



National Library  
of Canada

Acquisitions and  
Bibliographic Services

395 Wellington Street  
Ottawa ON K1A 0N4  
Canada

Bibliothèque nationale  
du Canada

Acquisitions et  
services bibliographiques

395, rue Wellington  
Ottawa ON K1A 0N4  
Canada

*Your file* *Votre référence*

*Our file* *Notre référence*

The author has granted a non-exclusive licence allowing the National Library of Canada to reproduce, loan, distribute or sell copies of this thesis in microform, paper or electronic formats.

The author retains ownership of the copyright in this thesis. Neither the thesis nor substantial extracts from it may be printed or otherwise reproduced without the author's permission.

L'auteur a accordé une licence non exclusive permettant à la Bibliothèque nationale du Canada de reproduire, prêter, distribuer ou vendre des copies de cette thèse sous la forme de microfiche/film, de reproduction sur papier ou sur format électronique.

L'auteur conserve la propriété du droit d'auteur qui protège cette thèse. Ni la thèse ni des extraits substantiels de celle-ci ne doivent être imprimés ou autrement reproduits sans son autorisation.

0-612-55483-X

**Canada**

THE IMPACT OF INFORMATION TECHNOLOGY  
IN STUDENT AFFAIRS AND SERVICES

By

Bruce Belbin

B.A., Memorial University of Newfoundland, 1990  
B.Ed., Memorial University of Newfoundland, 1990

A paper folio submitted to the School of Graduate Studies  
in partial fulfillment of the requirements for  
the degree of Master of Education

Faculty of Education  
Memorial University of Newfoundland

2000

St. John's, Newfoundland

© Bruce Belbin, 2000

## ABSTRACT

Student affairs and services professionals are experiencing many changes in the way they conduct their traditional programming and support initiatives. One of these major changes stems from rapid developments in the field of Information Technology (IT), including computer programming applications, efficiency models, and innovative techniques centered around student support. How these professionals adapt to such changes will impact on how student services are managed and delivered. This folio presents a discussion of the current state of student affairs and services, preparation initiatives for new professionals entering this area, and future directions the profession may take. The primary research question addressed was: How can student affairs professionals embrace, adapt, and utilize information technology in the profession?

This folio was a study of various research initiatives from post-secondary administrators and managers including articles, books, and research projects detailing IT impacts. In addition, interviews were conducted with six post-secondary administrators in the field of, or related to, student services. Their perspectives on the acceptance and utilization of technology and what the future may hold for student affairs and services if technology is fully utilized, were presented in consideration of what future service models might look like.

The research highlights several key points. Current student service practices are embracing IT opportunities slowly. The profession is challenged by restrictions in financial resources and the ability to operate in new environments that are technologically advanced. The prioritization of this challenge has been further restricted by the limited availability of relevant operational models involving technology in student services. Another key element is the importance of appropriate training and preparation of personnel. This includes the education of

current professionals and the integration of new professionals with technical training into the student services profession. IT opportunities also produce issues of confidentiality, effectiveness, and the need for a systematic and intentional process of learning and application of IT skills. The future of student services and IT development is certain to be one of opportunity and challenge. The research found that senior administrators realize the potential of IT development but agree that the profession must define itself as the architects and program developers of the IT resource. This folio concludes with recommendations that there is need for further study and research on the development of IT services.

## TABLE OF CONTENTS

	<b>Page</b>
Abstract . . . . .	ii
Table of Contents . . . . .	iv
List of Figures . . . . .	vi
Acknowledgments . . . . .	vii
<b>INTRODUCTION . . . . .</b>	<b>8</b>
Background . . . . .	8
Problem Statement . . . . .	9
Research Questions . . . . .	10
Key Concepts . . . . .	10
Methodology . . . . .	11
Folio Structure . . . . .	11
Scope and Significance . . . . .	12
<b>INFORMATION TECHNOLOGY AND THE MANAGEMENT OF STUDENT SERVICES . . . . .</b>	<b>14</b>
Introduction . . . . .	14
Overview of Student Affairs and Services . . . . .	14
Factors Influencing Technology in Student Affairs . . . . .	16
Economic Forces . . . . .	16
The 24 Hour Student . . . . .	18
Technological Changes . . . . .	19
Managing Student Services in a Technical World . . . . .	23
Financial Considerations . . . . .	23
Professional Qualifications . . . . .	26
Management by Internet . . . . .	27
Conclusion . . . . .	33
<b>UTILIZING EMERGING INFORMATION TECHNOLOGY APPLICATIONS IN PROFESSIONAL PREPARATION . . . . .</b>	<b>36</b>
Introduction . . . . .	36
Background of Emerging Applications and Professional Preparation . . . . .	36
Stages of Fundamental Learning . . . . .	38
Student Preparation . . . . .	39
Planning . . . . .	39
Reflection and Assessment . . . . .	41
Developing Student-Centered IT Programs on the World Wide Web . . . . .	41
Design Considerations . . . . .	42

Evaluating .....	44
Issues and Concerns .....	44
Distractions .....	45
Social and Academic Withdrawal .....	46
Incorrect Information .....	46
Accessibility .....	47
Safety and Security .....	47
Using Technology in Advising .....	48
Designing Student Affairs Directed Programs .....	49
Student Organizations-Advisement and Support .....	49
Information Technology Skills and Abilities .....	52
Conclusion .....	55

**UTILIZING INFORMATION TECHNOLOGY IN THE FUTURE OF STUDENT SERVICES .....** 57

Introduction .....	57
Background of Future Planning Initiatives .....	57
Methodology .....	58
Paper Structure .....	60
Future Role of Student Service Professionals .....	60
Professionals as Architects .....	61
Professionals as Facilitators .....	62
Professionals as Educators .....	63
Professionals as Policymakers .....	64
Professionals as Futurists .....	65
Trends for the Future .....	66
Specific Implications for Student Services .....	67
Telecommuting .....	67
Computer Ownership .....	69
Student Learning Orientation .....	70
Recommended Student Services Technology Models .....	71
Reasons for Change .....	72
Models of Operation .....	72
Models of Technology Portals .....	73
Northern Territory University (NTU) .....	73
University of Minnesota .....	74
User Centred Design .....	76
Coping With IT Change .....	76
Conclusion .....	78

**SUMMARY AND IMPLICATIONS .....** 80

**REFERENCES .....** 83

## List of Figures

Figure 1 -	Traditional Student Services Process Mode .....	75
Figure 2 -	New Web-Based Student Services Model .....	75

## ACKNOWLEDGMENTS

The completion of this folio has been a long and challenging journey. I acknowledge with many thanks my colleagues in the Student Affairs and Services profession at Sir Wilfrid Grenfell College in Corner Brook and in St. John's Newfoundland, who motivated me in this research and participated in the dialogue which lead to this project. Thank you also to the senior student service administrators who contributed their perspectives to the folio.

Many thanks to Dr. Dennis Sharpe, my supervisor, who provided guidance throughout the process. His advice, witticisms, and constructive criticisms were crucial in my efforts to perform and produce on a timely subject.

My mother, Madeline Belbin and my sister Stephanie, provided their constant support and unique reminders that prompted me along in completing this process. Finally, to my wife Victoria and my son Max, thank you for the most important reasons to succeed.

*This folio work is dedicated in loving memory to my father Bruce Belbin Sr. who always encouraged and inspired me to pursue education and learning as a wonderful way in which to embrace life.*



## Introduction

This folio was developed to identify and describe some of the challenges currently facing student services providers as they specifically pertain to Information Technology (IT) developments. The three main areas concerned were: The current state of student services related to IT; the preparation initiatives that are available to update and train new professionals in the field relating to IT; and the vision of what future student services may provide as IT plays a larger part in its evolution. Readers will learn that the profession has many options and roles to play in the continued support of the successful student through applications and use of IT.

### Background

Change is inevitable and affects all domains of society, including the profession of student affairs and services in post-secondary education. One of the major factors creating change in this area centers around IT and the emerging use of its various forms in the delivery of student services and related program development. Student affairs personnel are beginning to embrace IT in a way that aids, for example, in the expansion of integrated learning activities that result in the development of students who are more responsible for their own learning. This is especially important in light of the growth of distance education initiatives and the popularity of home learning as opposed to the traditional campus structure.

The changes in post-secondary education require student services personnel to appreciate the potential of information technology as a tool to develop and enhance the academic and social learning experiences of students (Willis, 1998). The role of post-secondary education in the “new millennium” will be directly influenced by the ability of service providers to harness the potential of IT and therefore reach students from all backgrounds.

Information Technology as it applies to student services, has the potential to improve accessibility to support services for students. These range from counseling, academic advising, and social support, to the fundamentals of improved career preparation and program development. Student affairs professionals are working towards the shared goal of improved student support and success (Rhoades, 1995). The profession is embracing change and doing so carefully to ensure high standards and efficiencies are maintained. This folio endeavors to contribute to that change with the discussion of the three topics identified.

### Problem Statement

The identification of new initiatives can bring with it expectations for more resources to accomplish tasks. However, it is possible that technological impacts within student services may mean less of a need for personnel or programming as it is traditionally known. Student services personnel have limited options in this regard. Students require and demand updated servicing techniques that center around such resources as the internet and web sites. The efficiencies of this type of servicing automatically means less individual and more multi-contact with students on a more frequent basis. Although new professionals will become highly trained in this area they will probably discover they work with less people in the office, and have fewer resources to follow the traditional model of providing services to students. On the positive side, IT utilization can encourage innovation and the development of partnerships with other areas of the post-secondary field that would not normally be considered, such as liaison with the registrar or program development with various faculty.

How student service professionals deal with this uncertainty will impact heavily on the leadership and management of the profession in the future. This folio explores how these

professionals are dealing with the uncertainty of, and developing strategies to cope with the change. In considering the options, the main problem is whether student services professionals can pursue new approaches of operating under various IT developments that will provide a long term response to new opportunities. The perceived impact on the structure and traditional way of operating within the profession is an important consideration in discussing this problem.

Alternatives are presented in the final discussion of the future of the profession in the last section of the folio.

### Research Question

The following primary question was investigated:

What is the impact of Information Technology (IT) on the development and delivery of Student Affairs and Services?

In addressing this question, the following issues were studied within the student services field and form the basis for the three papers that comprise this folio:

What is the current structure of student services as IT impacts on its operations?

What are the preparations new professionals are carrying out to aid in their development?

What are anticipated changes in the future IT development of student services?

### Key Concepts

Key concepts are defined throughout this folio; however IT development is the central concept used. In the student services context, IT is described as general information technology centered mainly around computer applications and developments, and encompasses communication technology within the general terminology. IT is now directly related to terms such as “customer satisfaction”, “support counseling”, and “program development”. IT is

suggested as a primary means of improving servicing and programming for students and student services professionals, commonly referred throughout the folio as “the professional”.

### Methodology

The literature reveals limited information on IT and student affairs and services development. As expected, much of it is very recent and relevant to the past six years, 1994-on. References to the current status for student services are limited to verbatim information from Senior Student Services Administrators (obtained through interviews), recent journal writings, on-line articles, graduate research initiatives. Special attention is also given to journal articles by prominent student services personnel who have been widely recognized by their peers in the field of student services/development.

To supplement the research analysis six interviews were conducted with senior student service administrators representing various post-secondary institutions. These interviews were utilized in the final paper of the folio as perspectives from practicing administrators of student services. The purpose of the interviews was three fold: to determine various interpretations of the impact of IT in the field; to assess what responses are taking place; to determine what the vision is for the future of the profession as it relates to the use of IT.

### Folio Structure

This folio focuses on three areas of concern centered around the application of technology and effective student services. The starting point, presented in the first paper, reviews how professionals are currently utilizing information technology in the management of student affairs. This paper argues that there are important changes on the horizon due to student consumer expectations and the current and emerging capabilities of information technology.

Included is an overview of current student services and IT practices and applications as well as clear examples and implications of technological developments that will lead to redefining the professional roles and responsibilities of student services administrators. The second paper deals with the integration of technology into student services preparation programs and addresses the importance of preparing and training professionals who can make the best utilization of IT in the field, especially as it relates to advising, research, teaching, and administration. There are examples of realistic and practical ways in which IT can be integrated into post-secondary student affairs professional preparation programs to improve teaching, advising, counseling, research, programming, and administration. There is also an overview of the knowledge professionals should attain in such professional development initiatives. The third paper reviews the processes and policies required in the future of student affairs in relation to information technology, including dealing with the unpredictable. There is consideration of the management strategies that may be required to promote the use of IT in student services. Interview data from senior professionals was also used for a discussion of the role of senior staff in helping institutions embrace IT changes.

