedia Production
MA, Instructional Tech (Multimedia)	2004-5	Elective	Introduction to Computer Network Concepts
MA, Instructional Tech (Multimedia)	2004-5	Elective	Exploring Computer Based Instruction
MA, Instructional Tech (Multimedia)	2004-5	Elective	Planning the Technology Program
MA, Instructional Tech (Multimedia)	2004-5	Elective	Introduction to Educational Programming Environments
MA, Instructional Tech (School)	2004-5	Required	Introduction to Computer Network Concepts
MA, Instructional Tech (School)	2004-5	Required	Exploring Computer Based Instruction
MA, Instructional Tech (School)	2004-5	Required	Planning the Technology Program
MA, Instructional Tech (School)	2004-5	Required	Introduction to Educational Programming Environments
MA, Instructional Tech (School)	2004-5	Elective	The Internet: Communicating, Accessing, and Providing Information
MA, Instructional Tech (School)	2004-5	Elective	Internet/Intranet Server Management
MA, Instructional Tech (School)	2004-5	Elective	Instructional Technology and Communication
MA, Instructional Tech (School)	2004-5	Elective	Topics in Computer-Based Instruction
MA, Instructional Tech (School)	2004-5	Elective	Designing Technology-Based Instruction
MA, Instructional Tech (School)	2004-5	Elective	Advanced Computer-Based Instruction
MA, Instructional Tech (School)	2004-5	Elective	Internship in Instructional Technology
MA, Instructional Tech (School)	2004-5	Elective	Digital Elements for Multimedia Production
MA, Instructional Tech (School)	2004-5	Elective	Programming Environments for Developing Interactive Learning Materials

Appendix H - Acadia University List of Program Developments

Program	Year	Course Type	Course Name
M.Ed, Info Technology	2000-1	Required	Curriculum Foundations
M.Ed, Info Technology	2000-1	Required	Learning and Technology
M.Ed, Info Technology	2000-1	Required	Major Theoretical Developments in Curriculum Studies
M.Ed, Info Technology	2000-1	Required	Research Design
M.Ed, Info Technology	2000-1	Required	Problems in Education – Research Literacy
M.Ed, Info Technology	2000-1	Elective	Problems in Education
M.Ed, Info Technology	2000-1	Elective	Readings in Education
M.Ed, Info Technology	2000-1	Elective	Introduction to educational technology
M.Ed, Info Technology	2000-1	Elective	Principles of Assessment
M.Ed, Info Technology	2000-1	Elective	Current Research & Theory in Curriculum – Literacy & Technology
M.Ed, Info Technology	2000-1	Elective	Community Perspectives on School and Society
M.Ed, Info Technology	2000-1	Elective	Online Technology in Education
M.Ed, Info Technology	2004-5	Required	Curriculum Foundations
M.Ed, Info Technology	2004-5	Required	Learning and Technology
M.Ed, Info Technology	2004-5	Required	Major Theoretical Developments in Curriculum Studies
M.Ed, Info Technology	2004-5	Required	Research Design
M.Ed, Info Technology	2004-5	Required	Problems in Education – Research Literacy
M.Ed, Info Technology	2004-5	Elective	Problems in Education
M.Ed, Info Technology	2004-5	Elective	Readings in Education
M.Ed, Info Technology	2004-5	Elective	Introduction to educational technology
M.Ed, Info Technology	2004-5	Elective	Principles of Assessment
M.Ed, Info Technology	2004-5	Elective	Current Research & Theory in Curriculum – Literacy & Technology
M.Ed, Info Technology	2004-5	Elective	Community Perspectives on School and Society
M.Ed, Info Technology	2004-5	Elective	Online Technology in Education

Appendix I - Athabasca University List of Program Developments

Program	Year	Course Type	Course Name
MDE	1994-5	Required	Introduction to distance education and Training
MDE	1994-5	Required	Methods of Inquiry and Decision Making
MDE	1994-5	Required	Systems Design in distance education
MDE	1994-5	Required	distance education and Training I
MDE	1994-5	Required	distance education and Training II
MDE	1994-5	Elective	Foundations of Adult Education
MDE	1994-5	Elective	Experiential learning and Development
MDE	1994-5	Elective	Adult Learning and Development
MDE	1994-5	Elective	International Issues in distance education
MDE	1994-5	Elective	Human Factors in educational technology
MDE	1994-5	Elective	Special Topics: Tutoring and Student Support in distance education and Training
MDE	1994-5	Elective	Special Topics: Gender Issues in distance education
MDE	1994-5	Elective	Independent Study
MDE	2004-5	Required	Introduction to distance education and Training
MDE	2004-5	Required	Research Methods in distance education
MDE	2004-5	Required	Systems Design in distance education
MDE	2004-5	Required	Instructional Design and Program Evaluation in distance education and Training
MDE	2004-5	Required	Planning and Management in distance education and Training
MDE	2004-5	Elective	Introduction to Technology in distance education and Training
MDE	2004-5	Elective	Foundations of Adult Education
MDE	2004-5	Elective	Experiential Learning
MDE	2004-5	Elective	Adult Learning and Development
MDE	2004-5	Elective	International Issues in Open and Distance Learning
MDE	2004-5	Elective	Human Factors in educational technology
MDE	2004-5	Elective	Program Evaluation in distance education
MDE	2004-5	Elective	Advanced Technology for distance education and Training
MDE	2004-5	Elective	Online Teaching and Learner Support Technologies in distance education
MDE	2004-5	Elective	Special Topics: Tutoring and Student Support in distance education and Training
MDE	2004-5	Elective	Special Topics: Gender Issues in distance education
MDE	2004-5	Elective	Professional Seminar in distance education
MDE	2004-5	Elective	Seminar Topics in Educational Conferencing
MDE	2004-5	Elective	Seminar Topics in Evaluating Conferencing Software
MDE	2004-5	Elective	Emerging Issues In distance education Technologies
MDE	2004-5	Elective	Independent Study

