

OPENING PANDORA'S BOX?

Designing and implementing strategies for new information and communication technologies in the Political Science classroom

by

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Abstract

This thesis argues that the implementation of new information and communication technologies (ICTs) in the Political Science classroom will provide new opportunities that will positively affect student learning. This contention is supported by the findings of a case study of Political Science courses employing new information and communication technologies at Acadia University from 1996 to 1998. Using the “lessons learned” from two years of technological implementation in the political science classroom, this thesis will explore the implementation of ICTs by illustrating numerous strategies and considerations for employing ICTs in different academic environments. Through an investigation of the unique circumstances that led to the implementation of a campus-wide computing initiative in 1996, the implementation of new ICTs within the Political Science classroom are critically assessed and approaches to technologically-enhanced political learning opportunities for other instructors of Canadian Political Science are proposed. The case study will also present the findings of a series of student surveys, indicating a series of positive and negative responses to the implementation of new information and communication technologies.

List of Abbreviations

AA: Acadia Advantage

ACME: Automated Courseware Management Environment, Acadia University

ADC: Academic Development Centre, Acadia University

AITT: Acadia Institute for Teaching and Technology, Acadia University

COR&D: Centre for Organizational Research and Development, Acadia University

ICTs: information and communication technologies

WWW: World Wide Web

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Introduction: Opening Pandora's Box?

In Ancient Greek mythology, the legend of Pandora's Box illustrates how a multitude of evils was released to afflict humanity, the "evils" being connoted as such because there was no existing context for understanding them.¹ In the contemporary understanding of the term, "Pandora's Box" indicates an issue that induces a series of questions that are both complicated and troubling, since there are no simple answers. Pandora's Box in this thesis symbolizes the presence of information and communication technologies (ICTs) and how they may be employed to enhance the Political Science classroom in Canada. When considering the implementation of technology, a series of challenging questions emerges. How, if at all, will technology enhance the process of teaching and learning in the Political Science classroom? How much technology is needed, if any, to achieve educational goals in the Political Science classroom? What prescribed role should ICTs play in the Political Science classroom to facilitate effective political learning? These questions illustrate some of the challenges presented by ICTs to the teaching and learning of Political Science which will be investigated further throughout this work.

For Political Science, the proliferation of ICTs has offered an opportunity for the revitalization of the classroom by increasing access to information and new forums for learning. Much has been written in the past few years cataloguing techniques for the effective use of technological tools at all levels of education, all suggesting dramatic impacts, both positive and negative. The implementation of ICTs in Political Science at the post-secondary level may enhance the educational experience for students, in addition

¹ James Weigel, Jr., *Mythology* (Lincoln, NB: Cliffs Notes Inc., 1973) 53.

to challenging the concept of the traditional classroom. This thesis will examine these changes in the Political Science classroom by presenting the findings of a case study undertaken at Acadia University from 1996 to 1998. Through an investigation of the unique circumstances that led to the implementation of a campus-wide computing initiative in 1996, the implementation of new ICTs within the Political Science classroom will be critically assessed and approaches to technologically-enhanced political learning opportunities for other instructors of Canadian Political Science will be proposed.

In July 1997, the Information Imperative Index,² compiled by the United Nations Development Program and AT&T, declared Canada the seventh most wired country in the world. This index assessed the degree to which ICTs had proliferated in individual countries, focusing on the number of televisions, computers, and other ICTs available to citizens. Canada's placement on the index suggests ICTs are becoming an undeniable characteristic of its social, political, and economic systems. In more practical terms, many Canadians are relying on complex computer networks in their everyday life, to the point where ICTs have become an accepted part of life in the "Information Age."³ The Internet has become an entity that no one fully understands, yet occupies much of our interest through its unencumbered growth and seamless presence in everyday life across North America. The national banking system, Interac, has effectively removed the need

² "Information Imperative Index." July 1997. <http://www.worldpaper.com/July97/variable.html> [9 October 1997].

³ The term "Information Age" will be used throughout this work to describe the socio-economic and political era in which we currently function. This era is characterized by an increased use of information and communication technologies for everyday existence, and the expectation that reliance on these technologies will continue to grow, likely to the point of omnipresence. Much like the term "Industrial Revolution" is used to describe early technological impacts on society with the introduction of machine-guided production and distribution, the Information Age signals a shift in everyday processes. See James R. Beniger, *The Control Revolution: Technological and Economic Origins of the Information Society*. (Cambridge, MA: Harvard University Press, 1986.)

for cash transactions. The growth in the use of ICTs and the expectations surrounding their use for most, if not all, aspects of society is one of the convictions that underlies the arguments presented within this thesis. In Canadian society, where computer networks facilitate everything from grocery purchases to financial security, it is essential to examine the proliferation of ICTs and determine the most effective approaches for dealing with their potential influence in the Political Science classroom. The underlying contention that drives this thesis is that the proliferation of ICTs in Canadian society will continue, and that the possibilities for enhancing information gathering and knowledge building that are proffered by these technologies cannot be overlooked, even at this early stage of the Information Age.

The central contention that ICTs can improve teaching and learning in the Political Science classroom will be supported by a secondary argument which contends that technological implementation can only be effective if it has been considered in a rigorous manner by instructors. Using technology for its own sake will not result in more effective political learning, but implementation that considers the issues, obstacles, and responses that may affect students will ultimately result in learning opportunities for students that will influence their pursuit of knowledge in the future.

Chapter One will introduce the study of political science in Canadian post-secondary institutions in general, focusing in part on the experience at Acadia before the implementation of notebook computer technology in 1996. To highlight the need for a reassessment of standard practices and curriculum, this chapter will explore some of the more recent challenges to the discipline such as fragmentation within Canadian Political Science and declining enrollments across Canada. Chapter One will also serve as an

introduction to changes that are being experienced in Canadian society as a result of technological proliferation, through a survey of four perspectives on the proliferation of ICTs. These perspectives illustrate many of the concerns regarding the ability of ICTs to liberate or enslave society, as well as the degree to which humans actually control the pace of technological change. This discussion is used to facilitate the final part of Chapter One, which considers the specific challenge of implementing ICTs in the Political Science classroom. By illustrating the positive and negative aspects of technological implementation, this final section will create a segue to the presentation of the case study and the arguments that are presented in this thesis.

Chapter Two will introduce the case study by considering the environment of technological implementation that facilitated the pedagogical and curricular changes undertaken in Political Science at Acadia University. This case remains unique in Canada because of a campus-wide computing initiative, the Acadia Advantage, which was implemented in 1996. As a result of this unique initiative, there was a larger context for the implementation of technology in the classroom, which resulted in a less complicated implementation for Political Science, since there were fewer technical obstacles to overcome. In addition to describing the initial implementation of ICTs in Political Science, this chapter will describe The Digital Agora, the second phase of technological implementation for Political Science in 1997. Following this introduction, the case itself will be presented by describing the methods and strategies that were employed over a two-year period of implementation, and the methods that were employed to gather the data that support the contentions of this thesis.

Chapter Three will offer a quantitative and qualitative presentation of data that were collected during the case study. In 1996, the strong presence of technology in one introductory class in Political Science, POLS 1006, made it a valuable case for assessing the influence of ICTs on traditional curriculum and pedagogy in the Political Science classroom. A second introductory class, POLS 1403, provided a means for comparison since it was not "technologically enhanced" to the same extent. The data gathered from these classes will be analyzed in two contexts: responses to changes in traditional teaching and learning methods, and student assessments of the success of technological implementation to date. A survey of data gathered from the second year of implementation in Political Science will provide a framework for discussing the possibilities for other instructors and the importance of evaluating the use of ICTs to ensure the educational goals of the class are being met. The data from the Political Science experience with technology will be supplemented by a discussion of several studies conducted by Acadia University's Centre for Organizational Research and Development that consider technological implementation in the same ways, but in the larger context of the Acadia Advantage initiative. This analysis will support the contention that using ICTs in the Political Science classroom results in opportunities that may positively affect student learning experiences, but will also illustrate the difficulties with such implementation. This analysis will also support the contention that the use of ICTs results in a "classroom" that is much different than the traditional Political Science classroom: that encourages students to pursue a multitude of resources to inform their work, and to work collaboratively to enhance their understanding of the course.

Chapter Four will provide a context for applying the results of the implementation experience at Acadia to other institutions. At this preliminary stage in the implementation process, the students' positive responses to using ICTs for research and communication, coupled with their concerns, will provide a basis for future implementation, as well as a framework for considering the use of ICTs by other Political Science instructors. Using the "lessons learned" from two years of technological implementation to date, the first part of this chapter will describe the changes to the Digital Agora that are in place for the third year of technological implementation. These changes illustrate that the technological implementation process is dynamic, thereby expanding the possibilities for teaching and learning in the Political Science classroom during the implementation process itself. Using the experiences presented in the case study, a summary of possible changes with the implementation of ICTs will be presented, supported by a series of strategies that may be employed by other instructors considering the use of ICTs in their classes. Finally, this chapter will proffer answers to the questions that were presented in the first paragraph of this introductory chapter concerning the larger challenge of technological applications in Political Science.

The conclusion will revisit the title of this thesis, "Opening Pandora's Box?" and summarize how the data presented in this thesis illustrate the positive and negative aspects of technological implementation in the Political Science classroom. Given the experiences at Acadia, the conclusion reiterates how the implementation process is both evolutionary and consultative. This chapter will also provide a critical assessment of how the methods employed in the case study may be strengthened for future study, by highlighting several methodological problems with the original study. Finally, the

conclusion will provide a variety of possible directions for the study in the future, by illustrating how the study of the implementation may continue.

Chapter One: Teaching Political Science and the challenge of technology

Before considering the new possibilities for the Political Science classroom as a result of technological proliferation, the context for the case study will be provided by discussing the Political Science classroom before the Information Age. Using this discussion as a starting point, current challenges to the discipline will be discussed in greater detail. Before exploring the specific challenges of implementing technology in the Political Science classroom, a survey of several theorists who consider computer technology will provide the context for understanding the opportunities being presented in the Political Science classroom. This chapter will support the argument that the implementation of ICTs in Political Science will improve the educational experiences of its students by describing the context for the study and the motivations for technological implementation that will be discussed in the following chapters.

The role of Political Science

Political Science as a discipline in Canadian universities was first established at Queen's University in 1877. The spread of Political Science across Canadian universities has created what James John Guy calls a "distinctive" Canadian Political Science, that distinguished itself from American Political Science in two significant ways. First, Canadian Political Science is still influenced by the European "generalism" in the spirit of a liberal arts education that laid the foundation for higher education in Canada instead of the methodology-driven study that is found in the United States. Second, a "Canadian" Political Science has developed because of the unique role and perspectives of Québec in the understanding of the Canadian politics. Francophone Political Science

is influenced by its history as much as its culture, and contributes to the larger Canadian school with its sizeable presence in the Canadian Political Science Association (CPSA) and the creation of the Société québécoise de science politique in 1978.¹ These factors combined created a field that has grown considerably in size and scope since its inception.

At the post-secondary level, Political Science follows the traditional tenets of Canadian Political Science in both pedagogy and curriculum. A survey of Political Science courses offered at Acadia University before 1996 fits the expected offerings of a Canadian Political Science department: Canadian politics, international relations, comparative politics, and political theory.² The instructional methods until 1996 were similarly traditional in nature. Introductory and second-year classes were largely lecture-oriented, with in-class discussion groups, essays, and small projects. Senior-level courses were generally conducted as more Socratic discussion-based seminars, with in-class presentations and longer essay requirements. While there is value in each of these instructional methods, the proliferation of ICTs makes it possible for these methods to be enhanced, or in the case that will be presented, offers new learning opportunities in the classroom.

Canadian Political Science, as a discipline, seeks to expand a student's understanding of the world through the exploration of primary and secondary resources, and to explain events through deeper levels of analysis. Curriculum for introductory-

¹ James John Guy. *People, Politics, and Government. Political Science: A Canadian Perspective*. (Scarborough: Prentice Hall Canada, 1995) 71.

² Acadia University. *Undergraduate Calendar* (Wolfville, NS: Acadia University, 1995). Changes to the curriculum and pedagogy after the 1995-96 academic year will be discussed in Chapter Two.

level courses can generally meet these goals.³ Students are provided with conceptual frameworks for understanding “politics,” as well as an introduction to the study of Political Science. The majority of introductory Political Science courses focus on the structures, functions, and processes of Canadian government at different levels within a nation-state and among nations in the international sphere. Often, introductory courses also acquaint students with other areas of political study by discussing topics in international relations, comparative politics, political theory, public administration, and any particular sub-field of the discipline that may be of particular interest to the instructor.

Challenges to Political Science in and out of the classroom

For Political Science departments, the issues of fragmentation within the discipline, declining student enrollment, and shifting departmental demographics with respect to gender and replacement of retiring faculty will limit their ability to provide an education in politics, if they have not already begun to do so. In addition to these challenges, the discipline faces the proliferation of new ICTs, to realize the opportunities they provide to not only increase political literacy⁴ among students, but to enhance the quality of the education received that the opportunities that may be generated by higher levels of political literacy.

³ This conclusion was reached after reviewing a number of textbooks intended for introductory Political Science courses, in conjunction with course descriptions in the university calendar.

⁴ In this work, the term “political literacy” will describe a student’s knowledge of Political Science, conceptually and through an understanding of the structures, functions, and processes of government.

Fragmentation

Peter Aucoin, in his presidential address to the CPSA in June 1996, acknowledged a number of dramatic changes in Political Science.⁵ Primarily, the discipline has moved away from the study of democratic governance that was favoured by the older generation of active political scholars in favour of increased specialization within departments. “Our discipline has been diminished by the extent to which it has veered from the central of questions of democratic governance. To the degree that we have allowed the focus of the discipline to be defined by partisan forces and ideological currents in politics or by the political fashions of other disciplines, we have placed the discipline at risk: the risk of redundancy at best, the risk of irrelevance at worse.”⁶ Aucoin also suggests the discipline has fragmented into different “directions” and it is these directions that may compromise its future. “Specialization in Political Science has meant a great deal of fragmentation within competing schools of thought and their different approaches to the study, and even definition, of politics.”⁷ This provides a great challenge for Political Science instructors, since it compounds the number of topics and perspectives that can be presented to students.

The question for all departments becomes one of how to best represent the field of Political Science given the diversity of subject matter and fields of specialization. In addition to the traditional subjects taught in Political Science, departments are also contending with “new” topics and issues like international political economy and political

⁵ Peter Aucoin, “Political Science and Democratic Governance,” *Canadian Journal of Political Science*, Vol. 29, No. 4 (December 1996) 643-660.

⁶ Aucoin, 660.

⁷ Aucoin, 655.

sociology, which rely on cross-disciplinary expertise. Departments must not only teach the “basics” of Political Science,⁸ but the faculty must compliment traditional offerings with expanded opportunities for analysis and research. For example, senior level courses in the discipline must employ a high level of rigorous analysis, but must also consider a myriad of sub-topics in Political Science, including public policy, agency, law, and other fundamental components of the political system. The research interests of individual faculty compound the problem even further, as departmental strengths in various sub-fields influence the courses offered within a department, as well as the quality of opportunities available to senior students.

Declining enrollment

In 1997, the CPSA presented preliminary findings of a nation-wide departmental survey that showed enrollment in Political Science courses and programs is declining dramatically across Canada. The decline in enrollment is exacerbated by changes to the faculty complement, with a significant number of retirees over the next five years. Table 1-1 presents the challenges confronting departments across Canada, and illustrates the challenges, enrollment and otherwise, presented to individual departments.⁹

⁸ Canadian politics, international and comparative politics, political theory, and public administration.

⁹ This information was obtained from Canadian Political Science Association, *1997 Departmental Survey Preliminary Analysis*. This account does not include all of the universities included in the Maclean's survey, or all of the Political Science departments in Canada. The Royal Military College, not included in the *Maclean's* rankings, is included in the primarily undergraduate category.

	Change in enrollment	Faculty	Retirement (in % years)	New Faculty
UG				
Acadia	Decrease 1-5%	6	1	0
Bishop's	Decrease over 20%	5	0	0
Cape Breton	Increase over 20%	4	1	1
Laurentian	Decrease 6-10%	9	0	0
Lethbridge	Decrease 6-10%	4	1	2
Moncton	Decrease 1-5%	4	2	2
Mount Allison	Decrease 1-5%	3	0	1
UPEI	Decrease 6-10%	3	0	0.5
Ryerson	Decrease 1-5%	11	1	2
St. Francis Xavier	Decrease 1-5%	8	0	0
Saint Mary's	Decrease 11-15%	6	1	2
St. Thomas	Increase 1-5%	3	0	0
Wilfrid Laurier	Decrease over 20%	12	1	1
Winnipeg	Decrease 1-5%	10	1	1
CO				
Guelph	No change	12.5	1	0
UNB	No change	5	1	2
Regina	Increase over 20%	9	5	5
Simon Fraser	Decrease 6-10%	18	1	2
Waterloo	Decrease 1-5%	12	1	1
Windsor	Decrease 11-15%	13	0	0
York	Decrease 1-5%	45	1	2
MD				
Alberta	Decrease 11-15%	22	2	4
UBC	Decrease 11-15%	25	3	0
Calgary	Decrease 11-15%	19	0	0
Dalhousie	Decrease over 20%	14	0	0
Laval	No change	30	5	2
Manitoba	Decrease 16-20%	9	3	2
McGill	Decrease 1-5%	22	3	1
McMaster	Decrease 6-10%	19	3	2
Montreal	Decrease 6-10%	25	4	0
Ottawa	Decrease 1-5%	16	0	1
Queen's	Decrease 16-20%	21	2	1
Saskatchewan	Decrease over 20%	11	1	0
Toronto	Decrease over 20%	57	5	5
Western	Increase 11-15%	21	3	2

Table 1-1: Department profiles for Canadian Political Science departments, sorted by *Macleans*'s survey categories. UG=primarily undergraduate, CO=comprehensive (undergraduate and some graduate programs), and MD=medical/doctoral (offering a wide range of undergraduate and graduate programs). CPSA 1997 Departmental Survey Preliminary Findings.

Table 1-1 indicates that Political Science departments, generally, are experiencing a significant decrease in enrollment. These changes in enrollment appear to be the more serious challenge facing departments, and may prove to be even more problematic over time. To interpret the potential impact of enrollment changes, Table 1-2 illustrates the institutions by “type” and general change in enrollment:

Change in Enrollment	UG	CO	MD
Decrease over 20%	4		3
Decrease 16-20%	1		2
Decrease 11-15%	1	1	3
Decrease 6-10%	3	1	3
Decrease 1-5%	7	2	2
Stayed the same		2	
Increase 1-5%	2		
Increase 6-10%			
Increase 11-15%			1
Increase 16-20%			
Increase over 20%	1	1	

Table 1-3: Number of universities reporting changes in Political Science departmental enrollment in each of the Maclean’s survey categories. UG=primarily undergraduate. CO=comprehensive (undergraduate and some graduate programs). and MD=medical/doctoral (offering a wide range of undergraduate and graduate programs). CPSA 1997 Departmental Survey Preliminary Findings.

The larger decreases appear to be occurring in the larger institutions, while smaller universities are reporting degrees of declining enrollment. Given the relative differences in enrollment among “types” of universities, however, it may be deduced that departments are losing a proportional amount of students. This decline creates a situation for departments that could become a crisis if it is not addressed. If there are fewer students studying Political Science, the problem of providing an education in all of fields described above becomes one not only of numbers, but resources.¹⁰ In the future, it will

¹⁰ These resources include: number of instructors, budgets, materials, library holdings, classrooms, and office space.

be a difficult justification to use the same number of resources to educate a significantly smaller number of students.

Departmental demographics

In addition to declining enrollments, Table 1-1 also illustrates the staffing challenges departments are facing. Over the next five years, full-time faculty members are retiring, and are not being fully replaced. The change in faculty complement challenges departments to an even greater extent because of fragmentation within the discipline. Essentially, departments must teach a broader range of subjects to a smaller group of students and a declining number of faculty members. If this trend continues, it will likely affect that the quality of education offered by departments.

The departmental survey results did, however, indicate that gender disparity in faculty positions is being diminished. In terms of departmental composition, tenured female faculty positions comprise, on average, between 20 and 40 per cent of the faculty complement.¹¹ The issue of gender within the discipline is one that has consistently recurred over a number of years. The challenge has not only been to encourage female students to study Political Science, but to encourage women to progress through the discipline to become instructors themselves. The cause of original gender disparity within many aspects of the discipline is, in fact, multicausal, but remains focused on encouraging an supportive academic environment that permits women to participate with confidence, instead of fear or reluctance. With the implementation of ICTs in Political

¹¹ Only three of the 40 departments who completed the survey do not have women teaching in their departments. CPSA. *1997 Departmental Survey Preliminary Analysis*.

Science classrooms, women may enjoy communicative environments where they are free to participate and break down traditional gender-based impediments in the classroom.

Sociologist Dale Spender has recognized the potential for new ICTs to empower women:

Despite the similarities with the past, there are new pressures at work today. Among them is the way that the electronic media break down traditional divisions. We can see how national boundaries have been undermined [by ICTs], how even subject divisions are being dislodged. It could be that rigid divisions of gender are also being weakened by this tendency to get rid of old certainties.¹²

In her work, Spender argues that there is still much room for improving the treatment of women in cyberspace, but is confident there are many opportunities for asserting control and seizing power over communication and the exchange of information electronically. Spender's analysis creates an atmosphere of optimism for women who participate in technologically enhanced Political Science classes, as they can have more power in communicative environments, as well as create and control a flow of information to a more satisfactory degree within the class.

The sum of these challenges facing Political Science departments is complex and troubling. It may be mitigated, however, by the consideration of information and communication technologies. A considered application of new technologies provides new opportunities for the study of Political Science, some of which are presented in the description of the case study that follows in the next chapter. Before assessing the impact of ICTs in the Political Science classroom, however, a review of technological literature will provide the framework for a better understanding of the possibilities for technology in the classroom.

¹² Dale Spender. *Nattering on the Net: Women, Power, and Cyberspace*. (Toronto: Garamond Press, 1996) 246.

Information and communication technologies in a changing world

For Political Science, the proliferation of ICTs presents as many opportunities as it presents challenges. This section will discuss the rationale behind a *considered* implementation of technology in the Political Science classroom through an assessment of theoretical literature. Using several of the perspectives provided by the literature, the positive and negative aspects of technological proliferation in the Information Age will be clarified. That insight can be used to describe the motivations for technological implementation in the Political Science classroom in the manner that is described in the case study.

The Information Age, as it is currently understood, is the result of a complex evolutionary process that began with the Industrial Revolution in the late 1800s. Political scientist Langdon Winner details the evolution of the Information Age as follows:

The industrial revolution and the rise of industrial society, the ascendancy of the middle class, the possibility of utopia, the misery of the working class and the necessity of revolution, the rise of new elites, the social and psychological turmoil involved in rapid change, alienation, nationalism, imperialism, leisure, and the possibility of ecological disaster.¹³

This quotation recognizes not only the significance of many factors in the evolution of the Information Age, but also illustrates the pervasive nature of technological change: one simple invention can diffuse its influence and affect everything it encounters. The steam engine, for example, precipitated this kind of change during the Industrial Revolution, just as Gutenberg's printing press did hundreds of years before. Jacques Ellul describes a similar phenomenon in *The Technological Society*, where the

relationship between human and machine has devolved into the submission of the masses by technological forces that permeate all aspects of society.¹⁴ Ellul's contention, while fatalistic in nature, alerts adopters of technology to the hazards of meaningless implementation.

In *The Control Revolution*, James Beniger traces the progress of society and its deference to technology in light of technological developments.¹⁵ According to Beniger, the Industrial Revolution is the time from which social, political, and economic "control" was placed in a technology dependent framework. The "Control Revolution" has many levels and streams of tangential analysis, but largely centres on the submission of society to the power of technology. Deference to technology, its use in everyday life, and society's relative unwillingness to question its power have left social, economic, and political progress driven by the pace of technological change. The acceptance of delivered information over derived knowledge and the loss of human touch to the promise of speed and efficiency are two of the many human losses of "control" to technology. Beniger contends, however, that the "Control Revolution" is not an entirely negative transition, since it has facilitated more effective processes for the production, distribution, and consumption of physical and intangible "goods" in society.

¹³ Langdon Winner. *Autonomous Technology: Technics-out-of-control as a Theme in Political Thought*. (Cambridge, MA: MIT Press, 1977) 2.

¹⁴ Jacques Ellul. *The Technological Society*. John Wilkinson (trans.). (New York: Alfred A. Knopf, 1970) 4.

¹⁵ James R. Beniger. *The Control Revolution: Technological and Economic Origins of the Information Society*. (Cambridge, MA: Harvard University Press, 1986).

Although it was Harold Adams Innis who first observed the power of a new medium to exert control over human beings,¹⁶ what Winner, Ellul, and Beniger describe is the ubiquity of technology in Western societies in addition to the negative side-effects of technological proliferation. This ubiquity of technology in the Information Age is the direct result of the development of the microprocessor in 1972, when computer chips were developed that could store and process large quantities of data faster than previous processors (vacuum tubes, punch cards, and so on). Since 1972, microprocessor technology has followed “Moore’s Law,” doubling in processing capacity and decreasing in cost every eighteen months,¹⁷ essentially driving the pace of technological proliferation in society. Understanding the promise of technology, and employing it in light of this pace of change, is a process that must consider both the positive and negative aspects of how it will ultimately affect society.