#### Scope and Significance

The next few years will prove to be challenging for the student services profession. The sheer size of the implications of IT on the profession, in combination with the complex nature of the management of post-secondary institutions, is a pressing issue. The benefits of embracing technology in the evolution of student services are evident and are part of the future of this aspect of post-secondary institutional organization.

Although the impact of technology has been a topic for some time, the effect on the

ability of the profession to respond has not been thoroughly discussed. This folio provides an understanding of how successful the profession has been to date in embracing and adapting to the change. Within the framework of the three papers, this folio provides an understanding of how student services is changing due to IT. It is not the intention to presume that the research applies to all post-secondary institutions, it is left to the reader to utilize the information in deciding the applicability to specific post-secondary environments.

## Information Technology and the Management of Student Services

### Introduction

This paper aims to identify and describe the current status of the student services profession related to the emergence of Information Technology (IT)<sup>1</sup> as an operational factor. It examines the present service challenges faced by student service professionals<sup>2</sup> and how they are beginning the transition to fully embrace the incorporation of IT into program and service development. In studying select aspects of student service operations, it is hoped the reader will understand and appreciate the IT challenge and how it is only now beginning to affect a profession that will be heavily impacted by such developments in the future.

### Overview of Student Affairs and Services

Student services management and administration has undergone a variety of changes in the past few years due to a number of factors including budget restrictions, philosophical challenges, changing students, and impacting technological changes. The latter includes the growth of email communications, use of web sites and courses, and on-line services and supports, all previously delivered in the student services realm on a person to person face to face basis. Each change or innovation in technology has tasked student services professionals to consider the development and support of alternative services to students and other clients traditionally supported in the post-secondary environment. These developments have meant changes in the thinking surrounding delivery of such services. The advancement of IT into

---

<sup>1</sup>IT is a describer of all elements of Information Technology including Information and Communications Technology

<sup>2</sup>The term "professional" is a descriptor for all types of student services administrator, dean, directors, or managers and may be used within the paper.

student services has been progressive but rapid.

Not only have technological changes affected student services on a basic level, they have arrived at a time when the mission and reason for student services itself has begun to change (Moneta, 1997). Ten years ago, student services management was primarily based around historic roots as a support service and mechanism to aid traditional students in their social and academic growth (Ausiello, 1997). This historical mission has changed and now includes partnering with faculty. This has helped student services become a profession where support programming has become a learner oriented mission supporting traditional learners, as well as the new and evolving non-traditional student. In the last decade, student services has moved away from the independence of programming and support services focused on the social development of students towards a focus that concentrates on the student as a whole. This includes academic and personal social success. The impact of technological change, in combination with the shift in student services mission and focus, have meant major changes in the management of student services.

These changes in management are sometimes as subtle as the shift in administrative reporting, or as abrupt as the reorganization of the overall operations model. Deans, directors, and programmers within student services can no longer repeat past program activities and events and expect the same success. The recruitment, support, and retention services offered in the past are almost irrelevant in the new era of student services, as is the historical view that students are not customers as much as they are just students. Today they are customers that demand excellent services in a competitive post-secondary environment that provides students services through e-mail systems, web sites, interactive support and other innovative computer-based technological



services.

According to Green & Gilbert (1995), future student services management and development needs to be more innovative and less restricted by office hours, staff availability, or office space. Services are beginning to be more effective when offered through the internet, virtual systems, and voice services. These changes require personnel to be more adaptive in management and methodology and also require them to fully understand the reasons for these changes, a concept this paper attempts to promote extensively.

### Factors Influencing Technology in Student Affairs

#### Economic Forces

The concept of technology changing procedures in student services is a result of, and reason for, implementing new management techniques (Levy, 1995). In the past ten years the challenge to institutional budgets has created reviews of all aspects of operations from cleaning services to student services. In most instances, the focus has been on saving money and managing money more effectively through efficiencies and accountability. This challenge has inevitably included the review of technological applications that can substitute for human contact and is more likely to be cheaper yet effective.

A select and very specific example of this is the traditional application procedure to a residence complex at a university or college. Traditionally the student applied well in advance of the calendar deadlines in order to attain a room for the first year of studies. This process required paper application that included references, statement of application, and other required details. This was then mailed to the residence offices where each application was dated received, filed, and reviewed for acceptance. In conjunction with this, factors such as room mate compatibility,

food requests, and any health issues had to be considered. This process took considerable time and human resources. Recent computerized programs have eliminated the time requirements and amount of human resources devoted to such a tedious task. A student can apply on-line through a home computer with immediate confirmation of receipt. The process is also instantaneous as specific criteria are automatically matched and the students needs are met by pre-determined criteria in the computer-based application. Most importantly, a database is automatically created that can quickly recall statistical information that readily aids the student services managers in their planning tasks. All this is accomplished in minimal time at minimal expense.

In student services, as in other units, managers are expected to do more with less. Without consideration of technological applications this task would be almost impossible in light of the financial aspects. However, the benefits of actually replacing the human professional with technology are not easy to substantiate. Student services has traditionally been a human contact profession, and as such, the qualities associated with it are almost immeasurable (Mills, 1990). Institutions are increasing their use of technological adaptations. Not only are students able to apply for a residence room on-line, as previously discussed, they are also able to access grades and financial information through the web. These are all examples of user directed applications requiring no assistance from external sources such as university personnel. Computer programs and systems save money, however it is important that the professional staff using them be educated on their efficient use. This creates an expectation that staff members receive continuous professional development and training that complements the technology.

As an institution embraces technological change in search of efficiencies and financial gains, many departments or professions such as student services find themselves resigned to

accepting the technology or they are forced to adapt. The embrace of new technologies is very appropriate when it increases efficiency and improves services to clients such as students. However, the larger issue is one of embracing technological change in consideration of the human services element that have made up the basis for student services. If technology is embraced too quickly, or haphazardly, problems may arise. Well planned technological development creates service opportunities. Consider the concept of counseling services being available 24 hours a day for all students from all backgrounds. With the arrival of email systems and web sites, students are able to seek information at all times without restrictions of office availability and trained staff. The electronic information allows student service staff to steadily field a variety of inquiries and therefore lends to efficiencies in financial and support service aspects.

#### The 24 Hour Student

The modern student in post-secondary institutions is breaking down the stereotypes that people have become accustomed to (Sewart, 1993). No longer will you find the traditional 18 - 24 year old student who goes to classes on campus, studies set hours per day and lives a prescribed lifestyle. The student of today is a “ 24 hour customer ” who expects the best service for the financial resources invested in their higher education. In this regard they dismiss the traditional nine-to-five servicing and expect access to information and answers at all times. Technology has made this possible and it is into that domain that student services has, and must, continue to move if it is to prosper.

The 1990's were a decade of phrases and terms related to the business philosophy of customer service and support. One of the most popular phrases has been that of TQM, or Total

Quality Management (Hammer & Champy, 1993). This reference to quality in all you manage has been applied extensively in the area of student services. There are many types of people who require services at the post-secondary level but they can generally be categorized within two areas: Internal customers include administrators, and program personnel who are traditionally bound by working hours of the institution; while external customers include the students who attend classes, study period, and research activities and therefore expect to access services at times which are more convenient for them. For many students these times include late evenings and weekends when traditional services would not be available.

Campuses which have a majority of students who are not residents on campus, discover that students want to access information and services from their homes. Students do not appreciate having to travel to the physical campus when they know the option to access services through the internet is available at other institutions. This also includes the delivery of courses. Distance education enables the student to choose many aspects of their programs through less costly internet and web site applications. They do expect to have to travel to campus for such services as library pickup and bill payment, however even these particulars are being addressed through technological means (Green, 1996).

### Technological Changes

Technology in institutions has advanced rapidly in the past few years. These changes include many components centering around services such as how information circulates, the application of communication tools, business operations and research, and developments in program delivery (Kozma & Johnston, 1991; Kotter, 1995).

The availability of information has expanded in the form of venues such as web sites,

telephone information systems, CD-ROM presentations, and campus information systems such as campus TV. Institutions that have their campuses networked allow their students, faculty, and staff to access information ranging from grades, to finances, to health records, each with their own specific restrictions according to their responsibilities. University systems are now developed whereby student information on academic performance is recorded including relevant notes on grades, residence selection, degree pursuits and any number of related factors. This ready made information can then be compiled into a database that serves the institution in efforts such as identifying potential students in recruitment drives, interpreting strengths and weaknesses in academic areas, and alumni growth. Memorial University (1999) now utilizes the Banner computer records system that is compatible with the Microsoft windows operating system. This allows immediate data availability on statistics related to many institutional goals and objectives. In all cases the information is also secured by coding and passwords. For the student services profession this impacts in the area of counseling, program development, and related initiatives designed to improve the student experience.

The most prolific communication tool now in massive use is the internet (Norris & Dolence, 1996; Zelesky 2000). Email is often the first choice of communication amongst students. Institutions have come up against such an explosion in service demand through this medium that their infrastructures have been strained to provide the expectations of the service (Carr & Johansson, 1995). Email access has also allowed greater access to almost anyone with an internet account. Presidents, deans, and directors are all open to more accessibility as paper trails are removed and access widens. The student services professional falls into this realm and is commonly called upon 24 hours a day with enquiries. The development of information list

servers have advanced access to information so that thousands of people simultaneously receive the same information or inquiry. The concept of instantaneous response thus alters work patterns and protocols. For the student service provider the implications are many and could easily comprise a full paper discussion on the one element of email impact.

Business conducted in post-secondary institutions has been dramatically altered through technological changes (Laurillard, 1999). The traditional paper approach of application processes has been replaced by on-line application and response systems. Students are now able to apply to a residence structure, register courses, pay fees, and organize social events through web systems. Any service that requires business activity or personnel service is now able to be organized through electronic means. This impacts student services in relation to structure. Electronic servicing dilutes the need for office centered services available at set sites, and leans to the development of student-centered services available to them in their homes or in areas where they gather socially or academically.

Business transactions are also being forged through mediums such as the institutional “smart card”. Essentially, the replacement to the traditional institutional identification card, the smart cards serve as debit cards for payment services, keys to open rooms, storage of personal data such as health, and other related personal service information. Highly popular in Europe (Green & Gilbert, 1995b) due to the popular distrust of central data bases, smart cards allow the owner to hold control at all times. The one card environment is a practical approach that can, arguably, work well with wired institutions that have central data bases. The two approaches can be supported together and create a fully accessible environment. The student services professional can utilize these technologies in preparation of counseling initiatives, service supply,

and program development.

Entertainment technologies are also impacting the student services profession. These technologies have grown faster than most of the related technology (Gilbert, 1996b). The development of entertainment technology stems from the public demand that has been historically routed in leisure activities. Where pinball machines and arcade video once reigned, manufacturers have developed interactive CD ROM games and virtual reality products. Institutional recreation centers now offer the latest in electronic games and simulations. Access to this entertainment also includes the lap top computer as not only a learning tool, but an entertainment one as well. For the student services professional a unique challenge presents itself. The availability of the desk top format has begun to replace the need for a social area for students. The campus center now faces the challenge of offering social activities that attract group gatherings as opposed to the solitary entertainment of such mediums as the lap top simulation. The trend seems to favor a growth in the solitary entertainment option for students, this can be seen as socially disturbing as it does not allow or foster the growth of the individual (Moneta, 1997).

Some aspects of entertainment technologies are being applied to the traditional classroom as a learning center. Classrooms are now being electronically wired and provided with the latest in electronic technologies that allow access to such tools as the internet, projection screens, and even holographic emitters (Gilbert, 1996a, Olsen, 1999). Some institutions provide plug-in access at the lecture seat for the student laptop computer. Faculty and staff who provide lectures using web based products, are opening the boundaries of the classroom to the student. Discussions on class content are then moved into other areas through the development of list

servers and home pages for course materials with conversation groups. A science class at Mount Holyoke has started using video from microscopes to study living cells. This video has been placed on the university computer system. “ I wanted students to sit in their dorm rooms and watch the video...I knew they would be fascinated by it , “ stated Rachel Fink, an associate biology professor (Olsen, 1999). She points out that the next step is the students developing their own videos. Donovan and Macklin (1999) both point to similar examples in other academic fields. They further restate the need for technologies to be “ flexible and adaptable to diverse teaching needs” (1999). Thus, there is a migration of the technology between different areas of interest.

### Managing Student Services in a Technical World

General management and administration of student services and the specific organization of student services divisions are very different when measured against the change in students needs, traditional institutional administrative and educational practices, and the expectations of society for higher education (Ehrmann, 1995). All higher educational institutions have stakeholders who want the most efficiency, accountability, and positive return on their investment through their payment of tuition fees, taxes, donations, and other forms of support. Professionals in student services must also respond to these demands. This creates technological implications in the services and management of student services in various areas.

### Financial Considerations

One of the most important impacts of technology is it's effect on the financial management of student services. There are many elements that contribute to this impact. These include desktop hardware and software, student records tracking, assessment, and other



computer applications and specialized programs associated with student services.