Appendix J - Memorial University List of Program Developments

Program	Year	Course Type	Course Name
M.Ed, Info Tech	2004-5	Required	Research on Computers in the Curriculum
M.Ed, Info Tech	2004-5	Required	Educational Software Prototyping and Evaluation
M.Ed, Info Tech	2004-5	Required	Issues and Trends in Educational Computing
M.Ed, Info Tech	2004-5	Elective	Assessment of Software and Information Technology Applications for Education
M.Ed, Info Tech	2004-5	Elective	Integration of Instructional Design and Information Technology
M.Ed, Info Tech	2004-5	Elective	Applications of Learning Theory in Educational Multi-media Design
M.Ed, Info Tech	2004-5	Elective	Designing Web-based Learning
M.Ed, Info Tech	2004-5	Elective	Technology Planning for Educational Environments
M.Ed, Info Tech	2004-5	Elective	Information Management for Educational Environments
M.Ed, Info Tech	2004-5	Elective	Research Designs and Methods in Education
M.Ed, Info Tech	2004-5	Elective	Research and Development Seminar in Information Technology in Education

Appendix K - Royal Roads University List of Program Developments

Program	Year	Course Type	Course Name
MADL	2001-2	Required	Learning Theory and Distributed Learning
MADL	2001-2	Required	Introduction to Distributed Learning
MADL	2001-2	Required	Instructional Design in Distributed Learning
MADL	2001-2	Required	Leadership in Distributed Learning Organizations
MADL	2001-2	Required	Needs Analysis and Program Evaluation
MADL	2001-2	Required	Distributed Learning Research Methods
MADL	2001-2	Required	Trends and Issues
MADL	2001-2	Elective	Distributed Learning Systems: Models and Structures
MADL	2001-2	Elective	Design and Development of Computer-Based Training Products
MADL	2001-2	Elective	Design and Development of Synchronous Courses
MADL	2001-2	Elective	Management of Distributed Learning Project Teams
MADL	2001-2	Elective	Delivery of Distributed Learning Courses
MADL	2001-2	Elective	Design of Electronic Performance Support Systems
MADL	2001-2	Elective	The Distributed Learning Consultant
MADL	2004-5	Required	MADL Orientation: The Landscape of Distributed Learning
MADL	2004-5	Required	Learning Theory and Distributed Learning
MADL	2004-5	Required	Instructional Design Methods: Theory and Application
MADL	2004-5	Required	Distributed Learning Research Methods
MADL	2004-5	Required	Introduction to Distributed Learning
MADL	2004-5	Required	The Distributed Learning Consultant
MADL	2004-5	Required	Management of Distributed Learning Project Teams
MADL	2004-5	Required	Leadership in Distributed Learning Organizations
MADL	2004-5	Required	Needs Analysis and Program Evaluation
MADL	2004-5	Elective	Distributed Learning Systems: Models and Structures
MADL	2004-5	Elective	Delivery of Distributed Learning Courses
MADL	2004-5	Elective	Design of Computer and Web Based Training Products
MADL	2004-5	Elective	Design of Synchronous Training Programs
MADL	2004-5	Elective	Design and Development of Electronic Performance Support Systems
MADL	2004-5	Elective	The Business of E-Learning
MADL	2004-5	Elective	Online Facilitation and Community-Building Processes
MADL	2004-5	Elective	Self Directed Study
MALT	2006-7	Elective	Learning Theory
MALT	2006-7	Elective	Introduction to Research
MALT	2006-7	Elective	Program Planning
MALT	2006-7	Elective	Instructional Design for Technology-Mediated Learning
MALT	2006-7	Elective	Community Building Processes for Online Learning
MALT	2006-7	Elective	Research Methods for Teaching and Learning
MALT	2006-7	Elective	Supporting Learners in Technology-Mediated Environments
MALT	2006-7	Elective	Emerging Issues in Technology-Mediated Education
MALT	2006-7	Elective	Choosing and Using Learning Technologies
MALT	2006-7	Elective	International and Global distance education
MALT	2006-7	Elective	Research Paper

