
**Researching Information and Communication Technology (ICT) in
International Education in Post-secondary Education in Canada**

**REPORT ON A SURVEY OF CURRENT USES OF ICTs IN
CANADIAN INTERNATIONAL EDUCATION ACTIVITIES**

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1. EXECUTIVE SUMMARY

Canadian post-secondary institutions have been facing the challenges of integrating ICTs into the design, organization and delivery of educational programs and services, since the rapid proliferation of information and communication technologies (ICT) began in the mid-1990s. The Canadian Bureau of International Education, in collaboration with UBC Distance Education and Technology and FuturEd, have undertaken a four-phase project to contribute to the knowledge base regarding the use and effectiveness of ICTs in international education (IE) activities in Canadian higher education. This report describes the findings of Phase One of the project – a survey of current use of information and communication technologies in international education activities across Canada. Invitations to participate in this online survey were sent to contact individuals in every post-secondary institution in Canada, and both the survey and invitations were distributed in both English and French.

Survey respondents represent universities, colleges, university colleges and cégeps from seven Provinces, and comprise a mixture of administrators, teaching staff, technology support or development staff, and student support/services staff. We recognize that by choosing to distribute an online survey, we probably reached respondents from institutions and regions with active IE programs and staff who have access to the internet and basic ICT skills.

Most respondents agreed that IE has medium or high priority in their institutions. International exchange and internship programs are the most common IE activities in responding institutions, and the predominant uses of ICTs are email and website distribution of international education information, and the facilitation of communications between students and instructors. To a lesser extent, ICTs are employed to deliver or supplement courses, or to support collaborative projects. Fewer than 25% of respondents regularly use any form of internet conferencing, or portals.

Most respondents believe that ICTs can increase access to educational activities for students, and can improve the quality of learning, but a majority note that staff time, skills with ICTs, attitudes towards technology, and cost, all impact the degree of ICT integration into IE activities. Nonetheless, most feel that ICT integration is progressing at an appropriate rate, indicating a general embracing of the educational potential of

ICTs. In particular, roughly half of respondents feel that their ICT-mediated activities are already helping students develop personal, professional, technical and intercultural skills, and two thirds foresee that course and program design and delivery will benefit most from further ICT use. All predict that ICTs will be important in future IE activities in their unit or program.

Our findings suggest that current use of ICTs is predominantly in support of pre-existing programs and activities, and is currently conservative in scope, being mostly employed for information distribution and exchange. Innovative uses of ICTs, where they exist, are decentralized, and largely at the course or program level. There is clear enthusiasm for future ICT innovations in the area of IE, but a number of concerns emerge. Educators worry that the Anglo-American culture of the internet may actually limit student's intercultural experiences online. Economic and technological factors are also a concern, with some cautioning that technology should not drive program curriculum or design. Most significantly, IE professionals worry that ICTs may be used to replace rather than supplement in-person IE activities, and that this would significantly reduce the intercultural learning and relationship building that students experience in face-to-face activities. It must be kept in mind, however, that a majority of respondents who expressed opinions about the educational effectiveness of ICTs may have limited experience of the range of possibilities offered by new educational technologies.

Despite some reservations about the choice and degree of ICT applications, IE practitioners are strongly convinced of the importance of ICTs in the future of international education programs and services. In the next phase of this study we will explore in greater depth a number of innovative projects at Canadian Universities and Colleges in which ICTs are used to deliver or supplement international education programs. These projects are diverse in developmental design, educational objectives, field of specialization, funding and staffing. When prepared as case studies, these projects will provide useful examples of lessons learned, preoccupations and problems arising from the use of ICTs in IE, and assist in the identification of emerging innovative practices in Canadian ICT-mediated IE activities.

2 INTRODUCTION

The uses of information and communication technologies (ICTs) are currently transforming many dimensions of social, economic and cultural organization worldwide. Higher education has been experiencing the impact of ICT use for decades, especially within the domains of academic research and institutional communication. The classrooms of Canadian post-secondary institutions, however, did not begin to feel the effects of ICT use until the proliferation of internet technologies in the mid-1990s. Since that time, and with increasing levels of intensity, academic departments, student service providers, and senior managers alike have been facing the challenges associated with the growing use of ICTs in the design, organization and delivery of educational programs and services.

2.1 Project Goals

The primary goal of this four-phase research project is to contribute to current knowledge about technology use and effectiveness in international education (IE) within Canadian post-secondary institutions. To that end, the project also aims to provide useful analytical frameworks and tools to assist international education providers in making decisions about the mix of educational approaches they wish to adopt in their IE programs and services. More specifically, the project attempts to accomplish the following:

- To provide a snapshot of current ICT use in international education at the public post-secondary level across Canada
- To identify and evaluate lessons learned in the use of ICT for international education. These include perspectives on emerging problems and preoccupations resulting from ICT use in IE programs and services, and examples of successful innovation in the application of ICTs in international education.
- To assess the similarities and differences in personal receptivity (e.g., satisfaction levels etc.) and skill acquisition of physical and virtual mobility and propose best practice approaches/models.

2.2 Research Context and Partners

This research project was initiated by the Canadian Bureau of International Education (CBIE) to study the use and impact of ICTs on IE practice in Canadian post-secondary education. The CBIE has undertaken this study with the support of Human Resources Development Canada's (HRDC) Office of Learning Technologies (OLT), in partnership with The University of British Columbia's Distance Education and Technology unit, and with FuturEd, an independent consultant firm specializing in education innovation. The project began in April 2001 and is scheduled to conclude in December 2002.

2.3 Structure of the Project

The project has four main areas of focus:

1. The uses of ICTs in post secondary international education
2. Competency development through international education
3. Preoccupations and lessons learned
4. Assessing career impact and comparing forms of international education delivery

Each phase of the study entails literature and environmental reviews, data gathering and analysis, and the synthesis of results into a report for wider dissemination and use. A combination of quantitative and qualitative approaches has been used throughout the study.

2.4 The Management and Advisory Committees

The Project Management Team comprises researchers from the three collaborating partners (CBIE, UBC Distance Education and Technology, and FuturEd). A Project Advisory Committee was established at the outset with membership from the Southern Alberta Institute of Technology (SAIT), New Brunswick Tele-Learning, Industry Canada and The Commonwealth of Learning. The advice of this committee provided critical guidance and perspective for both the Project Management Team and for the contributing research partners.

Phase One of the project was launched with a national survey on uses of ICTs in IE developed by the research team of the UBC Distance Education and Technology unit. FuturEd undertook a general review of current literature related to the uses of ICTs in IE in post-secondary education in Canada (Barker, K., 2001). While the UBC team took primary responsibility for the design, development and delivery of the survey, the analysis of the data, and the drafting of this Phase One Survey Report, the Project Management Team and Project Advisory Committee also contributed important guidance.

2.5 Why a Survey?

Although there is active discussion in the IE field concerning the advantages and disadvantages of ICT use, no actual data could be discovered in the literature to help identify current levels and types of technology use in international education programs and services in Canada (Barker, K., 2001). During the development of the project proposal, we therefore decided that a formal survey of post-secondary institutions across Canada would facilitate the creation of “a snapshot” of ICT use in current IE practice.

This report includes a description of, and commentary on, the survey results, a discussion section which highlights themes emerging from the survey data, and finally, some concluding remarks which identify questions to be answered by further research.

3 RESULTS

3.1 Respondent Demographics

Who responded to our survey? Where do they live and work? What are their roles in the development and promotion of international education? And what can this information tell us about where, and to what end, ICTs are currently being used in Canadian IE activities?