Four perspectives on technological proliferation

The volume of literature concerning the role of technology in society continues to grow in the Information Age as authors and readers attempt to derive meaning from the technological changes that are happening around them. When considering the literature which addresses the proliferation of ICTs in Canadian (and Western) society, a useful model for analysis has been developed by journalism professor Ross Eaman, shown in

¹⁶ See Harold Adams Innis, *Empire and Communications*, (Oxford: Clarendon Press, 1950); *The Bias of Communication* (Toronto: University of Toronto Press, 1951).

¹⁷ Bill Gates, with Nathan Myhrvold and Peter Rinearson, *The Road Ahead*, (New York: Viking Publishing, 1995) 31.

Figure 1-1.¹⁸ Eaman's model acknowledges the relationship between the belief in technological determinism, the degree to which the pace of technological proliferation is beyond human control, and the potential for ICTs to affect liberty and community. The resulting cross-section generates at least four distinct perspectives regarding the implementation of technology that can be used in the consideration of political education: assured technophiles; hopeful technophiles; anxious technophobes; and desperate technophobes.

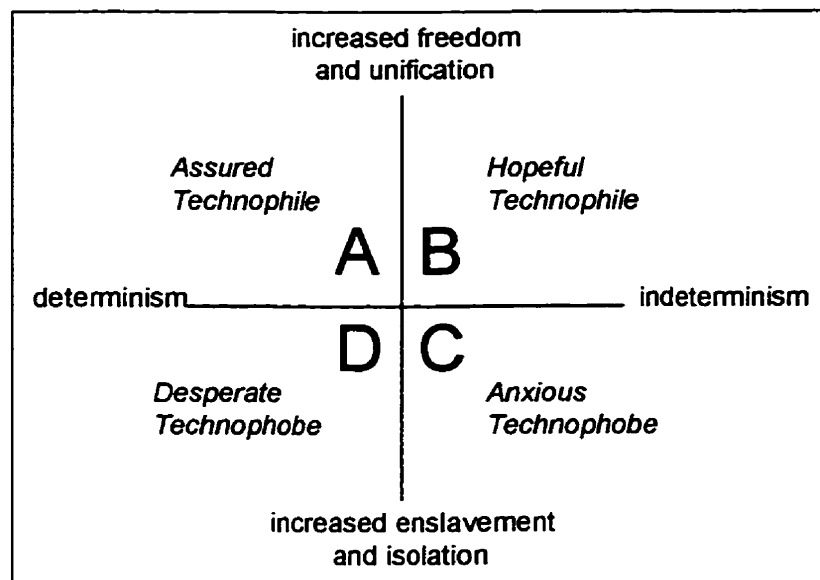


Figure 1-1: The application of Ross Eaman's model of analysis to theoretical literature concerning technological proliferation.

Assured technophiles consider the proliferation of technology to be deterministic and autonomous, as well as liberating and unifying to society. The work of Marshall McLuhan provides a number of points for discussion regarding the unifying effects of technology and the unlimited possibilities for future communication through

¹⁸ Ross A. Eaman, *The Media Society: Basic Issues and Controversies*, (Toronto: Butterworths, 1987) 145-163.

technology.¹⁹ One of his most famous aphorisms, the “global village,” while often misunderstood, describes the potential for a community of “citizens” who are united by technology and able to share experiences across time and space through the use of media. While McLuhan concedes that the pace of technological proliferation is beyond human control, the power of technology to unify citizens of the global village outweighed any potential problems with technological “control” over society.

Hopeful technophiles are best described by their relative enthusiasm for technological progress but contend humans can control the pace of technology. The work of Mark Poster,²⁰ for example, asserts the proliferation of technology will have a positive effect on society, through a postmodern assessment of the potential impact on culture. Poster’s analysis of ICTs suggests they will have a positive impact on society, generally, but require continual and rigorous analysis to ensure human control over the pace of change.

Anxious technophobes consider the influence of ICTs on social, political, and economic facets of society to be largely detrimental. With careful assessment and cautious implementation of ICTs in the future, however, there is the potential to ameliorate any “damage” caused by previous technologies. Particular attention should be paid to work in this area, since it provides the greatest warning for those people who do not consider it necessary to assess both the positive and negative possibilities for

¹⁹ See Marshall McLuhan, *The Gutenberg Galaxy*. (Toronto: University of Toronto Press, 1962); and *Understanding Media: The Extensions of Man*. (Toronto: Signet Books, 1964).

²⁰ See Mark Poster, *The Mode of Information: Poststructuralism and Social Context*. (Chicago: University of Chicago Press, 1990); and *The Second Media Age*. (Cambridge: Polity Press, 1995).

technology. In *The Whale and the Reactor*, Langdon Winner provides a rationale for cautious and thoughtful process of technological implementation:

In our society's enthusiasm to rationalize, standardize, and modernize, it has often thoughtlessly discarded qualities that it might, on more careful reflection, have wanted to preserve ... If there is a distinctive path that modern technological change has followed, it is that *technology goes where it has never been*. Technological development proceeds steadily from what it has already transformed and used up toward that which is still untouched."²¹

Technological progress, in Winner's view, has been given priority over risk- and impact-assessments, resulting in an environment that uses technology for its own sake. In political education, it is imperative that educators heed Winner's warning to employ technology for purposes that expand or improve learning opportunities, and not surrender educational "tasks" like critical thinking and analysis.

Desperate technophobes are, like Jacques Ellul,²² pessimistic after considering effects of technological proliferation on society. Work in this area is characterized by the assertion that technology has a negative effect on society, but there is nothing that can be done to correct the "damage" that has been done. Neil Postman's treatment of technology is similar to Ellul's, where he has purported that all aspects of culture and society are under the control of technology, resulting in a *technopoly*. In a technopoly, the power of ICTs is not questioned by society, largely because citizens have been altered by technology. "New technologies alter the structure of our interests: the things we thing *about*. They alter the character of our symbols: the things we think *with*. And they alter

²¹ Langdon Winner. *The Whale and the Reactor: The search for limits in an age of high technology*, (Chicago: The University of Chicago Press, 1986) 174.

²² See Ellul, *The Technological Society*, and *The Technological Bluff*, Geoffrey W. Bromiley (trans.), (Grand Rapids, MI: William B. Eerdmans Publishing Company, 1990).

the nature of community: the arena in which thoughts develop.”²³ Postman’s perspective on technological implementation, while coloured by a high level of suspicion, is important to consider, especially when considering the case study in Chapter Two, where technology was employed for the prescribed purpose that Postman laments.

This section has considered a wide range of perspectives regarding the presence of technology in society. As this thesis argues for the meaningful application of ICTs in political education, it is imperative to consider this wide range of perspectives, not just the positive ones. By employing a rigorous approach to the implementation process, it is easier to ensure a sound technological framework for enhancing the Political Science classroom.

Technological implementation in the Political Science classroom

The potential avenues for understanding the role of technology in society that were presented in the previous section illustrate the need for a careful and rigorous assessment of how ICTs can be used in the Political Science classroom. The proliferation of ICTs has offered an opportunity for the revitalization of the Political Science classroom by increasing the amount of information that is available, creating new communicative environments, and encouraging new skill development to assess and understand the electronic world. In recent years, literature concerning techniques for the

²³ Neil Postman, *Technopoly: the surrender of culture to technology*, (New York: Vintage Books, 1992) 20.

effective use of new ICTs in the classroom have illustrated not only the possibilities, but many of the potential positive and negative side effects of technology in the classroom.²⁴

In terms of pedagogy, a technologically enhanced classroom will shift the balance of power in the classroom, so that students and instructors are closer to being equal partners in learning. By encouraging students to take more responsibility for their own learning, they will experience a classroom that is significantly more “open,” where students can also express their perspectives without constraint in traditional and non-traditional environments. The technologically enhanced classroom can also teach students that it is important and valuable to develop their own knowledge, resulting in a different role for the instructors. By moving from a classroom model that focuses on the instructor’s ability to convey information to students to one that promotes the instructor as a facilitator of learning through activities and exploration, the dynamic of the classroom changes substantially and results in more student-driven learning.

In some cases, the implementation of ICTs in the Political Science classroom may alleviate other concerns. For example, any sort of gender inequalities that may exist in the lecture- or seminar-based classroom may act as impediments to full participation by students. Where female students are given the opportunity through electronic media to express their perspectives and participate in activities where they previously may have felt constrained, the communicative possibilities of the classroom are expanded and can

²⁴ The World Wide Web has a virtually infinite supply of articles referring to educational change and information technology. See POINT (Publication on Information Technology) <http://wcw.emory.edu/POINT/> for a wide selection of articles pertaining to post-secondary institutions. In Canada, various provincial governments have published electronic reports containing plans for future technological adaptation. In print-based media, *University Affairs*, a publication of the Association of Universities and Colleges of Canada contains many perspectives on technological adaptation. The *CAUT Bulletin* (Canadian Association of University Teachers) also offers many different perspectives on technological implementation.

result in more positive educational experiences for all students. In the previous chapter, Dale Spender suggested the use of ICTs can empower women in different communicative environments, and it turn, result in more control over information.

By using ICTs in the classroom, certain curricular benefits may be experienced as well. A combination of traditional and electronic resources can help instructors improve their classes by introducing students to a wider range of views. Giving students the opportunity to explore other perspectives through non-traditional resources enables them to become more aware of the diverse world outside of the classroom. Furthermore, using electronic information resources can help students become effective managers of information, an especially important consideration for those students who will seek employment after graduation.

It is crucial that all instructors involved in technological implementation consider the issues that were presented in the previous section. By considering the sorts of questions that are raised through the proliferation of ICTs, instructors will be better prepared to plan the *effective* and *considered* use of technology in their classes. Some questions that may be posed during the process include:

- *Who* benefits, and in what ways, from a technologically mediated classroom: the instructor, the students, or both?
- *What* educational goals and objectives can be realized using ICTs that were not realized before?
- *Where*, in the pedagogy and curriculum, is it appropriate to use technology for political learning?
- *When* can technology be used effectively: in-class, outside of class, or both?
- *Why* should students be encouraged to use ICTs for learning?
- *How* can the obstacles to successful technological implementation in the classroom be overcome?

By seeking answers to these questions, among others, instructors can determine the most appropriate uses for technology in their teaching. This rigorous process is the key to

developing technological methods in the classroom that are not only a benefit to the students, but will positively affect learning.

New ICTs and electronic information resources can change the Political Science classroom more dramatically than preceding technologies²⁵ for two key reasons: 1) the possibility of discovery through interaction (which, admittedly, is not possible using other media); and 2) the volume, depth, and diversity of information that is available. While employing these technologies effectively in the classroom, students not only appreciate the types of information and interaction that is available to them, but are encouraged (implicitly or explicitly) to develop new skills. Use of new ICTs, however, does not come without additional educational burdens. At all levels, students must continually develop and enhance sophisticated communication skills (for communicating in a forum without a traditional context, like electronic mail) and rigorous analytical skills (for sifting through the amount of information available and deriving the valuable from the superfluous). In cases where instructors relinquish the rigidity of traditional classroom approaches in favour of more unconventional approaches to learning, the possibilities become endless.

While there are many new opportunities provided by new ICTs, there are many new challenges to consider. Questions of equality, access, and quality of information provide certain obstacles that must be considered so that technological implementation is both considered and effective. Instructors who are interested in using ICTs in their classes must consider the reality of inequality with respect to access to technology. On

²⁵ These would include the film (and filmstrip), overhead projectors, VCRs, and traditional print-based media.

the average university campus, only a portion of the student body will have their own computers, while the remaining students share common computing facilities. A secondary consideration is that all students will have access to different kinds of technology. There is a wide spectrum of hardware and software that should be accounted for while planning technological implementation. Also, with the exponential growth of the Internet over the past ten years, the amount of information that is available to students is growing on almost a daily basis. It is imperative, before sending students out into this electronic "minefield," that all students learn about quality control and critical analysis of the electronic materials they seek. This will involve a larger process of skill-building for the instructor and the students. All things considered, the prospect of using ICTs for political learning is daunting, meriting the rigorous response that is suggested by this work.

By assessing contemporary Canadian Political Science curriculum and pedagogy, and the challenges facing the discipline, the motivations for technological implementation in the Political Science classroom are identified. Through a consideration of technological literature, a critical framework for implementation has been developed, resulting in a series of questions or challenges to the instructor who wishes to use ICTs in their teaching. The next chapter considers this framework through the case study, and creates the opportunity to assess the possibilities for ICTs in the Political Science classroom.

Chapter Two: A institutional response to technological proliferation

The challenges presented to Political Science instructors described in the previous chapter have been addressed, in part, at Acadia University through the implementation of a campus-wide academic computing initiative in 1996. Known as the Acadia Advantage, the initiative seeks to use ICTs in ways that will achieve a number of pedagogical and curricular goals for instructors. Through this initiative, students will be offered opportunities to explore the growing world of electronic information in a framework that emphasizes skill development and communicative competence through a number of media, all of which can result in more effective learning opportunities for students. This chapter will introduce the Acadia Advantage and describe some of the administrative, pedagogical, and curricular motivations for technological implementation in Political Science as well as the actual methods of implementation. The specific experience of Political Science at Acadia will be illustrated in a description of the case study. The case study will be applied to the central thesis of this argument to describe how technological implementation is not only possible, but also how it effects the political learning of students.

The Acadia Advantage: responding to challenges at an institutional level

Acadia University has begun to respond to the challenges described in the previous section with the implementation of a technologically enhanced academic initiative in 1996. Known as the Acadia Advantage (AA), the initiative's primary goal was to introduce and implement mobile computing¹ on-campus as a means of providing

¹ Mobile computing is often referred to as "ubiquitous computing," as it is more indicative of the scope of

students with greater access to information, enriching the undergraduate curriculum, and providing graduates with computer skills they can use in a practical manner.² Students who participated in the Acadia Advantage paid \$1 200 in addition to the standard undergraduate tuition, meaning they were making a significant additional financial investment in their education. Technologically, the initiative met its goals by leasing notebook (laptop) computers to undergraduate students in the first-year class, as well as any senior students who chose to participate. Since September 1997, the entire full-time first-year class has been equipped with notebooks, with the entire full-time undergraduate population expected to be involved in the program by September 2000.³

In 1988, "The Global Library" recognized the changing nature of information and knowledge because of information technology and recommended that Acadia students be able to access information and complete class work from their preferred location on-campus.⁴ In the eight years between making this recommendation and launching the Acadia Advantage in 1996, the university installed fibre optic whenever construction took place in the academic or residential buildings,⁵ and implemented an advanced ATM

technological implementation. See Diana G. Oblinger, Mark Resmer, and James R. Mingle, "Student Mobile Computing," in D.G. Oblinger and S.C. Rush (eds.), *The Future Compatible Campus: Planning, Designing, and Implementing Information Technology in the Academy* (Bolton, MA: Anker, 1998).

² The Acadia Advantage program was conceived as a response to a number of studies conducted at Acadia University in the past 10 years. See Lorraine McQueen and Alan McEwan, "The Global Library: Strategies for Managing Information Technology at Acadia University." (Wolfville, Acadia University, 1988) for the historical context of the program. See John D. Thomas, "Tom Swift Jr. Meets Clio: Reflections on Teaching Freshmen History in a Mobile-Computing Environment," unpublished manuscript, May 1997.

³ During the 1997-98 academic year, approximately 1400 undergraduates were involved in the program. In 1998-99, almost 2500 students are expected to participate in the program.

⁴ See "The Global Library."

⁵ In 1991, one of the campus residences, War Memorial House, was completely wired to the campus network through a series of extensive renovations, making it the most modern building on the campus until 1996.

backbone in the campus computer network. A high-speed Internet connection was established between Wolfville and Halifax, the main Internet “node” in Nova Scotia, which now provides one of the fastest connections in the province.

During the implementation of the Acadia Advantage program, a number of pedagogical issues were raised among faculty and administrators:

- using technology in a meaningful way in the classroom and not for its own sake;
- improving faculty computing skills so they may use technology effectively; and
- developing effective technological applications for the classroom.

The university dealt with these concerns in two significant ways. First, in preparation for implementation in September 1996, the four-month period leading to the launch was spent by faculty in training sessions and gathering expertise from guest speakers, who visited the campus having already experienced technological implementation in their own teaching methods or on mobile-computing campuses. Second, an Academic Development Centre (or “Sandbox”) was created to provide specific computer skills training for faculty. By employing almost twenty students, the ADC was able to dedicate students to specific departments who were implementing technology with more than one instructor or course⁶ and to provide project-based support to other faculty members involved in the program. In April 1997, the ADC became the Acadia Institute for Teaching and Technology (AITT, although still known as “Sandbox”), with a new mandate to conduct research into the responsible uses of technology in the classroom and develop appropriate software applications for the technologically enhanced classroom.

⁶ The Schools of Business Administration and Computer Science fully implemented the program in 1996 in their first-year courses, as did the Department of Physics.

Since Summer 1996, the AITT has maintained a student-initiated courseware management system called ACME (Automated Courseware Management Environment), that offers a common location for instructors to place course-related information, conduct on-line discussions and a wide range of other activities that can be easily facilitated by technology.

To meet the needs of incoming Acadia Advantage students, courses across disciplines and faculties were designated “AA,” to differentiate between “traditional” and “technologically enhanced” courses. In the first year of implementation, courses, participating departments, and instructors were volunteers, ensuring a group of participants who were willing to reassess their teaching methods and learn how to use the technology. Since 1996, the Academic Sector Planning Committee at Acadia University has employed a series of technological “guidelines” to differentiate AA courses from other courses. In order for a course to be considered a part of the Acadia Advantage program, it must contain some of the following attributes:⁷

1. *On-line home page* [for courses] – suggested material includes the course syllabus, links to the professor’s home page and email, and links to student home pages;
2. *Online resources* – suggested material includes class assignments and primary-source websites;
3. *Use of networked classrooms* – use of the notebook computer in-class, depending on class size and type of classroom used;
4. *Synchronous activities* – student-centred activities that occur during class time that are based on a time-dependent framework to be successful; and

⁷ The Academic Sector Planning Committee did not establish a “minimum” number of attributes that a course requires to be considered an Acadia Advantage course.

5. *Asynchronous activities* – class activities that take place outside of formal class time (depending on the resources of the instructor), that are not based on a time-dependent framework to be successful.⁸

Using these criteria, approximately 40 instructors taught AA courses in the 1996-97 academic year.⁹ Since then, approximately 140 instructors have begun to teach their courses using technology for at least one of the methods listed above.

One of the more revolutionary examples of the Acadia Advantage was the revitalization of the undergraduate physics program through the implementation of a “studio” physics program. Instead of lecturing three hours per week in a standard classroom and then conducting a three-hour lab in a standard laboratory, the best practices of each method were integrated in two two-hour “studio” sessions per week. A unique classroom model was developed that permits students to work together in small groups at stations that can be moved to create new groups as necessary. In the studio physics class, the instructor spends the first half-hour of the session conducting a short lecture and then the students spend the remaining time conducting experiments using lab equipment connected to their notebooks or working collaboratively on problems. During this part of the studio session, the instructor moves around the class, answering questions and providing guidance when necessary.¹⁰ Studio physics, while at the more advanced end of the implementation spectrum provides a practical example of how Acadia has revolutionized its undergraduate curriculum using ICTs. In the Faculty of Arts, the Department of Political Science was among the first departments to implement ICTs in

⁸ Academic Sector Planning Committee, Acadia University, “An Academic Overview of the Acadia Advantage,” May 1997, <http://ace.acadiau.ca/arts/reports/aa-aspc.htm> [1 August 1998].

⁹ The faculty complement at Acadia is between 220 and 240 full-time, part-time, and sessional instructors.

¹⁰ See P.J. Williams, Cyrus S. MacLatchy, Philip J. Backman, and Duncan S. Retson, “Studio Physics Report on the Acadia Advantage,” <http://www.acadiau.ca/advantage/physics.htm> [1 August 1998].

the undergraduate curriculum using the criteria outlined by the Academic Sector Planning Committee.

Recognizing the technological opportunities for and challenges to the university and larger society, Acadia University implemented a program that not only recognizes the need for skill development, but also offers opportunities for skill development in every discipline. The response of the university to the sum of its contemporary challenges has provided a valuable forum for increasing opportunities for new experiences in the Political Science classroom.

The case study: responding to challenges through Political Science

The case study considers the possibilities for political education through the efforts of the Department of Political Science at Acadia. The 1996-97 academic year was an ideal time to begin the study, because almost every first-year class would be “technologically enhanced” in the second year of the Acadia Advantage. The opportunity to survey progress and adaptability of the student body could be easily measured, since the classes involved had the same instruction team and covered the same material. After the discussion of the first year of technological implementation in Political Science, the study will look at the second year of implementation, the development of The Digital Agora, and the expanded possibilities for a technologically enhanced political education.

Year One: the technologically enhanced classroom

The Department of Political Science at Acadia University offered one course at the introductory level under the new Acadia Advantage paradigm in 1996-97. This course, POLS 1006, was team taught by Dr. Marshall Conley and Dr. Cynthia Alexander, with support from three graduate and two undergraduate teaching assistants. The instruction team itself was a unique occurrence, since team-teaching has been a rare phenomenon at Acadia, and the number of teaching assistants assigned to the course was even more extraordinary since there is usually only one assistant per class. The curriculum of the course focused on an introduction to Canadian politics by learning about the structures, functions, and process of government. In addition to learning about the Canadian political system, students were taught about other systems of government, and topics in international and comparative politics. To meet the definition of an AA course, the instructors developed technological enhancements including a course website, on-line discussion groups, and an on-line textbook companion containing external websites and other sources of information pertaining to the subjects covered in the textbook. The classes took place in a wired classroom, where students could access the University network for specific activities. The curriculum was enhanced through lectures and activities employing "lateral maps," an innovative learning tool used by Dr. Alexander in previous courses, that involved the strategic graphic representation of concepts and topics using images, colour, shapes, and text to illustrate interconnected issues or the progression of thought. Lateral mapping in this course was facilitated by using object-oriented computer programs, like Microsoft PowerPoint, and graphics packages, like JASC Paint Shop Pro, Microsoft Draw, and Corel Draw.

At the same time, similar courses were being taught by the same instruction team, POLS 1303 (fall term) and POLS 1403 (winter term),¹¹ that used the same curriculum, but were not designated AA courses. The classes met in a “traditional” classroom and were engaged using lectures, activities, and instruction involving lateral maps. The students had access to computers, the Internet, and software either through self-purchased personal computers, or the computer laboratories on-campus. POLS 1006 and POLS 1403 were ideal for study at this time because they considered the same curriculum, but were subject to somewhat different pedagogies.

The participants in the courses were students enrolled at Acadia, the majority in full-time degree programs.¹² The demographic composition of the participant group is outlined in Table 2-1:

Demographic	POLS 1006	POLS 1403
Registered students	39	22
Percent of sample	63.9%	36.1%
Males	24 (61.5%)	13 (59.0%)
Females	15 (38.5%)	9 (40.9%)
BA (POLS)	11 (28.2%)	3 (13.6%)
BA (other major)	5 (12.8%)	11 (50.0%)
BBA	23 (59.0%)	3 (13.6%)
Other degree	0 (0%)	5 (22.7%)
First year	38 (97.4%)	3 (13.6%)
Second year or later	1 (2.6%)	19 (86.4%)

Table 2-1: Demographic composition of participatory groups in the case study, POLS 1006 and POLS 1403. Data was taken from a combination of class registration lists and survey data.

There were far more Bachelor of Arts Political Science majors (declared) in POLS 1006 than POLS 1403. In addition, there were far more Bachelor of Business Administration students in POLS 1006 than 1403. The most significant difference between the two

¹¹ Traditionally, the Department of Political Science has offered POLS 1303-POLS 1403 using the same curriculum as POLS 1006, but offers the course in two parts to meet program needs of majors and non-majors.

¹² This data was obtained from registration information provided by Dr. Alexander and Dr. Conley.

classes was the relative “age” of the participants, since POLS 1006 was composed entirely of “year one” students,¹³ and POLS 1403 had more senior students.

Throughout the fall term of 1996, a process for the collection and analysis of data was conceived.¹⁴ It was decided from the onset of the study that it would be more beneficial to treat the groups as similarly as possible, meaning that the technology-enhanced class would not be subject to special treatment or projects over and above the use of technology. What this similarity ultimately meant was that the two groups would learn the same material in class, follow the same reading list, participate in regular forums for discussion, and participate in the same types of activities that were not lecture-based (topical simulations, for example).

The decision to wait until January 1997 to begin collecting data was largely supported by the technological learning curve of the students. In September 1996, there was no guarantee that the students participating in the Acadia Advantage course would have the necessary computer skills to use the technology effectively. By January 1997, however, POLS 1006 students had completed sufficient training and assignments to assume that they had developed a comprehensive set of computer skills. In POLS 1403, there was not any in-class training or technology-enhanced assignments, but it was assumed that students had access to computing facilities and could build skills at their own pace. While the students of POLS 1403 did not have all of the same computer-based

¹³ Acadia University defines a “year one” student as a student in their first year of study at Acadia University. In POLS 1006, there was one student who has already completed one year of study at another university, and one student who was classified as a “mature student,” returning to studies after being in the work force.