Appendix L – The Tele-University of Quebec List of Program Developments

Program	Year	Course Type	Course Name
MDE	2004-5	Required	Séminaire de mémoire
MDE	2004-5	Elective	Administration de systèmes de formation à distance
MDE	2004-5	Elective	Communication et formation à distance
MDE	2004-5	Elective	Visions pédagogiques de la formation à distance
MDE	2004-5	Elective	Lectures dirigées I
MDE	2004-5	Elective	Lectures dirigées II
MDE	2004-5	Elective	Support à l'apprentissage
MDE	2004-5	Elective	Formation à distance et développement
MDE	2004-5	Elective	Travaux pratiques I
MDE	2004-5	Elective	Travaux pratiques II
MDE	2004-5	Elective	Technologies et apprentissage à distance
MDE	2004-5	Elective	Fondements théoriques en formation à distance I
MDE	2004-5	Elective	Fondements théoriques en formation à distance II
MDE	2004-5	Elective	Sciences cognitives et apprentissage
MDE	2004-5	Elective	Méthodes de recherche en formation à distance I
MDE	2004-5	Elective	Méthodes de recherche en formation à distance II
MDE	2004-5	Elective	Méthodes d'intervention en formation à distance
MDE	2004-5	Elective	Stage I
MDE	2004-5	Elective	Stage II
MDE	2004-5	Elective	Projet personnel
MDE	2004-5	Elective	Séminaire thématique en formation à distance I
MDE	2004-5	Elective	Séminaire thématique en formation à distance II
MDE	2004-5	Elective	Environnements d'apprentissage multimédias (
MDE	2004-5	Elective	Design pédagogique d'environnements d'apprentissage informatisés
MDE	2004-5	Elective	Communication et collaboration télématiques
MDE	2006-7	Required	Séminaire de mémoire
MDE	2006-7	Elective	Administration de systèmes de formation à distance
MDE	2006-7	Elective	Communication et formation à distance
MDE	2006-7	Elective	Visions pédagogiques de la formation à distance
MDE	2006-7	Elective	Lectures dirigées I
MDE	2006-7	Elective	Lectures dirigées II
MDE	2006-7	Elective	Support à l'apprentissage
MDE	2006-7	Elective	Formation à distance et développement
MDE	2006-7	Elective	Travaux pratiques I
MDE	2006-7	Elective	Travaux pratiques II
MDE	2006-7	Elective	Technologies et apprentissage à distance
MDE	2006-7	Elective	Fondements théoriques en formation à distance I
MDE	2006-7	Elective	Fondements théoriques en formation à distance II
MDE	2006-7	Elective	Sciences cognitives et apprentissage
MDE	2006-7	Elective	Méthodes de recherche en formation à distance I
MDE	2006-7	Elective	Méthodes de recherche en formation à distance II
MDE	2006-7	Elective	Méthodes d'intervention en formation à distance
MDE	2006-7	Elective	Stage I

MDE	2006-7	Elective	Stage II
MDE	2006-7	Elective	Projet personnel
MDE	2006-7	Elective	Séminaire thématique en formation à distance I
MDE	2006-7	Elective	Séminaire thématique en formation à distance II
MDE	2006-7	Elective	Environnements d'apprentissage multimédias (
MDE	2006-7	Elective	Design pédagogique d'environnements d'apprentissage informatisés
MDE	2006-7	Elective	Communication et collaboration télématiques

Appendix M - List of Current Educational Technology Faculty Interests

Name	Institute	Interest 1	Interest 2	Interest 3
Hepburn, G.	Acadia University	Design and use of online educational environments (OEE)	Formal and informal learning environments	Not Available
MacKinnon, G.	Acadia University	Science curriculum development	Impact of instructional technologies on classroom instruction	Constructivist approaches in the classroom and laboratory
Stephens, H.	Acadia University	Field experiences for student teachers	Reflective practices	Curriculum development
Mappin, D.	Alberta, University of	Instructional design	Program development	Learning and technology
Montgomerie, C. (retiring June, 2006).	Alberta, University of	Computer-based learning	Use of information technology for instructional support	Internet-based instruction
Carbono, M.	Alberta, University of	Not Available	Not Available	Not Available
Wright, P.	Alberta, University of	Educational applications of computers and communications technologies	Information technology	Teacher education
Anderson, T.	Athabasca University	Distance education	Not Available	Not Available
Baggaley, J.	Athabasca University	Applications and management of the educational media	Health promotion	Community development
Cleveland-Innes, M.	Athabasca University	Program development	Curriculum design	Not Available
Fahy, P.	Athabasca University	Connection between technology and productivity	Best practices in technology interaction	Not Available
Jones, T.	Athabasca University	Computer applications in education	Measurement and evaluation	Educational administration