Desktop computing has grown rapidly through word processing, spreadsheets, presentation packages, and desktop publishing applications readily available for purchase and use by personnel with basic operational training (Donovan & Macklin, 1999). The computer supply industry constantly upgrades and refines the available equipment making them faster, stronger, and able to apply continuously larger numbers of applications. Just as fast is the change in the software upgrades that take advantage of the equipment improvements, but also requires that same equipment in order to operate. This creates a major problem for institutional users such as student services professionals (Barratt, n.d). Zelesky (1999), suggests that technology has disturbed the already "unlevel" playing field of student services. He states " The question arises as to the appropriate equipment and software purchases required for the tasks of the student services organization. Is it essential to have the latest, most up to date hardware and software? What are the standards to which you apply the needs of the department? Finally, in consideration of all these questions, how can student services stay updated and current with the rapid changes in desktop technology?"

These challenges create one of the most critical aspects of student services planning and management. The development of a desktop upgrade and replacement plan becomes essential (Willis, 1998). As costs for computer equipment and programs seemingly continues to drop, more student services professionals must be equipped. No professionals are immune to this development, and the concept of conducting their duties without computer usage is one that cannot be considered. All student services professionals are affected. Residence life directors, advisors, programming, and materials staff are all included through the simplest process of

purchase order conveyance, email communications, bulletin postings, preparation of reports and accessing the internet for research (Mills, 1990). The costs of such upgrades is financially challenging to an operational budget. Standard five year upgrade programs require an assumption that there will be a 20 percent replacement cost annually (Memorial University, 1999). A well thought out plan to support such a project would include recovery of funds through salary units that are replaced by technology. This is not easy to do in light of changing roles and responsibilities of student services personnel. Therefore, student services leaders must accommodate the fiscal realities within current budgets, many of which are shrinking. The accommodation must include not only the replacement of the technology, but also the consideration of salary units and benefit increases.

Software purchases and refinement comprise a large piece of the budgetary pie in student services. General word processing and similar applications may be declining in price, however the manufacturers of such programs adjust for this in the development of newer and more specialized applications. Residence hall directors have available specialized application and room tasking programs such as health alerts and room-mate compatibility. Medical staff utilize new health record systems that help students track their health concerns. Program developers access new statistical and tracking programs that provide clear pictures of student demographics helpful in planning, and other student services professionals can use planning and budget programs that aid in their forecasting goal planning (Ausiello, 1997). The attention to this challenge of costs may be the most difficult part of adapting to the technological era in student services. A general response to technological replacement without a well developed strategy and plan will result in the less efficient application of trained financial resources. This scarcity of new money may

impact greatly upon the personnel and their functions within student services as they face technological challenges in the near future.

### Professional Qualifications

A standard hallmark of technology and computer usage is the apparent competency gap that appears between the computer literate and those who fear computers (Gilbert, 1996a). This occurs within student services and appears to grow as the technology evolves and develops with each new generation of machines and programs. In the profession, the standards of email usage and electronic spreadsheets has gained acceptance and popular use. Professionals who have not embraced the technology will be even more challenged to consider and accept the use of newer applications such as electronic mailing, discussion groups, and web based activities. Information posted on line, such as calendars, program events, and planners may be problematic for those student services professional who still use day planners, file folders and related paraphernalia.

This creates another challenge. The question of professional development opportunities becomes even more important in the workplace that utilizes a great degree of information technology. Modern computer equipment is excellent when utilized by professionals who have the training to maximize their offerings. Student services leaders must provide the training for this to occur or else they risk inconsistencies and inefficiencies within their program offerings. Abilities utilizing technologies may differ in various staff members. Front line staff are most likely to be involved in servicing and word processing support using standard program packages, while managers may be involved in specific computer programming applications and technologies. New professionals will enter student services with greater technology skills than their own managers. They may discover that the equipment and programs they have to work with are

outdated, and this may create frustration in their attitudes and abilities to conduct their responsibilities. New student services professionals may even discover that the tight budgets further restrict opportunities to upgrade, or that senior student services managers may not share an understanding of the benefits of technological applications (Carr & Johansson, 1995). These new professionals will bring with them high skill levels and will require less formal training and updating than older managers and staff would receive. This is, in many ways, a positive aspect in terms of budget items saved from training needs.

Senior managers and staff in student services should be familiar with the use of the appropriate technology in specific situations and program events or activities. This is especially important in terms of the support of the goals and objectives of their programs and the ability to strike a balance (Zelesky, p.24,1999). This requires managers to stay current with programs, user applications, and skill sets for appropriate staff members. A modern structure of student services support should include a staff member who is computer trained and a webmaster who can translate, develop, and plan internet and web based applications benefitting the student services profession specific to an institution. Zelesky suggests, “ We must learn the technology and ride the wave of change, but we must also be prepared for the pendulum to swing back...if and when our students step off the cliff of technology, we must be there to provide support” (1999).

### Management by Internet

Email has impacted society in a massive and rapid way within the past ten years (Simonson, 1997). Perhaps no single development in communication has done so this decade and the result has been an overwhelming change in the way business and communications are conducted. Student services has not been immune from this technology. Communication by email

is immediate on an institutional campus that is wired and connected with modern equipment. Email provides benefits that include not only instant contact, but also opens up communication by removing traditional barriers and standards such as phone messages and hour availability. Email is a 24 hour service tool that is stifled only by electronic maintenance problems. That is not to say there are no problems with the medium. Concerns over privacy, harassment, too much accessibility, and miscommunication have occurred and are only slowly being addressed.

Electronic communication is growing in popularity on campuses (Rhoades, 1995; Laurillard, 1999) as students, faculty, and staff get wired into the services. This is not restricted to schools as businesses, government, and households join the wired revolution. Institutions have discovered the value of email communication as the preferred tool to keep in touch between students, faculty, and staff. This is a partial response to the frustration of telephone communication and the hit or miss approach in that medium. This includes the problem of telephone messages and unreturned calls. However the popularity of email is also attributable to the efficiency and accessibility it offers to the user (Olsen, 2000). Staff are able to communicate with each other without the paper memo format, students can share information between themselves and the faculty, and even administrators are more easily approachable amongst themselves and through students. This is particularly important as it relates to student services personnel and their responsibilities to students well being. New email systems provide “windows friendly” usage through the “point and click” functions of the computer mouse. Updated email packages also provided features such as chat opportunities, video and paper attachments for files, audio components, and automatic response options. The University of Houston offers a log in site that greets them with a photograph of “Clara”, the smiling virtual administrator whose job

is to “listen to and take care of students...24 hours a day” (Olsen, 2000). Students are invited to ask questions, voice opinions, or offer compliments on the system. These sorts of features increase the reliance, popularity and therefore the usage of the electronic medium.

Email usage has also created some challenges for student services personnel. Email use includes the constant availability of an email conversation box on the processing screen of the staff members computer. This is potentially a source of interruption between the staff member and people communicating with them, whether it be students or acquaintances. The challenge is to support email use in an environment that is productive and used to supply and disseminate information for the benefit of students in particular. The term “netiquette” (Norris & Dolence, 1996) is new and reflects the requirement to utilize the technology appropriately and to benefit those being served. Rules and manners. Student services, because of its historical status in providing accommodations between human and institutional services, may be well suited to lead the way in this area of promoting acceptable and responsible usage of the medium.

Another result of the electronic revolution this decade has been the development of direct communications and access to anyone who has an email address. Students, faculty, staff, and parents have discovered this and have seemed to place high value on the openness. This may be especially true as senior administrators have become more readily accessed by this technology. Traditional standards and procedures used to establish communication in administration are now obsolete as direct communication from students and parents occurs between student services leaders, administrators and even Presidents of institutions (Findlay & Findlay, 1997; Rhoades, 1995). This will most likely lead to the evolution of operating practices that allow such administrators to confirm receipt of messages and permit re-assignment of responses to the

appropriate level staff member or administrator. Student services operations traditionally experiences a high level of inquiries traffic so they may be well suited to develop such policies and procedures to establish functional responses.

There are other challenges associated with the email climate. There are the basic embarrassing incidents where correspondence is misdirected to the wrong person. This can be personally, as well as professionally embarrassing due to lack of diligence by the author. In actuality, there may be a tendency for email correspondence to encourage communication of thoughts that would not normally be conveyed. More problematic for student services professionals, however, is the often excessive use of email that can produce lack of quality in the correspondence (Willis, 1998). This can result in misinformation and lead to even more confusing responses by servicing staff. There are also problems with confidentiality. Included in this concern is the fact that originality of email messages can be altered as it passes through communication channels resulting in a final message not representing the original intent of the correspondence. In addition, the author of such correspondence may intend messages to be directed at a specific target, only to have it passed onto others for whom it was not intended.

This leads into the discussion over the legality of the process of email communication. In the United States, there have been several test cases that have developed precedents that suggest once email is composed and sent it becomes public domain (Gilbert, 1996b). This impacts the subsequent redistribution of the message meaning it is out of the control of the original author. There have also been legal challenges to address the ability of management groups to monitor email and establish strict rules and regulations governing its use (Gilbert, 1996b; Willis, 1998). This has a great impact on student services ability to manage by email. The priority for electronic

communications as a management tool is the careful consideration and appropriate use of where it shall be utilized. This is to clarify the use in terms of counseling, program development, and initiatives that communicate any form of personal information. In many ways, the standards of confidentiality and client privilege must also be applied in electronic communication to prevent the false impressions of security that the email system may seem to offer.

There are many other negative factors associated with electronic communication. Email technology and usage has severely changed conceptions of the home versus work. Email addictions and sickness have become commonplace and evident among student services professionals as well as students (Kotter, 1995). Students begin to suffer from “netlag”, a “clinical diagnosis for spending too much time...over the computer” (Zelesky, 1999). Student services staff often spend long hours attending to the needs of students in the mode of ensuring their success, and thus they can be prone to vulnerability of the need to stay connected with their work and students most of the regular day. This emanates from a possible desire to service students who they know can be helped 24 hours a day. As such, it is incumbent upon senior student services leaders to develop the policies and procedures that govern email communications. This includes the communication of what expectations are for checking email messages outside the regular work day. In instances centering around counseling or help lines, this is a fact of the profession, however general inquiries and operations cannot be expected to endorse constant email applications. This would be unrealistic. However, it is also important that the appropriate use for email is clearly identified. Email is not the appropriate device or medium for emergency related information such as crisis interventions (Ausiello, 1997). It is also inappropriate when critical information is required concerning subject areas. Phone conversation or personal contact



cannot be replaced by electronic communication, the details may be too important. In essence, email should most favorably serve as a supplement to personal contact and not as the sole means of communication (Levy, 1995). It should not replace the management protocols established through in person consultation.

The issues concerning user confidentiality are of paramount importance. Computer administrators with expertise in electronic communication, suggest that email be treated like a traditional post card that passes through the mail system. It is unlikely to be read by others than the intended target however the possibility does exist and the user must guard against it. This is the same in the use of email systems. It is unlikely that many will read the message as millions of these communications interface daily but student services professionals must be vigilant as they field inquiries, and offer advice or information through email. Confidential information is not meant to be transferred electronically unless it is especially encoded, an option that is available, but not yet in wide use.

Email use can be an excellent management tool for student services professionals to communicate with, especially as it relates to the question of accessibility for student inquiries and concerns on a 24 hour day basis. In his early work, Jones notes that " the adoption of technology which will abolish dirty, dangerous and dehumanizing work must be welcomed unequivocally, but we must assert our right to choose appropriate types of technology at our own pace and to express a preference for those which enhance and extend human capacity, dignity, diversity, and understanding" (1984, p. 238). Student services professionals face the same challenges. Zelesky argues, " We must not forget that we exist for students, not the advancement of technology. Our role...has been that of provider, nurturer, and mentor" (P.28, 1999). The challenge is to choose

the technologies that support institutional goals, professional practices, and student preferences without sacrificing the humanistic approaches that clearly identify the profession of student services.

### Conclusion

Student services is unlikely to resist the integration of IT technology into services and programs. The acceptance of IT will allow the profession some flexibility in developing strategies that will complement its application in the interpersonal and humanistic base of student services. In the past ten years restricted operational funds have translated into operational changes that saw diminished services. We are hitting the threshold, operationally at least, of where we can go with reductions. It appears that IT development is being supported by governments in all areas. In this regard, it is wise for student services to embrace IT development and access such funding in the creation of services.