¹⁴ The development of the methodological framework for the case study in Year One is detailed in Appendix One.

assignments as POLS 1006, they were expected to use the Internet for some research, and were sent relevant messages by the instruction team via electronic mail.

In addition to determining a methodological framework, the instruction team constructed a schedule of relevant activities that would follow the curriculum and provide exploratory opportunities for this study. The activities and observations that were conducted in the two classes were spread out over a three-month period. While the original intention was to have weekly assignments, the constraints of the meeting times and course goals did not permit such activity. The activities that did take place, however, provided many opportunities for exploration.

Week One, January 31, 1997: In POLS 1006, the first of a series of “electronic” discussions took place, during which students accessed electronic discussion materials via the Internet, outside of class. POLS 1403 held a traditional in-class discussion group. Teaching assistants, the discussion group leaders, were asked to lead the discussion, but not to direct the course of the discussion. The discussion groups were segmented into gender groups in each class, to assess the quality of communication and to see if any relevant differences emerged between the genders concerning their use of technology. The POLS 1006 students were given seven days in which they could participate in the discussions (from January 24-February 3), and after the discussion was “closed,” the questionnaire was distributed to the students. The questionnaire that was used in this first week was redesigned afterwards, since some questions were unclear and, in one case, generated too many unique responses.

Week Two, February 7, 1997: Week Two was the first of two weeklong simulation exercises that illustrated some basic functions of Canadian government, as

well as teaching students how to use the Internet as a research tool. Simulations had been used in the past by Dr. Conley, but this one distinguished itself in the way it used ICTs to accomplish various research and communication tasks. In previous years, the constraints of class time and the willingness of students to use the library and other resources outside of class reduced the effectiveness of the simulations in terms of replicating reality. In 1996-97, students were presented with a fictitious situation in which there was a federal budgetary surplus, where the government had to decide how to manage it. Acting in assigned groups, the students had to adopt the personas of various actors in the political system: the Prime Minister and his or her senior counterparts,¹⁵ Cabinet ministers, corresponding Deputy Ministers, and “ordinary” citizens who represented a variety of interests. All of the students were asked to research and lobby on behalf of their assigned interest. In POLS 1006, the students were given class time in order to conduct on-line research and lobbying. Using the information they gathered electronically, POLS 1006 students carried out debate and lobbying outside of class in a series of electronic forums, which could be established for any activity the students felt merited their use. In POLS 1403, four computer stations were made available to the students, with guided assistance from the instruction team. The students were encouraged, but not required, to conduct Internet or WWW research outside of class. All lobbying took place during class time. In the class following the last simulation session, students were given the questionnaire and asked to assess their activities and the communication skills that were used.

¹⁵ These include the Finance Minister, the President of the Treasury Board, the Clerk of the Privy Council and the Prime Minister's Office.

Week Three, February 14, 1997: The week of February 10-14 dealt with Québec's role in Canada. Since a large percentage of students in both classes were from the Atlantic region,¹⁶ it was important to be able to expose the groups to other pertinent viewpoints. At the time, a senior Political Science course in the Politics of French Canada was being taught by Dr. Alexander, so these students were included as participants who had a deeper understanding of Québec politics. In addition, a connection had been established between Acadia and an introductory politics course at the University of Lethbridge in Alberta. This connection was employed to not only introduce students to their counterparts across Canada, but it was hoped their exchanges would illustrate some regional differences in perspectives on Québec's role in Canada. In POLS 1006, a unique discussion took place on-line, because three separate questions were offered and students could participate in the discussions of their choice. Each group was moderated by a teaching assistant to ensure the discussion stayed focused. In POLS 1403, students were given the same questions for discussion, and a student from the Politics of French Canada class was present to share views from a senior student's perspective. Again, the POLS 1006 "discussion" took place over the course of a week, while the POLS 1403 class was restricted to one class session. The questionnaire was distributed in the class after the discussions were held.

Week Four, March 14-24, 1997: The final major activity for both classes took place over an extended period of time. The general goal of the activity was for each student to gain a greater understanding of different public policy fields and an appreciation for consensus-building processes. In each class, however, the presence and

¹⁶ Students were asked to identify their hometown during the activity.

availability of ICTs affected the approach to consensus building. In both classes, each student selected a public policy area (health, environment, natural resources, higher education, industry, and social welfare) that interested him or her. Before any in-class activity took place, students were asked to rank the policy fields according to their perceptions of importance. Students were then asked to conduct research (either using the Internet or the resources available at the university library) to gain a greater understanding of specific issues within each policy field. In class, students were given time to conduct research on-line. In POLS 1006, students used their notebook computers and the classroom network resources. In POLS 1403, students were provided with computer lab space and guided to relevant WWW sites of interest. After the initial research phase, students were then reorganized into groups that contained a representative from each policy field. In these groups, students were asked to discuss issues within their own policy fields, and then asked to rank each policy field in terms of perceived importance to the political, economic, and social well-being of the country as a group. Students were provided with several opportunities to discuss their particular views, but ultimately, were asked to reach a consensus on the relative ranking of each policy group. One student, acting as a reporter, submitted the results to the instruction team after the group reached a consensus (or near-consensus). In POLS 1006, these results were submitted electronically in a discussion-group type forum, and in POLS 1403, results were submitted on paper. In cases where there were dissenting opinions within groups, students were asked to explain their position, give their own personal rankings, and explain why they agreed to the decision of the group. The questionnaire was distributed in the class following the last activity.

Week Five, April 4, 1997: In the final week of classes, students not only submitted university-sanctioned course evaluations, but were also given a final questionnaire that asked them to assess different aspects of the course throughout the term. POLS 1006 students were asked specific questions regarding the use of ICTs in class. In addition, students in both classes were asked to respond to a series of statements that had both positive and negative connotations concerning ICTs and their use in a variety of settings. Ultimately, this final questionnaire, which was by far the longest and most detailed of the series, sought opinions on every type of activity that was conducted throughout the term, as well as seeking an opinion on the increased use of technology in the Political Science classroom.

The series of activities in POLS 1006 and POLS 1403 were used to assist and influence student learning, as well as positively impact their development as active citizens. Using synchronous and asynchronous opportunities to explore the world, students were exposed to resources and perspectives that could inform their own perspectives. While the first year of implementation was not revolutionary in the way Political Science was taught at Acadia, it was the beginning of a technological evolution in the practices employed for more effective political learning.

Year Two: The Digital Agora

Between Year One and Year Two of the Acadia Advantage, the instructors considered a new paradigm for teaching Political Science and integrating the study with other disciplines, to create a multidisciplinary approach to social sciences. The Digital

Agora,¹⁷ named after an ancient Greek location for meeting and sharing ideas, recognizes the “seismic shift” in education as a result of new ICTs and sees its mission as “the first educational initiative to offer multimedia, cross-disciplinary information materials within an intra- and inter-institutional, computer-mediated communication framework for high school, university, and college students, as well as lifelearners.”¹⁸ The initiative is built on the notion of reconceptualizing traditional pedagogy in favour of learner-centred and student-directed approaches to learning in the social sciences. During the first year of The Digital Agora’s implementation, three courses taught by Dr. Alexander and Dr. Conley were involved: POLS 1006, Introductory Politics or “Virtual Anchor;” POLS 2096, Comparative Politics or “Global Circuit;” and IDST 2216, Peace Studies or “Digital Dove” – an interdisciplinary course that is offered for Political Science credit,¹⁹ representing a wide array of student interests and abilities. Table 2-2 indicates the demographic composition of courses involved in The Digital Agora:

¹⁷ The Digital Agora can be found on the World Wide Web at <http://ace.acadiau.ca/polisc/aa/digagora/> [1 August 1998].

¹⁸ C.J. Alexander, M.W. Conley, and C. Watters. “The Digital Agora.” <http://ace.acadiau.ca/polisci/aa/digagora/web/about/homepage.htm> [1 August 1998], 1.

¹⁹ The names of courses in quotation marks are references to their Digital Agora names.

	Class 1006	Class 1006	Class 2216
Registered students	38	14	23
Percentage of Digital Agora participants (N=74)	50.0%	18.9%	31.1%
Males	16 (43.2%)	6 (42.9%)	11 (47.8%)
Females	21 (56.8%)	8 (57.1%)	12 (52.2%)
BA (POLS)	15 (40.5%)	10 (71.4%)	16 (69.6%)
BA (other major)	19 (51.4%)	3 (21.4%)	7 (30.4%)
BBA	3 (8.1%)	1 (7.1%)	1 (4.3%)
Other degree	2 (5.4%)	0	0
First year	31 (83.8%)	1 (7.1%)	1 (4.3%)
Second year or later	6 (16.2%)	13 (92.9%)	22 (95.7%)

Table 2-2: Demographic composition of classes involved in the Digital Agora. Results do not equal 100 per cent due to rounding. Students with declared double majors (two in POLS 1006 and two in IDST 2216) were counted in each relevant category. Data was derived from class registration lists.

This table identifies a unique group of participants in this initiative, where 45 per cent of Digital Agora participants were in their first year and seven were registered in two Digital Agora courses. The success of the initiative in its first year depended largely on being able to integrate different layers of information for students with diverse educational backgrounds and different experiences in Political Science. This initiative also sought to challenge students intellectually, in a manner appropriate to their educational experiences, and enhance collaborative learning skills by grouping students from the different courses together for specific activities.

The Digital Agora's uniqueness, however, lies in its methods for synchronous and asynchronous learning. It is largely WWW-based with a supporting CD-ROM,²⁰ comprised of lateral maps that explain key concepts and issues in Political Science. The main part of The Digital Agora is comprised of the following components:

²⁰ Students were required to purchase the CD-ROM for \$30.00 at the University Bookstore.

- *Virtual Anchor* – on-line class information for POLS 1006, Introduction to Politics and Government;
- *Global Circuit* – on-line class information for POLS 2096, Comparative Politics;
- *Digital Dove* – on-line class information for IDST 2216, Peace Studies;
- *Chat Room* – a dedicated on-line chat room for students, instructors, and other participants in The Digital Agora;
- *Online Tutorials* – on-line video tutorials conducted by senior students, covering topics from essay writing to presentation skills;
- *Gallery* – also known as the “Cultural Click around the World,” this resource connects students to the relationship between politics and art, music, and literature from around the world through the WWW. Used to enhance students’ understanding of diverse perspectives and realize how the art of different cultures is used to express political, economic, and social issues;
- *Symbol Bank* – a dedicated bank of custom designed, politically sensitive images used in the lateral maps on the accompanying CD-ROM, that students could download and use in their own lateral maps. Using the associated definitions of the symbols, students learned the “language” of The Digital Agora;
- *Glossary* – a custom-developed bank of frequently used terms in Political Science and their specific references in Digital Agora materials. Multiple layers of description provide definitions suitable for students with different educational experience;
- *Course Calendar* – a dedicated on-line calendar that supplies important dates in the course for students. Students can also add their own events to the calendar; and
- *Cabinet Room* – a forum for discussions outside of the prescribed activities.

These features, combined with an assortment of “housekeeping” resources (“What’s new,” “Guestbook,” and “FAQ”- Frequently asked questions) complete the many synchronous and asynchronous possibilities for the enhancing political literacy in the integrated courses.²¹

²¹ “Overview: Digital Agora.” <http://ace.acadiau.ca/polisci/aa/digagora/web/overview/homepage.htm> [1 August 1998].

The most significant feature of The Digital Agora in 1997-98 was called the “Political Byte,” an on-line newspaper that was written, edited, and posted to the Digital Agora’s webspace by students each week.²² The Political Byte occupied the largest portion of the initiative’s asynchronous activities, since the contributions towards each week’s “edition” were completed outside of class. This feature encouraged a high level of collaboration among students from the different courses in the Digital Agora, who used virtual meeting places like the “Editor’s Boardroom” to discuss the preparation of each week’s issue. Through their collaboration, student editors composed editorials and posted essays relating to specific course assignments or issues covered in class during a specific week. All students, whether they were the week’s editors or not, were scheduled to complete a specific task for the Political Byte. These tasks included contributing questions for discussion (“Question Period”), adding informative websites (“Site Seeing”), or posing questions about coursework (“Ask Digital Abby”). In addition to the materials created by students, there was also a place for visitors from outside of The Digital Agora who wanted to make contributions (“International Café”), designed to encourage input from decision-makers with expertise and insight from different sectors, public and private, all over the world.²³ In addition to the tasks completed by The Digital Agora students at Acadia, students and guest moderators from outside of the university participated in some of these weekly activities.

Ultimately, The Digital Agora fulfils a number of goals for using ICTs in ways that will positively affect learning in the Political Science classroom:

²² Weekly “editorial boards” for the Political Byte were comprised of students from each of the three participating classes.

²³ “Overview: Digital Agora.”

- 1) material considered in- and outside of class was framed as possibilities for exploration using traditional and electronic resources;
- 2) students were encouraged to use different methods for understanding and analysis;
- 3) students were active contributors to their learning in a number of ways, specifically through the Political Byte and the creation of their own lateral maps;
- 4) students collaborated with their peers and built upon their knowledge through the Political Byte;
- 5) students gained greater insights into the world through interaction with peers and other visitors from outside of Acadia; and
- 6) students were provided with an encouraging environment to discuss and develop their understanding of topics in Political Science.

The Digital Agora, in theory, provided a positive and effective environment for technologically enhanced political learning. Students from a variety of backgrounds were given the opportunity to “appreciate different points of view on complex issues, formulate coherent analyses, and generate well-articulated and well-reasoned positions on issues. Participants, therefore, need[ed] to do more than just access and read position papers on the Web. They need to discuss issues, extract key elements, articulate ideas, and formulate responses. The participants need to be producers as well as consumers of information, that is, active participants as well as the audience.”²⁴ The defined educational goals for the initiative fostered a positive environment for political learning, where active participation and interesting learning materials created a classroom culture that was more engaging than traditional lecture-based classes.

²⁴ Carolyn Watters, Marshall Conley, and Cynthia Alexander, “*The Digital Agora: Using Technology for Learning in the Social Sciences.*” *Communications of the ACM*, Vol. 41, No. 1 (January 1998) 51.

Expectations

Expectations of behaviour and opinion that were formed by the author not only guided the development of the case study, but are also used to frame the analysis that takes place in the next chapter. Given the qualities of the individual classes in Year One, students were expected to exhibit certain behaviours determined in part by their experience with information technology, their experience with the university environment, and the instructional methods used within the university environment. Since POLS 1006 was a group of self-selected participants in the Acadia Advantage program, they were expected to be more receptive to the implementation of ICTs in the classroom. Although the students in POLS 1006 came from a variety of educational systems, from Ontario to Bermuda, it was assumed that they had not been exposed to the types of technologically mediated activities that were conducted in this particular class.

Students in POLS 1403, who also came from places as far away as Spain, were expected to indicate a different set of opinions. A majority of the class had attended university for at least one year, so it was expected the class would not accept the implementation of ICTs in the classroom as willingly as POLS 1006. Since there was not equal access to ICTs, the students had to rely on public computer labs and, if they owned them, their own personal computers, which would likely negatively influence their responses.

In Year Two, students in all three of The Digital Agora classes were expected to exhibit similar sentiments. Since The Digital Agora was dramatically different from what students have encountered in the past, it was expected that initial responses to the

collaboration across classes (through the Political Byte) would be mixed, indicating uncertainty in terms of the effectiveness of the tools and success of collaboration. By the end of the year, however, the students should have been sufficiently comfortable using The Digital Agora, and were expected to enjoy the opportunity to expand educational possibilities through collaboration and the use of new technologies. Since responses to technology in Year Two were not collected in the same way they were in Year One, the data from The Digital Agora are expected to be preliminary, and should not be considered indicative of overall responses to technology at this stage in the implementation.

Accepting the opportunities and challenges of new ICTs in the Political Science classroom was not a simple process for the instructors involved in the study. It was important that students be introduced to new electronic resources in ways that make the technologies *and* the course material more relevant to their everyday lives. Similarly, it was important that students explore the possibilities for political learning through the use of technology, and understand that ICTs have many practical applications in the classroom in addition to the applications in the world outside of the classroom. To that end, answers to some of the questions posed in the previous chapter provided a clear basis for the implementation of technology in these Political Science classes. Both the students and the instructors benefitted from the ICTs employed because they were provided with opportunities to explore information, inside and outside of class, that previously would have been unobtainable. In order to use those resources effectively, however, the instructors had to ensure the technology did not appear more important than the curriculum. A combination of synchronous and asynchronous activities provided the

best opportunity to achieve the pedagogical and curricular goals of the courses. In the next chapter, the data derived during the case study will provide answers to the remaining questions by identifying various obstacles that emerged during the implementation process, and describing to degree to which educational goals were achieved. These results, although preliminary, offer insights into the relative effectiveness of technological implementation in the Political Science classroom and how ICTs may be employed by other instructors to achieve other educational goals.

Chapter Three: A report card on technological implementation at Acadia

Given the variety of activities carried out in the introductory Political Science classes from 1996 to 1998, a number of opportunities for political learning in the Political Science classroom through the use of technology will be highlighted. The data derived from student responses will be analyzed in two contexts: changes to traditional work methods and the students' impressions of technological implementation. For the sake of simplicity in interpretation, the results will be presented first as the sum of experiences in both Year One classes. Then, the relative success of specific activities of POLS 1006 students will be assessed for their technological content from the data derived from student questionnaires. The data derived from the Digital Agora will illustrate the experiences of the students at the mid-year point in the implementation process and their overall impressions at the end of the year. The final part of this data analysis will consider university-wide studies regarding the Acadia Advantage, employing data derived from a representative sample of students to assess the effectiveness of technological implementation at an institutional level. Through this assessment, preliminary accounts for the successes and failures of technological implementation in the Political Science classroom can be proffered.

Year One: a technologically mediated classroom

The 1996-97 academic year was an important transitional year for the teaching of Political Science at Acadia University. Using the two series of data presented in this section, a student-focused assessment of the initiative in its preliminary stages will provide the first opportunity of its kind for gauging the effectiveness of employing

technology in the Political Science classroom. The first section of data will focus on comparisons between POLS 1006 and POLS 1403. While there is a certain value in comparing results across activities and classes, these results do not indicate much in terms of technological competence or acceptance, but are more useful in determining attitudinal differences in each class and student orientations towards technology. These initial results will lay the foundation for the second section of results, that considers the behaviours and attitudes of those students specifically enrolled in POLS 1006, to gauge technological acceptance, competence, and their overall impressions of the course.

Comparisons between POLS 1006 and POLS 1403

Throughout the first year of the Acadia Advantage program in Political Science, students participated in a wide range of experiences, largely new to them because of a secondary education in a “traditional” classroom. The data from Year One indicate that as technology became a regular part of the course activities throughout the year, students indicated a greater willingness to use the computer in the classroom to facilitate learning through self-directed research and asynchronous activities. These survey results also indicate that adapting to the use of technology is much easier if the implementation is broad. Since POLS 1403 students were only exposed to the use of technology in minor ways, and since many of them were not Acadia Advantage or first-year university students, they were generally less inclined to use the technology and less impressed with its presence.

Figure 3-1 illustrates the starting point for this discussion, a skill assessment completed by all of the participants early in the winter term. This figure illustrates the

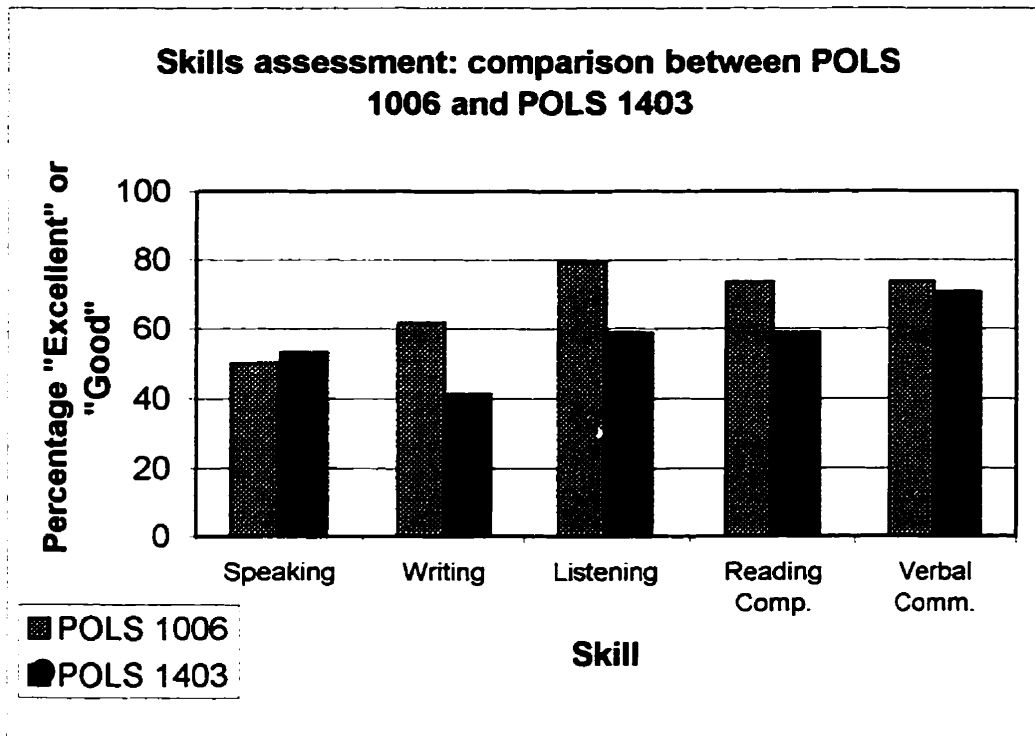


Figure 3-1: Skills assessment completed by POLS 1006 and POLS 1403 students at the beginning of Winter term, January 1997.

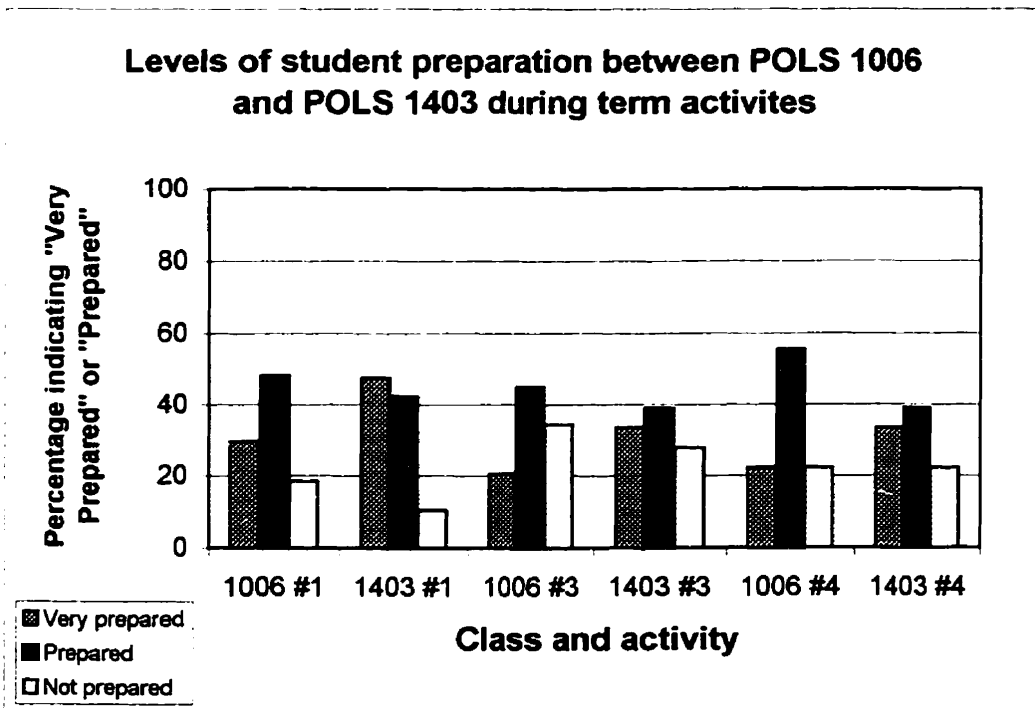


Figure 3-2: Types of prepared, as indicated on student questionnaires, for class activities in Weeks One through Four.

perception of skill in various areas, from speaking to writing, using five options from “Poor” to “Excellent” to assess their competence in a particular skill. In the interest of simplicity, this figure only illustrates results for those students who indicated their perceived skill level was either “Good” or “Excellent.” The students of POLS 1006 assessed themselves at higher levels in all of the skills, except speaking skill, where POLS 1403 students assessed themselves at a slightly higher level. Assessments of general verbal communication skills were relatively similar between the classes, but there proved to be a rather large disparity between the classes in non-verbal types of communication, with the students of POLS 1006 considering themselves far more proficient in these areas than the students of POLS 1403. This is interesting because POLS 1403 had more students who had already completed at least one year of university, so it would be expected that these students would assess themselves at higher levels than POLS 1006 students. It is not certain whether skill levels were related to performance and satisfaction with the course,¹ so comparisons in this area are more useful for defining similarities and strengths between the classes at this time.