Kanuka, H.	Athabasca University	E-Learning	Internet communication tools	Teaching and Learning
Kenny, R.	Athabasca University	Instructional design of online learning	Interactive multimedia instruction	Mobile learning issues
Moisey, S.	Athabasca University	instructional design	instructional development	Program development
Spencer, B.	Athabasca University	Management of distance education	Systems for distance education	Instructional materials and systems
Erickson, G.	British Columbia, University of	Student perceptions of science concepts	Curriculum development	Constructivist instruction
Gaskell, J.	British Columbia, University of	Science education	Science curriculum	Science education policy
Gouzouasis, P.	British Columbia, University of	Instructional intelligence	curriculum leadership	Not Available
Khan, S.	British Columbia, University of	Model based learning and teaching	Science education	Computer simulations
Krug, D.	British Columbia, University of	Pedagogy and educational technologies	Cultural studies and communication	Critical curriculum theories
Mayer-Smith, J.	British Columbia, University of	Collaboration	Teacher education	Constructivism
Petrina, S.	British Columbia, University of	Technology	Ethics	Economics
Westrom, M.	British Columbia, University of	Computers in education	Computers for instruction	Development of educational software
Clark, B.	Calgary, University of	Inquiry-based teaching and programs	Instruction design	Instructional design applied to distance learning
Crichton, S.	Calgary, University of	Virtual learning environments	Communities of learning	Knowledge building

Garrison, R.	Calgary, University of	E-learning	Critical thinking	Computer-mediated communications
Jacobsen, M.	Calgary, University of	Technology integration in teaching and learning	User-centered design	Educational partnerships
Kopp, G.	Calgary, University of	Knowledge engineering	Virtual reality and simulation	Medical e-training
Kowch, E.	Calgary, University of	Policy networks	School governance	Organizational theory
Li, Q.	Calgary, University of	Design of networked multimedia learning environments	Mathematics education	Gender issues
Lock, J.	Calgary, University of	Online learning communities	E-learning	Teacher education
Yaniv, H.	Calgary, University of	Knowledge management	Visualization technologies for learners	Not Available
Abrami, P.C.	Concordia University	Classroom processes	Research design	Technology integration in the schools
Bernard, R.M.	Concordia University	Print and image-based instructional systems	Distance education	Meta-analysis research techniques
Boyd, G.M.	Concordia University	Educational Cybernetics (Cybersystemics)	Computer communication mediated collaborative learning	Systems theory applied to education and training
Carliner, S.	Concordia University	Online communication in the workplace and evaluation techniques	Qualitative research	Museum exhibits design
Dicks, D.	Concordia University	Organizational learning	Human resources management	Program evaluation
Schmid, R.	Concordia University	Learning strategies	Performance support systems	CMC in education
Shaw, S.	Concordia University	Educational computing	Methodological issues in research	Cognitive science
Strobel, J.	Concordia University	Computer-supported collaborative learning	Problem solving	Modeling with system dynamics software
Brien, R.	Laval University	Not Available	Not Available	Not Available

Fountain, R.	Laval University	Socio-technical controversies in educational technology	Interdisciplinarity and technology	Democracy in education
Fournier, J.	Laval University	Educational technology in developing nations	Educational systems development	Educational systems management
Laferrière, T.	Laval University	Curriculum development	Teacher education	Educational systems
Pelletier, P.	Laval University	Not Available	Not Available	Not Available
Glassman, M.	Memorial University	Literacy instruction	Tele-learning and tele-teaching	Computer-mediated learning
Hache, G.	Memorial University	Technology education program development in Canadian secondary schools	Technology education development within rural communities	International developments in technical education
Mann, B.	Memorial University	Effects of computer sound	Cognitive processing in hyper media applications	Computer networking in education
Murphy, E.	Memorial University	Technology in second-language learning	Design of web-based learning	Online discussion forums in professional development
Sharpe, D.	Memorial University	Labour market research	Post-secondary attrition	Technology education in Canada
Bordeleau, P.	Montreal, University of	Educational communications	Not Available	Not Available
Giardina, M.	Montreal, University of	Multimedia design	Simulations	Educational computing
Meunier, C.	Montreal, University of	Educational communications	Not Available	Not Available
Perusse, P.	Montreal, University of	Engineering learning systems	Training	Human performance improvement
Stolovitch, H.	Montreal, University of	Engineering learning systems	Training	Human performance improvement
Viens, J.	Montreal, University of	Educational communications	Not Available	Not Available
Hamilton, D.	Royal Roads University	Program planning and evaluation research	Action research	Higher Education
Mundell, R.	Royal Roads University	Entrepreneurship	Electronically-delivered learning	Computer technology