Fifty two individuals completed the survey, either online, or, in a few cases, by filling in a printed version by hand, between August and November 2001. Unfortunately, technical difficulties related to software(Appendix A) rendered nine sets of responses invalid, leaving a pool of 43 valid sets for analysis. While this number is lower than we would have liked, we feel that the sample group may well be representative of the range of institutions and individuals across Canada who design or coordinate IE activities at Canadian public post-secondary institutions.

3.1.1 *Distribution of Respondents by Type of Institution*

Twenty six respondents (60.5%) are employed by 16 Canadian universities in Western, Central and Atlantic Canada; four respondents (9.3%) are employees of university colleges or other degree-granting non-university institutions; and 11 respondents (25.6%) work in Canadian colleges across the country (Figure 1).

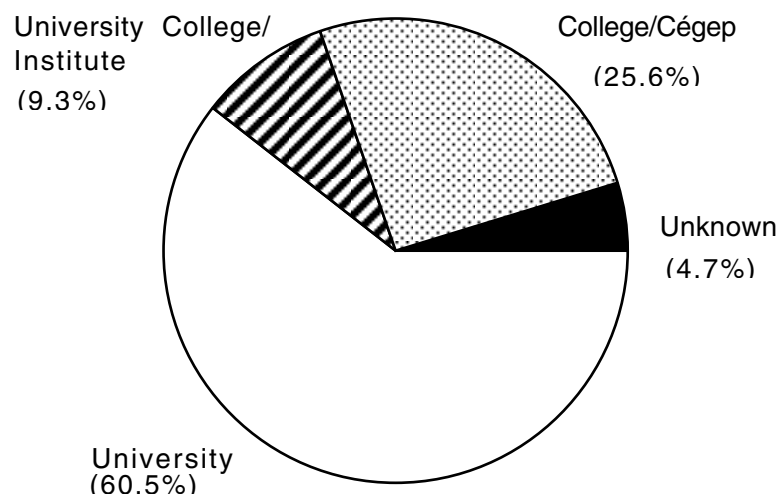


Figure 1. Distribution of Respondents by Type of Post-Secondary Institution

Although colleges, university colleges and cégeps significantly outnumber universities in Canada (Table 1), the most recent figures available from Statistics Canada (2002) show that Canadian universities are currently enrolling more than 60% of Canada's full-time and part-time students, while colleges and other institutions enrol less than 40% of the total student body. Consequently, the institutional distribution of our respondents effectively represents the institutional distribution of students they serve.

Table 1. Publicly-Funded Post-Secondary Institutions in Canada

Province/Territory	Universities	University Colleges/ Institutes	Colleges/ Cégeps	Total
British Columbia	7	14	11	32
Alberta	4	3	18	25
Saskatchewan	2	7	9	18
Manitoba	3	1	7	11
	(16)	(25)	(45)	86
Ontario	18	2	28	48
Quebec	15	3	20	38
	(33)	(5)	(48)	86
New Brunswick	5	0	12	17
Newfoundland	1	0	8	9
Nova Scotia	6	4	3	13
PEI	1	0	3	4
	(13)	(4)	(26)	43
Yukon	0	0	1	1
Nunavut	0	0	1	1
Northwest Territories	0	0	1	1
	(0)	(0)	(3)	3
TOTAL	62	34	121	217

These data were compiled by cross-referencing membership lists provided by the Association of Universities and Colleges of Canada (AUCC, 2002) and the Association of Canadian Community Colleges (ACCC, 2002) with information obtained from Provincial and Territorial Ministries. Geographically distinct campuses of a larger institution were counted as individual institutions. Figures in parentheses are regional institutional sub-totals.

3.1.2 Geographic Distribution of Respondents

Respondents are employed in seven provinces, with the largest proportion (17, or 39.5%) from British Columbia, and a similarly large proportion (14, or 32.6%) from Ontario. Distribution by Province/Territory and by region are shown in Table 2 and Figure 2, respectively.

Table 2. Distribution of Respondents by Province or Territory.

Province/Territory	#	%
British Columbia	17	39.5
Alberta	4	9.3
Saskatchewan	0	0
Manitoba	0	0
Ontario	14	32.6
Quebec	2	4.7
Newfoundland	2	4.7
Nova Scotia	1	2.3
New Brunswick	1	2.3
PEI	0	0
Yukon	0	0
NWT	0	0
Nunavut	0	0
Did not state	2	4.6
TOTAL	43	100

Both Central and Western Canada are centred around large and culturally diverse urban centres which attract international business, tourism, settlers and students – features which we believe stimulate interest in intercultural and international exchange. For this reason alone, one might expect these regions to be at the leading edge of Canadian IE activities, and this is confirmed by the predominance of respondents from these regions.

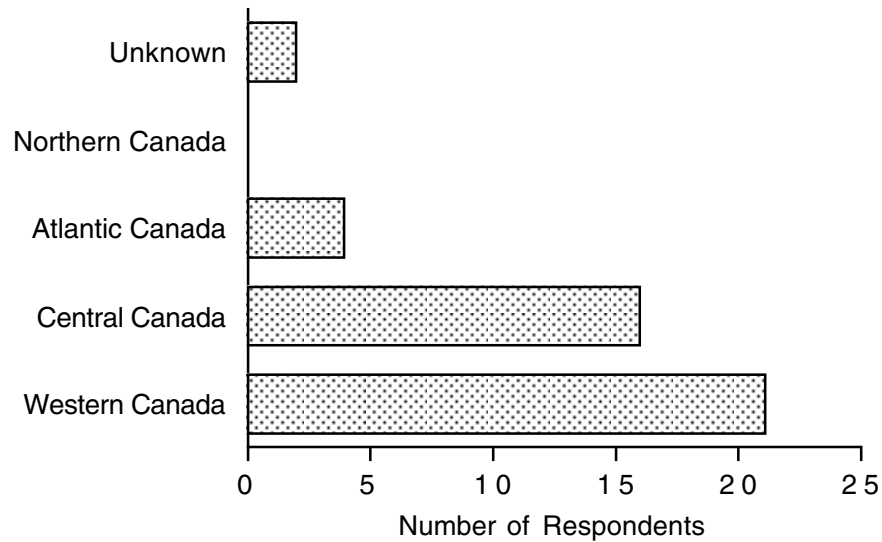


Figure 2. Distribution of Respondents by Region of Canada

Why does such a large proportion of respondents hail from Western Canada, when it is relatively less populated compared to Central Canada? Central Canada is almost three times more populous than Western Canada, and caters to more than twice as many post-secondary students as Western Canada (Statistics Canada, 2002). On the other hand, it should be noted that Central and Western Canada have equal numbers of post-secondary institutions (Table 1). (Central Canada has more large universities, the West has a greater number of smaller colleges, university colleges and other non-university degree-granting institutions). Because we invited institutions, irrespective of student enrolment, to participate in the study, the similar number of responses from Central and Western Canada may well reflect a similar institutional response rate (20-25%) in both regions.

Moreover, British Columbia hosts almost twice the proportion of international students as Ontario (AUCC, 2000), which may indicate that Western Canadian institutions employ proportionately more staff in IE activities (relative to absolute student numbers).

Lastly, it is also possible that Western Canadian institutions may have given more credence to a request for participation in a UBC-coordinated survey than non-Western institutions, further boosting the number of Western Canadian respondents.

3.1.3 Distribution of Respondents by Professional Roles/Responsibilities

The large majority of survey respondents (66.7%) stated that they represent organizational units serving their entire institution, while 26.1% come from specific academic departments.

Respondents were invited to list their title, the name and URL of their program, unit or office, and their institution, allowing us to infer some information about their primary roles and responsibilities in the area of IE (Table 3).