Another way to measure perceived success by the student is to quantify the amount of preparation that was admitted by the students for the activities that took place throughout the term. Since some of the activities required different types of preparation, students were not always asked about the same methods of preparation on each questionnaire. Figure 3-2 illustrates the type of preparation for each activity, as indicated by the students during the course of the term. The general trend that emerges is that both

¹ Grades for students between the classes were not compared.

groups of students prepared for class using assigned readings and lecture notes instead of external resources. Students in POLS 1006 were more likely to use outside resources to enhance their preparations. When asked to indicate which media were used for preparation, students in both classes used the Internet (though POLS 1006 used it more often), newspapers (both printed and on-line), and watched television news programs.² It is reasonable to conclude that both classes were similar in terms of preparation through traditional methods, but given the strong technological content, it is surprising that POLS 1006 were not using other new media sources to a greater degree. It is expected in future years of the program that technologically enhanced Political Science courses will expand the use of non-traditional sources, informing more of an individual student's work than textbooks, lecture notes, and other traditional materials.

In addition to asking students about their preparation before class, the students were asked to assess how prepared they felt for the activity after its completion. Figure 3-3 illustrates that POLS 1403, on average, felt more prepared for the activities after they took place (with the exception of the final week, where POLS 1006 indicated they were slightly more prepared than POLS 1403). In activities #1 (Week One) and #3 (Week Three), POLS 1403 indicated that they were "prepared" or "very prepared" more than their POLS 1006 counterparts, the first week by almost 12 per cent. It is not surprising, however, that POLS 1403 students thought themselves more prepared after the completion of the activity. While the activities conducted in both classes were generally similar, the inconvenience of using ICTs for POLS 1403 students meant the class

² The data were collected through the written responses of students.

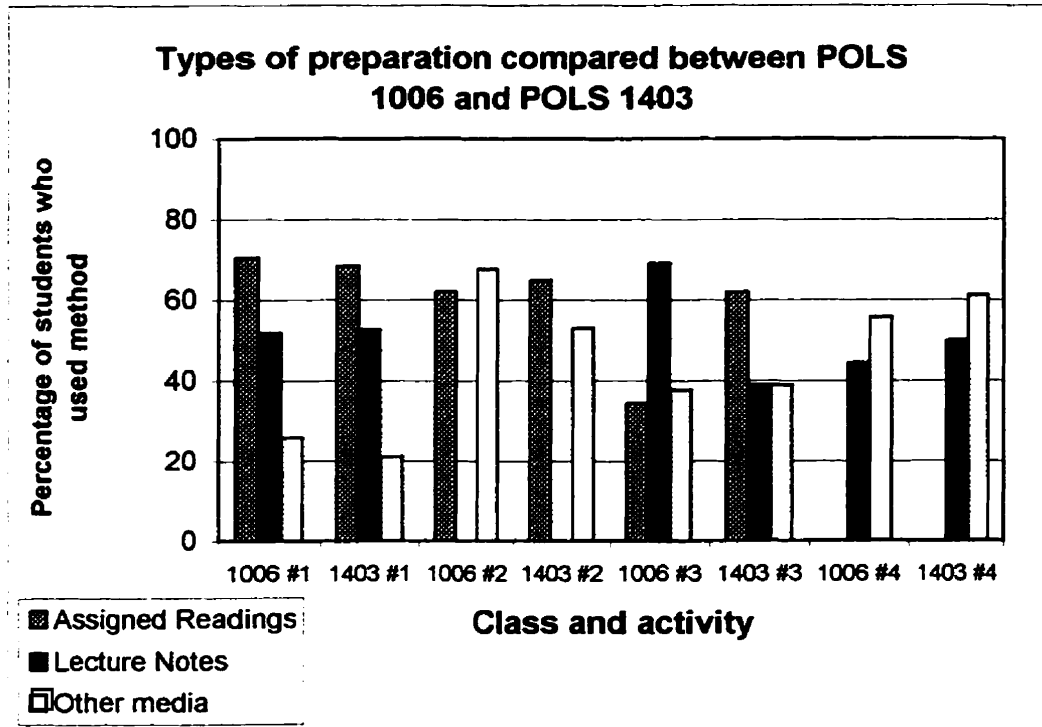


Figure 3-3: Student indications of preparation after activities in Weeks One, Three, and Four. In Week Two, different preparation questions were asked.

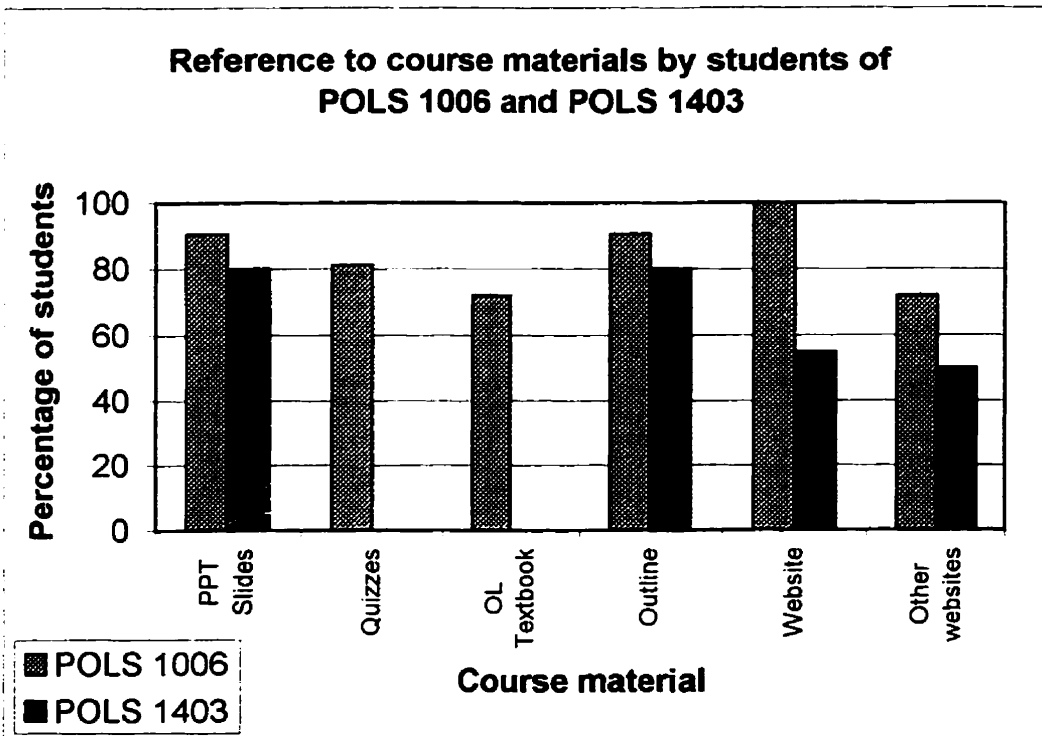


Figure 3-4: Student use of course materials in POLS 1006 and POLS 1403. "PPT Slides" is PowerPoint slides. "Quizzes" is online quizzes. "OL Textbook" is the online textbook companion. "Outline" is the course outline. "Website" is the course website. "Other websites" is other websites given in class.

participated in more traditional activities (lectures, in-class discussion groups, library research) than POLS 1006. The previous university experience of POLS 1403 students suggested they had more experience with traditional classroom methods, which meant they should have been more familiar with the goals of such activities and methods used to reach the goal. The structure of the on-line activities was far more nebulous. Students who are new to using ICTs (either in a classroom environment or in general) faced a series of new experiences in new social contexts for which a traditional secondary education had probably not prepared them. It seems likely that students in POLS 1006 did not feel as prepared as their counterparts because of their lack of knowledge about the goals and procedures of technologically enhanced asynchronous activities.

To gauge the effectiveness of the “traditional” and “technological” materials used in the classes, the students were asked to quantify the materials they actually used to enhance their political learning, as indicated in Figure 3-4. Since the questionnaire that resulted in this data was conducted shortly before the end of term, the results are useful for determining course directions in the future and assessing the success of particular resources. POLS 1006 generally used all of the course materials more than POLS 1403, which is somewhat surprising given the higher level of perceived preparation by POLS 1403 illustrated in Figure 3-3. Two of the resources, the self-test quizzes and the textbook companion, were accessible through both course websites, but were essentially used only by POLS 1006. The course websites, containing the bulk of course-related

information for the classes,³ was used almost twice as much by POLS 1006 (full participation) than by POLS 1403. The use of other websites by students resulted in a 20 per cent difference between the two classes. This difference can be explained in two ways. First of all, students in POLS 1006 not only had better access to technology, they had multiple access points on the campus. This ease of use was likely the motivating factor in the higher level of electronic materials usage by the class. Second, the activities conducted in POLS 1006 were more conducive to the use of technology, therefore students were specifically asked to use the electronic resources available to them. Students in POLS 1403 were encouraged to use electronic resources, but were not required to use them for most activities.

To gauge the relative success of new strategies for teaching and learning in the classes, students were asked to indicate the aspects that were most effective to their learning, as indicated in Table 3-1:

Aspects of the course	POLS 1006	POLS 1403
Reading the Text	15.6%	30.0%
Face-to-face Discussion	46.6%	65.0%
On-line Discussion	21.9%	NA
Lectures	50.0%	45.0%
Simulations and Exercises	43.8%	50.0%
Attention to Media	18.8%	35.0%
Meetings with TAs	15.6%	25.0%
Meetings with Professors	15.6%	25.0%

Table 3-1: Student responses to effective aspects of POLS 1006 and POLS 1403. Responses are the percentages of the entire questionnaire sample. NA=not applicable.

³ The course websites for POLS 1006 and POLS 1403 contained syllabi, reading lists, assignment postings, instructor contact information, and other relevant WWW links. The timeliness of the information and the ease with which it could be amended throughout the year as needed made the websites a vital resource for the students throughout the year.

While POLS 1006 students did not support using the text, they were also less supportive of using the new activities: on-line discussion, simulations, and attention to media, suggesting that a combination of “traditional” and “technological” methods would facilitate a positive learning environment. POLS 1403 supported most of the traditional class activities: reading the text, in-class discussions, and meetings with faculty. These results suggest that technological implementation, at this early stage, hindered the students’ ability to learn the course material. This indication suggests that there is either an acknowledged preference for traditional classroom learning activities, or that the level of technological implementation in the class exceeded the abilities of the students.

On the final questionnaire, a unique method was used to gauge student perspectives and identify attitudinal differences between the two classes. A number of short statements were provided that indicated both positive and negative opinions towards technology. Students were asked to indicate their level of agreement with each of the statements,⁴ as indicated in Figure 3-5. The first question, “Even if I don’t like the computer, I know I must learn to use it,” generated unanticipated results. Students in POLS 1006, who had unrestricted access to technology, were less positive than students in POLS 1403 who had varied access to technology. Since there was not a possibility to derive more information from the students as to why they expressed these perspectives, this question can be left open as an area for investigation in the future.

⁴ Acadia University’s Centre for Organizational Research and Development employs a similar technique when it conducts annual surveys regarding the implementation of the Acadia Advantage program.

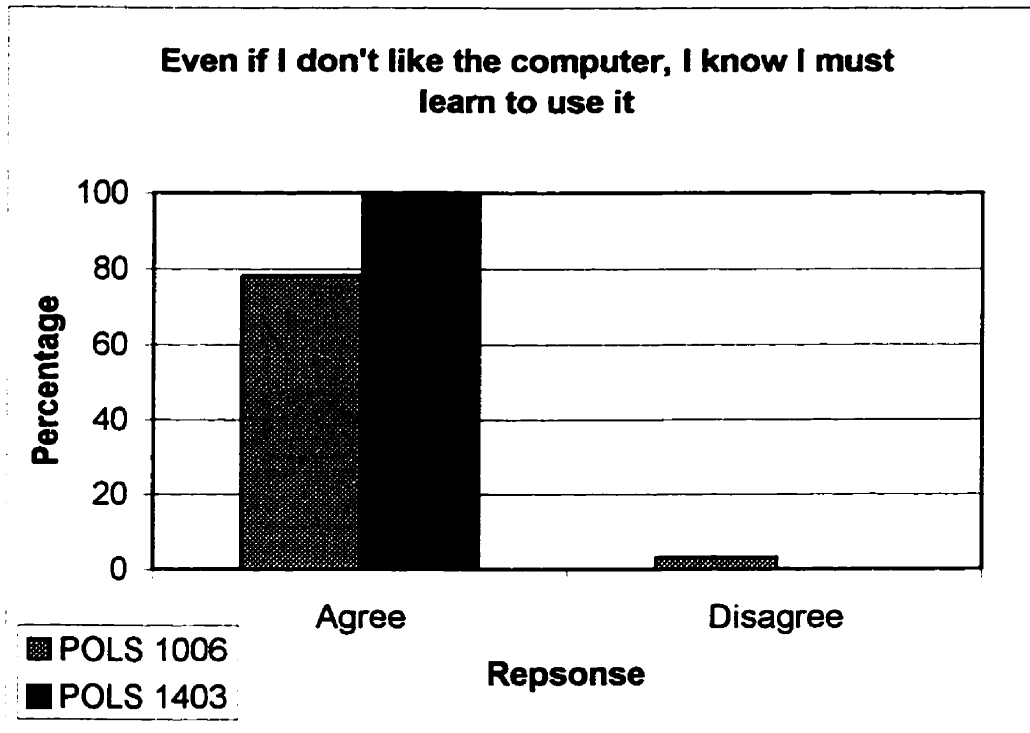


Figure 3-5: Student responses to "Even if I don't like the computer, I know I must learn to use it." Results do not equal 100 per cent because "no opinion" responses are not included.

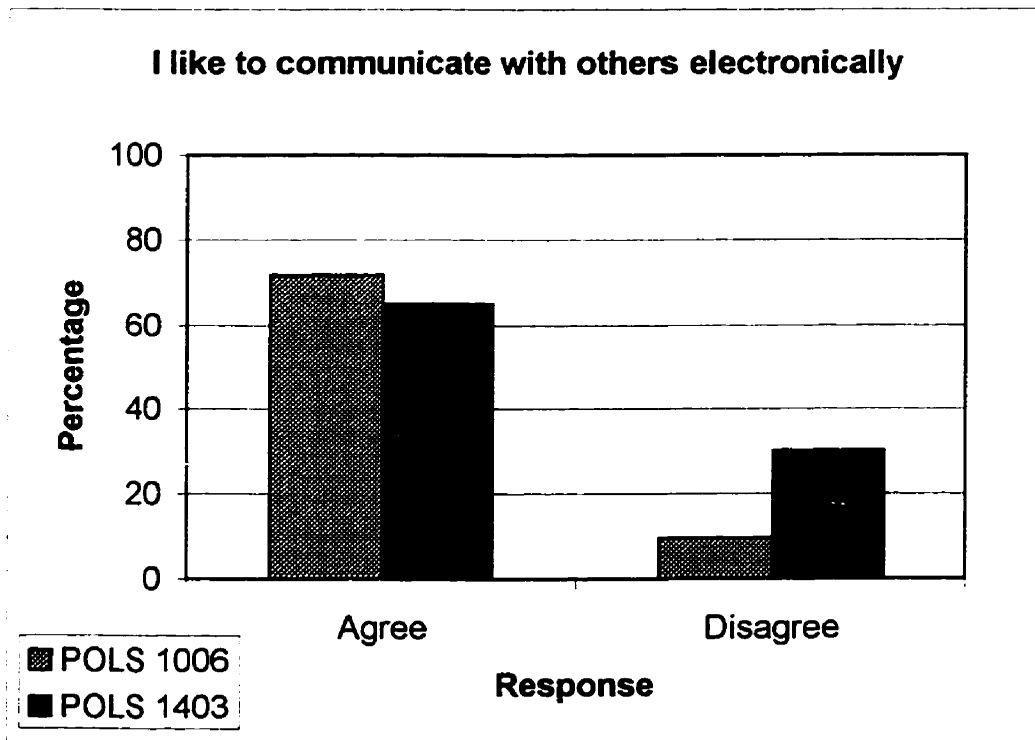


Figure 3-6: Student responses to "I like to communicate with others electronically." Results do not equal 100 per cent because "no opinion" responses are not included.

All students have had email accounts and Internet access at Acadia since the early 1990s, so it seems likely that the student body, in general, has become quite used to technologically-mediated communication as a part of their regular, if not daily, existence at the university. Another statement, “I like to communicate with others electronically,” was used to assess relative comfort levels with the use of communication technologies, as shown in Figure 3-6. It was expected, given the level of access and availability of such resources to POLS 1006 students, that they would be more inclined to agree with the statements slightly more than the POLS 1403 students on this basis. It was not expected that the POLS 1403 students would disagree to any significant extent, simply because of the presence and use of communications technologies on the campus for so many years. The questionnaire results, for the most part, supported these expectations. While a significant portion of the POLS 1403 students (approximately 30 per cent) disagreed with the statement, these results may be attributed to the differences in communicative preferences that exists across the student body.

Finally, the third technology-based statement posed to both classes asked for the students to assess communication skills required for new ICTs. The statement, “Electronic communication requires different skills than traditional forms of communication,” was used intentionally to gauge whether or not POLS 1006 students thought they had gained any new communication skills through the use of ICTs. It was expected that POLS 1006 would tend to agree more with this statement illustrated in Figure 3-7, but the difference between the classes was not as significant as might have been expected. The POLS 1006 students, having just finished a year of increased technological experience, had probably come to understand the “idiosyncrasies” of

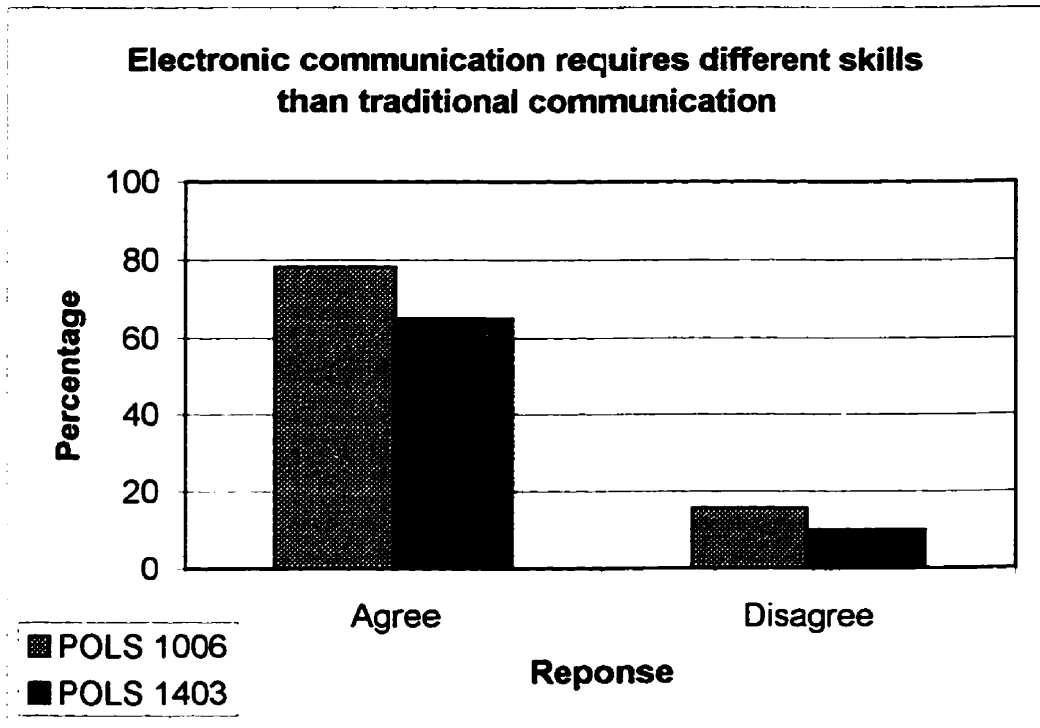


Figure 3-7: Student responses to "Electronic communication requires difference skills than traditional forms of communication." Results do not equal 100 per cent because "no opinion" responses are not included.

electronic communication (tone, volume, shorthand and so on) better than their POLS 1403 counterparts. Since POLS 1403 had less exposure to ICTs, their inexperience with technology could have motivated their responses to the statements.

In sum, the questionnaire results from POLS 1006 and POLS 1403 illustrate a number of interesting attitudes. At the end of the school year, a full year into the implementation of the Acadia Advantage initiative, the POLS 1006 students were still exhibiting uncertainty towards the use of technology in undergraduate teaching. POLS 1403, generally, indicated a preference towards more traditional methods in the classroom. Since POLS 1403 had a large number of students beyond their first year of university study, many of them had adapted to a university-level class, and expected particular procedures and activities. POLS 1006, on the other hand, was largely a transitional group of students, who were not only making the transition to university, but were also contending with learning how to use ICTs in practical ways. The uncertainty (by POLS 1006) or reluctance (by POLS 1403) to use ICTs for learning may, in time, be mitigated by their continued use to enhance traditional classroom methods, or facilitate entirely new methods. These results also illustrate the differences in communicative preferences among students, where it is reasonable to suggest that the technological methods employed were simply not preferred by a portion of the students involved in the study.

Specific responses to technology: POLS 1006

The strong presence of technology in POLS 1006 made it a valuable case for assessing the influence of ICTs on traditional curriculum and pedagogy in the Political Science

classroom. In addition to asking both classes a common set of questions, POLS 1006 was also asked, on a weekly basis, about their particular responses to technology. Their responses gauge the progress of technological implementation over the course of the term, and provide valuable insight into the success of Year One's activities.

Week One: There appeared to be little difference in the quality and content of responses to the discussion questions in light of the fact that the class was divided into two gender-based groups. Of the 27 students who completed the questionnaire, 63 per cent noted that the use of technology enhanced their ability to express their perspectives, while just over seven per cent indicated that the presence of technology constrained their ability to express their perspectives. While there was no significant difference between male and female participants in the quantitative measure, female students who included written comments indicated that the on-line discussion group permitted them to express perspectives without interruption more than male respondents. This data provides the basis for a preliminary assertion that the use of ICTs in the Political Science classroom may mitigate the reluctance to participate in class activities that is suggested by the female respondents. The overwhelming majority of the students (96.3 per cent) read all of the contributions within their assigned discussion group. These results were strongly positive, and suggest the on-line discussion group is a valuable tool for students. The on-line discussion group provided a forum where students could be "heard," but could also "listen" to all of the other contributors. With in-class discussion groups, students are only able to listen to the responses of the students in their particular group, possibly being deprived of valuable insights from other students. With the on-line discussion, a transcript is kept so students may go back at a later time to "catch up" on the discussion,

challenge an earlier argument, or use the perspectives of another student to illustrate their own points. Such an opportunity, regardless of the frequency with which it takes place, can result in a more meaningful experience for all of the students in the class.

The questionnaire from Week One was unique from the other weeks, because there were two opportunities for students to speak specifically to the use of technology in the on-line discussion and to assess the benefits and limitations of the on-line discussion (versus a traditional discussion). The benefits of the technology, as described by the students, are best summarized as follows: 1) students being able to express their opinions without interruption or fear of intimidation; and 2) students appreciating the opportunity to reflect on the discussion that has taken place before commenting. The limitations of the technology largely focused on the timeliness of the discussion. Several students felt that the time lag in the asynchronous discussion prevented a “real” discussion, suggesting that more effective discussions take place in a synchronous, face-to-face environment. The major limitation, indicated by slightly more than half of the students who included written comments, was that face-to-face discussions were more “valuable.” From the comments, it may be implied that the value in the face-to-face interaction is not only the content, but also the opportunity for students to meet (in both the formal and informal sense of the word) and illustrate their perspectives using verbal and non-verbal expressions to make a point. Other written comments suggested the asynchronous activity was more convenient, and was effective because students could access materials to use as a direct reference during the course of the discussion.

Week Two: The combination of on-line activities with classroom exchanges was considered by the students to be a successful and a valuable exercise in learning through

simulation, while expanding their abilities to assess and analyze information from the WWW. Over 60 per cent of the students indicated that the simulation was “very valuable” or “valuable.” Only one student indicated that the exercise was “not valuable at all.” The majority of students indicated the technology:

- made communication easier (85.3 per cent);
- made it easier to share information (91.2 per cent); and
- made conducting research for the activity easier (94.1 per cent).

Of this particular activity, one of the more telling comments came as a response to the question, “I found this simulation challenging because...” One male student indicated the activity “forced [him] to search for information on the topic (but in a recreational way).” It is interesting how the students, at this relatively early stage of technological implementation, have equated the Internet with a recreational device instead of a learning tool, suggesting their exposure to the Internet prior to enrolling at Acadia and during their first year was largely extra-curricular. In addition to this comment, one female student added that the combination of traditional activities with technology “taught me how to learn in a different way.” This comment suggests some measure of success, since a goal of technological implementation in the class was to offer learning opportunities that were different from those previously experienced by the students.