Seeley, D.	Royal Roads University	Animation	Human/computer interaction	Collaborative work
Brown, B.	Saskatchewan, University of	Distance learning	Multimedia production	Distance learning and photography
Morrison, D.	Saskatchewan, University of	Adult education	Learning theory	Design practice of distance and distributed learning
Proctor, L.	Saskatchewan, University of	Media integration	New technologies in the classroom	Design, development, and evaluation of learning programs
Schwier, R.	Saskatchewan, University of	Instructional design	Interactive multimedia learning environments	Virtual learning environments
Gagné, P.	Télé-université of Quebec	Teaching in multimedia courses	Learning in multimedia courses	Not Available
Henri, F.	Télé-université of Quebec	Systems	Distance education	Not Available
Michaud, B.	Télé-université of Quebec	Professional development in recruitment	Planning academic programs and procedures	Implementing academic programs and procedures
Umbriaco, M.	Télé-université of Quebec	Administration of distance education and university education	Relation between emotion and cognition	distance education development

Appendix N - Glossary of Acronyms

Acronyms
AACE - Association for the Advancement of Computers in Education
ADATE - Association pour le développement et l'application de la technologie en education
AECT - Association for Educational Communications and Technology
AMTEC - Association For Media and Technology In Education in Canada
APOP - Association pour les applications pédagogiques de l'ordinateur au postsecondaire, Québec
AQUOPS - Association québécoise des utilisateurs de l'ordinateur au primaire et au secondaire
ASTD - American Society for Training and Development
CADE - Canadian Association For distance education
CAVA - Canadian Audio-Visual Association
CCRE - Canadian Council for Research in Education
CIPTE - Conseil inter-institutionnel pour le progrès de la technologie éducative.
CQFD - Conseil québécois de la formation à distance
CSTD -Canadian Society for Training and Development
DAVI - Department of Audiovisual Instruction
DOD - Department of Defense
IBSTPI - International Board of Standards for Training, Performance, and Instruction
ISTE - International Society for Technology in Education
ISPI - International Society for Performance Improvement
NATAL - National Author Language
NIE - National Institute of Education
NIMH - National Institutes of Mental Health
NRC - National Research Council
NSF - National Science Foundation
OCD - Office of Child Development
OLT - Office of Learning Technologies
ONR - Office of Naval Research
REFAD - Réseau francophone d'enseignement à distance
SALT - Society for Applied Learning Technology
SDTE (Societe du development de la technologie de la technologie en education)
SSHRC - Social Sciences and Humanities Research Council (SSHRC)
USOE - United States Office of Education

Appendix O - List of Educational Technology Degree Programs in Canada

Laval University - Faculty of Science of Education. *Available:* http://www.ulaval.ca/sg/PR/C2/2.567.01.html

University of Saskatchewan - Department of Curriculum Studies. Available: http://www.usask.ca/calendar/gradstudies/programs/byarea/edcur

University of Montreal -Faculty of Science of Education. (Discontinued)

Concordia University - Department of Education. Available: http://doe.concordia.ca/grad.html

Télé université of Quebec - Formation à distance. Available: http://www.teluq.uquebec.ca

University of Calgary - Graduate Division of Educational Research. Available: http://www.ucalgary.ca/~edtech

University of Alberta - Department of Educational Psychology. Available at:

University of British Columbia - Faculty of Education. Available: http://www.ecps.educ.ubc.ca/grad_programs/index.html

Athabasca University - distance education. Available: http://cde.athabascau.ca

Memorial University - Department of Education. Available at: http://www.mun.ca

Acadia University - Learning and Technology. http://www.acadiau.ca

Royal Roads - Distributed Learning. Available at: **http://www.royalroads.ca**

Part Two: Research Participants

1. Sample of Persons to be Studied:

The research participants will be made up of adults who have voluntarily offered to participate in the study. Specifically, a maximum of 24 educational technologists will be sampled. According to the selection criteria, as one of the founding faculty of the Concordia program, the dissertation supervisor (Dr. Doctor Boyd) should be sampled. Committee members acknowledge this as an acceptable bias and give permission provided this situation is clearly stated in the dissertation.

2. Method of Recruitment of Participants:

Participants will be recruited using a purposive sample of educational technologists recruited through e-mail. Potential participants will be sent notices describing the study and outlining the nature of participation involved (See attached). Only participants who volunteer will be used and no incentives will be offered. Participants will be provided with the researcher's email address and telephone number to contact if they have any questions pertaining to the study or if they want to withdraw.

This study will in no way endanger the physical or psychological well being of the participants. The nature of the study to be carried out deals with the development of educational technology as an academic field in Canada.

3. Treatment of Participants in the Course of the Research:

Participants will be informed of what is expected of them in terms of time and effort. Participants to be interviewed using a semi-structured interview protocol will be informed that their identities will not be disclosed unless their written consent is given after having full access to their individual responses and any quotes to be published or used in any public forum. Data collection material will be stored in a locked facility with key access for the researcher. Extracted data will be compiled on QSR NUDIST software on the researcher's iBook in a secured office.