Table3. Professional Role(s) of Survey Respondents

Professional Roles & Responsibilities	#	%
Support of International Students	20	46.5
Administration	9	20.9
Faculty Member/Instructor	10	23.3
Technological Support/ Development	2	4.65
Student Services	1	2.3
International Exchange Programs Coordination	16	37.2
Did not state	3	7.0

Interestingly, although our survey clearly outlines a definition of international education for the purposes of this survey as

“courses, programs and support services developed for Canadian undergraduate students in Canadian post-secondary institutions”,

almost half (20, or 46.5%) of respondents indicated that they are affiliated with a unit, department or program whose primary role (based on a survey of institutional websites) appears to be the recruitment and support of international students. Indeed, one respondent explicitly stated:

“In our institution, international education mainly has to do with receiving international students”.

Nonetheless, a significant number of respondents (16, or 37.2%) also indicated that they have responsibility for international programs (exchanges, internships, study abroad programs) which involve Canadian students.

Nine respondents (20.9%) indicated that their primary role is administrative - they are Managers, Deans, Directors or Coordinators of programs, departments or centres -

while 10 respondents (23.3%) are faculty members or instructors in academic or teaching units. Surprisingly, only two respondents describe their professional role as being one of technological support or development, suggesting that many institutions are depending on existing staff to develop skills with ICTs, rather than employing ICT specialists in the area of international education. (This is reinforced in Figure 8 which shows that 37 respondents (87.8%) feel that “staff skills with ICT” is a ‘quite important’ or ‘very important’ factor influencing the use of ICTs in their unit or program.)

3.2 International Education Activities in Canadian Post-Secondary Institutions

How important is international education within Canada’s post-secondary institutions? A large majority (92.9%) of survey respondents rated IE as a high or medium priority activity at their institution, suggesting that most institutions at least profess a strong commitment to international education and its value for Canadian undergraduates.

Within the broad category of ‘international education’, what kinds of IE activities are being promoted in Canadian post-secondary institutions?

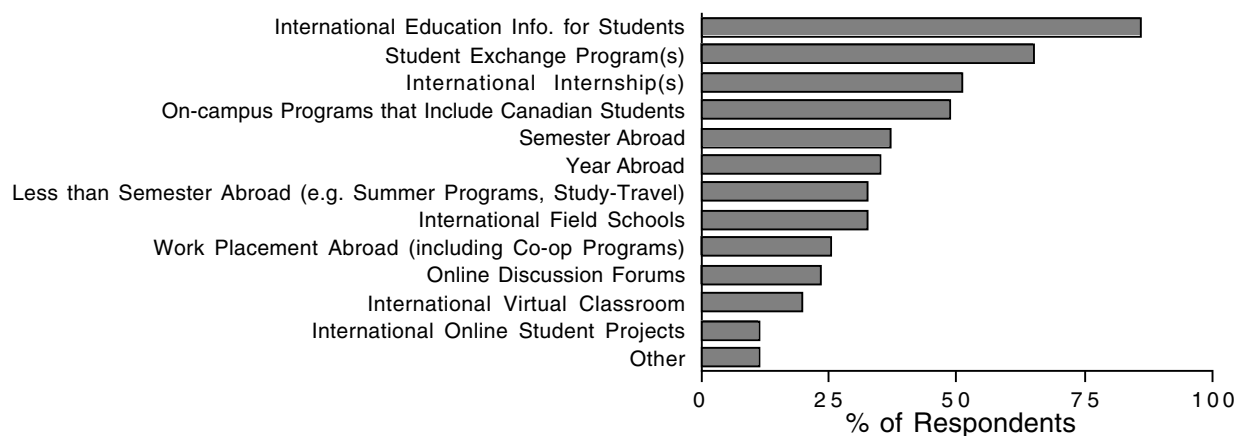


Figure 4. Types of International Education Activities Coordinated by Survey Respondents

As is evident in Figure 4, there is considerable diversity in the types of IE activities available within institutions. In addition to the categories shown, individual respondents mentioned that their units, centres or programs also coordinate or support “international research assignments”, “ESL programs for international students”, “pre-program preparation and post-program debriefings for participants in international education

activities”, “training programs for international teaching assistants”, and “executive training programs for international professionals in partnership with other faculties and organizations”, as well as “emergency support services for outgoing and incoming students”.

Nevertheless, respondents are, for the most part, working in units which provide information about IE programs and opportunities, rather than being involved in the actual delivery of ICT-supported IE activities such as online discussion forums (23.3%), virtual classrooms (11.6%) or online student projects (11.6%).

3.3 Current Use of ICTs in International Education Activities

To allow us to develop a ‘snapshot’ of current ICT use in IE activities in Canadian institutions, and the factors dictating current use, we asked respondents to tell us which ICT media they used frequently, and what kind of IE activities were supported by ICTs at their institutions. Moreover, we gave respondents the opportunity to indicate which factors they felt were driving the adoption of ICTs by their institutions, and which factors might be limiting ICT use. Finally, and to try to gauge respondents’ level of comfort with the current rate of ICT integration into their institution, we asked them to give their opinion on ICT adoption rate.

3.3.1 Uses of Different ICT Media

PriceWaterhouseCoopers (2000) found that 94% of Canadians use the internet for sending and receiving email, and for researching and getting information. All other potential uses of the internet (such as reading online magazines or newspapers, participating in on-line chat rooms, two-way voice communications, shopping) are accessed by fewer than 55% of Canadians and only 2% of Canadian respondents in that study indicated that they access educational opportunities via the internet.

It is perhaps not surprising, then, to discover that email and websites are the most common ICTs employed by educators in the promotion of international activities in Canadian post-secondary institutions (Figure 5).

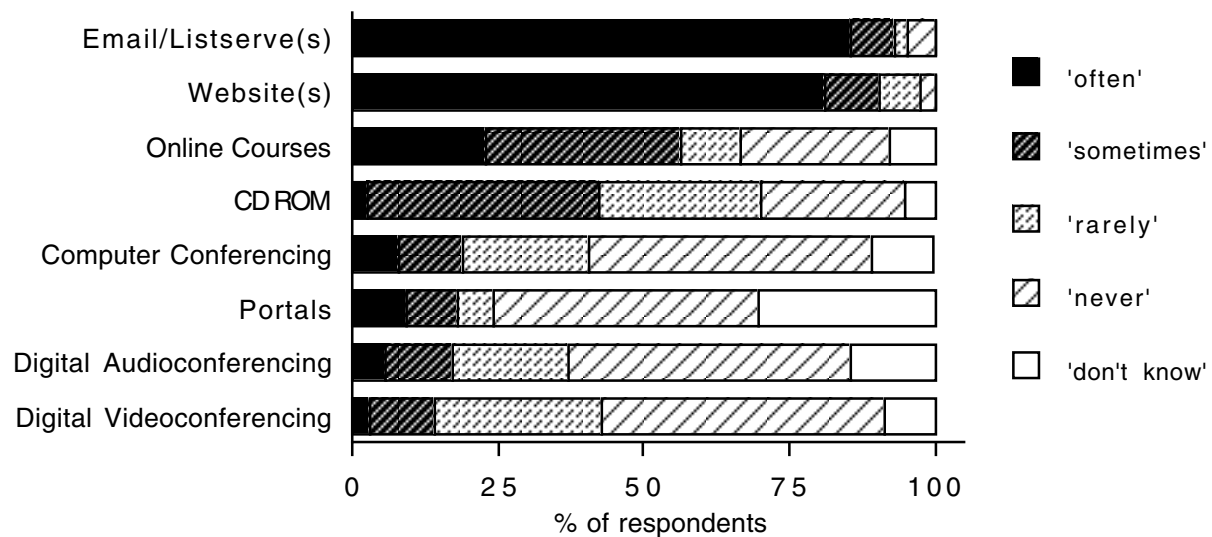


Figure 5. ICT Media Used by Respondents to Enhance/Support International Education Programs and Activities

More than 90% of survey respondents indicated that they use email and websites 'sometimes' or 'often' to enhance or support IE activities. At the other end of the spectrum, more than half of respondents 'rarely' or 'never' use the more recently developed interactive ICTs such as computer-, digital audio- and digital video-conferencing. These figures probably reflect current technical skill-level and financial realities of educational institutions with regards to the various technologies. Email and web-browsing software packages are now well-established and ubiquitous, often free or very cheap, increasingly user-friendly, and accessible by users with very limited bandwidth connectivity, and low-memory/low-processor-speed hardware. Conversely, the hardware required for live conferencing communications is expensive, and both hardware and software still suffer from technical problems, are still in the developmental stage, function best with high-speed high-bandwidth connections (unavailable to many users) and require acquisition of considerable new technical skills on the part of users.