Week Three: Week Three was an interesting experience for the students of POLS 1006 because they had the opportunity to interact with their peers at the University of Lethbridge. Transcripts of the on-line discussion would make an interesting study in themselves because they indicate a great difference in perspectives on the issue of

Quebec between the two geographical areas.⁵ The students of POLS 1006 had a technological advantage over their Albertan counterparts, by virtue of their participation in the Acadia Advantage program, with ready access to the electronic discussion group, while Lethbridge students accessed the group at an on-campus lab around regular class time.

The data suggest some interesting student perceptions of the impact of the technology and the sort of interpersonal communication that is replicated by ICTs. Students indicated that technology generally enhanced their ability to express their perspectives (74.2 per cent in agreement – an increase when compared to the first time this question was asked in Week One⁶). The same percentage of students felt constrained by the technology (just over seven per cent) as in previous weeks, indicating that resistance to the use of technology remained constant throughout most of the term for some students. Again, this may correlate with the communicative preferences of the students involved, which remains a potential area for inquiry in the future.

The use of ICTs was imperative to the success of this activity. To communicate with the Lethbridge students in a timely fashion, it was necessary to use a technologically enhanced medium. If germane to the activity, Acadia students were invited to contact Lethbridge students by electronic mail outside the formal structure of the discussion.

⁵ The majority of students who attend Acadia (as well as those who take Political Science courses) are from the Atlantic provinces. The majority of students in the Political Science class at the University of Lethbridge were from Alberta. In the questionnaire, 58.6 per cent of the students indicated that the Lethbridge students clarified regional differences in ways that introductory Political Science textbooks do not.

⁶ The same question was asked in both questionnaires, with the same choice of responses. In Week One, 63 per cent of students indicated that the discussion was enhanced by the presence of technology.

Almost one-quarter of the students contacted one of the Lethbridge students outside of the discussion, which supports an important premise of this exercise, to increase the students' understanding of the world by offering them opportunities to explore interesting perspectives they may not otherwise encounter.

A valuable component of this questionnaire was the comparison of the on-line discussion group to traditional forms of communication. Table 3-2 summarizes student responses:

As a form of communication, is the on-line discussion group similar to:	
a face-to-face conversation?	6.9%
a telephone conversation?	37.9%
Reading a personal journal?	44.8%
Reading an essay?	34.5%
Reading a personal letter?	48.3%
Listening to a recording?	6.9%

Table 3-2: Student responses to "As a form of communication, is the on-line discussion group similar to ..." indicated in percentages. Responses for each answer are a percentage of the entire student sample.

Student responses suggest they do not discount the ability of electronic media to convey information and opinion, but do not see it as a wholly interactive medium. These results also suggest that students considered the electronic discussion group format similar to reading information of a personal nature (in this case, personal political opinion), but it lacked a certain time sensitivity that is usually seen in interactive exchanges of information.⁷ In their written comments, students reiterated their earlier opinions that on-line discussions were valuable because they prevented interruptions, yet students received

⁷ The high number of favourable responses for "telephone conversation" appears to be an anomaly since it is a time-dependent method for communication.

feedback on their perspectives. One student thought that the on-line discussion was a “soapbox.” This was an interesting perspective from the students since the “traditional” soapbox would, like the electronic discussions, limit the number of interruptions and provide a forum for airing opinions. The use of traditional media as approximations of electronic communication for the sake of comparison, while not conclusive, suggests that POLS 1006 students using the technology are becoming more aware of the power of ICTs as communication tools, but still lack the enthusiasm for their use as a tool for timely, interactive exchanges.

Week Four: The consensus-building exercise was the longest-running activity of the term, taking place over almost two weeks. Like the simulation from Week Two, students were asked to combine Internet resources, in-class group work, and on-line forums for discussion. After the activity, students were asked to express their perspectives on the use of in-class and on-line communication, with the emphasis being on a group’s ability to reach a consensus. On the questionnaire, students were asked which sort of discussion group they preferred, after having experienced a number of in-class and on-line activities throughout the term. When choosing among in-class, on-line, or a combination of the two, the students preferred to have a combination of the two (55.6 per cent versus 27.8 per cent who chose in-class and 11.1 per cent who chose on-line). This response suggests students became more comfortable with the technology for activities and class work, but also liked the types of interaction offered in-class as well. In addition, this result may support the contention that students are still uncertain about the use of technology as a learning tool, but remain interested in seeing how the use of technology will evolve in the classroom. There is also the consideration that students do

enjoy the opportunity to discuss their perspectives in a synchronous, face-to-face environment. Of the five written comments, one student wrote, "I find in-class group discussions more helpful for consensus making than on-line discussions. On-line is good to give your viewpoint but not for interaction," suggesting that the on-line forum is best used for a "soapbox" that was indicated in previous statements. The rest of the written comments indicated more class time and guidelines for the discussion could have improved the activity.

Week Five: While the first section of data detailed results of the common questions posed to both classes, there were additional technology-related questions posed only to POLS 1006. While students apparently enjoyed using the new technology at this early stage in the Acadia Advantage program, many were still uncertain about the ramifications of the changes for their education in the future. The written comments were generally positive, but the negative ones were very specific. Several students noted that two professors leading the class at the same time was very distracting, since each had a unique perspective and presentation style. Only two students indicated dissatisfaction with the use of technology and felt that it was sometimes overwhelming or even irrelevant.

Regarding the use of on-line discussions, the majority of POLS 1006 students (84.4 per cent) agreed the on-line discussion groups were "valuable forums for discussion" versus the two students who indicated they were not valuable. This result suggests what data throughout the term indicated, students were willing to use new technologies in the classroom even though they were uncertain about their value, while a fairly consistent portion of the class preferred the face-to-face discussion groups.

On the final questionnaire, students were provided with an opportunity to assess the use of technology in-class, with particular attention to the instructors and their own uses of technological resources. Students were provided with a five-point scale of responses with “1” representing “very much” to “5” representing “not at all.” Table 3-3 summarizes student responses to the questions:

Question	1	2	3	4	5
Did the professors use the computer in-class as much as you thought possible?	14	9	6	1	1
Did the professors appear comfortable using the computer in the classroom?	15	15	1	1	0
Did the professors use the computer in-class effectively?	6	12	10	1	3
Did the use of computers in the classroom result in a “new kind of learning?”	11	9	5	3	4
Did you use the Internet in-class as much as you thought possible?	6	13	6	5	2
Did you use the Internet outside of class, for this course, as much as you thought possible?	13	10	3	4	2

Table 3-3: Student responses to concluding questions concerning technology use in the classroom. “1” connotes “very much” and “5” connotes “not at all.” Results indicate the number of student who selected each response.

The series of positive responses in Table 3-3 indicates a measure of success for the use of ICTs in the course. Overall, the students indicated the professors made effective use of technology in-class, suggesting the technological competence exhibited during instruction was sufficient to influence their own learning. Students also supported the notion that “a new kind of learning” was experienced through the use of ICTs in the classroom, supporting this thesis’ contention that using ICTs will positively affect political learning. The students’ own use of electronic resources, specifically the Internet,⁸ met whatever level of expectation had been established through enrollment in the course.⁹ Overall, these results support the original objectives of the course and the

⁸ The Internet, a key resource for this course and one of the more compelling representations of the use of technology in a contemporary context, was singled out for this purpose.

⁹ Initial technological expectations of POLS 1006 were not collected at the beginning of the course.

reasons for using technology in political learning that were outlined in the previous chapters. At the beginning of the course, the students of POLS 1006 were not provided with many explicit examples of how technology would be used to facilitate their learning. Where much of the first term of the course tended towards technological enhancements of traditional activities (lectures and small projects), the second term provided them with far more opportunities to witness the kind of change that was possible through the implementation of technology. As an informal measure of success, five students¹⁰ in the course changed their major to Political Science during the academic year, which indicates that among traditional reasons for switching into the discipline, the use of technology sufficiently impacted their interest to continue studying Political Science. It remains the contention of this thesis that technological implementation will continue to improve political learning, as demonstrated by student responses in POLS 1006.

Year Two: The Digital Agora

While the Digital Agora was a supplementary component of the case study, there is preliminary data from a survey conducted in the middle of the 1997-98 academic year that identifies some relevant student perspectives.¹¹ Table 3-4 illustrates the composition of the respondent pool:

¹⁰ This information was provided by the individual students involved and the instructors' records from the Registrar's Office at Acadia University. Several other students indicated they would continue to take Political Science courses and work towards a minor in the subject.

¹¹ The mid-year Digital Agora survey was conducted by an external organization, Clear Picture, <http://www.clearpicture.com/agora>. An activation password is required to enter the results.

Demographic	Percentage
POLS 1006	40.5%
POLS 2096	24.3%
IDST 2216	35.1%
Male	35.1%
Female	64.9%
First year	32.4%
Second year or higher	67.6%
Acadia Advantage students	86.5%
Non-AA students	13.5%

Table 3-4: Demographic composition of Digital Agora respondent pool. Results obtained from Clear Picture survey, December 1997.

Since the respondent pool was comprised of only half of all Digital Agora participants, it is not certain whether the results of the mid-year survey are significant.¹² The data appear, however, to be at least marginally relevant, as there is a fairly good distribution of students from all of the Digital Agora classes. There is an overwhelming number of Acadia Advantage students, so the data will not provide a fair assessment of how non-Acadia Advantage students adapted to the use of ICTs in these classes.

The most valuable data emerged from the general questions posed to students. Table 3-5 illustrates responses to general questions students were asked about their adaptation to the system and overall satisfaction with the system in the first term:

Question	Difficult	No opinion	Easy
Learning to use the system was	2.7%	37.8%	59.4%
Remembering how to use the system was	2.7%	21.6%	75.6%
Exploration of features by trial and error was	5.4%	56.8%	37.8%
Question	Not at all		A lot
Overall I like using the Digital Agora	5.4%	35.1%	56.7%
Overall I found it easy to use	-	10.8%	89.2%

Table 3-5: Student responses to general questions concerning adaptation to and satisfaction with the Digital Agora. Results obtained from Clear Picture survey, December 1997.

¹² The survey sample was not large enough to perform analysis of responses to individual questions by course.

These preliminary results indicate that student adaptation was relatively easy, with very little difficulty with being expressed by students. If these results are indicative of all of the students enrolled in the program, then it may be assumed that the initiative was implemented in an effective manner, where a sufficient amount of training was provided, and supplementary resources proved effective in helping students learn the system. The second series of responses were equally positive. The majority of students expressed satisfaction with the Digital Agora, and the vast majority of them found it easy to use. This bodes well for the future of the initiative, since ease of use will likely continue to be a determining factor in successful technological implementation.

With respect to individual elements of the initiative, the reviews were decidedly mixed. Table 3-6 illustrates the features of the Digital Agora that were liked most and least by students:

Feature	Liked most	Liked least
Glossary	6	0
Symbol Bank	3	1
Lateral Maps	3	6
Political Byte	6	3
Web Links	4	0
Other: Assignment Deadline	NA	4
Other: Cost of CD-ROM	NA	3

Table 3-6: Student indications of Digital Agora features that were liked the most and the least. Data indicates number of students who selected a feature. Some students indicated more than one feature. Results were coded from written responses submitted by students, though it was not possible to code all responses. NA=not applicable. Results obtained from Clear Picture survey. December 1997.

While some of the data suggest a negative reaction to some of the features, a follow-up question indicated that only 10 students out of the 37-student sample would have preferred a paper resource. The size of the sample does not permit a reasonable indication of which demographics were least satisfied by the technologically enhanced features, but it is likely that either a number of senior students (even through they

comprised a majority of the sample) or the five non-AA students who completed the survey who did not like the electronic features of the Digital Agora. The students did, however, indicate satisfaction with the Political Byte, which is promising for the implementation of technology in the Political Science classroom, since the Political Byte was the asynchronous activity most consistent with the goals for technological enhancement in the classes.

At the preliminary stage in which this survey was conducted, the biggest student concern was the use of lateral maps. In their written comments, several students indicated that the lateral maps were difficult to understand. Dissatisfaction with lateral mapping may be the result of the method itself. Since the concept of lateral mapping is perpendicular to traditional learning methods, it follows that some students will have difficulty in adapting to the method. It is expected that students will be more responsive to lateral mapping as it becomes a regular part of undergraduate Political Science. The other major concern for a few students was the cost of the CD-ROM; written comments indicate that purchasing the CD-ROM was an unexpected expense for the three students who indicated dissatisfaction.

At the end of 1997-98 academic year, students contributed their final "editorials" to the Political Byte, summarizing their experiences in a permanent record. The consensus of these written comments was that the Political Byte was a unique and challenging tool, and was generally enjoyed by students in all three classes. One student noted that the regular publication of their essays was a motivating factor in continuing her efforts each week. "Traditional text book learning can [,] to say the least [,] get less than interesting and it takes incredible willpower to stay motivated. The Political Byte teaches

in the most innovative ways and keeps students motivated when they see their own work published for the world to see.” The students’ comments, while mostly positive, identified one major shortcoming in the program during its implementation year. Students enrolled in two Digital Agora courses contended with twice the number of Political Byte contributions as students enrolled in only one course, since all students participated in the Political Byte weekly. While this will likely be addressed in the forthcoming year, it stands out as the only significant student problem with the tool. Many students indicated the Political Byte was a worthwhile experience since it enhanced their communication skills and ability to work collaboratively with other students, regardless of the time commitment or other challenges.

The Digital Agora presented new educational opportunities to students in all three classes. Students were learning Political Science, but they were also learning effective communication skills through a variety of media and how to manage electronic information. Collaborative activities, specifically the Political Byte, presented new challenges and opportunities for learning about the world and sharing perspectives on the world with students in different classes and countries. The Agora also encouraged the use of electronic information, easing the transition between a “traditional” class and a technologically enhanced class.

The Acadia Advantage

During the implementation of the Acadia Advantage initiative, Acadia University’s Centre for Organizational Research and Development (COR&D) conducted a number of campus-wide surveys to collect perspectives on the computerization process

at the University initially, and to assess student reactions to the Acadia Advantage after it was implemented. These results are useful to the data analysis present thus far, since findings of the COR&D support the findings of data from the case study questionnaires.

Shortly after the Acadia Advantage program was announced in March 1996, the COR&D distributed surveys to almost 4000 Acadia students, to assist the implementation process by determining the greatest concerns of students. In the initial results, the results indicated three major student concerns:¹³ the impact of technology on the role and purpose of the instructor; variable student comfort levels with computers; and the role of technology as an effective communication device. Generally, students indicated concern over the computerization process because, at that point, the implementation process and resulting product had not been fully clarified for students and instructors.

The initial survey also considered the kinds of activities facilitated by technology before formal technological implementation. This was measured by calculating the number of courses, in the 1995-96 school year, students used ICTs for course work. Looking at the campus two years later, the amount of computer use on-campus in 1996 is surprising. Figure 3-8 illustrates the number of courses where students used computers in the 1995-96 school year:

¹³ Centre for Organizational Research and Development. "Current Skills, Trends and Perceptions of Computer Use: The Baseline for Acadia Advantage." 1996: 2.

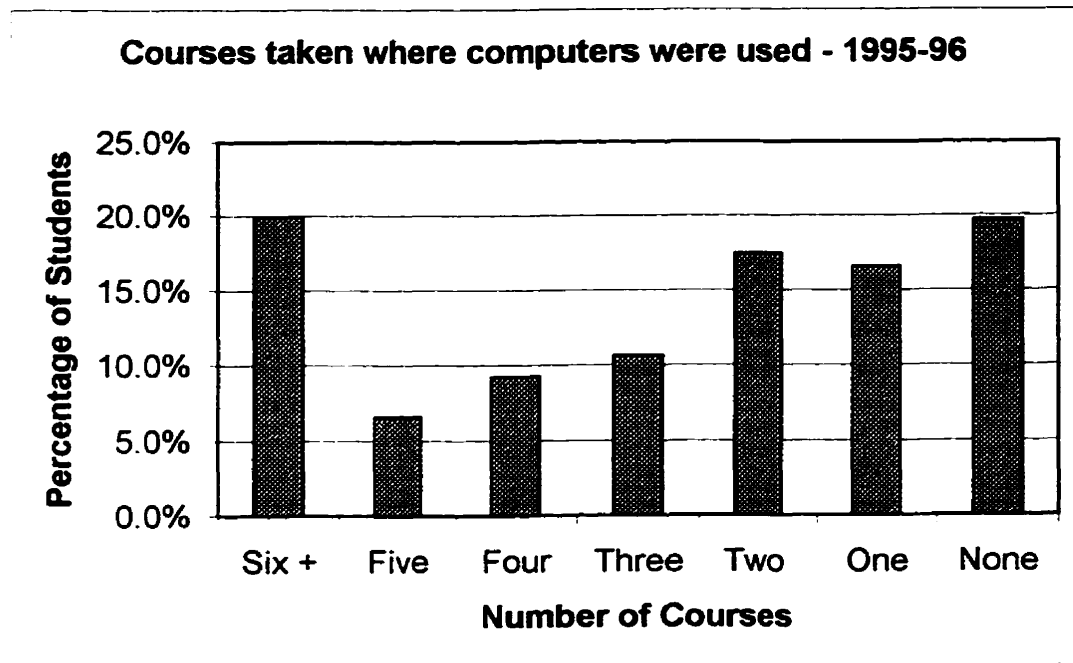


Figure 3-8: Indications of student computer use before the Acadia Advantage. COR&D. 1996.

These results indicate that before the Acadia Advantage, over 80 per cent of students at Acadia were already taking courses with some level of computer use. Unfortunately, the same question was not repeated again in the 1997 or 1998 studies, so it is not possible to assess whether or not general computer use increased for students, though it can be implied through the implementation of Acadia Advantage. These results do indicate, however, that academic computing was already a part of student life at Acadia before the Acadia Advantage was formalized. From the 1996 survey, it appears that concern over the “computerization” process at Acadia manifested as a result of the manner in which it occurred: the physical distribution of the tool to the students through a formalized structure, the financial costs associated with the program, and the expectation of technology use by all students involved in the program.

Since 1996, surveys regarding the Acadia Advantage have been conducted annually, with the expectation that a time series of results that will show that academic

computing has had a positive impact on academic and social life at the University, in keeping with the mandate of the University to provide an enhanced liberal arts education.¹⁴ Table 3-7 indicates the mean result of students' responses to questions posed over the past three years:

Statement	1996 Mean	1997 Mean	1998 Mean
Computers do not replace the need for lectures and discussions.	4.55	4.56	NA
It is important that Acadia University maintain its commitment to a liberal education.	4.16	4.23	4.16
The kind of student coming to Acadia will change due to the computerization process.	4.14	1.88	NA
Computers in teaching make the learning process too impersonal.	3.60	2.46	3.03
The use of computers makes the academic life at Acadia University intellectually exciting.	3.01	3.26	3.21
Increased use of technology in teaching makes learning easier.	2.93	3.15	3.20
I feel comfortable using computers.	3.80	4.02	4.20
Computer use increases the usual university workload.	3.21	2.33	3.05

Table 3-7: Mean results of attitudinal questions regarding the use of computers at Acadia University. Results are based on a five-point scale, where 5=strongly agree and 1=strongly disagree, NA=not asked. COR&D survey results 1996-98.

The 1996 survey results show a student body that is uncertain about the role technology will play in the academic environment, which is likely due in part to the available information at the time. In later results, however, students seem to adapt quickly to the implementation of technology in their undergraduate education, and indicated they enjoyed the liberal arts curriculum with the technological enhancements that are a part of the Acadia Advantage.

Student responses to the computerization process, however, have not been entirely positive. Students in 1996 were not comfortable communicating electronically with instructors about course work, preferring conventional meetings. This sentiment was

¹⁴ See Acadia University. Mission Statement and Supporting Objectives. 1997.

mitigated somewhat by the greater use of ICTs (largely electronic mail) over the two years since the implementation of the Acadia Advantage program. Survey results indicate that the use of technology at Acadia before the implementation of the program was perceived as more social in nature, with a minimal role in academic activities at the time. Students also indicated dissatisfaction with network resources and performance, and a host of other technological concerns that have impacted the academic use of technology.¹⁵ Since the implementation of the Acadia Advantage, negative comments by students generally focused on the instructors' knowledge and comfort with technology, as well as technological instruction provided in class.

Since 1996, students have been adapting to life after the Acadia Advantage at different rates. For example, first- and second-year students are adapting to the technology faster than their senior counterparts, which is the likely result of technological immersion for the younger students or a preference to the type of interactions that are present in the "traditional" classroom. COR&D results over the three years since the announcement of the project suggest that students are valuing the opportunity to participate in the program to a greater extent, but are still not sure the cost is justified in light of the problems encountered to date. Since September 1996, students have responded negatively to the question "Is Acadia Advantage worth the cost?" in increasing numbers, a noted concern during the implementation process. Negative responses to the question may be the result of a number of factors, including rising tuition fees above the

¹⁵ Networking and technology-related difficulties over the past three years have declined with improvements to the campus network and changes in the computer hardware and software. In 1998, however, students still expressed a measure of dissatisfaction with network performance.

specific costs of Acadia Advantage, the increased expectation of value for dollar, and the perception that the “growing pains” of the program are not dissipating to a satisfactory degree.¹⁶

There is reason, however, to be cautiously optimistic about the continued success of the program. In 1998, 47.2 per cent of Acadia Advantage students surveyed indicated that they were satisfied with the program overall, up significantly from 1997 when only 15.4 per cent of the Acadia Advantage students surveyed indicated satisfaction. The administration and instructors remain confident that satisfaction with program will continue to grow, since many of the technological challenges to the program are being remedied, more courses and programs are involved, and generally speaking, Acadia Advantage is increasingly becoming the norm on campus. From the perspective of the COR&D, there is still a lot that will be learned about the computerization process at Acadia. It is essential that a concerted effort be made to analyze perspectives on the implementation process to ensure a rigorous and critical approach to the program will always be in place.

Data presented in this chapter have illustrated a number of points central to the main contention of this thesis. The improvement and expansion of the Political Science classroom through technological implementation has been shown to be a highly evolutionary process, that relies on considered approaches of instructors and meaningful responses of students. Data from activities undertaken in POLS 1006 and POLS 1403 during Year One indicate a student body that is receptive to change, but somewhat

¹⁶ Student expectations of the Acadia Advantage program were not measured.

unwilling to abandon traditional notions of the classroom. Ultimately, these sentiments are valuable to account for, since the goal of technological implementation was to improve opportunities for “real” classes and not “virtual” ones. The use of ICTs in introductory-level Political Science courses like POLS 1006 demonstrates the possibilities for enhancing the classroom in practical ways. The additional analysis of the Acadia Advantage program supports the rationale for using technology in these classes and suggests a number of important factors to remember during implementation in the future. The sum of these parts creates a unique series of possibilities for Political Science instructors as they begin to consider the influence of ICTs on their practice in the Information Age. Using the information provided by the unique experience of Political Science at Acadia University, other strategies for innovation in political learning through the implementation of notebook computer technology can be explored.

Chapter Four: Technological possibilities in the Political Science classroom

Given what has been learned about the possibilities for technological implementation in Political Science at Acadia University through the case study, it is possible to offer multiple administrative, pedagogical, and technological strategies for coping with technological change in the future at Acadia and at other institutions. The strategies presented do not demand that every institution undertake the sort of approach considered by Acadia during the implementation of its campus-wide notebook computer program, but merely provides a framework for revitalizing the discipline using the opportunities that are presented by new technologies. This chapter will explore strategies for technological implementation by, first, considering the changes undertaken in undergraduate Political Science at Acadia during its third year of technological implementation. Using “lessons learned” through two years of technological implementation, this chapter will further develop the central thesis – that the implementation of new ICTs in the Political Science classroom will result in new learning opportunities for students – by illustrating numerous strategies and considerations for employing ICTs in different academic environments. Finally, this chapter will proffer preliminary answers to the challenging questions provided in the introductory chapter, that will ultimately provide the context for understanding the technological experience in Political Science at Acadia. This context will also provide useful guidelines for other political educators considering the role of technology in teaching and learning.

Year Three: implementing “lessons learned” in Political Science

Informed by students’ experiences and input during the first two years of technological implementation in Political Science at Acadia, and supported by data collected by the COR&D, there has been a reassessment of the Digital Agora for the third year of technological implementation. Dr. Alexander and Dr. Conley are continuing their efforts to improve the Digital Agora and expand its educational possibilities for students at different levels in their post-secondary education. These changes, in large part, were precipitated by the expansion of the Digital Agora to include seven classes at all levels of undergraduate Political Science at Acadia:

- POLS 1006 (Introduction to Politics and Government);
- POLS 2096 (Comparative Politics);
- IDST 2216 (Peace Studies);
- POLS 3013 (The Politics of Gender);
- POLS 3183 (The United Nations Organization);
- POLS 3993 (Politics and the New Metamedia);
- POLS 4283 (Canadian Foreign Policy); and
- POLS 4883 (Human Rights).