Returning to and restating the purpose of this paper was to identify and describe the current status of the student services profession related to the emergence of IT as an operational factor. In researching this topic two main areas were studied. In the first area of study, factors that influence technology in student services looked at the economic forces affecting program development. Reduced operating budgets, and demands for efficiency are part of this challenge and have lead to replacement of personnel with technological applications where practical. This has created many related challenges as they relate to the question of whether reduced personal servicing is a benefit or hindrance to the overall experience and success of students. A second influence was found to be the concept of the "24 hour student". Essentially students are becoming workers and customers that expect servicing at their convenience. Research has

supported this and the student services profession is beginning to respond by offering automated answering services and availability of supports through resources such as internet servicing. This has prompted a debate regarding the concept of the student as a customer or as a student in the traditional sense. A third influence has been that of technological change. The development of technical services that are personally driven has created higher expectations of what institutions can and should offer as an educational experience. The internet has been the driving force behind this. Personal communications through email and servicing through computerized registration and support has started to develop a technologically dependant student. This, in turn, has motivated student services to begin adjusting to meet those expectations through IT development.

The second area of study was the management of student services in the technical world. The first factor studied concerned the financial considerations of IT development. With reduced financial resources the ability of service professionals to stay current with IT resources is restricted. An essential element of coping is the development of a computer resources replacement plan. The second factor is that of professional qualifications. As the profession begins the development of IT services it is challenged to upgrade the skills of older employees and develop support for consistent professional development on an annual basis. Without this planning the profession will not remain current with institutional and student expectations. A third factor is the management of services through the internet. Controversial at best, the concept of impersonal advising, support, and administration through electronic means is a difficult prospect. Combined with suspicion are the problems of internet abuse, poor information, and general misuse of the tools available.

Finally, the challenge of properly integrating IT services into the profession can be successful if a careful plan is developed that combines traditional operations with new and evolving technologies. Part of this process is the formal preparation and training of student services professionals, the next point of study in this folio. How the profession of student services chooses to handle the technological revolution will determine its future. This careful development can allow post-secondary institutions to fulfill their primary mission while at the same time being innovative in responding to program challenges and caring for the relationships we have with our evolving students.

## Utilizing Emerging Information Technology Applications in Professional Preparation

### Introduction

This paper aims to describe the types of emerging information technology (IT)<sup>3</sup> resources being considered by student services professionals and the ways in which that technology is being applied to help these professionals<sup>4</sup> adjust and plan for the programs and students they service. This paper is a look at the changing face of student services as it evolves from traditional roles and works to support its professionals in embracing that change, while at the same time motivating and supporting the student. In studying various changes it is hoped the reader will understand that the student services profession is evolving with IT change and developing the professionals to meet the challenge.

### Background of Emerging Applications and Professional Preparation

History is replete with distinct examples of advances in education that created major changes in how people learned. The printing press contributed to the accessibility of scholarly works that were usually the privy of learned scholars and religious leaders. The open universities of Germany offered populations wider accessibility to education systems. The development of the computer advanced the science of mathematics by enhancing the formations of theories and formulas.

Is the current explosion in information technology (IT) a similar example? Many educators argue that the impact is the same and society is heading into yet another period of

---

<sup>3</sup>IT is a descriptor of all elements of Information Technology including Information and Communications Technology

<sup>4</sup>The term "professional" is a descriptor for all types of student services administrator, dean, directors, or managers and may be used within the paper.

adjustment concerning education and how it is pursued. Green (1996) reported through a campus computing survey that more than seven million college students and faculty used the Internet and World Wide Web as part of daily and weekly activities. This large number, now three years old, indicates that IT has emerged as a permanent, and accepted part of the college experience.

The emergence of the technologies also coincides with the development of student-centered initiatives in the past decade. The timing is wholly appropriate. Student affairs and services main purpose is the promotion of student development and learning.

In relation to these developments, undergraduate students are increasingly exposed to, and utilizing, advanced technologies in their pursuit of a post-secondary education (Sewart, 1993). In turn, graduate students and student services professionals will expect the same technology to be integrated into the university student services graduate preparation programs. Graduate students will expect to finish their programs and be able to apply technology in the development and improvement of their student services programs. In the course of their studies, the exposure to new technologies can be exciting and act as innovative tools to expand the learning environment for students. The student services professional is dedicated to promoting student learning, so it is important that graduate students and professionals in this area experience all the benefits that new IT offers to their profession. This is especially important as new graduates complete their studies and return to their profession to address the needs and preferences of a growing and diverse student body. Preparation programs should be dedicated to learning that utilizes emerging technology and encourages active student contributions to the institution, classroom, and the society. IT applications encourage faculty student interaction at a

social and academic level, something that encourages positive student service development. The ideas for using this type of interaction should also be included as a part of professional development. This paper studies four main areas in which professional development and emerging technologies help prepare the student services profession. First, there is a discussion of the related learning principles which must be used to guide applications of technology. Secondly, there is a discussion of the major components needed in student learning that uses IT in the World Wide Web. Thirdly, the use of technology in advising programs is discussed. Finally, there are examples of selected competencies that professionals should have related to IT that could be considered standard and that are necessary for the professional to adapt and grow. With this in mind, this paper addresses how IT can be utilized by student services professionals in the promotion of student involvement, learning, and development. The areas concerned include: the fundamental learning principles that should be used by student services professionals to guide applications of IT; major components of student learning-centered information technologies that use the World Wide Web; and the use of IT in student advising, instruction and development initiatives.

#### Stages of Fundamental Learning

The key to enhancing learning and personal development is not simply for the faculty to teach more and better, but also to “create the conditions that motivate and inspire students to devote time and energy to educationally purposeful activities, both in and outside the classroom” (American College Personnel Association, 1996, p. 118). These points also apply to the student services professional who supports the development of the student at the post-secondary level. There are many significant developmental challenges for post-secondary students including the

development of social and individual personal skills, academic, and career related skills.

Fundamentally, student services professionals would argue that all students must have equal access to learning activities to attain these skills and their related goals and objectives. This equal access includes those students who face economic, learning, physical, and cultural challenges. The learning principles that govern and support this access in conjunction with emerging IT applications are student preparation, planning, and reflection (Baier & Strong, 1994).

### Student Preparation

Electronically gathered information can be utilized in many ways to assist high school students prepare for post-secondary studies (Carr & Johansson, 1995). The teachers, counselors, and students themselves are now able to access on-line tests that assess student abilities and performance. This, in turn, aids student services professionals in identifying basic skills and any type of remediation that may be needed before the student commences studies in higher education. The use of web sites also improves access to information on academic performance which includes such planning tools as career search and comparisons, various school programs, and identification of accessibility options. These are important considerations before a student attends a specific school with a specific program in mind in order to realistically prepare for a relevant program of study and career choice.

### Planning

Student Services professionals must be able to teach students about the resources available to them to identify such things as career goals and how best to achieve them (Cuyjet, 1996). Technology gives students the opportunity to develop a link between planning an academic program directly and planning to establish a viable career. Electronic linkages can



easily be established that allow the student to develop a specific academic plan for a program, and the activities that complement such studies in the field of voluntarism and research.

Feedback on electronically formatted student plans, can be provided by academic faculty, staff advisors, friends, and parents. Administrators who access such plans are able to plan future resources that help students meet course demands. The participation of students in such planning exercises can be assured through the requirement to register in a specific course designed to introduce post-secondary learning. Such a course would entail introductions to all aspects of the college experience from social to academic development and would be linked to the use of IT. Such linkages would include exposure to Internet based information distribution such as databases that can increase student involvement in campus events and organizations. This in turn can increase the educational potential of student government, sports, residence life, community services and public events (Mills, 1990).

One of the greatest potentials of developmentally organized IT in planning is the guidance it can provide students in identifying, assessing, and recording learning competencies (Benedict, 1996). Learning abilities occur through college activities in which students learn about and develop skills in their academics, personal behavior, social life, and career searches. The skills developed in these instances are the measurable outcomes that are directly related to student development. The education of students in planning for, observing, and evaluating their learning competencies offers a way for students to acquire responsibility for their personal learning. Students are then able to acknowledge these accomplishments in the college setting in ways that prepare them for professional careers.

## Reflection and Assessment

Learning competencies indicate not only the acquisition of skills, but also the awareness of competencies serving as a guide for future learning. Students develop this awareness when they reflect upon the development of their skills. The student services professional plays an important part in this aspect of learning. Assisting a student in documenting and reflecting upon learning accomplishments is part of the responsibilities of helping students develop a learning portfolio. This is particularly important in developing such accomplishments as career plans and goals.

The three learning principles of preparing, planning, and assessing are best applied in relation to each other. These principles help to create the conditions that maximize student involvement, learning, and success and fall to the forefront of the responsibilities of student services professionals in student development.

### Developing Student-Centered IT Programs on the World Wide Web

The choice of institution can be determined by many prospective students based on their ability to get most of their answers from one source (Levy, 1995). An institution that can put applications, calendars, course information, and activities on the Internet increases student satisfaction. Student services professionals are able to take this accessibility and ease of information even further. In 1995 the University of Minnesota Duluth (1999) became one of the first North American Universities to consider such accessibility for their student satisfaction. A guide to the development of web-based student learning centers around two basic guidelines for development and growth: the programs must be student centered for student use; and the IT programs on the web should incorporate preparation, planning, and reflection components into

their design. There is no one perfect example of such applications in student affairs and services. However, the next section describes a collaboration of student service strategies in the development of web-based services.

### Design Considerations

Student centered IT systems on the web should consider useful design features in their development by student services professionals. This will help ensure the relevancy of the system to the student, as well as the friendliness of the services to make them attractive to use.

IT designed to support and grow the student experience of learning must first be included in the academic curriculum before students will use it meaningfully. Advising and first-year experience activities must also be adapted to incorporate IT in order for it to be used wisely, and responsibly. This approach will encourage and allow students to use the technology appropriately at the right time and in the right instance.

The practice of student services and learning itself is a social as well as academic activity (Dewey, 1990). The fostering of student development will occur if IT encourages the development of social relationships among academic and social groups. As such, IT should not replace the traditional college campus but rather, work within the college learning community in strengthening such relationships and promoting their growth and sustain ability. IT may pose a risk of removing the traditional interactions of students and faculty, however it can also encourage that relationship building by designing programs built into the web that specifically facilitate interactive and personal contact.

Accessibility is another important consideration. All students, faculty, staff, and student services professionals must have access to, and be trained in, up to date computer use. This is

especially true as it pertains to the Internet and web-based technology. Training opportunities should be available to ensure computer literacy, including the training to learn email usage, navigation of web sites, search techniques, and efficient usage of computer resources (Sproull & Kielser, 1995).

The design of IT systems should be informative. Campus information should contain up to date and correct information resources that will be available to respond to questions, especially ones that are email based (Rhoades, 1995). This point asserts that web documents must be considered official college documents and therefore have all the traditional information such as citations indicating sources as well as authenticity. It therefore becomes necessary for the specific departments that utilize web services to identify who owns the information source, and to have resource persons available on-line to respond to inquiries.

Systems design should be interesting. One of the attractions of the world wide web is that it offers interests based on the excitement of the electronic medium. Many of the interactive video and audio components make it incredibly exciting to use because of consistent change. In addition to it being interesting, web formats allow more accessibility to more students who have various learning styles (Sewart, 1993). The variety in type of user, and type of service can thus create a user friendly environment, and enhance the learning experience.

Finally, the system must be easy to explore and follow through in its navigation. The amount of information appearing on web sites is phenomenal. Therefore, it requires organization that is simple, interesting, and satisfying. Search engines are the mainstay of this process (Baier & Strong, 1994; Kramer, 1997), however campus information can be organized into specific institutional indexes. This will better facilitate the campus user in their efforts and inquiries.

### Evaluating

IT offers opportunities to pursue and complete tasks more efficiently (Kuh, 1997). The writing, analysis, and organization of information efficiently can help to save money and other related resources in the pursuit of projects and research. The greatest effect in this area may be on students. There is a shift away from the traditional approach of department centered servicing towards a student centered approach of servicing. This move, in combination with IT servicing, may reduce the amount of time students spend searching for information and services. Ideally, the level of satisfaction with such servicing will improve along with the quality and efficiency of routine college processes.

Development of IT servicing alone is not enough. Effective assessment and evaluation tools must also be built into the process. Any programs and services offered through the web must be measured for their effectiveness and impact. The immediate nature of the medium allows many such measurement tools to be built right into the system being used. In cases of web registration for courses, for example, completion of the registration process can be evaluated by a short questionnaire at the end that measures satisfaction. The responses to speed, ease, availability can quickly be counted through the computer application thus giving the programmer immediate pictures of the service and constant improvements that may be needed.