Only 1 (2.5%) respondent described that he/she uses CD ROMS 'often' (although 40% indicated that they sometimes use CD ROMS). Again, financial factors may be key: CD ROMS are expensive to buy or develop, and quickly become outdated. Finally, 45.5% of respondents told us that they never use portals, and in fact 30.3% indicated

that they did not know about Portal use. We believe that this reflects the fact that Portals are a very new technology that as yet have not entered the wider domain of ICTs.

Finally, we note that 43.6% of respondents agree that they 'sometimes' or 'often' use online courses (although one quarter, 25.6% responded that they never do). While this figure does indicate an interest in developing and exploring the internet as an interactive learning environment for students, it unfortunately gives us no information about the format or quality of these courses. A closer examination of our survey data reveals that of 19 respondents who 'sometimes' or 'often' use online courses, only two 'never' or 'rarely' use email or websites. This suggests that many 'online courses' may simply employ the 'basic technologies' of email and websites to distribute or share information.

3.3.2 International Education Activities Supported by ICTs

Figure 6 shows the percentage of respondents who agree that they 'sometimes' or 'often' use ICTs to support a variety of specific IE activities.

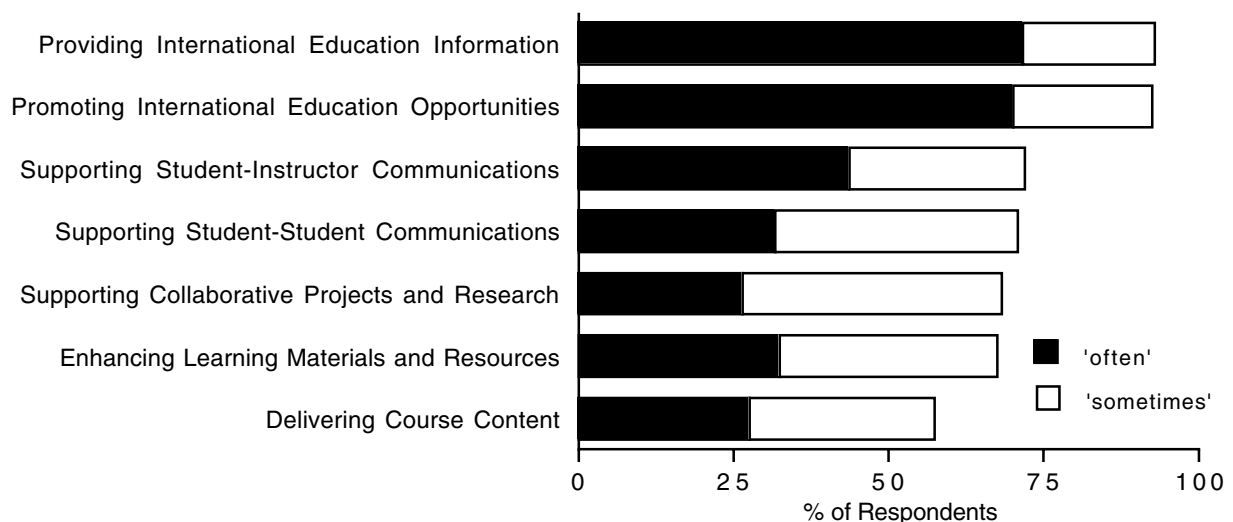


Figure 6. Applications of ICTs in International Educational Activities

Consistent with the high frequency of email and website use, the bulk of respondents (more than 90%) indicated that they used ICTs to provide information about and promote international education opportunities. Email, and to a lesser extent websites, are likely the media used most commonly in supporting student-student and student-

instructor communications, as well as in supporting collaborative projects and research, and perhaps even in delivering course content, as discussed above. Again, only one third of respondents reported that they often used ICTs to deliver course content or enhance learning materials and resources, and similar proportions (35.0% and 20.0%) reported that they never or rarely used ICTs in this way. Although we gave respondents the option of describing other possible applications of ICTs in their IE activities, no further applications were described.

3.3.3 *Why Are ICTs Used in IE Activities? And Why Not?*

Almost 60% of respondents identified the changing learning needs of Canada's student population as a significant driving force behind the introduction of ICTs into IE programming. Close to 90% recognized that ICT use improves access to IE opportunities for a student population that is increasingly likely to have work or family commitments, or to be located far from an institution offering IE activities (Figure 7).

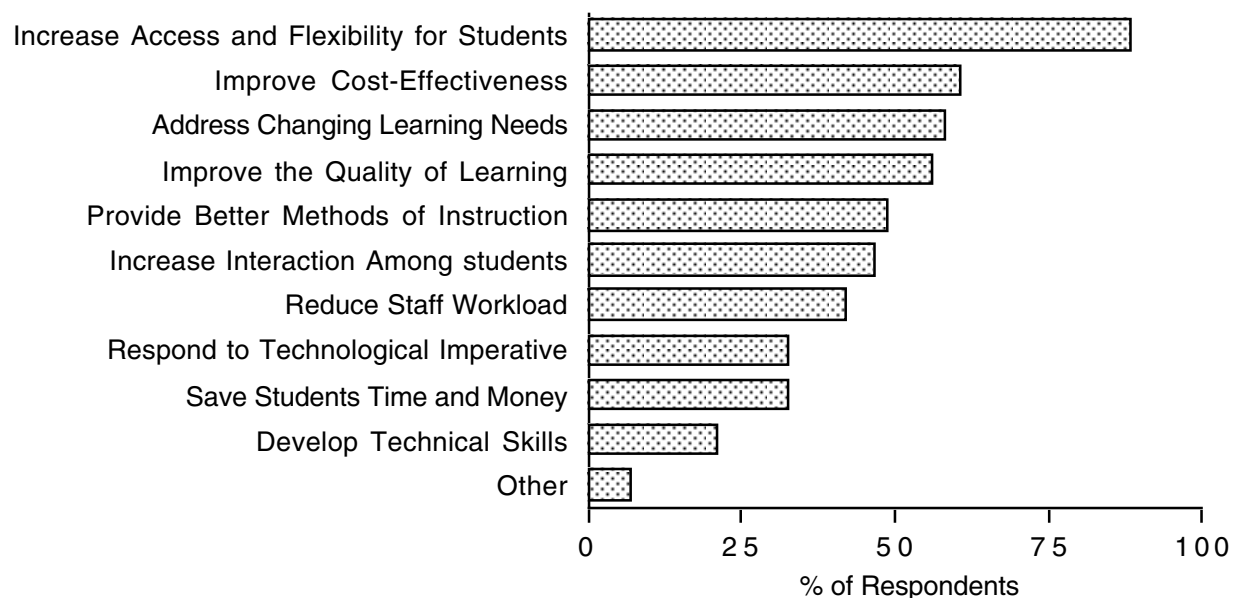


Figure 7. Reasons for ICT Use in International Education Activities

Around 50% of respondents also agreed that ICTs “provide better methods of instruction” and “improve the quality of learning”, although it is unclear by what measures they might be assessing instructional quality or learning outcomes.