To facilitate the expansion of the Digital Agora, course pages with relevant resources have been added for each of the seven classes. In addition, the Cultural Gallery has been expanded to include Canadian perspectives, supplementing the other cultural perspectives that were already present. Video tutorials that were presented in the previous incarnation of the Agora have been modified and embedded in a new tutorial which addresses issues of an academic nature, from research and essay writing to studying strategies for tests and exams. A whole new set of video clips offers students the insights of a number of political scientists, and the Presidents of the Social Science and Humanities Research Council of Canada, the Humanities and Social Science Federation of Canada, and of several politicians. Students see and hear them discussing relevant topics in the

discipline, thereby providing a variety of perspectives on the topics they will study. The videos give further insight into the ideas of academics actively engaged in research and of policy-makers who face the kinds of political and policy challenges students study. Other innovations include "Country Profiles," a "WWW Archive," and extensive links to international online media resources.

Responding to student concerns and difficulties with the lateral maps on the CD-ROM, the 1998-99 phase of implementation includes a new series of maps, embedded with sound files, WWW links, and video clips that clarify the components of the map and their relationship to the key issues and concepts. In addition to this resource, new tutorials have been added that describe the process of effective lateral mapping using a multi-step process, as well as a link to an external lateral mapping tool. To facilitate greater ease-of-use with the lateral maps, the Symbol Bank has been updated with new symbols and explanations of why symbols are used to describe specific concepts. The combination of these developments is expected to have a positive influence on student use of the lateral maps on the CD-ROM and the creation of their own maps.

The Political Byte has evolved into the Political Byte Newsstand, a result of student feedback and the challenge of managing the Political Byte (as it existed in 1996-97) with seven classes. First, the Newsstand is a collection of ten online newspapers that can be browsed freely by students in all of the classes and visitors from outside of the Acadia system, including special papers for high school students, a Japanese college, and student interns placed in human rights organizations around the world. Much like a real newsstand, the Digital Agora Newsstand will offer perspectives on a range of topics in Political Science at different educational levels. In addition to the specialized

newspapers available from the Newsstand, new columns have been added including News Bytes (student reports from mainstream media sources), Chapter Chip (student perspectives on the assigned readings), Commentary (student perspectives on specific issues in any columns in any of the Newsstand papers), and On The Line (student presentations of current public policy issues and recommendations for resolution). Professors and students are able to choose from a “bank” of several columns, tailoring each issue of every newspaper, if desired, to the needs of the course. Responding to student concerns about the time commitment to the Political Byte, especially when enrolled in multiple Digital Agora courses, a professor can now choose the frequency of each paper’s publication, ranging anywhere from once per term to once per class. It is expected that the increased time allotment for contributions will enhance the quality of submissions to a greater degree and continue to encourage political learning in meaningful ways. The segmentation of the Political Byte may also mean that students may use the Newsstand for discussing course topics in a specialized way, instead of considering topics that span all of the courses involved in the Agora. A professor may, however, choose to ask students to browse the Newsstand’s papers, and comment on what interests them from the vantage point of their class. For example, a student in a course on gender and politics may read the Peace Studies paper and then comment on the gendered language of the security literature’s description that India “lost her virginity” when she gained nuclear capability. The Digital Agora design team also constructed marking software which gives professors a marking template to respond thoroughly and easily to each student’s column. That software provides hyperlinks to the tutorials so that

students can gain more knowledge about how to write more effectively. In this way, both the students' and the professors' needs are met.

These changes not only illustrate the response to student feedback, but also the understanding that technological implementation is a dynamic, evolutionary process. The opportunities that are being provided through the use of technology are still largely unknown, and the process will continue to change and shift, much like the changing nature of the new ICTs themselves. The data collected to date support this contention, and serve as a basis for these changes, ultimately confirming that the implementation process is a combination of instructor contemplation and student consultation.

Technological changes affecting the Political Science classroom

The possibilities for technological implementation that have been presented at Acadia University leave much room for optimism for the Political Science classroom. The relative success of technological implementation in Political Science at Acadia is the combination of a number of factors including: knowledge and willingness of the instructors, access to electronic resources and the Internet, and the use of innovative tools and methods for learning. The sorts of initiatives undertaken at Acadia not only provide sufficient reason for students to enroll in Political Science, but add new dimensions to the discipline for inquiry, expression, and communication.

Until such a time when interactive educational experiences are available to all students of Political Science, the initiative undertaken by Dr. Alexander and Dr. Conley in the Political Science classroom remains the exception instead of the rule. Theirs is the first program of its kind in Canada, and as such, has taken the lead in challenging the

concept and boundaries of the traditional classroom. The changes in the teaching and learning strategies employed in Political Science at Acadia can be summarized by the methods and strategies employed to date:

- Use of a variety of research resources, including the Internet, to support analysis and discussion;
- Activities that encourage and challenge students to learn in different ways, including electronic exchanges of information and collaborative work with other students;
- Activities that aid students in developing skills for thinking, communicating, and using ICTs in an applicable manner;
- Activities that encourage students to reflect more on issues and ideas related to lectures, readings, and current events;
- Opportunities to engage students and instructors in both synchronous and asynchronous modes of communication;
- Opportunities to share knowledge with peers in other institutions, across boundaries of time and space;
- Class materials and methods that illustrate the interconnectedness and interdependence of contemporary society;
- Class materials and methods that illustrate the interconnectedness of disciplines within a university; and,
- The understanding that ICTs can facilitate, but not replace, meaningful interactions among all participants in a class.

Alone, these methods and principles are neither revolutionary nor unique. It is their combination and interconnection, the manner in which they are presented to students, that contribute to the educational successes experienced at this early stage in technological implementation. These methods can be employed in educational settings across institutions, because they do not rely on the sort of technological access that is permitted by the Acadia Advantage initiative. Instead, these methods illustrate a consideration of the possibilities for ICTs in political learning. The data in the previous chapter illustrated, to a satisfactory degree, that students are enjoying the study of politics given the challenges and opportunities offered by these new methods for learning, and used in

varying degrees at other institutions, it is possible that similar experiences will occur. As students enter post-secondary institutions with the greater expectation of access to technology and enhanced employment prospects with technological skill, positive attitudes toward technological implementation in the classroom will continue to rise.

Students are responding positively to changes in the classroom because these changes support, in large part, a student-directed approach to learning that not only places responsibility for learning between the instructor and student, but also makes the tools and materials for learning directly relevant to the students' own skill building. The learning opportunities facilitated in the Political Science classroom at Acadia serve as a good example for other institutions for five important reasons. First, students are actively involved in their own learning and the learning of their peers, by creating their own dialogue and frameworks for understanding society. Second, students are encouraged to share their perspectives and allow those perspectives to develop in an environment that recognizes that thinking should take place in the open, and not solely in their heads. Third, the instructors are facilitators of learning, where they provide guidance and a framework for inquiry, but are not the sole conveyers of knowledge in the classroom. Fourth, students learn to engage their colleagues in discussion and activities outside of the classroom similar to the way they engage their colleagues in the classroom. Finally, students conduct self-directed research and challenge other explanations of politics and society by their own endeavours. These outcomes, while not immediately measurable, provide support for the continuation and improvement of technological implementation in the classroom.

This case study illustrated a unique example of technological implementation in one institution, although the lessons learned can be implemented at other institutions with similar results. Given the different technological and pedagogical issues that are present at institutions across Canada, effective implementation in the Political Science classroom can be achieved through a considered implementation of the six strategies illustrated below:

1. Increase the use of primary sources in traditional and electronic formats.

Increased access to primary information about politics and government via the WWW (legislation, government reports, and competing or contradictory viewpoints) widens a student's exposure to different sources of knowledge. The assigned textbook and supplementary readings only provide a snapshot of a topic or issue in Political Science. Teaching students that alternative, accurate, and timely information is available through their own exploration is an essential method for ensuring a student's interest in and knowledge of Political Science. ICTs also provide tools to support their own development and endeavours as political actors. Students can enhance their own knowledge of Canadian politics, for example, by listening to radio stations from around the world or by reading newspapers like the St. Petersburg Times, which was largely unheard of in even the finest Canadian university libraries. An introduction to campus libraries and electronic resources as part of the introductory-level curriculum will illustrate the potential of these resources, and make the prospect of looking for information a less daunting task.

2. *Form classroom relationships with other institutions.* Students can learn from their own experience in addition to the experience of others. Forming relationships with peers in different geographic locations is easier to facilitate with ICTs and provides other informed views on issues that are considered in class. In Year One, POLS 1006 students shared some of their viewpoints on Quebec with a group of students in Alberta, thereby enhancing their own perspectives by considering the perspectives of other regions in real ways. Introducing Canadian students to their colleagues around the world will inform their own perspectives with respect to international and comparative politics, by making the events in other countries more real with the informed perspectives of students from other political systems. It is not necessary to have the sort of medium employed in the Acadia example; simple email exchanges may facilitate similar exchanges of perspective.
3. *Develop departmental strategies/policies concerning appropriate and practical uses of ICTs.* Although the implementation strategies employed at Acadia did not require the development and use of departmental information technology policies, other departments may find internal planning for the use of ICTs more academically rigorous. Formalized departmental strategies in institutions that do not have a campus-wide computing strategy like Acadia may ensure that reasonable skill development for faculty members is facilitated, and that the enhancement of learning, not the replacement of meaningful instruction, remains the goal of technological implementation. In these considerations, the potential influence on students and their learning must remain the main concern. Such

strategies should identify educational goals for technological enhancement of classroom activities in order to be effective. Departmental strategies should also promote reconsidering teaching and learning in a thoughtful manner, encouraging faculty members to challenge traditional methods employed in the classroom and seek innovative ways to conduct their classes, but in no way should that decision be forced upon instructors. Departments considering strategies for technological implementation may also seek to formalize strategies and clarify appropriate and alternative uses of technology through professional organizations like the Canadian Political Science Association and the Canadian Association of University Teachers (CAUT). It may also be useful if the CPSA would keep a page of relevant resources and links to innovative ICT applications in Political Science departments across the country.

4. *Encourage students to undertake more of their own learning through self-directed research and collaborative activities.* Students can feel a level of satisfaction by attaining information that contributes to their own growth and development, as well as the growth and development of their peers. The search for useful information and deriving its meaning in the context of Canadian politics, for example, makes the process more meaningful and more accessible to those who will undoubtedly influence it in the future. The search for information and finding it can be an empowering experience for students, especially when considering the glut of electronic information that is available. In this respect, instructors assume the role of facilitators of knowledge, and can effectively guide students towards resources without being the direct conveyers of content.

5. *Use classroom activities to encourage students to engage their colleagues in and outside of the traditional boundaries of the classroom.* Teaching students the value of sharing knowledge and respecting the opinions of others can become a larger part of classroom through collaborative activities and exchanges. These activities and exchanges can be facilitated through the use of ICTs, moving some class work outside of class time constraints. Connecting students to their peers in other places will also inform their perspectives and make them more aware of the issues and differences that influence politics outside of their immediate geographic area.
6. *Stress the importance of technological skills and knowledge of the world after graduation.* Some students may enter post-secondary institutions with a clear idea of their educational and employment goals, but many do not. Using ICTs in classes to develop better communication and critical thinking skills will prepare students for the world after graduation. Introducing common technologies that are found outside of school will aid in preparing students for practical uses of technology, easing the transition from school to work, as well as easing transitions between careers throughout their lives. The technologies employed provide a way to show students that the ideas they are learning about are directly relevant to their ongoing efforts to understand the world. Using ICTs in the teaching of Political Science also expands a student's knowledge of his or her surroundings. Students who are encouraged to explore the world through various media will have a better understanding of issues confronting society, and be able to offer more informed perspectives when they are in positions to affect change.

These strategies, whether alone or in combination, can aid in achieving a number of goals for political education. Ideally, they would also be implemented through the educational system (from elementary education to post-graduate studies), so that all students can benefit from the possibilities offered by technological implementation.

Preliminary answers to challenging questions

In the introductory chapter of this thesis, a series of questions were posed that provided the framework for the case study and its analysis. After a consideration of the conditions motivating technological change in the Political Science classroom, preliminary answers can be offered to describe early responses to these changes and guide future responses to these questions.

How, if at all, will technology enhance the process of teaching and learning in the Political Science classroom?

Technology has already affected teaching and learning Political Science in two ways. First, the increased presence and use of ICTs in everyday life over the past twenty years is creating a generation of students who are more familiar with their use and expect to use them for communication and the conduct of daily business. The influence of ICTs on the development of students outside of the classroom has not necessarily been taken into account in educational planning to date, to the detriment of students. Second, the increased use and presence of ICTs outside of the education system has created a new context for communication and exchange of political information, in which technologically mediated communication is a regular occurrence. Facilitating communication and collaboration have already been discussed extensively through the

analysis of the case study and discussion in the earlier part of this chapter. Increasing access to information and the world outside of the classroom is imperative to the success of millennial students and cannot be disregarded by agents of political learning. Improving communication skills and knowledge using ICTs creates a powerful learning environment for students as they enter adulthood. They are better prepared for the world of electronically mediated communication and vast amounts of electronic information, being capable of disseminating information from a variety of sources and contributing to their knowledge of the world by self-directed inquiry. These adults will also be able to contribute positively to the political system through informed voting and considered membership in organizations.

How much technology is needed, if any, to achieve educational goals in the Political Science classroom?

This question can be answered by identifying three possible conditions for implementation. First of all, institutions must be prepared to offer the electronic resources and technical training to facilitate the educational goals of the instructor. If the instructor wants to use the Internet to teach students critical thinking and research skills, the appropriate hardware and software must be available at the institution, whether through computer labs or campus-wide computing initiatives. Second, the instructor must be cognizant of pedagogical issues concerning technological implementation and must be able to verify the instructional methods that will be used will be effective. The imperative for successful technological implementation is to avoid using technology for its own sake, as there is no benefit to the students or the progress of the discipline. Third, instructors and students must be comfortable using ICTs and have the necessary

resources for skill development and enhancement. The implementation of ICTs will be counterproductive for educational goals if either the students or the instructors are not skilled in using technological tools for learning.

Since every institution has a unique history, mission, cultures, and subcultures the number of conditions surrounding effective uses of technology in Political Science will be unique for each institution and department. A more meaningful answer to this question can be found by determining specific educational goals of a Political Science department or course. Expanding a student's knowledge of a particular subject area, for example, can be accomplished by using various tools to enhance the in-class presentation of materials and encourage students to find their own information on the Internet. Students in introductory-level courses may expand their understanding of Canadian politics by communicating with peers across the country through moderated on-line discussion groups, or by inviting "guest moderators" (politicians, lobbyists, bureaucrats) to take part in on-line discussions to provide direct examples of how the political system works. Using tools like the Digital Agora, students may discover the interrelationships within and among political ideas and issues on their own exploration and through collaboration. As a general guideline, the use of technology should enhance the collegial atmosphere of the classroom, maintain or enhance the interest of students in the subject matter, and endeavour to accomplish meaningful activities that were not possible before the use of technology.

What prescribed role should ICTs play in the Political Science classroom to facilitate effective political learning?

To implement ICTs effectively in post-secondary institutions, a thoughtful consideration of their effects must take place beforehand. Post-secondary institutions must assess the resources (fiscal, human, and technological, among others) that are in place – or need to be put into place – to accomplish technological implementation, and if those resources are insufficient, develop strategies or partnerships in order to attain resources. There is not a single role for technology in post-secondary education, since it depends on many factors. The size and mission of a university, its history and traditions, its experience with innovation, and a dedicated, informed, involved, and responsive faculty and staff all determine the success or failure of technological implementation across a campus.

Ultimately, ICTs can play a large role in the Political Science classroom. Much like the specific case of Acadia University, ICTs can positively impact political learning by facilitating communication, access to information, collaboration among scholars, and creating a population who not only knows how to use the Internet, for example, but use it for the enhancement of learning. Given the presence of ICTs outside of the classroom, a considered plan for implementation is the most responsible response possible in light of the different challenges facing individual institutions.

Practical and relevant learning opportunities through the implementation of technology in the Political Science classroom can be achieved in a number of ways, including the methods illustrated in this chapter. Michael Adams has noted that the generation of Canadian youth entering post-secondary institutions at the turn of the millennium is different than their predecessors.

Raised in an environment in which advanced technology, in the form of fax machines, cellular phones, VCRs and personal computers became ubiquitous, Generation X [Canadians born between the 1960s and the early 1980s] is, in many ways, the vanguard of multimedia. In Canada, it is the MuchMusic generation, people who have grown accustomed to an historically unprecedented barrage of media images and ideas. As a result, members of Generation X tend to be much more at ease than their elders with change and complexity, and with people who are different from themselves.¹

When the students now entering post-secondary institutions were born, the first personal computers were gaining popularity. Increasingly, these students are able to email, download, and make cyber-friends in the same way that previous generations wrote letters and made telephone calls; these new aptitudes can affect the way they learn about and understand their world. The sum of these considerations does not mean what detractors of technological implementation will argue. Millennial students should be encouraged to engage his or her surroundings through communication and self-directed exploration. They should be challenged to justify their perspectives in meaningful ways, using the tools and methods with which they are most familiar. Through these exercises, millennial students will not only be prepared for the professional world after graduation, but may be better prepared to effectively respond to social and political change that is fostered by ICTs.

¹ Michael Adams. *Sex in the Snow: Canadian Social Values at the End of the Millennium*, (Toronto: Penguin Books, 1997) 101-2.

Conclusion

Has Pandora's Box been opened? Is the implementation of technology in the Political Science classroom too problematic to be undertaken? The case study presented in this thesis suggests the answers to these questions are not as difficult as they might appear. While there is not a unicausal solution for the challenges facing educators who want to use ICTs in their classrooms, there is a clear path that can be followed to ensure a less problematic experience.

This thesis argued that the Political Science classroom could be revitalized through the implementation of ICTs. Through the data presented, this contention was supported by the positive responses of students involved in technologically enhanced Political Science classes at Acadia University. When considering the implementation of ICTs, however, political educators must be cognizant of the "lessons learned" through the implementation process in Political Science at Acadia University and the campus-wide implementation of the Acadia Advantage initiative. First, all participants (students, faculty, and staff) must be comfortable and skilled using the technology, or they will become reluctant to explore other educational opportunities, as indicated by the negative comments from students in the first year of technological implementation. The degree to which participants are comfortable and skilled using technology, in large part, affects the pace and success of implementation. Second, technological enhancements should seek to improve the quality of the education provided in the Political Science classroom. If technology is simply added on to traditional classroom activities, students may see it as adding work in addition to changing how work is accomplished. This contention was supported by the many positive student responses to the Political Byte, a result of the

instructors' careful consideration of the role for ICTs in their courses. Finally, students have the potential to influence the pace and success of technological implementation profoundly. In the first year of technological implementation in Political Science at Acadia, students indicated that the use of technology, while interesting, was not entirely satisfactory. As a response, the instructors rethought their program delivery, based on the existing and the potential educational goals and greater possibility of achieving them by altering the design and implementation of technology.

It bears noting, however, that the case study provided some important insight into the negative aspects of technological implementation. First of all, students who indicated a reluctance to use technology for their learning were illustrating an important consideration. This thesis indicates that ICTs should be used in education to *enhance* the educational experiences of students, not *replace* integral parts of their educational experience. "Virtual" universities, while increasing in popularity, are not the answer to creating a more effective Political Science education. That is, ICTs ought not be used to overshadow the content of a course; if they are, learning may still take place, but the students will not be learning Political Science. Similarly, students indicated in their survey responses that technologically mediated communication does not replace face-to-face interactions. Keeping these "conditions" for effective technological implementation in mind, the possibilities for the future are endless.

Ultimately, the use of ICTs in the Digital Agora courses in the Political Science Department at Acadia has thus far achieved a number of the goals for implementation. Generally, students were more active in class, and significantly contributed to their own learning through synchronous and asynchronous activities. The enhancement of

traditional and electronic communication skills indicated by students through electronic communication and collaborative activities are clear indicators of a measure of success in this respect. Students, more importantly, were engaged in the “language” of politics, where they not only learned the structures, functions, and processes of government, but gained a better understanding of these concepts through self-directed research and collaborative activities. The students indicated they enjoyed contact with other students and information resources across temporal and spatial boundaries. The continued growth of the Internet means that students and instructors should continue to work together, to improve the quality of their endeavours and create new opportunities for learning. The technological experience at Acadia, to date, has presented a number of new opportunities for interesting learning experiences in the Political Science classroom that are unlike anything that has preceded them.

While the results obtained in the study were promising, some methodological challenges were presented that constrained the author’s ability to form absolute conclusions with respect to the implementation of technology in the Political Science classroom. First, the Year One results were compromised by the lack of a standard questionnaire across all of the weeks the study. Had such a questionnaire been used, it is likely that Year One would have yielded even more significant results. This contention is mitigated somewhat by the difficulty that would have been experienced in creating a standard set of questions that would capture the unique qualities of the classes and their activities. Second, the Digital Agora was not assessed to a sufficient degree to determine whether or not it is an effective tool for political education and learning Political Science. At this point, there are positive indications from students, but not sufficient to indicate the

general sentiment of student participants. Third, the study was limited by the lack of comparable activities internally (at Acadia) or externally (at other Canadian post-secondary institutions). At this time, there is still relatively little work being published in this field and few Political Science departments who are undertaking any initiatives towards a greater technological presence in the classroom. The lack of relevant comparisons made the analysis difficult, because there was no existing critical framework for assessing progress at Acadia.

Given the positive results that were obtained, however, there are sufficient grounds for continuing this study at Acadia and other institutions. For future studies of the implementation of ICTs in Political Science, a serious time-series of data can be collected through a more practical approach to the study. In addition to gathering a consistent time series of data, future studies of the technological implementation process can also explore issues like gender, that were not sufficiently examined in the original series of questionnaires.

- At the beginning of the academic year, students in all Digital Agora courses can complete a skills assessment, to gain insight on their technological experiences to date. More importantly, however, students should be asked about their expectations for the course, both its educational goals and technological content. This information may be useful in shaping the course activities throughout the academic year, and for assessing whether students change their expectations throughout the year. In addition to these questions, the first part of the study can gauge attitudes towards the use of new ICTs, so that distinctions can be made, for example, in the ways male and female students approach ICTs. To aid student responses, questions would be offered on a five-point scale (or multiple possible responses) and may include:
 - “Assess the ease with which you use following technologies (electronic mail, the WWW, CD-ROMs, online discussion groups; specific software applications);”
 - “How have you used the WWW for research in the past;”
 - “Which skills do you expect to develop by taking this course;”
 - “Why did you take this course?”

- “Has using new information and communication technologies (like the WWW and electronic mail) affected your day-to-day life in any measurable way? How?”
 - “Based on your previous experiences using computer technology, how do you think new technologies might be used in this course,” and
 - “What do you expect to learn in this course?”
- At the end of the first term, students can complete a second skills assessment, similar to the one they completed at the beginning of the year. At this time, students can also be asked about their impressions of the use of technology to date. This questionnaire can also gauge student perceptions of the use of ICTs to facilitate discussions, to gain insight into any gender-based differences that may emerge in the responses. Finally, the mid-way point in the year can begin to gauge the relative effectiveness of technology as a communication and information management tool. Questions at this point in the year may include:
- “Assess the ease with which you use following technologies (electronic mail, the WWW, CD-ROMs, online discussion groups; specific software applications);”
 - “What sort of change, if any, have you noticed regarding your use of (electronic mail, the WWW, the library) for course work? Has this changed the way you communicate with others outside of class?”
 - “How would you rate the on-line forums as a tool for discussion? How do you think on-line discussion differs from in-class discussion? Do you prefer in-class discussions or online discussions? Why?”
 - “Has your experience in this class, to date, met with your expectations?”
 - “Have your expectations for this course changed? How?”
 - “What, if any, are your expectations for the second part of this course?”
- At the end of the year, students can complete a third skills assessment, to measure their overall skill development over the year. In the final inquiry, students can provide their own perceptions of success or failure in using technology for their political learning. Since the students will have had at least one year of experience with the Digital Agora, they can be particularly useful in determining what aspects of the program can be continued into the next year. The final questionnaire can also be used to gauge any differences in student responses to technologically mediated discussion, to see if any differences remain between male and female responses to the use of technology for various class activities. Finally, the students can be presented with their expectations from September and asked how the actual experience compared to their original expectations. Questions posed at the end of the year may include:

- “Assess the ease with which you use following technologies (electronic mail, the WWW, CD-ROMs, online discussion groups; specific software applications)”
- “What sort of changes, if any, have you noticed in the way you (research, communicate with friends, communicate with classmates/instructors) over the course of the year?”
- “How would you rate the on-line forums as a tool for discussion? How do you think on-line discussion differs from in-class discussion? Do you prefer in-class discussions or online discussions? Why?”
- “Has the course met with your expectations? How?”
- “Have you learned more/less than you thought you would about politics?”
- “What, if anything, would you change about the course for next year?”

The key for a successful study in the future will be the comparison between what was expected and what was actually experienced. Student feedback would also be useful to determine what additional applications or components would enhance the Digital Agora. The implementation can continue to be successful if the instructors ensure that the students are comfortable using the technology and are able to use it effectively for the course activities.

Since the implementation of ICTs in the Political Science classroom is challenging in pedagogical, administrative, technological, and other important ways, it is easy to see how the term “Pandora’s Box” might describe the process. That does not mean, however, that the process should be avoided all together. The benefits to the discipline, more communication among students, greater access to information, and the development of a wide range of skills, are a satisfactory justification for using ICTs in political learning. While the implementation of ICTs in Political Science is still in its preliminary stages, there is an important opportunity for political educators to use information and communication technologies to encourage a pedagogical evolution and technological revolution in their classes.