### Issues and Concerns

The growth of web-based and Internet technologies of communication has also created a series of issues and concerns revolving around personal, professional, and ethical challenges (Green, 1996). Institutions that have embraced the new technologies must also address the inherent problems that come from their use. This includes a willingness to develop strategies,

programs, and resources that aid the user and remove obstacles that might curb learning. The development of IT services cannot be done without consideration of the impact on the student and the institution. The issues and concerns are exacerbated by the reality that accessing IT resources can be done through personal computers owned by the user. In this case, an institution finds itself in the position of service development and offering without the traditional direct controls associated with such efforts. This becomes problematic as described in the following sections.

### Distractions

The web offers many distractions and opens up information opportunities that have traditionally been restricted, or difficult to access. These include such things as pornographic sites and materials, overuse and abuse of chat rooms, and the use of advertising and marketing tools (Sproull and Kiesler, 1995). This creates social situations such as alienation, unacceptable social and sexual behaviors, and general social problems in the student environment. There are also a variety of academic works on-line that may distract a student from the required work of their academic studies (Dewey, 1990). These distractions are very disruptive because they are combined with the attraction of advertising and multimedia, making them entertaining distractions that lure students away from their immediate tasks. As technologies advance, students are also utilizing programs and equipment that have a combination of services. The personal computer is now able to serve as a word processor, email server, television, stereo and much more. This creates even further distractions and requires the student to apply even more discipline. Because of all these options there are challenges on how to best control them. The obvious solution seems to be the promotion of internet use through a combination of directed

assignments and encouragement of students to develop self-discipline (Gilbert, 1996a) in recognition of what the consequences are for improper or wasted use.

#### Social and Academic Withdrawal

One of the biggest strengths of the Internet and web-based services is the ability to deliver information directly to the user without interveners or “middle men”. For the student user, this means the possibility of utilizing the home computer for most information, thereby reducing the need for travel to campus libraries, service areas, and academic classes. These students may rely on the computer for almost all information and be so satisfied with the results that they withdraw from campus activities, social involvement and academic activities with larger groups (American College Personnel, 1996). These students may also develop their social interactions through chat rooms and list serves, discussion groups and links that deliver information. This type of activity then contributes to the development of the illusion of social interaction, when in reality such activity has been supplanted by the artificial sources (Simonson, 1997).

#### Incorrect Information

Students of a traditional age and background may develop complete reliability and belief on everything they hear and read on the Internet (Kuh, 1997). This is due partly to the fact that younger students have grown up with the technology, have developed its use, and relied on its sources for much of their social and academic information. However, the problem of misinformation exists over the Internet, primarily because of the ability of anyone to develop web pages with words. Web publishing is subject to creation without the benefits of strict publishing, editing, writing, and research that ensures reliability and accuracy for the user. In the post-

secondary field the problem is made even worse by the lack of systems that can easily identify whether information posted is official institutional information or a combination of unofficial facts and figures. Finally, electronic information does not currently have built in systems that ensure accurate comprehension by the user, despite the possibility that the information is actually excellent beyond a doubt (Kuh, 1997). In terms of student services however, this is much less an issue than those of social disruption and academic under performance due to IT misuse. It is a factor in combination with all of the issues we have discussed.

### Accessibility

In the post-secondary environment of 1999 it is apparent that not all student services or academic departments have equal budgetary resources or interest in developing electronic information for the use of students (Memorial University, 1999). This may be in part because the leadership is not willing to do so because of unfamiliarity of the potential, or they have deemed it a non-essential item on the list of development and operational concerns that they might have. In order to address this challenge, student services administrators must demonstrate leadership in the provision of guidance and solicitation of funding to develop electronic information for students. This includes ensuring that students and staff have reasonable access to that information through the proper equipment and services. The technology requirements for this service change rapidly, therefore it is incumbent upon student services administrators to develop effective budgeting and research information that supports such servicing as a priority. This will ensure that students are able to access Internet services without lagging technical support.

### Safety and Security

The Internet offers opportunities for the transfer of personal and private information,



whether intended or not. This creates unique circumstances and issues around the issue of how to best protect the user in such instances (Green & Gilbert, 1995b). Included in the process is the development of security safe software, development of user protocols, and clarification of who actually controls the secure information belonging to the students and the institution. This issue is a very important one, and tends to be taken less seriously than should be by both students and professionals alike. This can change through the careful development of electronic services and subsequent updating of security measures. The topic of security and safety is vast, and can be the subject of a separate research project.

#### Utilizing Technology in Advising

One of the biggest challenges to student services professionals is planning how to keep current with the fast paced changes in technology that is used by students and professionals alike. Within the field of student services, specialists in this area have begun to appear to service that specific challenge (Baier and Strong, 1994). Professional journals servicing student services, have begun to report on research and services that address the issue of updating the technology used. This includes regular reporting on information from professionals in the field that are facing the challenges of keeping the technology current and relevant. These professionals are reporting from all areas of student services including advising, programming, student aid programs, health and other support services. This process supports the awareness issues that many professionals face annually. This sharing of information and reporting of operations also benefits from the development of list serves, web sites, and similar resources by professional support groups and institutional programs. The Canadian Association of College and University Student Services (CACUSS) supports such information dissemination through its divisional list serves and support

services. Residential, health, and career support sections are all able to consistently share information on technological advancement, resources, and challenges through these mediums. In this way, the information is current, and the resolutions are numerous.

### Designing Student Affairs Directed Programs

While student affairs services and programs have traditionally evolved outside the classroom supports, there is a new philosophy and operational reality that views class approaches as an appropriate tool for support development. This includes the preparation programs for students to ensure healthy academic planning and skills. IT advancements currently support the consideration of many related services within these programs. Internet discussion groups are recommended to become the norm as opposed to the exception when it concerns course seminars and program involvement. Assignments for students are encouraged to be web-based, or at the very least, have major elements that require the student to access web sites for research and servicing as a component of the seminar. Students are also encouraged to develop skills in the presentation field using such software as Power Point, Presentations, or Excel as a means of familiarization and preparation for technological development (Willis, 1998). Finally, use of email for discussion purpose, forwarding of research work and general communication can be encouraged as progressive tool. This offers opportunities to develop working relationships with others outside the immediate campus and as far as the continent or world itself. This includes the utilization of video conferencing and real video for conferencing, presentations, and other related activities to the specific seminar or program.

### Student Organizations-Advisement and Support

One of the most important aspects of student services operations is the support and

advisement of student groups and organizations. This includes many types of organizations ranging from traditional clubs, societies, fraternities and residences, to the more formal operations of student governments, service agencies, and programs (Moneta, 1997). Technology offers opportunities of change in how these organizations function on a level of communications, business operations, promotion, and general operations. Students can benefit most through direct access to advisors through email systems especially as it relates to urgent and important questions. Student organizations can also be encouraged to develop comprehensive and effective services such as email responses to enquiries. Not only is this a relevant service, technological servicing also allows the organization to promote important information that not only covers social activities, but also allows coverage of important academic information that may be more likely read by the student in the student organization (Moneta, 1997). Within the actual operations of the organization itself, the opportunity exists to “democratize” the operations to the fullest extent through posting of current issues, topics, and agenda items and to open them to discussion by the general student populace being served by the particular group. This allows a fairer and more equitable response to certain issues especially those that may be deemed contentious.

Student organizations, like business, are increasingly involved in the development of their own web sites to inform students about what their organization is doing, the leadership and members, as well as the programs and services they offer (Memorial University, 1999). Some institutional organizations are offering services and systems that offer group accounts and passwords through the web servers. A specific group is then able to develop their own web site and information services that can then be directly linked with the larger student organization.

This is especially attractive to student governments and their varied clubs and societies that have annual changeovers and development. Student services advisors who work with such organizations are encouraging them to develop research activities that study list serves and technological supports that help these groups grow and prosper on an academic as well as social level. The concept is the direct development of information sharing systems that cover a variety of topics that can be dealt without outside of the traditional borders of the institutional campus.

Residence operations are at the front of this process (Kotter, 1995). Student leaders of residence committees and social groups are utilizing IT to keep their fellow students informed, to solicit input, and to share the information with other residence operations. Traditional meetings are being replaced by the constant sharing of social and academic information on the Internet. Web site offerings produce pictures and updates on activities, foster community activities, and prompt wider exposure to the community. Most importantly, the technology offers residence operations the tool to develop and promote spirit building, tradition, and reputations through pro-active and progressive activities shared by the residents as a whole. This is probably one of the most positive effects of the web-based technologies in residence, the development and fostering of cohesive community that is so essential to collegiate residence operations (Benedict, 1996).

IT can also be an excellent tool for the development of the individual student. Students can be encouraged to share email addresses with new friends and student services professionals. This is effective when the professional develops discussion groups that encourage inquiries on various aspects of the post-secondary experience. The student services moderation role is best applied here in the fostering of dialogue that encourages students to talk about their anxieties,

expectations, fears, and ideas. In this regard, students do not fall into one specific category, rather they are a variety of backgrounds and experiences. These categories include commuter students who live outside the campus, students from specific cultural backgrounds, religions, and sexual orientations, as well as physical and learning disabilities. In most cases technology offers the opportunity to grow on the varied experiences through such discussion groups for the technology is a communication support system.

One of the most important roles of the student services professional is the leadership role assigned to them in the development of student work shops and courses that teach skills in the use of the Internet. Memorial University (1999) has developed Internet seminars into its orientation programs on a departmental and campus wide basis so that first year students in particular, are familiar with the proper use of Internet technologies. Although traditional students from high school systems may bring with them knowledge and understanding of the technological usages, they may still require familiarization in the etiquette and proper use of the Internet in an academic setting.

Finally, there are many opportunities that the Internet and other information technologies can offer to students and staff alike. Student services professionals must learn to incorporate such support in the development of their operational and strategic plans for the support of their students. Think tank and planning sessions will aid in the development of advising, program development, and teaching strategies that help to develop quality services for student groups, individuals, and their involvement in the post-secondary experience.

#### Information Technology Skills and Abilities

The abilities and skills related to IT should be integrated across the curriculum of

professional preparation, and student education, and not isolated to specific classes (Gilbert, 1996b). Professional training programs for student services professionals must develop mechanisms that ensure they learn the basic technical and operational skills for technology applications in their field. These include: use of email for communication and discussion groups, use of search engines in web systems, using the Internet and CD rom's in research activities, use of list serves and news groups, designing web pages, transferring files and other word processing, and general operations through electronic means. The tools to accomplish the teaching of these skills can come from current campus students and support services that have developed expertise in the area. This is important as it is apparent that many current students are much more knowledgeable in the area of IT applications than are many current student services professionals. Their knowledge and experience can be readily tapped in pursuit of the training and development of professionals. They are able to communicate their expectations and student services staff are then given the opportunity to respond accordingly with effective programs and services. This process can also be accommodated through courses and ancillary workshops.

It is also important to not teach the appropriate skills in isolation (Willis, 1998). Training should include specific applications of technology to promote student learning in residence complexes, counseling applications, student development, and career planning among many other functions and activities. Professional training and development should also include exposure to campus information systems, data based decision making, and analysis of technological data as it pertains to direct program development. Not only is the education to systems important but the training should also extend to the development of working relationships with technical, program, and operating staff that deal with IT. This will help in the development of an effective

relationship where communication addresses specific wants and needs of the student services professional. This, in turn, results in development of good programming.

The professional preparation also includes the examination of critical issues that emerge from the integration of technology in a campus environment (Cuyjet, 1996). Student services professionals must be educated and trained in the urgencies that technology brings. Many questions arise including: what the impact is upon freedom of speech through the Internet, the development of standards, policies and procedures, and what are the financial implication upon students who are expected to absorb and embrace new technologies? These are questions that fall into the realm of the student services practitioner.

The importance of a well developed structure to explore questions related to technology, is also a consideration. It is important to be aware of the development of technology services for student services that leave students feeling out of touch. This must be avoided at all costs. There is a need to strike a fair balance between the educator, administrator, programmer, and counseling roles (Baier, 1993). The development of distance education courses and programs further requires redeployment of the traditional student services roles of support and servicing. The professional training may require that participants register for such an experience to gain first hand information and expertise on what the distance and technical experience is actually like. This experience reaches as far as the examination of the effect that IT has upon the nature of student services organizations and the relationships between students and practitioners.

In any case, it is obvious that there is a need for a well coordinated approach to developing student centered electronic information. The major benefit of this approach is the simplicity of maintaining and developing a centralized electronic information system. In contrast,

the traditional information system of paper copy and materials is less efficient and less user friendly. Finally, the development of the electronic approach to information and support is best maximized through the proper preparation and training of the student services professionals who are involved in the development of such programming. It is imperative that these professionals be trained in, and kept updated on, the latest technological advances in student service technology. In this regard the development of IT can help students prepare for the modern college experience if the student services professionals providing the services in their many forms, are thoroughly familiar with the possibilities that emerge from technological applications.