Interestingly, 42.9% believe that ICTs are being introduced to “help reduce staff workload”, even though recent studies have found that online education requires a greater investment of staff time than more traditional face-to-face teaching (Sorg *et al.*, 1999). It is possible, however, that this perception is a result of redistribution of workload that may result from implementation of ICTs (for example, from student services staff to ICT developers and support staff). In apparent contrast to the notion of reduced staff workload, a majority of respondents (85.7%) also believe that ‘Staff Time’ (or, we deduce, the lack of) is the most significant factor limiting the integration of ICTs into IE activities (Figure 8). Clearly, there is a gulf between what IE educators *believe* to be the positive benefits of ICT use, and the real time and skill demands of implementation that they are actually experiencing.

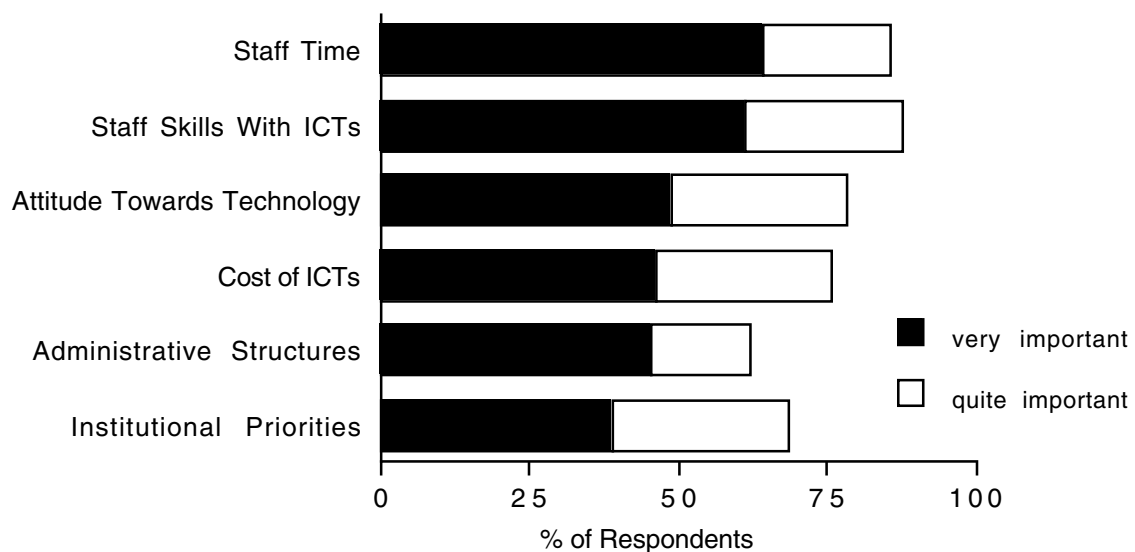


Figure 8. Factors Limiting ICT Use in International Education Activities

It remains to be seen whether staff workloads will truly be reduced after institutions have passed the initial hurdle of ICT integration into their activities, or whether ongoing development and maintenance will continue to make heavy demands on staff time and skills.

Equally as important as workload issues, 87.8% of respondents cite “staff skills with ICTs” (or lack of skills) as a ‘quite important’ or ‘very important’ factor impacting ICT use in their unit or program – perhaps a predictable response from a pool of respondents in which only two are technology specialists. As described in section 3.2.1,

a significant proportion of Canadians continue to feel ‘technologically incompetent’ when faced with ICTs.

We note that almost half (46.5%) of respondents believe that ICTs are being used to increase interaction among students (with the implicit assumption that increased interaction in itself is both desirable and beneficial). In addition, individual respondents added that the potential for increasing student-instructor interaction and the facilitation of distance learning are factors promoting the introduction of ICTs.

3.3.4 The Rate of Institutional ICT Adoption

Figure 9 gives us a clear window on the attitudes of ‘international educators’ towards the introduction of ICTs into IE activities (Figure 9).

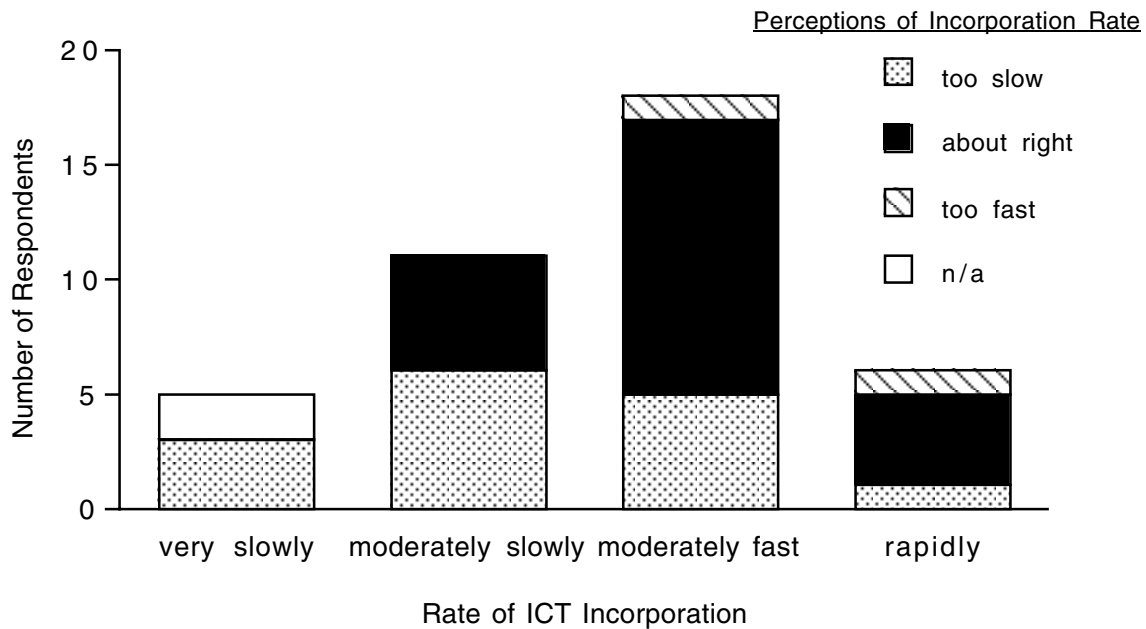


Figure 9. Perceptions of the Rate of Incorporation of ICTs into IE Activities

Personal experiences of the rate of ICT adoption vary, but the majority (60.0%) of respondents characterize the rate of introduction of ICTs in their institutions as ‘moderately fast’ or ‘rapid’, and fewer (40.0%) characterize the introduction rate as ‘moderately slow’ or ‘very slow’. Importantly, a majority (52.5%), whether they believe the rate is slow or fast, are comfortable with this rate, assessing it as ‘about right’. Only two respondents feel that the rate of introduction is too fast. Overall, this gives an

impression of a pool of educators who are embracing the introduction of ICTs into their professional and educational activities. This is reflected in the finding that 78.1% of respondents believe that ICTs will be ‘very important’ or ‘quite important’ in the future educational activities of their unit or program.

3.4 Anticipated Outcomes of ICT Use

3.4.1 Which skills can students develop through the use of ICT resources?

Our respondents clearly anticipate increased application of ICTs in IE activities in their institutions, and a significant proportion believe that ICTs will provide students with access to “improved teaching strategies and learning opportunities” (Figure 7). In an attempt to elucidate more clearly the projected learning outcomes of ICT-mediated IE activities, we asked respondents to indicate the skills they feel that their students are developing using ICT resources.