The main portion of the study will be carried out over a three month period. Study participants will be asked to respond to participate in an audiotaped interview which will not exceed sixty minutes.

Appendix Q - Timeline

Year	Event	Commentary	Source
1820	Introduction of Magic Lantern in the United Kingdom	South of the border, if you go back to around 1870 there was the magic lantern which was introduced into schools.	4
1870	The Museum Movement	After that was the museum movement.	4
1889	Creation of publication, "Optical Lantern" (journal)	Parallel to that was the development of the journal "Optical Lantern" which started looking critically at the use of technology. What is interesting is that the writings of 1870 could be published today if you changed the name of the technology.	4
1938	Introduction of distance education	Essentially distance education began in Canada as correspondence courses dating back to around 1938.	20
1945	World War II - psychology and media training in soldiers	Then there was the World War II and the blending of psychology and media in the training of soldiers.	4
1952	Introduction of Television	You get television introduced as and entertainment device that found its way into educational uses.	4
1956	Nasa shuttle, Sputnik, returns to earth.	In 1956, there was a reaction to Sputnik, which triggered instructional development within school systems. Research finally began looking at interaction effects, whereas before the focus was on processes	4
1960s	Application of media tools	In the 60's there were film, overhead projectors, and audio recorders.	8
1960	The Quiet Revolution in Quebec. Signified a departure of state and church.	This occurred at the time of the Quiet Revolution in Quebec and emphasized that schools should open themselves up to the world via the use of media. The funding that followed from this gave a tremendous impetus to the use of media for learning which encouraged a lot of teachers to get certificates in audiovisual teaching methods. It created a huge influx of people into Laval, Concordia, and	24

		The Universite de Montreal, but not so much at McGill.	
1962	"Higher Education in BC and the Plan for the Future"	In 1962 in BC there was a big report that came out of the University of British COlumbia called "Higher Education in BC and the Plan for the Future" which had implications for distance education at the University of British COlumbia.	20
1964	Publication of the Parent Commission Report, Bill 60, in Quebec	In the 1970s the Quebec government funded a lot of AV in the schools and did multimedia drives as a result of the Parent Commission and Report in the 1960s...The results of the Parent Report had a huge influence in the early 1970's in opening the schools and universities to the use of media for learning. This was one the drivers for creating educational technology programs originally called audiovisual instruction or audiovisual learning, which began in the early 1970s as certificate and diploma programs for teachers.	24
1967	Creation of the Challenge for Change Initiative	The Challenge for Change Initiative of the National Film Board in the 1960s was a major event, and one that brought me to Canada as it spread worldwide. The initiative was pioneered on Fogo island just off of Newfoundland.	2
1967	IBM 1500 introduced to Canada	In 1967, I came into Canada with the IBM 1500.	18
1967	LOGO	I think the second key event was LOGO. It turned everything on its head in what it meant to teach and use technology. These two things were major shifts and trends.	5
1968	Founding of Radio Quebec	The innovation that got us started was the founding of broadcasters-Radio Quebec, TV Ontario, and Alberta	2
1969	Introduction of the Internet	In terms of events, certainly the emergence of the web was important.	19*
1969	Introduction of the Internet	It was the movement from traditional media to media of engagement--moving out of the audio-visual business and into the business of communication and how we do that intelligently and well. That movement started around the introduction of the desktop computer and especially with the introduction of the Internet.	22

1970s	Introduction of portable videotape equipment	Also in the early 1970s there was the introduction of portable videotape equipment which cracked open the use of media in schools like nothing before.	16
1970s	Program development in Quebec	I would say that the development of programs in the early 1970s in Quebec was a big development followed by growth.	25
1970s	Quebec government funded Audio Visual in schools	In the 1970s the Quebec government funded a lot of AV in the schools and did multimedia drives as a result of the Parent Commission and Report in the 1960s.	24
1970	Founding of Athabasca University	The development of distance education in Canada in the early 1970s was also important in helping Canada overcome geographical distances. Athabasca developed at the same time as the Open University and educated thousands of people that were so remote they could never get an education at a traditional university.	1
1970	Founding of TV Ontario	The innovation that got us started was the founding of broadcasters-Radio Quebec, TV Ontario, and Alberta (?).	2
1970	Founding of TV Ontario	If I go back to the 1960s and early 1970s there were a series of events that resulted in the creation of provincial television and media authorities. TVO had an influence in Ontario and across Canada.	16
1971	Creation of AMTEC	Probably, the major event that influenced Ed. Tech. in Canada was the creation of AMTEC and the collegial collaboration that occurred as a result of that collaboration whose members got together once or twice a year to share experiences.	3*
1971	Creation of AMTEC	Another event was the effort in 1971 to bring together ETRAC and EMAC to form AMTEC. I think the creation of AMTEC and hosting of an annual combined conference had an influence on how the academic field developed. I think that AMTEC had influence on educational technologist practitioners and promoted cooperation among them.	16
1973	Creation of 'Media News"	Another event that effected the development was the creation of the Journal of Educational Communications, which started out as Media News. It provided impetus for collaborative research projects.	3