#### Conclusion

Returning to and restating, the purpose of this paper was to describe the types of emerging IT resources being considered by student services professionals and the ways in which that technology is being applied to help these professionals adjust and plan for the programs and students they service. Stages of fundamental learning were researched presenting the importance of preparation, planning, reflection, and assessment in the preparation of professionals in students services as well as students themselves. Further research studied examples of how to develop web-based student programs from the perspective of programmers and students. This revealed the elements of design to be considered, and a select number of examples of issues centering around design. These included distractions, questions of accessibility, safety, and the correct presentation of information through web services. In this section skill sets and operational challenges that student services staff would encounter were presented. Specific to the student services professional the impact of IT was studied in the traditional area of academic and social advising services and how best to adapt technologies to the service. Important points raised



included designing directed programs and the development of advising structures for student groups and organizations. Lastly, a summary of the skills and abilities student services professionals must have was presented for consideration. In combination, the paper supports the idea that professional training and preparation will benefit mainly from exposure to IT in various forms throughout the profession.

Finally, this review of the endless opportunities for integrating IT into the preparation of professionals suggest that any IT program efforts must include a systematic and intentional process to enhance the learning and teaching process. In this manner, professionals and students will be able to use IT to promote student development and learning.

## Utilizing Information Technology in the Future of Student Services

### Introduction

This paper aims to identify and describe the challenges facing Student Service Professionals<sup>5</sup> in the 21<sup>st</sup> century and the roles, trends, strategies, and operational models needed to ensure the growth and development of that profession. This paper is a look at the emerging and future service challenges and how student services is coping with that change and creating new programs and services involving Information Technology (IT). By studying various options for future services it is hoped the reader will learn how student services is responding to the IT challenge and to what extent these services can be developed in the future.

### Background of Future Planning Initiatives

The millennium has brought with it the inevitable question of change. IT has never played a more important role in our lives than it does now. In student services, it is equally important that the profession stay current in new developments, applications, and responsibilities in technology.

IT has seen its greatest progress in the academic field (Findley, 1997). Innovations and new uses abound, for example, the electronic classroom and touch button library are realities that have gained acceptance and popularity amongst post-secondary students. These academic applications have generally been successful and that has encouraged their application in the student service field. The question then posed is, how should student services evolve and plan for the future utilizing IT? This requires the development of a plan to establish technological

---

<sup>5</sup>The term "professional" is a descriptor for all types of student services administrators, deans, directors, or managers and may be used within the paper.

innovation that supports, yet does not detract from, student services programming. The student service professional must facilitate the changes by communicating effectively with stakeholders such as students, faculty, staff, and the community. The student service professional also becomes the teacher and educator as they share their knowledge with the community. This includes teaching the importance of IT to others, while at the same time learning about the newest forms of technology and how best to incorporate them into student services. This approach will enable student services to develop into a learning organization, partnering with its faculty colleagues in challenging traditional thinking and promoting innovation (Simonson, 1997).

Student services professionals should be viewed as policymakers dealing with all the legal, ethical, and administrative implications associated with IT and its untested effects. These policies may center around electronic guidelines that reflect traditional policies, rules, and regulations but deal realistically with the associated technological implications. This requires senior student services professionals to support change by taking a positive approach and embracing IT. This will enable institutions to apply the technology and improve student learning through the development of new operational models.

### Methodology

The literature on future IT implications in student services revealed various opinions, suggestions, and ideas on how student services will evolve in the near future. However, references to the current strategies being considered utilizing IT are limited to journal items, specific student service writings, and technology articles.

To supplement the document analysis, six interviews were conducted between November

1999, and January 2000. Interviewees included individuals representing senior student services administrators, deans/directors, managers and service providers such as the registrar. These individuals held various posts within the university and college system and remain anonymous for professional reasons. The purpose of the interviews was two-fold. First, to determine how successful the student service profession has been in adapting to IT opportunities and challenges. Second, to discuss in broader terms issues and future developments of IT within the student services field. References to the interviewees insights are indicated through identification as Administrator 1 - 6 accordingly.

Each participant agreed to one interview lasting approximately one hour. During this time the following questions were asked:

1. How effective have student services practitioners been in responding to the impact of IT?
2. How could student service professionals better deal with the future impact of IT?
3. Is the utilization of IT essential to student services development, growth, and survival?
4. In what areas is IT utilization most effective and useful?
5. What resources are required to develop and implement IT related student services?
6. What are the barriers to such development?
7. Whose role is it to develop future IT services?
8. What are the benefits and negative implications?
9. What is the future of IT dependant student services?

Allowance was also made for general commentary and suggestions regarding the topic. All comments were combined and presented throughout parts of this paper in the appropriate areas.

In assessment of the interviewees responses it became clear that the IT resource has

general acceptance among practitioners in student affairs. Participants generally concluded that IT offers exciting opportunities that have never existed before in the development of student affairs. In addition, the perception is that the profession must embrace IT advances or risk falling behind in support development. Suggestions on how best to achieve this is varied depending on the current state of various student services operations.

### Structure of the paper

This paper focuses on some main concerns of future student services operations. The administrator interviews are utilized in conjunction with current research to present perspectives on what the major topics will be. The paper begins by presenting a discussion of the roles of student services professionals in the future followed by examples of general trends in society that will affect post-secondary institutions. The third aspect of this paper discusses the specific implications of IT development in student services related to these trends. This is then linked through a review of suggested technology models that can be utilized by student services professionals in order to best facilitate program development and operations. Finally all of these points are combined into seven distinct suggestions on how professionals can best cope with IT challenges without risking personal and professional failure.

### Future Role of Student Service Professionals

Traditional roles and responsibilities of the student services professional are changing rapidly in relation to the impact of IT. College and university communities must stay current with technological innovations that meet the needs of the institutional members. Student services is a part of this process and the professional within must evolve accordingly.

### Professionals as Architects

Student services does not have a strong tradition of operating as institutional architects, defining an institution through planning of goals, objectives, and philosophy. As a result, the profession has been traditionally defined through its responses to institutional plans that have not been the result of their involvement in the design process at the senior level. According to one of the student services professionals interviewed (Administrator 2, 1999), student services need to become architects of planning as it relates to IT. In doing so the student services professional becomes the leader in initiating and developing consensus on a strategic planning process for student services, including the development of fundamental questions that help build the goals and objectives for a technological plan. Such questions include: “How will technology change current work practices? What is the balance between academic and social development through technology? What way can student services professionals make themselves players in the technology revolution?” (Administrator 2, 1999).

These sample questions help address current technological impacts. Assessments will identify trends and changes, thereby guiding the planning process. The constant changes, improvements, and break throughs create new ideas and causes IT plans to change as the needs of diverse groups are addressed. New initiatives require critical evaluation to measure effectiveness. This is primarily because technological servicing is very expensive and a commitment of resources to such ventures requires results that demonstrate positive impacts on student learning (Administrator 3, 2000).

The construction period will see the vision and plan grow. It is the responsibility of the student service provider to gather information from stakeholders and define the vision (Cornish,

1996). The vision is then integrated into long and short term plans that should help staff members think broadly about the impact of IT rather than focus on a narrow problem or working area. This approach helps to discourage a focus on individual or separate department areas.

Another element to consider as a technology plan grows, is that it be in sync with the mission statement of the institution (Administrator 3, 2000). By directly linking the student services technical plan with the mission of the institution, the impact of the plan can be strengthened making it more viable to the whole institution. This creates partners within the institution that will help the plan, as well as the mission, grow to meet constant changes and demands.

Beyond the development of a technological plan, is the accessing of the financial resources to accomplish the task (Hall, 1991). The past decade has been marked primarily by the shrinking of financial resources to accomplish tasks at hand. This is especially true in post-secondary institutions where budgets have shrunk enormously. Given this challenge, the student services professional can identify allies within the institution that support such initiatives as a technology plan. Traditionally, these allies will come from areas such as the registrar, library services, computing departments, faculty support areas, and student bodies (Administrator 6, 1999). The student services professional can remain close to the changes because results will take some time to be realized, a period of years and months. This enables the professional to develop response protocols, plan for change, and continue to develop partnerships and resources for future program changes.

### Professionals as Facilitators

The idea that technological change and adoption will be immediate is false (Cornish,

1996). Students, faculty, and staff will learn to utilize IT resources gradually as they are introduced into their working and academic routines. Because IT projects are new and evolving, the communication must include education so that the stakeholders will learn to accept them into their daily lives. This is extremely important, (Administrator 2, 1999), as it aids in the development of the team approach, removes fear of change, creates cohesiveness in the working unit, and makes the implementation of the technology plan much easier. Each person involved will have various comfort levels concerning technology. In recognition of this fact, a variety of techniques should be considered including training sessions, focus group, large group meetings, and individual counselling or training.

The form of introduction to such IT change can be varied. The discovery of linkages between the different elements of IT and learning can be a cornerstone of this approach (Milam, 1999). Development of a training package that includes e-mail, Web page creation, list serve groups, and video conferencing may serve to identify the benefits of IT. Users can have the option of choosing one service, but in doing so are also offered the realization of what all the services linked together can mean for the user (Findley, 1997). If they become familiar with one aspect of the technology they may be more inclined to embrace the other aspects as well. If, for example, a user is exposed to e-mail and realizes the relationship between it and the web, the possibilities of student learning can be realized to the full extent.

### Professionals as Educators

The implementation of a technology plan will require more training and education for professional leadership (Kvavik, 1998). To be effective, the professional must continually learn about IT innovations. This can be accomplished through national, regional, and institutional



research projects that provide new ideas on how the profession can best utilize new innovations in IT. The traditional student services professional has been a user, not a developer, of IT. This can change with other institutional expertise that is developed through partnerships. The computer, library, and registrar services have banks of experts and expertise in IT that can be properly applied to the student services profession. Student affairs can serve as the mobilizer of these resources into a shared knowledge base. The development of these learning and educational partnerships enables the profession to develop further technology plans and programs in general for their students.

#### Professionals as Policymakers

New IT developments bring considerable legal, operational, and ethical obligations. The Internet demonstrates the biggest challenges in this field with etiquette rules, confidentiality questions, academic freedoms and personal ownership. The ramifications of such an evolution are many and require constant adaption and review. Institutions must develop appropriate responses and policies that outline evolving user and developer responsibilities as IT services grow.

Student affairs professionals must also assume an active role in facilitating institutional policies (Komives & Woodard, 1996). In collaboration with departments, academic units, staff, and students, student services must lead in the development of cohesive policies that will not leave students confused about expectations and responsibilities as it concerns technology usage.

Policies and guidelines that regulate IT should be consistent with, and complement, institutional harassment policies, codes of conduct, and discrimination policies. This includes identifying what is, and is not, a violation and how breaches should be reported.

### Professionals as Futurists

Student affairs professionals can play a useful role as guides to the future of IT in institutions. They bring a set of useful values and knowledge about human behaviour in higher education that will help those who fear IT (Kvavik, 1998). The idea of what a futurist is, comes complete with mystical images of what society has been exposed to over time. This includes conceptions of what future cities will look like, what will be eaten, how people will dress and so on. So it is within higher education and the field of student services where visions of servicing are offered for consideration.

Absolute predictions of the future are not possible, but society is getting better at predicting it using indicators of what is happening around us (Memorial University, 1999). In student services, futurists build plans based on alternate models such as assuming a 10 percent increase in student enrollment and developing models of staff support for that increase (Memorial University, 1999). Trend analysis is conducted to see how decisions impact upon aspects of a service. For example, in recent years institutions began to study the impact of reduced budgets and funding from the Federal Government of Canada on students ability to purchase learning technologies such as a personal computer. This in turn was studied regarding academic success. In these ways, futurists attempt to plan to address urgencies.

The 21<sup>st</sup> century will probably continue to see rapid technological developments that will change how people do their work and conduct their lives, yet the biggest change may be the expansion of the concept of what it means to be human. This includes the challenges raised by medical advances in technology that affect choice of birth sex, communications helping human rights develop globally, or the effect of technology on learning in general within higher education

contexts (Moneta, 1997). Many of these new questions will evolve and student services professionals will be well placed to pose the human questions that any technology advance will bring.

### Trends for the Future

The United Way of America's Strategic Institute (1989) projected several trends about the future in North America that have direct implications for post-secondary education, and are influenced by technologies. Student Affairs professionals should likely study these predictions related to the profession. These trends are the maturation of North America, the continent becoming a mosaic society, a redefining of the role of the individual and society, the economy becoming information based, globalization, new personal and environmental health, economic restructuring, the redefining of family and home, and the rebirth of social activism (Komives & Woodard, 1996). Many of these trends are shaped by technology and will benefit from, and find answers in that technology application.