Table 4. Skills Developed Using ICT Resources

Skill Set	Yes	No	Don’t Know
a) Personal Skills? <i>communications, tolerance, leadership</i>	18 (43.9%)	14 (34.1%)	10 (24.4%)
b) Technical/Professional Skills? <i>problem-solving, technical knowledge, negotiation skills, strategic thinking</i>	19 (46.3%)	16 (39.0%)	6 (14.6%)
c) Intercultural Skills? <i>ability to operate in other cultures, international job experience, language capabilities</i>	20 (48.8%)	12 (29.3%)	9 (22.0%)

Interestingly, Table 4 shows an almost perfect split between respondents who believe that their students are acquiring personal, technical, professional and/or intercultural skills using ICT-mediated learning environments, and those who do not. This split may well illustrate the current division of opinion amongst educators regarding ICT-mediated educational activities generally, and the quality of learning these activities

may provide. Nonetheless, it must be remembered that a majority of respondents previously indicated that they have only limited experience incorporating use of educational technologies into design of IE activities. This lack of experience undoubtedly influences their understanding of the educational potential of new technologies. Below, we give examples of the positive and enthusiastic comments of respondents about the utility of ICT-mediated learning (For a discussion of concerns with ICT-mediated IE activities, see the discussion).

a) Personal Skills

In the area of personal skills, a number of respondents commented that ICT-mediated IE activities allow students to acquire and practice ‘communication skills’, and specifically communication skills for an online environment. With the rapid growth of ICT-mediated communication use in all areas – education, business and ‘leisure’ – ‘online communication’ might rightly be considered a new form of communication, with its own norms and pitfalls. Learning to become a better online communicator might therefore be one of the most obvious benefits for a student of participation in ICT-mediated activities. Related to this, other respondents commented that ICT resources are being used in their institution to help students *“develop team building and group skills, especially when the team or group involves international students”* and to encourage them to *“work effectively in cross-cultural groups”* or *“develop intercultural communication skills”*, highlighting the fact that global electronic communications by definition will involve individuals from divergent cultural and linguistic backgrounds – factors which impact communication style (see Chase *et al.*, 2002, and references therein). Learning to be an effective online communicator therefore encompasses the ability to recognize and work with different communication styles, as well as to maximize clarity and creation of shared meaning.

Others pointed out that web-based resources originating from non-Canadian sources

“give widely varying perspectives on subjects that are traditionally viewed in another light at home. These varying view points can change students’ orientation to the subject.”

In a similar vein, another notes that their institution’s online resources and programs

[focus on] not just tolerance but inclusivity of different worldviews”.

In essence, these enthusiasts highlight the fact that ICT-mediated activities can challenge students to become more effective communicators with the diversity of correspondents they encounter 'electronically', and to consider carefully the ideas and opinions offered by their global partners in communication.

b) Technical Professional Skills

Respondents identified 'ICT skills' as a primary area of learning for students using ICT resources, and rightly argue that these skills are now necessary prerequisites for most professional work in the modern world. Individuals variously noted that students learn to "*access information...via the web*", that they learn to "*use..technology to meet learning needs*" including "*conferencing, chat-rooms and web based learning*". Others noted that some online courses are now available whose primary purpose is to teach technical skills, for example

"some online courses are available for learning to use programs that assist in presenting subject matter or operating essential equipment".

Another notes that his/her institution offers online Computer Technician's certification.

With reference to the survey definition of technical/professional skills, eight individuals added commentary describing skills in this category that they believe their students are acquiring through use of ICT resources. These include "*problem solving and critical thinking skills*", "*critical dialogue*", and "*constructivist [learning]*". In other words, they feel that these important learning outcomes, which in the past have been delivered solely by face-to face teaching methods, are now accessible through ICT-mediated routes, although one educator laments:

"somewhat this happens through the online discussions and feedback...[we] could do much more",

giving an indication that supporters of ICT-mediated learning nonetheless recognize that this medium is still under development, and that the full potential of ICT-mediated activities have yet to be explored.

c) Intercultural Skills

Although almost half of our respondents believe that students can acquire "intercultural skills" via ICT-mediated resources, a majority define such skills as simply

an acquisition of language skills or knowledge of “cultural protocol”. Two respondents mentioned that their units offer ICT-mediated language programs, and others describe ways that their units use ICTs to provide or distribute information about international opportunities, host countries and institutions, and ‘pre-departure preparation’ information for sojourners.

However, a few recognize the importance of intercultural contact (“*one learns by interacting with other cultures*”) and communication for complex learning about culture difference, mentioning that their units use “*simulation games*” and exercises to expose students to culturally different ideas and individuals. In particular, one unit offers programming specifically designed to teach “*strategies to communicate more effectively across cultures*” using “*case studies, critical incidents and personal stories...as the basis of analysis and exploration of alternate solutions*”. While this commentary suggests that it is possible to teach intercultural communication skills and ideas using ICT-mediated activities, it remains to be determined whether simple ICT-mediated intercultural contact allows acquisition of intercultural skills as a by-product of activities with a different academic focus.

3.4.2 Which aspects may be diminished by ICT use?

To take a measure of respondent concern about the use of ICTs in IE activities, we asked which aspects of IE they believed might be diminished by the introduction of ICTs. One respondent pointed to the Anglo-American cultural hegemony of the electronic medium, arguing that cultural immersion can actually be reduced through ICT use, by allowing students to “*relate too often to the home culture*” and making it easy for students to “*communicate in their native language online*”, reducing activity in the “*host language*”.

The most apparent concern, however, is clearly that ICT use will be introduced to replace “*the actual cultural experience*”. “*Face to face contact*” will be diminished, notes another respondent, with “*virtual entertainment replac[ing] real experience*”. A number of respondents clearly fear that ICT use in international education will “*reduce interpersonal relationships between Canadians and people from other countries*”, diminishing the potential for true relationship-building that many feel is crucial for building good international relations. Another feels that ICT use risks diminishing

“establishment of lasting human relationships, limiting frequency and type of interaction between students and facilitators, complex communications”

and significantly, a further respondent elaborates on the complexity of human communications by adding that opportunities for *“side bar discussions that occur in campus corridors and coffee shops”* will be reduced, articulating a common feeling that meaningful relationship building often occurs ‘outside of class’. In all, respondent commentary highlights a lasting concern, in the face of ICT marketing rhetoric, that ICT use will be introduced to replace (rather than supplement) *“actual [inter]cultural experience”* and will in fact reduce *“opportunities for studying abroad...and deeper understanding of cultural diversity”*.

4 DISCUSSION

A number of themes relating to the adoption and use of ICTs in post-secondary international education emerge from the survey data. Some clearly arise from individual judgments and discriminations about the appropriateness of ICT use for IE purposes. Others can be linked more directly to organizational patterns and priorities within the responding post-secondary institutions.

4.1 Respondent Demographics Reflect Regional and Institutional Differences in ICT Use

Before further discussion of the survey results, we would like to pause and consider the broader implications of the data we did not collect with this survey, and the respondents whom we did not manage to recruit. What can we learn about the use of ICTs in the international education sector by considering who did NOT respond? Based on a current estimate of 217 publicly-funded post-secondary institutions in Canada (Table 1), our pool of responses from 28 institutions represents a per-institution response rate of only 12.8%. Moreover, and in spite of a comprehensive distribution and follow up strategy (see Appendix A), we failed to recruit respondents from institutions in the three northern territories, Manitoba, Saskatchewan or Prince Edward Island. The relatively low response rates from Quebec and from Atlantic Canada were also disappointing. What factors may have contributed to this low response rate?