1974	Application of satellite television in distance education	The use of satellite television by TELEQ and Athabasca pioneered distance education	2*
1977	Application of satellite television in distance education	Then there was the satellite project around 1977 which had huge implications for distance education. I probably know our local history of educational technology more than the Canadian history of educational technology.	20
1977	Introduction of Apple Personal Computers	Another main event was the appearance of the Apple II and PC which meant a lot more work could be done on a stand-alone basis.	2*
1977	Introduction of Apple Personal Computers	I think that the Apple environment and desktop publishing was inclusive. The whole idea that you did not have to know anything to become a user was elegant.	5
1977	Introduction of the desktop computer	It was the movement from traditional media to media of engagement--moving out of the audio-visual business and into the business of communication and how we do that intelligently and well. That movement started around the introduction of the desktop computer and especially with the introduction of the Internet.	22
1978	Creation of Telidon	It was an early example of Canada's expertise in bridging wide geographical spaces for educational purposes. The problem with Telidon and other systems developed in Canada is that there was little or no content developed.	1
Mid 1970s	Introduction of affordable computers	Another event was the introduction of cheap accessible time-sharing computers which began in the mid 1970s.	2
1980s	Rise of distributed networks in Canada	Later in the 80s we saw the rise of distributed networks like the ICON in Ontario. The rise of distributed networks the management of technology was given a boost.	8
1980	100-Computer project launched in BC	Locally the 100-computer project of 1980 put BC on the map. It was a big deal for us, although we weren't the first involved.	20
1980	Introduction of instructional development	The introduction of instructional development, starting around 1980, was a major influence on the Department of Audio Visual Media. Instructional development has driven the whole area of audio visual media into an academic configuration because we had to bring in the underpinnings of teaching and learning. That gave us the visibility and the wedge that brought us into mainstream Education. That	3

		gave us meaning and respect in the academic community. I think the move to looking at teaching and learning has helped us tremendously. It was a milestone.	
1981	"Canadian Journal of Educational Comunications"	There are also journals. One is the Canadian Journal of Learning and Technology (Canadian Journal of Educational Comunications prior) and there are a few others that have been influential in moving things along.	11
1981	Development of World Wide Web IB protocol	Then there was World Wide Web IP protocol.	18*
1981	Introduction of microcomputer	Also around 1980 there was the introduction of the microcomputer, which changed things profoundly.	16
1981	Introduction of microcomputer	In 1981, there was the introduction of the microcomputer, which was a negative development by the way.	18
1981	Introduction of microcomputer	In the early 80s IBM introduced the microcomputer.	8
1981	New editor for minor publication named.	In 1981 Bob Bernard from Concordia took over the editorship of the Canadian Journal of Educational Communications and provided us a major step forward in establishing an academic journal in Canada.	16
1981	Quebec founded CANAL, the educational network	In Quebec we had CANAL for broadcasting educational television.	2
1983	AMTEC Conference	The 1983 AMTEC Confluence conference comes to mind. So many people came together. There was a lot of cross talk between those groups at that time.	22
1983	Introduction of BIT NET	In 1983, there was the introduction of the BIT NET.	18

1985	the Tele-university of Quebec began networking with students	Starting in 1985, TELUC began networking with our students.	10
1986	"Teachers and Machines"	I also think Cuban's "Teachers and Machines" had a huge influence.	20
Mid 1980s	Rise of HPT	Then I think the growth of human performance technology provided a different outlook. This group within educational technology realized that learning, while interesting, could not lead to significant performance changes without factoring in other variables. There was an interest among people from business to learn more about training.	24
1990s	Development of online education	In the 1990s there was a popularization of educational technology as many people put there website and course materials online and believed themselves capable of integrating technology. This brought a level of legitimation to the field.	25
1990s	Introduction of CMC	I think this early use of CMC was an astonishing moment. For the first time in the history of distance education, we could be in contact with our students seven days a week.	10
1990s	Introduction of Web 2	The Internet, Web 2, and CANARIE are seminal events but I cannot tell you exactly when they started.	7
1990s	PC embraced MAC technology	We also saw advances in user friendly computing with Mac technology making its way into PC environments. We saw computers become more assessable, graphically enhanced, with richer media.	8
1991	Migration of BIT Neducational technologyto the Internet	Then around 1991, there was the movement of BIT Neducational technologyinto the Internet.	19
1992	"Handbook of Human Performance Technology"	I would like to believe that the publication of the Handbook of Human Performance Technology in 1992 had an influence.	24