The student services professional should heed such trend predictions and apply implications to the profession to each trend for the opportunity to see what the results will be. This application will allow the professionals to stay ahead of potential trends and plan and project programming to meet their unique sets of challenges. Administrator 5 (1999) noted that if a specific trend, such as globalization of economies, continues as it is developing now, what are the upside and downside implications? If this trend continues and something else happens in between, what are the upside and downside implications in student services? Or, How will this trend affect the whole post-secondary system? The principles of continuity and analogy must be applied to successfully analyse and respond to changes, especially that of IT related progress.

### Specific Implications for Student Services

For many of the reasons discussed, it is difficult to predict all of the possible uses of technology in the near future. The pace at which new technology quickly becomes obsolete is staggering and makes such predicting useless in a paper such as this. However, the challenge can be addressed by studying some new innovations and their immediate affect on the higher education field. In doing so, we are able to illustrate how technological change also tests our values and assumptions. In student services, such examples can aid the professional in their approach to questioning, analysing, and connecting the decisions made when it concerns technology and the application to the profession. The following three examples demonstrate IT impacts on the student services profession as part of perceived trends in the near future.

#### Telecommuting

As an example, Susan, the research officer in the Student Development Office suggests to the Director that she be permitted to work at home three days per week. The research officer states that most of her work is done on the computer using various programs and that telecommuting is now accepted widely in corporations across Canada. With the addition of automatic statistics packages, voice serviced software, and international student databases, she can complete her work without physically coming into the office. She also has a fast service phone modem in her home with digitalized service so compatibility is not an issue. Finally, she points out that she will be better able to work at home uninterrupted and that her productivity will be enhanced without office interruption.

The possibilities that telecommuting<sup>6</sup> offers is the ultimate professional dream, especially

---

<sup>6</sup>Relatively new terminology not yet used world wide in dictionary formats.

for those who live in traditional urban areas where work commuting and all inherent problems are a daily routine. Although student services operations would suggest that the presence of the professional on campus is essential, recent technology simplifies the process from remote locations. "The traditional model is open to change, and it must be given serious consideration", stated Administrator 4 (1999).

Telecommuting offers many benefits including easing stress caused by commuting to work from long distances on a daily basis. Telecommuting also provides flexibility to the work schedule which may benefit professionals with families, disabilities, or varied spousal work shifts. It may also enhance productivity as the employee is offered a work environment that is removed from the traditional distractions of the work place.

Managers who receive a request to telecommute may hastily deny it based on the belief that the traditional student services structure must be maintained and to change that structure would be too difficult. In addition, such changes may affect the balance of the office environment and the interaction that takes place between co workers and fellow professionals. Managers may be challenged to address the question of how to evaluate a workers performance when that employee has no daily interaction. "This issue can be looked at in the light of goal oriented performance", stated Administrator 5 (1999). " It is ridiculous to believe ...that student services professionals cannot adapt to the conditions ", he further states (1999). Questions of perceptions of other employees who cannot telecommute are not so easily answered. Employees may view such requests as unfair, especially if their specific tasks do not allow the option of home work environments. This, however, should not serve as an excuse to deny the consideration of the option. Essentially, it may require the student services administrator to educate the collective

work group to the benefits of the telecommuting option on the operations of the unit as a whole.

### Computer Ownership

Many institutions have placed an emphasis on either creating open access to computer resources for all students or expecting them to own updated computers for their use when they arrive on campus (UMN, 1999 & Southern Illinois, 1999). Institutions have moved rapidly to the connecting of residence rooms, development of campus connection and labs, and classrooms that are fully developed to new computer technologies.

The IT revolution has affected nearly every higher educational institution. Funding has moved to support new technology in all aspects of campus life, however, the competencies of students, faculty and staff have not necessarily kept pace. Student services professionals have noticed this problem and raised the alarm when necessary (Administrators 1, 3, 6, 1999). “We have funnelled resources into areas that are disproportionate to others. Sciences have benefited greatly in comparison to arts, and this causes problems” states Administrator 5 (1999). This leads to a question of effective resource allocation. Sciences are already under represented by women and minorities, so it may develop into a modern version of have and have nots, described as “know and know nots” by Mayer and Gutierrez (1997, p. 17). On this point, professionals are eager to work on preventing the detraction from other institutional goals by the growth in emphasis on IT. The decision making structures must be aware of the competing goals and priorities. The speed of the IT agenda may take attention from other goals, and create inequalities. Because the student services profession is committed to equality, they must ask questions about universal computer ownership. These include: Who will be disadvantaged by such a policy? How will economically disadvantaged students be supported? What interventions

will be available to compensate for different computer skills and levels of competency? Holding to the belief that students come from many backgrounds, these types of questions should be of paramount importance. Administrator 2 stated, “We cannot repeat access failures of the past such as lack of financial resources, or poor secondary academic training. The question of access to technology must be resolved completely before the student applies to the school of choice, or else we lose a student, alumni, and contributor to society in general (1999).

### Student Learning Orientation

Higher education institutions are revising their academic missions to reflect the move from a focus on teaching towards a focus on student learning in general (Moneta, 1997). The Northern Territory University of Australia (NTU) is an example of leadership in this area (NTU, 1999). The faculty has been called upon to adjust pedagogy to incorporate new technologies into the learning process. In conjunction with this, administrative leaders have changed the reward structures to encourage innovative learning. An example of this is the development of a Center for Learning (NTU, 1999) that has designed work shops for faculty aiding them in moving from traditional teaching to student learning.

New technologies will continue to affect the ways of students services for the foreseeable future. The move from teaching to learning processes is just one example of that change. The challenge to higher education is fairly clear. The change of society from the Industrial Age to the Information Age has already begun and is now in the throws of fast pace change. Norris and Dolence (1996) refer to this change quite clearly. “ The changeover is a global phenomenon with very significant local implications... everyone is affected, although at different paces or degrees. The institutions that realign their practices most effectively to Information Age standards will

reap the benefits. Those who do not will be diminished or replaced. “ (p.2).

The changing paradigm is probably not as difficult to embrace for student services professionals as it is for faculty. Administrator 6 stated:

What we have occurring in many cases, is the defending of tradition by academics versus the promotion of change by professionals. It is hard for them to accept that teaching can be replaced by learning models. Many academics simply refuse to embrace the approach as a benefit to their practices, and this has been frustrating for us as student services planners and leaders (1999).

The next century will be marked by the learning model indicators that measure the ability of students to communicate one on one with faculty, have access to global information, network at home, use a flexible curriculum, and demand more services on a faster basis. This is in contrast to the past model that used indicators such as administrative costs, parking space, tuition revenue, graduation rates, and the number of institutional access computers. The challenge for student service professionals will not be embracing the change, but to reshape the role of the profession in the change process. This includes such questions as: What changes will be required of the learning model student services profession? Will learning age focus threaten or enhance the profession? What are the opportunities the change presents for the profession to work with faculty and administration?

#### Recommended Student Services Technology Models

The specific implications of IT in student services presents an opportunity to discuss how best to address and implement them. In this regard it is essential that a consistency be developed in the research, development, and implementation of operations related to IT that meet and



exceed all the standards under which an institution operates. Failure to develop a professional technology model will result in service delivery that is ineffective and prone to criticism and failure in addressing student needs.

### Reasons for Change

Attitudes and expectations concerning easy electronic access to information are rapidly changing. Services for students that are web based or student based, used to be options for institutions (Administrator 1, 1999), but this is no longer the situation. If an institution did develop such services they were viewed as an advantage in competitions with other schools. However, today students require such services and expect choice and convenience when they attend a particular institution or when they are deciding on which one to attend. Students who can now buy videos and books over the Internet also expect to be able to research an institution through their web site and gather all they need to know from that resource. They also want immediate service and no line ups or waiting periods for personal meetings. In such an environment institutions compete in the physical and virtual world, and their services must reflect a dedication to a horizontal model of servicing.

### Models of Operation

Most higher educational institutions have a Web site providing information and services. A quick glance at most of these will tell the user whether that institution is using the site as a portal for information. Staff will be trained to answer email and web enquiries. The web should reflect a student centred horizontal process (Administrator 5, 1999). This horizontal approach will reflect the steps a student must follow to attend or enroll in an institution. The process should be designed from a student perspective and be seamless and without boundaries. “ What

we have encountered in the past 30 years of student services is the development of process... that saw students making separate appointments, going to separate offices, lining up, and being frustrated. That just does not work any more and we would be denying ourselves if we said any different” states Administrator 3 (2000). With a student centred process students should be able to register on line, verify personal information changes, make appointments with advisors, and seek book orders and other services through their computer.

Creating a web site is not easy. Many institutions have followed a process whereby one department may post information followed by another and then another. Each section is specific to that department and does not provides services as a whole for the institution. This approach creates silos, each containing much information but little integration. Administrator 6 said: “We would never create a registration book without reviewing and editing closely, why is the web and other technology treated so differently?” (1999).

### Models of Technology Pcertals

#### Northern Territory University (NTU)

NTU, located in Australia, is a leader in the development of student services and technology. NTU was the first institution in Australia to develop online enrollments. In 1997 it began looking at solutions to improve enrollment and address the challenges of a small population in a large geographic area. The solution considered was Internet based because it pulled together many types of resources and eliminated geographic location and remoteness as barriers to becoming part of NTU. As a result of their research, NTU now uses the web portal for several services: A student information centre that provides student with quick access to services of all types; An online handbook where course, faculty and staff information is on

display; Course development and approval where results of exams are listed, subjects of courses are offered and evaluations are carried out.

NTU also developed its immediate web site as a student friendly area called LaunchPad (1999). It is designed so that students are able to navigate the web site with areas such as: New Student Help; Admission Information; Courses Offered; Social Supports; Academic Advice; and Financial Services.

#### University of Minnesota (UMN)

UMN is also recognized as a leader in using technology to service students. It developed its One Stop Web to support and enhance the student experience. In surveys of student satisfaction, UMN discovered that students satisfaction with their experience worsened as they moved from their first year to senior years (Kvavik, 1998). Students were spending much of their time walking from office to office for services and getting little satisfaction. Robert Kvavik and Michael Handberg, senior administrators, decided to address the situation with a goal towards using technology to service students better. Technological services were developed that provided access to service that was streamlined and seamless. In the old process, specialists handled most of the student services (See Figure 1). Very few services were available through self service, whereas with the One Stop Web students manage most of their own service needs. The new model developed into a system where there were no more silos and segmentation. The seamless process became student centred and much more progressive (See Figure 2). “Kvavik set a standard for future student service developers” states Administrator 4 (1999). “We, as professionals must acknowledge the need to turn old operational models on their head....change can be a good thing” he further states.

Figure 1  
Student Services Process (Kvavik, 1998)

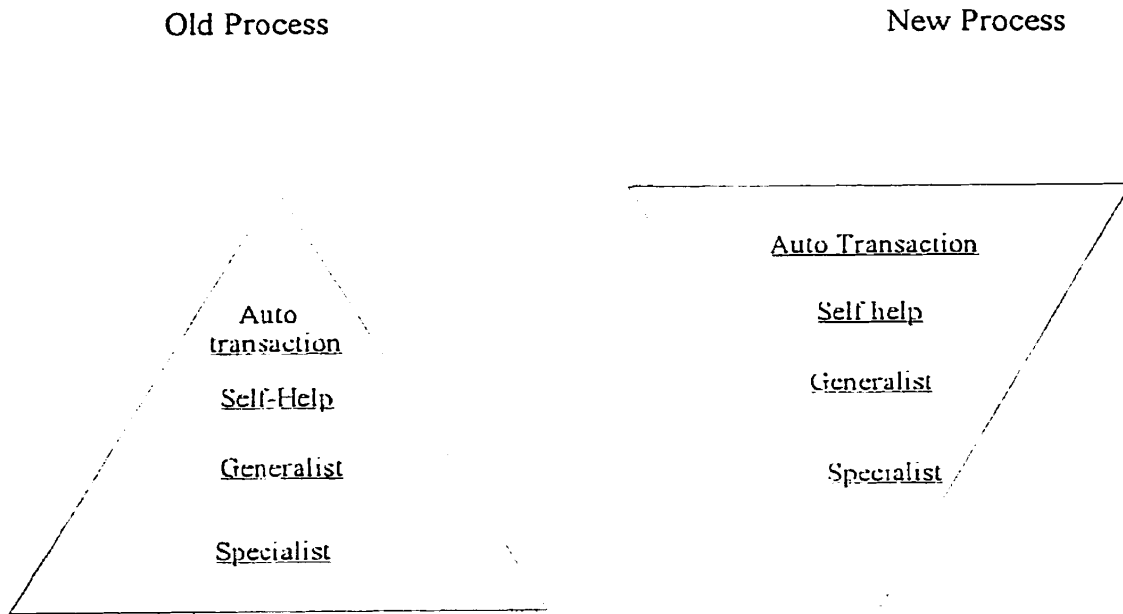
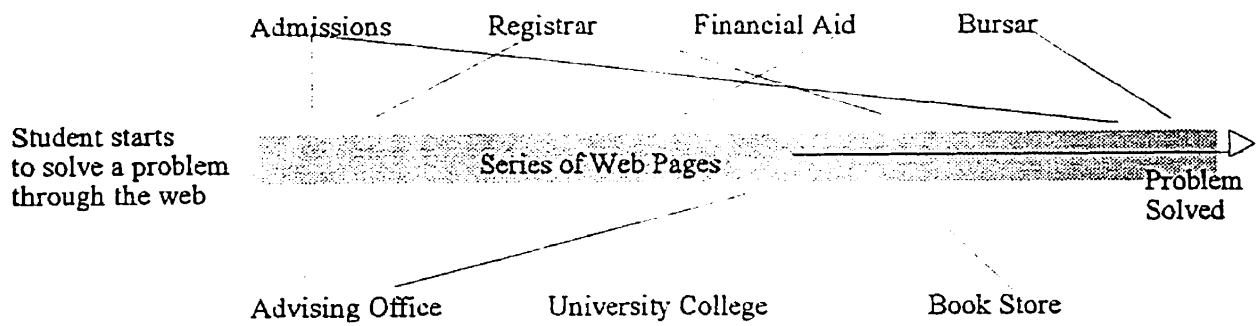


Figure 2  
New Web-Based Student Services (Kvavik, 1998)



## User Centred Design

User Centred Design (UCD) is a methodology for developing products. The focus on the user rather than the technology allows UCD to ensure the applications are friendly and easy to learn. The two main aspects of UCD are that the users should be continually consulted for feedback, and the users should be the focus of the development (Memorial University, 1999). Teams working on this process should have a variety of skills. This includes those with expertise in student services, visual design, leadership, and marketing.