4.1.1 *Technological Selection*

By making this survey available almost exclusively in electronic form, accessible only through the internet (except for a small number of surveys completed on paper at the Annual Conference of the Canadian Bureau for International Education (Banff, November 2001)), we automatically selected against IE professionals who do not have easy internet access in their institution, or who are not confident using ICTs. Since our primary interest was in the nature rather than the level of ICT use in post-secondary International Education, the Project Management Team felt that online survey distribution was appropriate. The issue of technology adoption is non-trivial, however,

when attempting to draw a realistic picture of ICT supported educational practice in the IE field.

One recent government-funded study of the remaining pool of "non-users" of the internet (Reddick *et al.*, 2000) found that for about half of all "non-users" of ICTs, lack of technical proficiency and understanding, and thus confidence, is a significant obstacle. Nor is the pool of non-users insignificant: in 2000, 59.5% of Canadian households did not have internet access, and 72.5% of households had no members who accessed the internet at work (Statistics Canada, 2000). These investigators did find that internet use is more prevalent in the college-educated (51%) and university-educated (70%) sub-populations, suggesting that employees of post-secondary institutions are far more likely to be technologically competent ICT users.

Statistics regarding internet use are changing rapidly; nevertheless, it is likely that some potential respondents did not complete the survey due to access problems, or because they did not feel sufficiently knowledgeable to comment on general ICT use at their institution. Finally, hesitation to respond could also be attributed to individuals in institutions where ICTs are not being actively integrated into educational activities at this time.

4.1.2 *Economic Selection (a Digital Divide)*

A number of economic factors are also likely to have influenced the response rate from other regions of the country. A "digital divide" (Reddick *et al.*, 2000) separates large institutions (primarily universities), where economies of scale make installation and maintenance of technological infrastructure cost-effective, from small colleges and schools whose budgets limit their capacity to implement ICT use widely (Campus Computing International/Industry Canada, 2000). This may help explain why we were able to recruit respondents from 25.8% of Canada's universities, but from only 7.7% of the smaller colleges and university colleges.

Low response from Northern and Atlantic Canada is perhaps more difficult to explain, and at this point we can only speculate on the combination of factors contributing to our lack of data from these regions. It is clear that these regions have fewer and smaller post-secondary institutions for whom the costs of managing a

technological infrastructure are likely more onerous, but in some cases, New Brunswick for example, there has also been significant infrastructure and program development. Northern and Atlantic regions are relatively more culturally homogeneous, and lack large urban centres where intercultural and international exchange may have a higher profile. In addition, both regions serve communities with fewer economic resources (Statistics Canada, 2002), and potentially less ubiquitous access to the internet and associated attitudes and skills.

4.1.3 *Cultural and Content Selection*

Linguistic and cultural barriers likely also contributed to the relatively low response rate from Quebec and from Northern Canada (Reddick *et al.*, 2000). Compared to other Canadians, Quebecers are less likely to have internet access at home, and spend less time using the internet (PriceWaterhouseCoopers, 2000). According to a 1998 study commissioned by the Canadian Office of Learning Technology (Groupe Communicom, 1998), with the notable exception of centres such as the Télé-Université of the Université du Québec (Téluq), CITME at Laval University, the GRAIM, Cégep Bois-de Boulogne and Cégep de Maisonneuve, “blackboards, paper and pencil and lecture-discussion are the order of the day” (Groupe Communicom, 1998) in public or private Québec schools.

In this same report on uses of new learning technologies and media in Québec, the authors note that “the market for educational software and multimedia applications in Québec schools is not highly developed...With a limited Québec market, the decline in public funding and the lack of vitality in the private sector, available financial resources for the development and use of new learning media and technologies do not meet learners’ needs” (Groupe Communicom, 1998).

Given that the English language, and Anglo-American culture and values, dominate the technological infrastructure and content of the internet, it is perhaps not surprising that individuals and institutions in Canada’s non-English-speaking regions have not embraced ICTs with the same enthusiasm as those in Anglophone Canada, and are under-represented in this survey of ICT use.

4.2 ICTs Used Predominantly to Support Existing Programs and Services

Another significant theme is based in the recognition that ICTs have been most readily adopted to support pre-existing activities, such as the provision of information about IE opportunities and services - perhaps not surprising given that the majority of survey respondents cite IE information distribution as one of the roles of their unit or centre. (Figure 4). Such practical uses parallel those seen in Canadian society at large where government services, banking, travel and news media are increasingly accessed via internet-based tools. Email is used instead of the telephone and websites are used instead of brochures, calendars and mail delivery services.

One could imagine that international education, by definition, might lead the way in technological innovation supporting international and intercultural learning experiences for Canadian students. Based on our survey results (collected at the end of 2001), however, such wide spread innovation is not yet taking place. IE programs and support services tend, like other areas of academic activity, to be embedded in the traditional structures and attitudes of the home institution.

Recently, many Canadian colleges and universities have identified "internationalization" as an institutional and educational priority. For example, the "Trek 2000 Academic Plan" at The University of British Columbia ranks *internationalization* as the foremost of five influential trends shaping the future of the University (University of British Columbia, 2000). Internationalization is perceived as a way in which the university can "participate as an active member of the society of the twenty-first century by educating future citizens to think globally and by advancing international scholarship and research." The two primary avenues of "internationalization" suggested by the Trek 2000 document are increased recruitment of international students, and the promotion of study-abroad programs for Canadian students. In addition, the document suggests that the University increase the numbers of international faculty and staff exchanges, and invite more international events onto the campus. Similar plans are being developed by institutions across Canada. While such internationalization strategies are essential in 21st century academic life, they do not yet take into account the potential role for the creative use of ICTs in extending and expanding the definition of international education activities.

It remains to be seen whether international education programs for Canadian students will be assigned as high a priority as the recruitment of higher fee paying international students, especially given the current limits of government funding.

4.3 Emphasis on Personal Communications via email, and the WorldWide Web as an Information Resource

A second theme that is apparent from survey data is that by far, the most common ICTs in use by surveyed IE practitioners are email and the WorldWide Web (Figure 5), which are being used to support inter-personal communications and information distribution activities. This pattern of conservative technology integration is not new: throughout history there has been a tendency to first employ new technologies to simply replace older technologies - without immediately recognizing or accepting the new possibilities that an emerging technology has to offer. For example, when moving pictures were first introduced in Europe and North America the technology was first used to record stage plays or present moving versions of photographic subjects. It was not until the creative work of cinema innovators like Eisenstein and Griffiths that the new technological medium was understood as a radically new form of human communication. In essence, there is a time-lag between the appearance of a new technology, and the paradigmatic shift in thinking and creating that such technologies can bring about.

Based on the program-specific comments provided by survey respondents, current innovations in ICT use in IE appear to be taking place primarily at the course or program level, rather than as an integrated institution-wide tool to expand student learning options. Instead, individual educators or administrators, often without technological support, are implementing independent ICT-mediated courses, activities and programs in a decentralized way (ACCULT, 2000). We hope to further investigate these instances of 'hidden' innovations in ICT use in IE activities in Phase Three of this project, by carrying out detailed case studies.

4.4 Awareness of Opportunities, Expressions of Concern

Lastly, we observe that 'caution', or 'mixed feelings' on the part of IE practitioners is a common theme. Our respondents indicated both an awareness of the new teaching and learning opportunities that ICTs may provide their students while at the same time expressing some concerns about wholesale or overly-rapid introduction of ICTs into IE activities.