Appendix One: Methodological framework for data collection in Year One

The researcher refrained from observing and gleaning results from the student body until the Fall 1997 term had been completed, and the second part of the academic year had begun. The rationale behind this decision was that enrollment would fluctuate throughout the first half of the full-year course (POLS 1006). In addition, the half-year course (POLS 1403) would likely not be comprised of the same students who took the companion course in the fall term. Data collection during the winter term was the best way to ensure a consistent participant pool.

After consultation with the instruction team, it was decided that the most effective method for gathering data would be to conduct recurring questionnaires between the two classes.¹ This would be useful to gauge student opinion and differences in adaptation to the technological environment. It is the combination of this quantitative method with qualitative written comments that ultimately would provide for the analysis and comparison of data. The decision to employ recurring questionnaires was not a simple one. There were obvious benefits to such a method including the generation of a large volume of data, the ability to ensure consistency in the subject pool, and the ability to test for certain results over time. On the other hand, the regular inquiry could quell the enthusiasm of the participants, therefore the author had to be sensitive to this possibility and vary activities and questions so they would appear to be relatively unique throughout the term. The method of recurring questionnaires would also prove beneficial so the author could gauge responses to specific activities, as well as general themes including

¹ The questionnaires for POLS 1006 are in Appendix Two and the questionnaires for POLS 1403 are in Appendix Three.

preparation and course satisfaction. The author decided against other qualitative methods for several reasons. It was essential to the success of this study that participants have the opportunity to disclose positive or negative opinions with relative anonymity. The participants were notified that the questionnaires were confidential, with little identifying information required. To obtain the volume of information required to make a qualified assessment of student reactions, interviews or other qualitative methods would have been too time-consuming and resource-intensive.

Appendix Two: Questionnaires distributed to POLS 1006***Week One:***

Gender: M F

Program: (please circle) BA BSc BBA BPE BRM Other:

Major:

Year in University: (please circle) 1 2 3 4 5 Other

1. a) Were you prepared for this week's discussion? (please circle)

1 2 3 4 5

Very Prepared

Not Prepared

b) In your estimation, how prepared did the majority of discussants appear?

1 2 3 4 5

Very Prepared

Not Prepared

2. a) Did you read the assigned readings? Did you review the week's lecture notes?
(please check)

Yes No Yes No

b) Did you read/listen to any media analysis or coverage related to this week's issue(s)?

Yes No *If yes, which media?*

3. a) How well do you think you expressed your perspectives in this week's discussion?

1 2 3 4 5

Very Well

Not Well at All

b) Did the technology enhance or constrain your ability to express your perspectives?

It enhanced my contributions It constrained my contributions It made no
difference

4. a) Did your understanding of the issue(s) improve during this week's discussion?

Yes No Not Sure

b) How do you rate your interest in the issue(s) now, after this week's discussion?

1 2 3 4 5

I Care More Feel the Same I Care Less

c) Did your perspectives about the issue(s) change during this week's discussion?

Yes No Not Sure

5. a) Did you take time to read other participants' contributions?

Yes No

b) In your estimation, were the members of this week's discussion group willing to
discuss the viewpoints of others, even if they were different?

1 2 3 4 5

Very Willing

Not Willing at All

6. a) As a member of the discussion group, I felt: (please check *all* that apply)

accepted	ignored	isolated	other
accommodating	interested	knowledgeable	
interesting	provocative	constrained	
disruptive	involved	respected	

b) In one word, this week's group dynamic would be best described as:

7. Did this week's organization of the groups make a difference to your understanding of the issue?

1	2	3	4	5
A great difference			No difference at all	

8. a) In your estimation, how close was this week's group to reaching a consensus? (please circle)

1	2	3	4	5
Not close		Consensus reached		

b) In your estimation, how much more time would it have taken this week's group to reach a consensus? (please fill in an approximate amount of time)

9. a) Did the facilitator(s) of your discussion add interesting or thought-provoking insights into the discussion?

1	2	3	4	5
Very Interesting			Not Interesting at all	

b) Did these insights, if any, alter the direction of the discussion?

Yes No Not Sure

10. Through the use of the technology, what were the benefits you experienced, if any?

11. In your opinion, what were the limitations of the technology, if any?

Week Two:

1. Gender: Male Female

2. a) Degree and major: BA BSc BBA BPE BRM

b) Major:

3. Year in university: 1 2 3 4 5 Other

4. Role in simulation: Citizen Deputy Minister Minister PM. PMO. PCO. TB or Finance

5. a) Did you read the assigned readings? Yes No

b) Did you read/listen to any media analysis or coverage outside of the classroom? Yes

No

If yes, which media?

6. How do you rate yourself:

	Excellent	Good	Average	Fair	Poor
a) Speaking?	1	2	3	4	5
b) Writing?	1	2	3	4	5
c) Listening?	1	2	3	4	5
d) Reading Comprehension?	1	2	3	4	5
e) Verbal Communication?	1	2	3	4	5
f) Negotiation Skills?	1	2	3	4	5

7. Was this computer-mediated simulation valuable?

1 2 3 4 5
 Very valuable Somewhat Not valuable at all

8. a) Did this simulation enhance your knowledge of the subject?

1 2 3 4 5
 Very much Somewhat Not at all

b) In your estimation, did you learn as much from the simulation as you could from a lecture?

Yes No Not Sure

9. a) Did this simulation pique your interest in this subject?

1 2 3 4 5
 Very much Somewhat Not at all

b) Compared to the simulation, do you think a lecture would have sparked your interest in this subject?

More The Same Less Not Sure

10. After this simulation, what do you know about the following?

a) interest groups?	More	Less	Same	Not Sure
b) political parties?	More	Less	Same	Not Sure
c) public policy?	More	Less	Same	Not Sure
d) senior public administrators?	More	Less	Same	Not Sure
e) political executives?	More	Less	Same	Not Sure

11. a) Did you consider yourself an asset to your group? Yes No Not Sure

b) In your estimation, did your group create a distinct position or policy? Yes No
 Not Sure

12. a) How did your simulation group compare to an in-class discussion group?

1 2 3 4 5
 More interesting Same Less interesting

b) Was it more *informative* than a typical discussion group?

1 2 3 4 5
 More informative Same Less informative

13. Did you find it useful to have a Teaching Assistant in your group? Yes No Not Sure

14. a) Did you find it easy to build ideas within a group? Yes No Not Sure

- b) Did it encourage more creative thinking? Yes No Not Sure
15. Do you have a better understanding of what a *consensus* is now than you did before?
Yes No Not Sure
16. In your estimation, what does consensus mean? (Please consider carefully and check all that apply)
unanimity accommodation collaboration mediation agreement
cooperation power struggle sacrifice concession compromise
17. a) Did you reach a consensus within your group? Yes No Not Sure
b) In your estimation, is consensus-building an easy process? Yes No Not Sure
18. Did this simulation give you a greater understanding of consensus-*building*?
Yes No Not Sure
19. a) As a *communication tool*, how did the technology affect your ability to communicate?
1 2 3 4 5
It was easier Same It was harder
b) How did the technology affect your ability to share *information*?
1 2 3 4 5
It was easier Same It was harder
c) How did the technology affect your ability to share *ideas*?
1 2 3 4 5
It was easier Same It was harder
20. How did the technology affect your ability to conduct research?
1 2 3 4 5
It was easier Same It was harder
21. Were you surprised by the amount of information that was available? Yes No Not Sure
22. a) Did you *access* the on-line briefing rooms? Yes No
b) Did you *read* the postings in the on-line briefing rooms? Yes No
c) Did you *contribute* to the on-line briefing rooms? Yes No
d) In your estimation, how valuable were the on-line briefing rooms?
1 2 3 4 5
Very Valuable Neither Not Valuable at All
23. I found the simulation valuable because
24. I found the simulation challenging because
25. Please write any other comments in the space below and on the back of this page.

Week Three:

1. Gender: M F

2. a) Program: (please circle) BA BSc BBA BPE BRM Other:
 b) Major:

3. Year in University: (please circle) 1 2 3 4 5 Other

4. a) Did you read the assigned readings? b) Did you review the week's lecture notes?
 Yes No Yes No
 c) Did you review the PowerPoint lecture slides? Yes No
 d) Did you read/listen to any media analysis or coverage related to last week's issue(s)?
 Yes No
 If yes, which media?

5. a) How prepared were you for the Québec discussion?
 1 2 3 4 5
 Very Prepared Prepared Not prepared at all
 b) In your estimation, how prepared did the majority of discussants appear?
 1 2 3 4 5
 Very Prepared Prepared Not prepared at all

6. a) How well do you think you expressed your perspectives in the Québec discussion?
 1 2 3 4 5
 Very Well Satisfactory Not Well at All
 b) Did the technology enhance or constrain your ability to express your perspectives?
 It enhanced my contributions It constrained my contributions It made no
 difference
 c) Did you contact any of the participants outside of the electronic discussion group?
 d) *Did you want to?*

7. As a form of communication, is the on-line discussion group similar to: (*check all that
 apply*)
 a) a face-to-face conversation?
 b) a telephone conversation?
 c) reading a diary or personal journal?
 d) reading an essay?
 e) reading a personal letter?
 f) listening to a recording?
 g) Does using the on-line discussion group make you feel like you're *really
 communicating* with someone else? Yes No Not sure
 Why?

8. a) Did your *understanding* of the "Québec question" improve during this week's
 discussion? Yes No Not Sure

b) Did your *perspectives* about the “Québec question” change during this week’s discussion? Yes No Not Sure

c) How do you rate your *interest in* the “Québec question” now, after this week’s discussion?

1 2 3 4 5
I care more I feel the same I care less

9. a) Did you take time to read other participants’ contributions?

Yes No Why?

b) In your estimation, what percentage of participants appeared willing to consider the ideas of others?

1 2 3 4 5
0-20% 40-60% 80-100%

10. Did the discussants from the University of Lethbridge:

- a) Offer perspectives you hadn’t heard before? Yes No Not Sure
b) Make the discussion more interesting? Yes No Not Sure
c) Make you feel more competitive? Yes No Not Sure
d) Make you feel more self-conscious about your contributions? Yes No Not Sure
e) Make you more aware of your spelling, grammar, and punctuation? Yes No Not Sure

11. Did the discussants from a senior Political Science class (*The Politics of French Canada*):

- a) Offer more advanced arguments? Yes No Not Sure
b) Make the discussion more interesting? Yes No Not Sure
c) Make you feel more competitive? Yes No Not Sure
d) Make you feel more self-conscious about your contributions? Yes No Not Sure
e) Make you more aware of your spelling, grammar, and punctuation? Yes No Not Sure

12. a) Was it useful to have the discussants introduce themselves and their hometowns?

Yes No Not sure Why?

b) Did you perceive any regional differences in how the Québec issue was addressed?

Yes No Not sure

13. Most political science textbooks identify diverse regional differences. Did this on-line discussion clarify some of those regional political perspectives in a way that a textbook could not?

Yes No Not sure How?

14. Assess the facilitator(s): Did she or he . . .

- a) Offer interesting insights? Yes No Sometimes Not Sure

- b) Ask thought-provoking questions? Yes No Sometimes Not Sure
 c) Challenge you intellectually? Yes No Sometimes Not Sure
 d) *Facilitate* the discussion instead of *leading* it? Yes No Sometimes
 Not Sure

15. Your additional comments:

Week Four:

1. Gender: M F

2. a) Program: (please circle) BA BSc BBA BPE BRM Other: b) Major:

3. Year in University: (please circle) 1 2 3 4 5 Other

4. a) Did you review the week's lecture notes?

Yes No

b) Did you review the PowerPoint lecture slides? Yes No

c) Did you read/listen to any media analysis or coverage related to the public policy fields we covered?

Yes No *If yes, which media?*

5. a) Did you find an article pertaining to your chosen policy field? Yes No

b) How prepared were you for the consensus-building exercise?

1 2 3 4 5

Very Prepared

Prepared

Not prepared at all

c) In your estimation, how prepared did the majority of your group members appear?

1 2 3 4 5

Very Prepared

Prepared

Not prepared at all

6. a) How well do you think you expressed your perspectives in the public policy exercise?

1 2 3 4 5

Very Well

Satisfactory

Not Well at All

b) Did your policy group give you the opportunity to express your perspectives, *to your satisfaction?*

Yes. I could say whatever I wanted

Most of the time I could say what I wanted

Sometimes I could say what I wanted

No. I couldn't say anything at all

c) Do you feel you gave the members of your group the opportunity to express their perspectives?

Yes. I let them say whatever they wanted

Most of the time I let them say what they wanted

Sometimes I let them say what they wanted

No. I didn't let them say anything at all

d) Did you express *all* of your perspectives during the in-class portion of the exercise?

1 2 3 4 5

All

Most

Some

None

8. a) Did you express all of your perspectives in the on-line component of the exercise?

1 2 3 4 5
All Most Some None

b) Did you express perspectives on-line that you did not express in-class, for whatever reason?

Yes No Not Sure Why?

c) Did you take time to read your group members contributions on-line?

Yes No Why?

9. a) Did your understanding of some public policy fields improve during the public policy exercise?

Yes No Not Sure

b) Did your perspectives about some public policy fields change during the exercise?

Yes No Not Sure

c) How do you rate your interest in public policy now, after exercise?

1 2 3 4 5
I care more I feel the same I care less

10. a) Did your group reach a consensus? Yes No Not Sure

b) Which of the following helped your group reach a consensus? Check all that apply.

Q All or almost all of group members present	Q All were willing to discuss many issues	Q We were determined to reach a consensus	Q Limited amount of time available	Q Group members were prepared
Q One person emerged as leader	Q Everyone expressed their perspectives	Q We took a vote	Q We are friends so it was easy to agree	Q There were no disagreements

c) Which of the following hindered your group's ability to reach a consensus? Check all that apply.

Q Only a few group members were present	Q Nobody was willing to discuss the issues	Q We didn't know how to reach consensus	Q Limited amount of time available	Q Group members were unprepared
Q Too many people tried to control group	Q Too many speakers. not enough listeners	Q Everyone had a unique perspective	Q I didn't like the people in my group	Q Our differences were too severe

11. Is consensus-building getting easier? Yes No Still not sure what consensus is

12. a) What sort of discussion group do you like the best?

In-class On-line A combination of the two

b) Where is it easiest to build a consensus?

In-class On-line A combination of the two

13. What would make consensus-building easier for you?

14. Your additional comments:

Week Five:

1. Gender: M F

2. a) Program: (please circle) BA BSc BBA BPE BRM Other: b) Major:

3. Year in University: (please circle) 1 2 3 4 5 Other

4. Which aspects of the course were most effective in building your knowledge base?

	Very much	Somewhat	Not at all
a) Reading the text	1	2	3
b) Face-to-face discussions	1	2	3
c) On-line discussions	1	2	3
d) Lectures	1	2	3
e) Simulations and policy exercises	1	2	3
f) Attention to the media	1	2	3
g) Individual meetings with TAs	1	2	3
h) Individual meetings with the professors	1	2	3

5. What would have encouraged you to be more prepared for class? (*check all that apply*)

- a) a quiz every week
- b) a final exam
- c) more written assignments
- d) more electronic assignments
- e) smaller assignments instead of major papers
- f) using texts as a "starting point" for lectures
- g) using texts as a "starting point" for discussions
- h) using readings on reserve instead of a textbook
- i) OTHER:

6. a) Define a lateral map:

b) Did you find lateral maps useful in relating your essay's key ideas to the class?

Very useful 1 2 3 4 5 Not useful at all

c) Did you find lateral maps useful in understanding other people's essays?

Very useful 1 2 3 4 5 Not useful at all

d) *Initially*, was it difficult to create lateral maps?

Very easy 1 2 3 4 5 Very difficult

e) *Now*, how difficult is the creation of lateral maps?

Very easy 1 2 3 4 5 Very difficult

f) Did you ever create lateral maps before you took this class? Yes No Not sure

g) Will you use lateral maps in your future class work? Yes No Not sure

7. How would you rate your understanding of politics, policy and government now (in April 1997) compared to the beginning of the course?

Much better 1 2 3 4 5 No
difference

8. Taking notes in class, whether it is during a film, a lecture, or guest presentation: (*check all that apply*)

- a) is a waste of time
- b) is facilitated by the computer
- c) is easiest by hand
- d) is facilitated by the lateral map method
- e) makes no difference to my performance in the class
- f) makes all the difference to my performance in the class

9. I referred to the following:

	Regularly	Sometimes	Never
a) PowerPoint lecture slides	1	2	3
b) self-test quizzes	1	2	3
c) on-line textbook companion	1	2	3
d) the course outline	1	2	3
e) the course website	1	2	3
f) other websites given in class	1	2	3

10. a) Did the professors use the computer in-class as much as you thought possible?

Very much 1 2 3 4 5 Not at all

b) Did the professors appear comfortable using the computer in the classroom?

Very much 1 2 3 4 5 Not at all

c) In your estimation, did the professors use the computer in the classroom effectively?

Very much 1 2 3 4 5 Not at all

d) Did the use of computers in the classroom result in a "new kind of learning" for you?

Very much 1 2 3 4 5 Not at all

e) Can you think of any other ways the professors could use the computer for this course?

11. a) Did you use the Internet in-class as much as you thought possible?

Very much 1 2 3 4 5 Not at all

b) Did you use the Internet outside of class, for this course, as much as you thought possible?

Very much 1 2 3 4 5 Not at all

c) In your estimation, is the Internet a valuable tool for this course?

Very much 1 2 3 4 5 Not at all

d) Do you use the Internet for research?

Very much 1 2 3 4 5 Not at all

12. a) In your estimation, did students use the Internet, in-class, effectively?

Very much 1 2 3 4 5 Not at all

b) Did you find it distracting when students used the computer in-class, for activities not related to the class?

Very much 1 2 3 4 5 Not at all

13. In some of your discussions and class activities, you were asked to reach a consensus, or at least work toward a consensus.

a) Did your understanding of the term *consensus* improve during these exercises?

Very much 1 2 3 4 5 Not at all

b) Did the consensus-building process become easier for you during the term?

Very much 1 2 3 4 5 Not at all

c) Did the consensus-building process help you learn new skills?

Very much 1 2 3 4 5 Not at all

d) Do you think it is possible to use these skills in other areas of your life (work, relationships, other classes)?

Very much 1 2 3 4 5 Not at all

14. Respond to the following statements about computers and consensus-building:

The response key is as follows:

SA= 'Strongly Agree' A= 'Agree' NO= 'No Opinion' D= 'Disagree' SD= 'Strongly Disagree'

SA A NO D SD

1 2 3 4 5 a) The on-line discussion groups were valuable forums for discussion.

1 2 3 4 5 b) Even if I don't like the computer, I know that I must learn to use it.

1 2 3 4 5 c) We could have reached consensus *on-line* if there had been an incentive to do so.

1 2 3 4 5 d) I like to communicate with others electronically.

1 2 3 4 5 e) The computer was a valuable tool in the consensus-building process.

1 2 3 4 5 f) Consensus-building is not possible with the computer technology (and Internet) we use now; it will be someday.

1 2 3 4 5 g) Electronic communication requires different skills than traditional forms of communication.

1 2 3 4 5 h) It would have been interesting to attempt a consensus-building activity only using the computer.

1 2 3 4 5 i) I value the opportunity to discuss different viewpoints with others.

1 2 3 4 5 j) I don't think a group can reach a consensus if it doesn't agree initially.

Your additional comments:

Appendix Three: Questionnaires distributed to POLS 1403***Week One***

Gender: M F

Program: (please circle) BA BSc BBA BPE BRM Other:

Major:

Year in University: (please circle) 1 2 3 4 5 Other

1. a) Were you prepared for this week's discussion? (please circle)

1 2 3 4 5

Very Prepared

Not Prepared

b) In your estimation, how prepared did the majority of discussants appear?

1 2 3 4 5

Very Prepared

Not Prepared

2. a) Did you read the assigned readings? Did you review the week's lecture notes?
(please check)

Yes No Yes No

b) Did you read/listen to any media analysis or coverage related to this week's
issue(s)?Yes No *If yes, which media?*

3. a) How well do you think you expressed your perspectives in this week's discussion?

1 2 3 4 5

Very Well

Not Well at All

b) How did the group setting affect the way you contributed to the discussion?

1 2 3 4 5

I felt very comfortable
expressing my viewsI felt very uncomfortable
expressing my views

4. a) Did your understanding of the issue(s) improve during this week's discussion?

Yes No Not Sure

b) How do you rate your interest in the issue(s) now, after this week's discussion?

1 2 3 4 5

I Care More

Feel the Same

I Care Less

c) Did your perspectives about the issue(s) change during this week's discussion?

Yes No Not Sure

6. How do you rate yourself:
- | | Excellent | Good | Average | Fair | Poor |
|---------------------------|-----------|------|---------|------|------|
| a) Speaking? | 1 | 2 | 3 | 4 | 5 |
| b) Writing? | 1 | 2 | 3 | 4 | 5 |
| c) Listening? | 1 | 2 | 3 | 4 | 5 |
| d) Reading Comprehension? | 1 | 2 | 3 | 4 | 5 |
| e) Verbal Communication? | 1 | 2 | 3 | 4 | 5 |
| f) Negotiation Skills? | 1 | 2 | 3 | 4 | 5 |
7. Was this simulation valuable?
- | 1 | 2 | 3 | 4 | 5 |
|---------------|---|----------|---|---------------------|
| Very valuable | | Somewhat | | Not valuable at all |
8. a) Did this simulation enhance your knowledge of the subject?
- | 1 | 2 | 3 | 4 | 5 |
|-----------|---|----------|---|------------|
| Very much | | Somewhat | | Not at all |
- b) In your estimation, did you learn as much from the simulation as you could from a lecture?
- Yes No Not Sure
9. a) Did this simulation pique your interest in this subject?
- | 1 | 2 | 3 | 4 | 5 |
|-----------|---|----------|---|------------|
| Very much | | Somewhat | | Not at all |
- b) Compared to the simulation, do you think a lecture would have sparked your interest in this subject?
- More The Same Less Not Sure
10. After this simulation, what do you know about the following?
- | | | | | |
|----------------------------------|------|------|------|----------|
| a) interest groups? | More | Less | Same | Not Sure |
| b) political parties? | More | Less | Same | Not Sure |
| c) public policy? | More | Less | Same | Not Sure |
| d) senior public administrators? | More | Less | Same | Not Sure |
| e) political executives? | More | Less | Same | Not Sure |
11. a) Did you consider yourself an asset to your group? Yes No Not Sure
- b) In your estimation, did your group create a distinct position or policy? Yes No
Not Sure
12. a) How did your simulation group compare to an in-class discussion group?
- | 1 | 2 | 3 | 4 | 5 |
|------------------|---|------|---|------------------|
| More interesting | | Same | | Less interesting |
- b) Was it more *informative* than a typical discussion group?
- | 1 | 2 | 3 | 4 | 5 |
|------------------|---|------|---|------------------|
| More informative | | Same | | Less informative |

13. a) Did you find it easy to build ideas within a group? Yes No Not Sure
 b) Did it encourage more creative thinking? Yes No Not Sure
14. Do you have a better understanding of what a *consensus* is now than you did before?
 Yes No Not Sure
15. In your estimation, what does consensus mean? (Please consider carefully and check all that apply)
 unanimity accommodation collaboration mediation agreement
 cooperation power struggle sacrifice concession compromise
16. a) Did you reach a consensus within your group? Yes No Not Sure
 b) In your estimation, is consensus-building an easy process? Yes No Not Sure
17. Did this simulation give you a greater understanding of consensus-*building*?
 Yes No Not Sure
18. a) Did you use the technology to conduct in-class research? Yes No Not Sure
 b) How did the technology affect your ability to conduct research?
 1 2 3 4 5
 It was easier Same It was harder
 c) Do you anticipate using technology to conduct future research?
 Yes No Not Sure
19. Were you surprised by the amount of information that was available? Yes No
 Not Sure
20. a) In your estimation, would you have preferred to spend *more* time with the
 technology?
 Yes No Not Sure
 b) In your estimation, would your knowledge of the subject have been enhanced by
 more time with the technology?
 Yes No Not Sure
21. I found the simulation valuable because
 22. I found the simulation challenging because
 23. Please write any other comments in the space below and on the back of this page.

Week Three

1. Gender: M F
 2. a) Program: (please circle) BA BSc BBA BPE BRM Other: b) Major:
 3. Year in University: (please circle) 1 2 3 4 5 Other
 4. a) Did you read the assigned readings? b) Did you review the week's lecture notes?