1993	Creation of CANARIE	The Internet, Web 2, and CANARIE are seminal events but I cannot tell you exactly when they started. I can tell you when mackintosh started because I had one of the first ones. In 1983 I got my first apple computer and realized the potential of computer use in schools.	7*
1993	Creation of CANARIE	Also, from Canada's point of view, when we created CANARIE and took over CANET4 and put in the first optical network anywhere, we were at the leading edge.	18
1993	Creation of CANARIE	I also think the CANARIE project was another major organization.	19
1993	Popularization of software - the mosaic graphic user interface	The next big event came in the early 1990s when everyone got access to the mosaic graphic user interface that led to the widespread use of the World Wide Web.	16
1994	Popularization of the internet	More recently around 1988, the World Wide Web had a huge impact.	2*
1994	Popularization of the internet	Then, of course, there was the internet and access in 90s. At this time, I was in a small rural community. Being able to meet people and maintain relationships at a distance meant I could stay in a small community. I would say that for rural Canada, the internet provided a huge contribution.	5
1994	Popularization of the internet	The next big event came in the early 1990s when everyone got access to the mosaic graphic user interface that led to the widespread use of the World Wide Web.	16
1994	Popularization of the internet	The Internet allows students to get free online access to documents and to contact their professors online is extremely important. It also allows students to create online forums with their peers.	17
1994	Popularization of the internet	The minute the World Wide Web became a viable overlay for what we were doing, we got into the communication business.	22
1994	Popularization of the internet	Also the arrival of the Internet the 1990's had an influence.	24

1973	Creation of Media News (eventually Journal of Educational Communications)	Another event that effected the development was the creation of the Journal of Educational Communications, which started out as Media News. It provided impetus for collaborative research projects.	3
1995	Rise of easy-to-use client server technology	In the 1990s we saw the rise of easy to use client server technology and enterprise wide approaches to it.	8
1995	Tele-learning NCE initiatives	I think that tele-learning NCE affected the academic field of educational technology and distance education in Canada because it created a community that became a cluster. When this organization fell apart, people dispersed and went into the private sector and into universities. It had a profound effect that I believe put Canada ahead in the world.	19
1996	CoSy system introduced	Doctor Boyd at Concordia who used the CoSy system and encouraged colleagues with varying degrees of success to adopt the CoSy system in teaching.	1
1996	First laptop university emerged in Canada	I think that the fact that Acadia in itself was the first laptop university in Canada is a key event. We have been working with other schools that were starting out in thinking about laptop technology in their classrooms. So, we have largely tried to help people get started without reinventing the wheel. So without been too bold, I would say that Acadia just in this laptop initiative had a huge impact. It has been successful and we have highly in the universities as far as undergraduate education goes.	15
1996	Popularization of online education	Online methods were pioneered by people like the Centre for Computing Sciences at Athabasca.	1
1997	Software Developments (Blackboard and WebCT)	Things have really helped that like the courseware development commercial offerings like Blackboard and WebCT. Products like these have been hugely influential on campus as course management systems to accompany face-to-face courses to make them hybrid or as a distance education platform.	11
1998	CANARIE took over management of CA*net3	Also, from Canada's point of view, when we created CANARIE and took over CANET4 and put in the first optical network anywhere, we were at the leading edge.	18

1998	ISTE Standards	I do think that in recent history ISTE standards had an impact on how we think about teaching and standards. Right now standards are a hot item.	20
1998	Neducational technologyStandards	The Neducational technologystandards had an implication as well.	20
1999	Creation of SchoolNet	Doctor Doug Hull was a believer in the K to 12 system taking advantage of technology. He pushed for School Net. There are also dozens of academics that had an impact.	18
2000s	Popularization of blended learning	Between the late 90s and now there was the rise of e-learning and its successor, blended learning. We saw much more acceptance of e-learning as a legitimate form of learning.	8
2000s	Emergence of new synchronous online methods	Today, in distance education there is the continual effort to reinvent the wheel through terms like e-learning, m-mearning, even p-learning now, without the realization that much of the work was already done ten or twenty years ago.	1
2000s	Popularization of Open Source Software	We have been involved in things like teaching and learning, centres for distributed learning, and now we are moving towards Open Source, which has the whole concept of learning objects at the core. That I think is going to be another event.	3
2001	"Canadian Journal of Learning and Technology"	There are also journals. One is the Canadian Journal of Learning and Technology (Canadian Journal of Educational Comunications prior) and there are a few others that have been influential in moving things along.	11
2001	"Over Sold and Underused"	Larry Cuban wrote this book called "Over Sold and Underused" which described where I think we are at in terms of having infrastructure and computers but not a sense of how to use them.	13
2002	"Digital Diploma Mills"	Release of the book "Digital Diploma Mills" in 2002.	20
2004	ICT curriculum mandated in Alberta	The ICT mandate came through Alberta Education for curriculum development. It is supposed to be integrated into all subjects now; it has become a must-have rather then a nice-to-have.	12
TBA	Merger of AMTEC and CADE	Also the current merger of AMTEC and CADE will be significant.	22*