4.4.1 Enthusiasm

It is clear that a significant proportion of respondents are now operating in institutions where the adoption of ICTs is well underway (see Figure 9), and some are also using ICTs to deliver course content, enhance courses and resources, and facilitate communications among students and instructors. More than half are convinced that ICTs are a vital tool for providing the kinds of learning that the ever-evolving learner community needs, and a similar number indicate that they are convinced that ICTs can improve the quality of learning. As described, half of our respondents believe that they are teaching their students personal, technical and intercultural skills through ICT-mediated activities. Most telling are the responses given to Survey Question 3C, which asks respondents to give “example of IE activities that could be significantly enhanced by the creative use of ICTs”. Almost half (20, or 47%) took the time to mention their ideas for innovative uses of ICTs. While some suggested using ICTs to further improve access to information, and to facilitate and maintain connections with students participating in exchange programs and similar activities, others allowed their imagination to travel further.

One respondent noted that

“many students coming to Canada from overseas are not aware of Aboriginal issues in Canada except through the mainstream media”.

He/she envisions that ICTs could allow Aboriginal perspectives to be made available internationally – facilitating cultural exchange between aboriginal Canadian students and students worldwide.

Another respondent suggested that ICT-mediated programs may be an ideal way to augment intercultural skill development for foreign-trained nurses, given the current nursing shortage in Canada and ongoing international recruitment.

A third adds an important qualifier, “interactive”, to her suggestion that ICTs could be used to provide online pre-departure information for students preparing to travel overseas, implying an increasing awareness that simple information distribution via ICTs may not be sufficient for effective student skill development.

Our study does not give us actual information about ICT adoption rates in Canadian post-secondary institutions – a rate that may be impacted by many factors including institutional priorities, financial realities, and staff time, skills and receptivity. Instead, our data can only tell us how our respondents experience these adoption rates, and how they feel about it. We believe, however, that it is significant, and positive, that the vast majority (84.0%) characterize the rate of adoption as ‘about right’ or ‘too slow’, implying that a majority are comfortable with ICT integration, or, indeed, want to see more.

4.4.2 Concerns

On the other hand, our findings suggest that, beyond email and information distribution and exchange via the Web, a significant proportion of our respondents are not using ICTs in particularly innovative ways. While technical and economic realities are doubtless contributing factors to slower rates of ICT adoption in some institutions, we also suspect that many educators remain currently unconvinced of the benefits of ICT in international education activities. Comments made by some survey respondents convey three general areas of concern regarding the use of ICTs in IE activities.

One area of concern can be deduced from comments about the ‘cultural homogeneity’ of the internet, and the negative impact this may have on international and intercultural exchange. One respondent notes:

“ICT can be used internationally, with the caution that local differences need to be planned with local input as to what will work and what won’t”

Clearly, there is recognition that for a multicultural student body such as Canada’s, and in a country where regional differences in language and culture can be large, ‘one

size fits all' approaches to ICT-mediated learning will not be effective, and will not provide the socially and culturally relevant content needed to engage and stimulate the wide range of Canadian students.

Another respondent notes that ICTs

"increase opportunities for [English-speaking] students to communicate in their native language online, reducing activity in the host language"

(the language of the country where they may be participating in an IE program).

Both comments speak to the recognition that "the internet" is not culture-free. Like any technology, it is a cultural invention, with a social organization rooted in the worlds that gave rise to it (Escobar, 1994) – namely, a cohort of American, English-speaking scientists and engineers (Anderson, 1995) – and embodying the values of its creators. Respondents are therefore highlighting the need to integrate ICTs into IE activities in ways that do not exclusively promote Anglo-American language, culture and values, and reduce the intercultural experience of students.

A second area of concern relates to technology itself. It must be mentioned again that 75% or more of respondents perceive that cost, staff skills, staff time and general 'attitudes towards technology' are significant factors impacting the integration of ICTs into IE activities. Moreover, one respondent writes:

"as with any other application of technology we must always be aware that we are the drivers of the tech[nology], and its uses, we must not become slaves to the technology".

This comment suggests that while there exists important enthusiasm for ICT use in IE, the perceived practical barriers, and the untested nature of the medium as an educational tool cautions against jumping blindly onto the technological bandwagon.

The most significant concern voiced by survey respondents, however, is the worry that introduction of ICTs into IE activities will reduce the face-to-face intercultural experiences and encounters that they clearly identify as the preferred mode of intercultural learning for students. Why might such a concern have arisen?

We suggest that it is significant that educational software companies marketing course management software systems (WebCT, Lotus Notes, Blackboard) are increasingly and aggressively marketing online-teaching packages as a way of responding to "greater student demands and expectations...[and] overburdened faculty

resources”, while also promising a high return on investment, increased revenue from students and reduced faculty preparation time (WebCT Press Kit, 2001). One recent private study, commissioned by Blackboard (Kaufman Research & Consulting Group, 2002) prominently reports that “institutions anticipate a 51% cost-savings in per-user support and maintenance costs” and that “per-user training costs have already decreased by 41%”.

Simultaneously, many Canadian post-secondary institutions have come to view international students as a significant source of revenue, and as discussed previously, many survey respondents indicated directly or indirectly that a major focus of ‘internationalization’ on their campus was the recruitment of higher fee paying international students. In this light, it is understandable that IE practitioners harbour concerns about ICTs being introduced into IE activities as a cost-saving and/or revenue-generating measure, reducing apparently more costly ‘face to face’ activities such as exchange programs.

Moreover, survey comments reflect broader societal concerns that internet communications generally reduce the quality of human and intercultural interactions, lacking as they are in context perception, dynamic real-time conflict repair mechanisms, a parallel visual channel, eye contact, gestural information and the flexibility we normally expect to obtain or emerge between conversational partners (Chase *et. al.*, 2002). One recent report notes that “many [people] continue to divide themselves into “for” and “against” camps”, when discussing the use of ICTs in education” (Institute for Higher Education Policy, 2000). In our view, such active debate about the uses of technology in education is unlikely to subside in the near future.

5 CONCLUSION

The current global momentum in ICT development and use, and the views of our survey respondents about future importance of ICTs would argue for the growing integration of these tools into international education activity of all kinds, although it is as yet unclear whether the increased use of ICTs will gradually lessen polarized sentiment among IE professionals. We suspect that issues of educational quality, creativity, adaptability and meaning will all play significant roles in cultivating greater openness and curiosity about the value of ICTs in the international education field.

This survey has provided a limited snapshot of ICT use in Canada's post-secondary IE sector. It has not provided insight into actual rates of ICT integration into IE activity in individual Canadian post-secondary institutions, nor about actual numbers of Canadian students currently using ICTs to access IE information and activities. More detailed investigation into specific uses of ICTs in international education will be essential in order to determine which forms of ICT are being used most successfully.

Our findings suggest that current use of ICTs is predominantly in support of pre-existing programs and activities, and is currently conservative in scope, being mostly employed for information distribution and exchange. Innovative uses of ICTs, where they exist, are decentralized, and largely at the course or program level. There is clear enthusiasm for future ICT innovations in the area of IE, but a number of concerns emerge. Educators worry that the Anglo-American culture of the internet may actually limit student's intercultural experiences online. Economic and technological factors are also a concern, with some cautioning that technology should not drive program curriculum or design. Most significantly, IE professionals worry that ICTs may be used to replace rather than supplement in-person IE activities, and that this would significantly reduce the intercultural learning and relationship building that students experience in face-to-face activities.

We can conclude, however, that ICTs are clearly visible above the horizon of institutional IE activities, and are currently being integrated in effective if cautious ways. We look forward to the results of the next phase of this study which will explore specific examples of ICT use in international education. These case studies will

demonstrate the creative integration of educational design, learning technologies and intercultural understanding in support of international education's most worthy goals.

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