- Yes No Yes No
- c) Did you review the PowerPoint lecture slides? Yes No
- d) Did you read/listen to any media analysis or coverage related to last week's issue(s)? Yes No *If yes, which media?*
5. a) How prepared were you for the Québec discussion?
- | | | | | |
|---------------|---|----------|---|---------------------|
| 1 | 2 | 3 | 4 | 5 |
| Very Prepared | | Prepared | | Not prepared at all |
- b) In your estimation, how prepared did the majority of discussants appear?
- | | | | | |
|---------------|---|----------|---|---------------------|
| 1 | 2 | 3 | 4 | 5 |
| Very Prepared | | Prepared | | Not prepared at all |
6. a) Did your understanding of the issue(s) improve during the Québec discussion?
- Yes No Not Sure
- b) Did your perspectives about the issue(s) change during the Québec discussion?
- Yes No Not Sure
- c) How do you rate your interest in the issue(s) now, after this week's discussion?
- | | | | | |
|-------------|---|---------------|---|-------------|
| 1 | 2 | 3 | 4 | 5 |
| I Care More | | Feel the Same | | I Care Less |
7. a) Did you reach a consensus within your group? Yes No Not Sure
- b) In your estimation, is consensus-building an easy process? Yes No Not Sure
- c) Do you have a better understanding of what a *consensus* is now than you did before? Yes No Not Sure
8. Assess the facilitator: Did she . . .
- | | | | | |
|---|-----|----|-----------|----------|
| a) Offer interesting insights? | Yes | No | Sometimes | Not Sure |
| b) Ask thought-provoking questions? | Yes | No | Sometimes | Not Sure |
| c) Challenge you intellectually? | Yes | No | Sometimes | Not Sure |
| d) <i>Facilitate</i> the discussion instead of <i>leading</i> it? | Yes | No | Sometimes | Not Sure |

Week Four

1. Gender: M F
2. a) Program: BA BSc BBA BPE BRM Other: b) Major:
3. Year in University: 1 2 3 4 5 Other
4. Did you read/listen to any media analysis or coverage related to the public policy fields we covered? Yes No *If yes, which media?*
5. a) Did you find a WWW article pertaining to your chosen policy field? Yes No
- b) How prepared were you for the consensus-building exercise?
- | | | | | |
|---------------|---|----------|---|---------------------|
| 1 | 2 | 3 | 4 | 5 |
| Very Prepared | | Prepared | | Not prepared at all |
- c) In your estimation, how prepared did the majority of your group members appear?
- | | | | | |
|---|---|---|---|---|
| 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|

- Very Prepared Prepared Not prepared at all
6. a) How well do you think you expressed your perspectives in the public policy exercise?
- 1 2 3 4 5
- Very Well Satisfactory Not Well at All
- b) Did your policy group give you the opportunity to express your perspectives, *to your satisfaction*?
- Yes. I could say whatever I wanted Most of the time I could say what I wanted
Sometimes I could say what I wanted No. I couldn't say anything at all
- c) Do you feel you gave the members of your group the opportunity to express their perspectives?
- Yes. I let them say whatever they wanted Most of the time I let them say what they wanted
Sometimes I let them say what they wanted No. I didn't let them say anything at all
- d) Did you express all of your perspectives during the exercise?
- 1 2 3 4 5
- All Most Some None
7. a) Did you want to express perspectives that you did not express in-class, for whatever reason? Yes No Not Sure
- b) Why didn't you express all of your perspectives?
8. a) Did your understanding of some public policy fields improve during the public policy exercise? Yes No Not Sure
- b) Did your perspectives about some public policy fields change during the exercise? Yes No Not Sure
- c) How do you rate your interest in public policy now, after exercise?
- 1 2 3 4 5
- I care more I feel the same I care less
9. a) Did you learn more about your public policy field using the Internet? Yes No Not sure
- b) What was easier, research using the Internet or research using traditional media? Internet Traditional Media Both were the same Neither Not Sure
- c) How do you use the Internet?: (check all that apply)
- Research Communication Entertainment Other:
- d) What other aspects of this exercise of this exercise could be facilitated by the Internet?
- Discussion Work outside of class Negotiation
Information sharing Building consensus Achieving consensus
- e) In your estimation, is the Internet useful for this kind of exercise? Yes No Not Sure
10. a) Did your group reach a consensus? Yes No Not Sure
- b) Which of the following helped your group reach a consensus? Check all that apply.
- | | | | | |
|--|---|---|------------------------------------|-----------------------------------|
| Q All or almost all of group members present | Q All were willing to discuss many issues | Q We were determined to reach a consensus | Q Limited amount of time available | Q Group members were not prepared |
| Q One person emerged | Q Everyone expressed | Q We took a vote | Q We are friends so it | Q There were |

as leader their perspectives was easy to agree of disagree

c) Which of the following hindered your group's ability to reach a consensus? Check all that apply.

- | | | | | |
|--|--|---|--|------------------------------|
| Q Only a few group members were present | Q Nobody was willing to discuss the issues | Q We didn't know how to reach consensus | Q Limited amount of time available | Q Group members unprepared |
| Q Too many people tried to control group | Q Too many speakers. not enough listeners | Q Everyone had a unique perspective | Q I didn't like the people in my group | Q Our differences too severe |

11. Was consensus-building easier this week? Yes No Still not sure what consensus is

12. Your additional comments:

Week Five

1. Gender: M F

2. a) Program: (please circle) BA BSc BBA BPE BRM Other: b) Major:

3. Year in University: (please circle) 1 2 3 4 5 Other

4. Which aspects of the course were most effective in building your knowledge base?

	Very much	Somewhat	Not at all
a) Reading the text	1	2	3
b) Face-to-face discussions	1	2	3
c) Lectures	1	2	3
d) Simulations and policy exercises	1	2	3
e) Attention to the media	1	2	3
f) Individual meetings with TAs	1	2	3
g) Individual meetings with the professors	1	2	3

5. What would have encouraged you to be more prepared for class? (*check all that apply*)

- a) a quiz every week
- b) more written assignments
- c) smaller assignments instead of major papers
- d) using texts as a "starting point" for lectures
- e) using texts as a "starting point" for discussions
- f) using readings on reserve instead of a textbook
- g) OTHER:

6. How would you rate your understanding of politics, policy and government now (in April 1997) compared to the beginning of the course?

Much better 1 2 3 4 5 No difference

7. Taking notes in class, whether it is during a film, a lecture, or guest presentation:
(*check all that apply*)

- a) is a waste of time
- b) makes no difference to my performance in the class
- c) makes all the difference to my performance in the class

8. I referred to the following:

	Regularly	Sometimes	Never
a) PowerPoint lecture slides	1	2	3
b) the course outline	1	2	3
c) the course website	1	2	3
d) other websites given in class	1	2	3

9. a) Did the professors use the computer in-class as much as you thought possible?

Very much 1 2 3 4 5 Not at all

b) Did the professors appear comfortable using the computer in the classroom?

Very much 1 2 3 4 5 Not at all

c) In your estimation, did the professors use the computer in the classroom effectively?

Very much 1 2 3 4 5 Not at all

d) Did the use of computers in the classroom result in a “new kind of learning” for you?

Very much 1 2 3 4 5 Not at all

e) Can you think of any other ways the professors could use the computer for this course?

10. In some of your discussions and class activities, you were asked to reach a consensus, or at least work toward a consensus.

a) Did your understanding of the term *consensus* improve during these exercises?

Very much 1 2 3 4 5 Not at all

b) Did the consensus-building process become easier for you during the term?

Very much 1 2 3 4 5 Not at all

c) Did the consensus-building process help you learn new skills?

Very much 1 2 3 4 5 Not at all

d) Do you think it is possible to use these skills in other areas of your life (work, relationships, other classes)?

Very much 1 2 3 4 5 Not at all

11. Respond to the following statements about computers and consensus-building:

The response key is as follows:

SA= ‘Strongly Agree’ A= ‘Agree’ NO= ‘No Opinion’ D= ‘Disagree’ SD= ‘Strongly Disagree’

SA A NO D SD

1 2 3 4 5 a) Even if I don't like the computer, I know that I must learn to use it.

1 2 3 4 5 b) I like to communicate with others electronically.

1 2 3 4 5 c) Consensus-building is not possible with the computer technology (and Internet) we use now it will be someday.

1 2 3 4 5 d) Electronic communication requires different skills than traditional forms of communication.

1 2 3 4 5 e) It would have been interesting to attempt a consensus-building activity only using the comp

1 2 3 4 5 f) I value the opportunity to discuss different viewpoints with others.

1 2 3 4 5 g) I don't think a group can reach a consensus if it doesn't agree initially.

Your additional comments:

Bibliography**Books**

Acadia University. *Annual Report 1993-94*. Wolfville, NS: Office of Information Services, 1994.

———. *Annual Report 1994-95*. Wolfville, NS: Office of Information Services, 1995.

———. *Annual Report 1995-96*. Wolfville, NS: Office of Public Affairs, 1996.

———. *Annual Report 1996-97*. Wolfville, NS: Office of Public Affairs, 1997.

———. *Mission Statement and Supporting Objectives*. Wolfville, NS: Acadia University, 1997.

———. *Undergraduate Calendar 1995-96*. Wolfville, NS: Acadia University, 1995.

———. *Undergraduate Calendar 1996-97*. Wolfville, NS: Acadia University, 1996.

———. *Undergraduate Calendar 1997-98*. Wolfville, NS: Acadia University, 1997.

———. *Undergraduate Calendar 1998-99*. Wolfville, NS: Acadia University, 1998.

Adams, Michael. *Sex in the Snow: Canadian Social Values at the End of the Millennium*. Toronto: Penguin Books, 1997.

Beniger, James R. *The Control Revolution: Technological and Economic Origins of the Information Society*. Cambridge, MA: Harvard University Press, 1986.

Bercuson, David J., Robert Bothwell, and J.L. Granatstein. *The Great Brain Robbery: Canada's Universities on the Road to Ruin*. Toronto: McClelland and Stewart, 1984.

———. *Petrified Campus: The Crisis in Canadian Universities*. Toronto: Random House Canada, 1997.

Cameron, David M. *More Than an Academic Question: Universities, Government, and Public Policy in Canada*. Halifax: The Institute for Research on Public Policy, 1991.

Eaman, Ross A. *The Media Society: Basic Issues and Controversies*. Toronto: Butterworths, 1987.

Ellul, Jacques. *The Technological Bluff*. Geoffrey W. Bromiley (trans.). Grand Rapids, MI: William B. Eerdmans Publishing Company, 1990.

- . *The Technological Society*. John Wilkinson (trans.). New York: Alfred A. Knopf, 1970.
- Foot, David K., with Daniel Stoffman. *Boom, Bust and Echo: How to profit from the coming demographic shift*. Toronto: Macfarlane Walter and Ross, 1996.
- Gates, Bill, with Nathan Myhrvold and Peter Rinearson. *The Road Ahead*. New York: Viking Publishing, 1995.
- Gutmann, Amy. *Democratic Education*. Princeton, NJ: Princeton University Press, 1987.
- Guy, James John. *People, Politics, and Government*. Scarborough: Prentice Hall Canada, 1995.
- Innis, Harold Adams. *The Bias of Communication*. Toronto: University of Toronto Press, 1951.
- . *Empire and Communications*. Oxford: Clarendon Press, 1950.
- Jones, Glen A., ed. *Higher Education in Canada: Different Systems, Different Perspectives*. New York: Garland Publishing Inc., 1997.
- McLeod, Keith A., ed. *Canada and Citizenship Education*. Toronto: Canadian Education Association, 1989.
- McLuhan, Marshall. *The Gutenberg Galaxy*. Toronto: University of Toronto Press, 1962.
- . *Understanding Media: The Extensions of Man*. Toronto: Signet Books, 1964.
- Osborne, Ken. *Teaching for Democratic Citizenship*. Toronto: Our Schools/Our Selves Education Foundation, 1991.
- Pammett, Jon H. and Jean-Luc Pepin, eds. *Political Education in Canada*. Halifax: Institute for Research on Public Policy, 1988.
- Poster, Mark. *The Mode of Information: Poststructuralism and Social Context*. Chicago: University of Chicago Press, 1990.
- . *The Second Media Age*. Cambridge, MA: Polity Press, 1995.
- Postman, Neil. *Technopoly: the surrender of culture to technology*. New York: Vintage Books, 1992.

Spender, Dale. *Nattering on the Net: Women, Power, and Cyberspace*. Toronto: Garamond Press, 1996.

Wiegel, Jr., James. *Mythology*. Lincoln, NB: Cliffs Notes Inc., 1973.

Winner, Langdon. *Autonomous Technology: Technics-out-of-control as a Theme in Political Thought*. Cambridge, MA: MIT Press, 1977.

———. *The Whale and the Reactor: The search for limits in an age of high technology*. Chicago: The University of Chicago Press, 1986.

Articles

Acharya, Madhavi. "University won't beat college diploma: poll." *The Toronto Star*, 15 July 1998: B1

Alexander, C.J., M.W. Conley, and C. Watters. "The Digital Agora." <http://ace.acadiau.ca/polisci/aa/digagora/web/about/homepage.htm> [1 August 1998].

Aucoin, Peter. "Political Science and Democratic Governance." *Canadian Journal of Political Science*, 29, 4 (December 1996): 643-660.

Berkowitz, Peggy. "Responding to new challenges." *University Affairs*, 36, 5 (May 1995): 6-8.

Christie, Brian D. "Higher Education in Nova Scotia: Where past is more than prologue." Glen A. Jones, ed. *Higher Education in Canada: Different systems, different perspectives*. New York: Garland Publishing Inc, 1997: 221-44.

The Digital Agora. "Overview: Digital Agora," <http://ace.acadiau.ca/polisci/aa/digagora/web/overview/homepage.htm> [1 August 1998].

Dwyer, Victor. "Academia Inc." *Macleans*, 110, 47 (November 24, 1997): 67.

Evers, Frederick T. and Sid N. Gilbert. "Outcomes Assessment: How much value does a university education add?" *The Canadian Journal of Higher Education*, 21, 2 (1991): 53-76.

Ford, Christine Tausig. "The road to the future." *University Affairs*, 35, 5 (May 1994): 10-11

Frank, Tema. "What do employers want?" *University Affairs*, 38, 5 (May 1997): 8-10.

Giberson, Mark. "Facing the Budget Crunch." *University Affairs*, 36, 8 (October 1995): 9-11.

- Hughes, Andrew S. and Alan M. Sears. "Macro and Micro Level Aspects of a Programme of Citizenship Education Research." *Canadian and International Education*, 25, 2 (December 1996):17-30.
- Hughes, Susan. "Halifax connection helps ITI become computing training success story." *The Chronicle-Herald* [Halifax], 21 May 1997: B1.
- Oblinger, Diana G., Mark Resmer, and James R. Mingle, "Student Mobile Computing," in D.G. Oblinger and S.C. Rush (eds.), *The Future Compatible Campus: Planning, Designing, and Implementing Information Technology in the Academy*. Bolton, MA: Anker, 1998.
- "Universities re-think undergraduate education." *University Affairs*, 38, 1 (January 1997): 13.
- Watters, Carolyn, Marshall Conley, and Cynthia Alexander. "The Digital Agora: Using Technology for Learning in the Social Sciences." *Communications of the ACM*, 41, 1 (January 1998): 50-7.
- Williams, P.J., Cyrus S. MacLatchy, Philip J. Backman, and Duncan S. Retson, "Studio Physics Report on the Acadia Advantage," <http://www.acadiau.ca/advantage/physics.htm> [1 August 1998].

Reports

- Academic Sector Planning Committee, Acadia University. "An Academic Overview of the Acadia Advantage." May 1997. <http://ace.acadiau.ca/arts/reports/aa-asp.htm> [1 August 1998].
- Baseline Market Research and Maritime Provinces Higher Education Commission. *Final Report: Survey of 1995 University Graduates*. Fredericton, NB: Baseline Market Research Ltd., 1996.
- Centre for Organizational Research and Development. *Current Skills, Trends and Perceptions of Computer Use: The Baseline for Acadia Advantage*. Wolfville, NS: Centre for Organizational Research and Development, 1996.
- Centre for Organizational Research and Development. *The Acadia Advantage First Impressions Survey, September 1996*. Wolfville, NS: Centre for Organizational Research and Development, 1996.
- Centre for Organizational Research and Development. *Computer Use Survey, April 1997. Current Skills, Trends and Perceptions of Computer Use: Time II*. Wolfville, NS: Centre for Organizational Research and Development, 1997.

- Centre for Organizational Research and Development. *Acadia Advantage Student Interviews, April 1997. Current Program Satisfaction and Recommendations for Enhancement of the Acadia Advantage Program*. Wolfville, NS: Centre for Organizational Research and Development, 1997.
- Centre for Organizational Research and Development. *Computer Use Survey, May 1998. Current Skills, Trends, and Perceptions of Computer Use*. Wolfville, NS: Centre for Organizational Research and Development, 1998.
- Clear Picture. "Digital Agora Survey Results, December 1997."
<http://www.clearpicture.com/agora/> [22 January 1998].
- Dean of Arts, Acadia University. "Advantage vs traditional courses." January 1998
<http://ace.acadiau.ca/arts/reports/averages.htm> [19 January 1998].
- Government of Alberta. Advanced Education and Career Development. "Enhancing Alberta's adult learning system through technology." June 1996.
http://www.aecd.gov.ab.ca/dept/system_funding/enhancing_thru_tech/enhancing.htm [10 July 1998].
- Government of Alberta. Advanced Education and Career Development. "New Directions for Adult Learning in Alberta." October 1994.
http://www.aecd.gov.ab.ca/ministry_info/new_directions/new_directions.htm [6 July 1998].
- Government of Manitoba. Education and Training. "Report of the University Education Review Commission: Post Secondary Education in Manitoba: Doing Things Differently." December 1993. <http://www.gov.mb.ca/educate/postsec/roblin/roblin.html> [6 July 1998].
- Government of Nova Scotia. "Main Estimates for the Fiscal Year 1997-98."
<http://www.gov.ns.ca/fina/fedprov/budget97/est/estimate.pdf> [8 December 1997].
- Government of Saskatchewan. Post-Secondary Education and Skills Training. "Public Interest and Revitalization of Saskatchewan's Universities." 1996.
<http://www.sasked.gov.sk.ca/public/index.html> [6 July 1998].
- Human Resources and Development Canada. Office of Learning Technologies. "Lifelong learning on the knowledge highway." August 10, 1995. <http://olt-bta.hrdc-drhc.gc.ca/info/online/highway.html> [6 July 1998].
- Industry Canada. Information Highway Advisory Council. "Preparing Canada for a Digital World: Final Report of the Information Highway Advisory Council." September 1997. <http://strategis.ic.gc.ca/SSG/ih01650e.html> [1 August 1998].

- Maritime Provinces Higher Education Commission. *Final Report: Atlantic Canadian University Study, Class of 1996*. <http://www.gov.nb.ca/acl/mphec/survey.pdf> [1 August 1998].
- Maritime Provinces Higher Education Commission. *Responding to financial challenges, 1996-7*. Fredericton: Maritime Provinces Higher Education Commission, 1996.
- Nova Scotia Council on Higher Education. *Discussion paper on the development of a new funding formula for Nova Scotia's universities*. Halifax: Nova Scotia Council on Higher Education, 1997.
- Nova Scotia Department of Education and Culture. *Public School Programs: 1997-1998*. Halifax: Nova Scotia Department of Education and Culture, 1997.
- Ontario Ministry of Education and Training. Advisory Panel on Future Directions for Post Secondary Education. "Excellence, Accessibility, Responsibility: Report of the Advisory Panel on Future Directions for Postsecondary Education." December 1996. <http://www.edu.gov.on.ca/eng/document/reports/futuree.html> [6 July 1998].
- Ontario Ministry of Education and Training. "Discussion Paper: Future Goals for Ontario Colleges and Universities." July 1996 <http://www.edu.gov.on.ca/eng/document/discussi/postdeng.pdf> [6 July 1998].

Unpublished Works

- Canadian Political Science Association, *1997 Departmental Survey Preliminary Analysis*. Unpublished data, 1997.
- Cohen, Dian. "The University in a Wired World: Some Reflections, Notes for a Convocation Address." Acadia University: 6 May 1996.
- Ettinger, Judy L., *Bridging Theory and Practice: The Democratization of Human Rights Dialogue*. Unpublished Master's thesis, Acadia University, 1997.
- Thomas, John D. "Tom Swift Jr. Meets Clio: Reflections on Teaching Freshmen History in a Mobile-Computing Environment." Unpublished manuscript, May 1997.

Other Electronic Resources

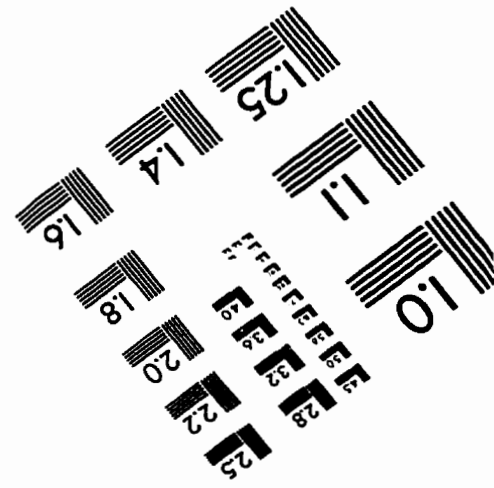
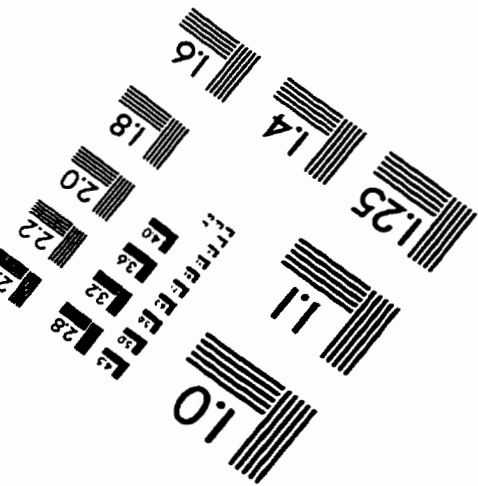
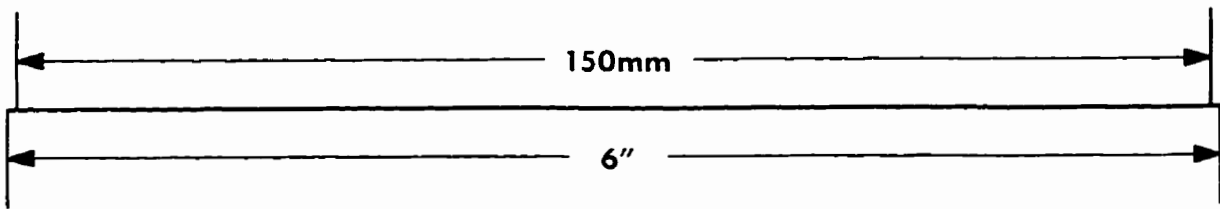
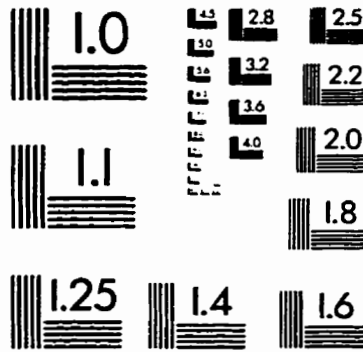
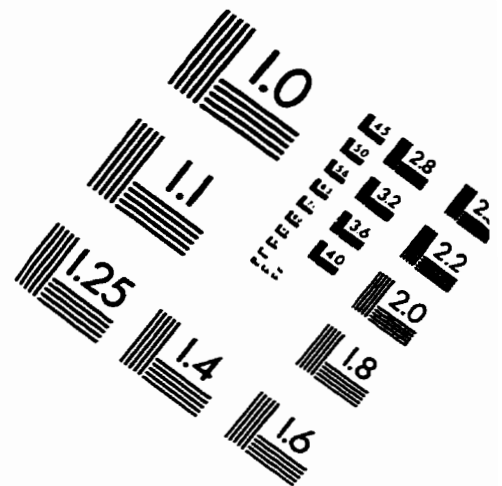
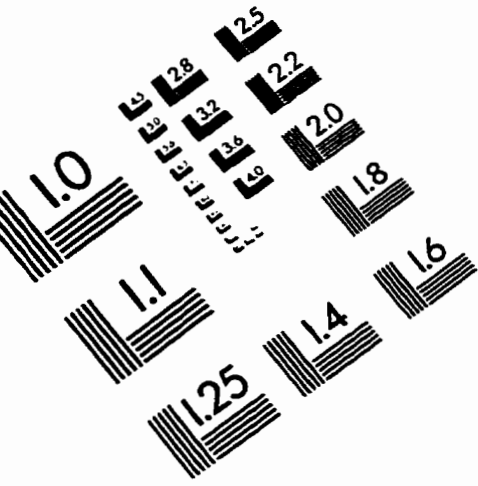
- The Digital Agora*. <http://ace.acadiau.ca/arts/polisci/aa/digagora/> [1 August 1998].
- Emory University. *POINT* (Publication on Information Technology) <http://wcw.emory.edu/POINT/> [1 August 1998].

“Information Imperative Index,” July 1997. <http://www.worldpaper.com/July97/variable.html> [9 October 1997].

Statistics Canada. “CANSIM Matrix 8010: University enrolment full- and part-time, by sex, for Canada and provinces, annual.” <http://estat.statcan.ca/> [20 July 1998].

Statistics Canada. “The Daily, Tuesday, August 5, 1997.” <http://www.statcan.ca/Daily/English/970805/d970805.htm> [8 December 1997].

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