The main benefit of UCD practices is that it leads to satisfied students, a direct benefit for the institution. Involving students in the design process allows for critique and review of solutions to meet their needs. Another benefit is that it is cost effective. Administrators have an opportunity to be assured that the student service is effective. They can be sure that the service will be developed to meet student needs. Traditional planning would be done in relative isolation whereas the UCD process opens it up to development that will not be met with surprise problems or expenses. The UCD process will be highly successful if the sites are developed from a student perspective, information is consistent across the institution, there is cooperation between departments, and the resources are allocated for the continued support and development of the service. UCD is not a one time deal or expense. It is ongoing and must be funded and staffed as other traditional information services are.

### Coping With IT Change

The predicting of the future of IT in student services is difficult. Developing an understanding of the impact is equally troublesome. There are, however, steps that can be taken to adjust to the changes and take positions that lead the profession forward in the information

age. Administrators and other student services professionals have many suggestions to consider.

1. Student affairs professionals who feel they are behind in technological use should not panic. The information age has arrived and evolved so quickly most institutions are still adapting. Senior administrators may feel overwhelmed by the changes however, new professionals are coming to institutions with increased understanding of technological expertise and they will contribute to the process. Student affairs professionals must be willing to embrace the change and consistently work on a technological plan.

2. All student service professionals should immerse themselves in IT servicing (Administrator 4, 1999). Everyone will not be an expert but within the organization of the profession there must be dedicated personnel who understand the developments and possibilities.

3. Ongoing professional development is crucial. (Administrators 1, 2, 3, 4, 5, 6, 1999). Training that develops competencies in IT programs will enable student service personnel to develop servicing related to needs and expectations.

4. Maintaining a balance between the electronic and other forms of communication is imperative. Administrator 2 said: "We have a tendency to believe that the IT advancements will answer our concerns in areas of traditional personal interaction. That is a fallacy and one that should be addressed prominently" (1999).

5. Necessary financial resources must be allocated to the operation of IT services. Innovations in technology soon render current offerings obsolete. Upgrades and replacements are a fact of life in IT servicing.

6. Student affairs professionals at all levels must become futurists as much as is possible. (Komives & Woodard, 1996). Traditional approaches have not embraced this concept, however

performance indicators have become so refined that planning future initiatives is now possible to a certain degree. It is not perfected, however it is more reliable now than before. Information sharing between professional groups is especially important.

7. Finally, any IT planning must remain rooted in the mission of the institution, its history, and its experiences.

### Conclusion

Student affairs can be the professional group that determines the direction and performance of the institution. By using technology to track student trends, attitudes, and issues, the profession can develop the information flow needed for an institution to understand its students. Using IT, student services can become leaders and educators that help to transform institutions so that they are able to service students and make the learning experience complete. The profession can set standards by which institutions operate.

Returning to and restating, the purpose of this paper was to discuss and illustrate the effect of IT on the future of student services. In researching this topic, proposals for the future roles of student service professionals were presented. These included a shift from traditional responsibilities towards more innovative roles such as architects and policymakers in program development. Further research studied the implications of IT for the student services profession on a specific basis. These specifics lent themselves to a review of recommended technical models that could serve the profession in its future development. These models demonstrate an endless possibility of IT services that will benefit the student and institution involved in the higher education process. Finally, the interviews with senior student service administrators confirmed most of theoretical frameworks available. They supported many of the suggested models of

future IT operations and the limitless technological services that can be incorporated in the student service field. For example, Kvavik, (1998), points out that the majority of higher educational institution students entering schools in 2015 were already born in 1997 and 1998. They can be tracked over the next 15 years to determine their needs and wants prior to their attendance in a post-secondary institution. The challenge is to connect their trends and make the service respond accordingly.

Finally, IT is not an answer onto itself. It is, rather, a tool to be considered as a support in conjunction with traditional models of student services. By working with, and not replacing traditional services, the IT projects of institutions can be highly successful in the attraction of students to an institution, retaining their presence during that education, and enhancing the satisfaction of that experience while they attend. In doing so, IT and student services will work hand in hand towards the growth and maintenance of the institutional primary mission and goals.



## Summary and Implications

The objective of this folio was to identify and describe many of the Information Technology (IT) challenges facing student services providers in post-secondary institutions. An important aspect of this research was the investigation into the current status of IT development within the profession, how professionals are being prepared to adapt to the changes, and what some of the future implications of IT development are upon the profession. It was revealed that student services practitioners realize the need to embrace IT applications but they require the resources to do so, both financial and theoretical. This final section presents some of the implications for policy and research in post-secondary institutions.

### Policy and Practice Implications

Three key findings emerged from this folio that have implications for policy and practice within post-secondary institutions. These areas involve resource availability, professional training and support, and IT leadership.

Resource availability has been a factor in the utilization of IT within student services and post-secondary institutions in general. With budget cut backs and reassignment of existing finances, many student service professionals have been replaced with technological applications. Generally, retirement options and staff reorganizations have forced the use of technology when appropriate. This is in many ways an ironic development as reduced financial resources would ordinarily lead one to conclude a reduction in servicing. This has not necessarily been a reality. What has occurred in the student services profession is that budget pressures have forced professionals to seek service alternatives. This process has allowed for the raising of alternative servicing resources and therefore the development of efficient technological applications. This is

certainly true in the case of web portals and self-service financial and registration processes for students. However, cautionary approaches would dictate that human resources cannot be completely replaced through the application of IT. The implications of this on policy is that the human resource needs to be professionally trained and supported to complement IT developments. This leads to the second key concept.

Professional development, support, and training is essential to the growth of student services, especially in relation to Information Technology. Current professionals in student services must be supported in the training to use IT services, and in the efforts to generate acceptance of technological applications in a profession that has traditionally been very humanistic in its operations. The development of such skills and expertise should include systematic and intentional processes for training and operations involving IT. The policy implications of this approach include the need to devote specific amounts of operating budgets to the development and support of staff including updated equipment and related support.

A third key concept is that of the evolution of student services as leaders in the formulation of policy and procedures in post-secondary institutions. The use of IT to track student trends, developments, attitudes, and issues creates an opportunity for student services to develop the academic and social information flow needed for institutions to attract and retain students. This implies that student service leaders must engage in a systematic approach to recruiting, supporting, and developing the student throughout their academic experience. As a result the profession can find itself being consulted on all aspects of institution policy development.

## Conclusion

IT is unlikely to replace the human aspect of student services. What it can do is complement the traditional roles of the profession through the development of user friendly technologies that allow ease of access to information, efficiency of services, and development of information that identifies students needs and expectations of an institution. With the many changes in post-secondary operations in the past decade, an important concept has emerged. The student has become a customer and expects the best servicing possible. If student services in post-secondary institutions do not accept this, then they may not survive. The evidence of change currently in place or being considered indicates that post-secondary institutions will continue to apply technological service solutions. Developed and planned carefully, IT applications afford an opportunity not only for survival for student affairs and services, but for growth as well.

## References

- American College Personnel Association. (1996). The student learning imperative: Implications for student affairs. Journal of College Student Development, 37, 118-122.
- Ausiello, K. (1997). Information technology and student affairs: Planning for the twenty-first century. New Directions for Student Services, 78, 71-81.
- Baier, J.L., & Strong, T. S. (1994). Technology in student affairs: Issues, application, and trends. Lanham, Md: American College Personnel Association.
- Barratt, W. (n.d.). Technology and student affairs: An unlikely pair. [On-line]. Retrieved January 2000 from the World Wide Web:  
[http://www.activities.cornell.edu/sa\\_online/article4\\_p.htm](http://www.activities.cornell.edu/sa_online/article4_p.htm)
- Benedict, L. G. (1996). Technology and information systems. In S. R Komives, & D.B Woodard, Jr., & Associates, Student services: A handbook for the Profession. (3<sup>rd</sup> ed.). San Francisco: Jossey-Bass.
- Carr, D. K., & Johansson, H.J. (1995). Best practices in reengineering: What works and what doesn't. New York: McGraw-Hill.
- Cornish, E. (1996) . The cyber future: 92 ways our lives will change by the year 2025. Bethesda, Md: World Future Society.
- Cuyjet, M., & Bowman, R. (1996). Graduate program technological training versus practitioner expectations: A research report. Paper presented at the national conference of the American College Personnel Association, Baltimore.
- Dewey, J. (1990). Moral principles in education. Carbondale, Ill.: Arcturus Books.

Donovan, M. C. & Macklin, S. (1999). New learning technologies: One size doesn't fit all. *Planning for Higher education*, 28, 1, 9-17. Retrieved 1999 from the World Wide Web: <http://www.scup.org/pv28n1.htm>.

Ehrmann, S.C. (1995). Asking the right questions: What does research tell us about technology and higher learning? *Change*, 27 (2), 20-27.

Findley, D., & Findley, B. (1997). Strategies for effective distance education. *Contemporary Education*, 68(2), 118-120.

Gilbert, S.W. (1996a). The technology revolution: Important questions about a work in progress. *Change*, 27(2), 6-7.

Gilbert, S.W. (1996a). Double visions-paradigms in balance or collision? *Change*, 28(2), 8-9.

Gilbert, S.W. (1996b). Making the most of a slow revolution. *Change*, 28(2), 10-23.

Green, K.C. (1996). The coming ubiquity of information technology. *Change*, 28(2), 24-29.

Green, K.C., & Gilbert, S.W. (1995a). Academic productivity and technology: Myths, realities, and new necessities. *Academe*, 81 (1), 19-25.

Green, K.C., & Gilbert, S.W. (1995b). Great expectations: Content, communications, productivity, and the role of information technology in higher education. *Change*, 27, 8-19.

Hall, J. W. (1991) . *Access through innovation*. New York: Macmillan.

Hammer, M., & Champy, J. (1993). *Reengineering the corporation: A manifesto for business revolution*. New York: Harper Business.

Jones, B. O. (1984). Sleepers wake! Technology and the future of work. New York: Oxford University Press.

Kochhar, J. (1999) . Rensselaer career development centre. Retrieved from the World Wide Web: <http://www.rpi.edu/dept/cdc/index.html>

Komives, S. R., & Woodard, D. B., Jr. (1996) . Building on the past, shaping the future. In S. R. Komives, D. B. Woodard, Jr., & Associates, Student Services: A Handbook for the Profession. (3<sup>rd</sup> ed.) San Francisco: Jossey-Bass..

Kotter, M. (1995). Restructuring Student Services. New directions for student services, 70, 25-27.

Kozma, R.B., & Johnston, J. (1991). The technological revolution comes to the classroom. Change, 23(1), 10-23.

Kramer, G. L. (1997). The Human-technology nexus. Transforming academic services through information technology. NACADA Monograph Series, 4.

Kuh, G. D. (1997). Guiding principles for creating seamless learning environments for undergraduates. Journal of College Student Development, 37, 135-148.

Kvavik, R. (1998) . Transforming Student Services. Paper presented at Innovations in Student Services Forum, 3-5 August. Brigham Young University.

Laurillard, D. (1999). Investing in information technology pays big dividends. Planning for Higher Education, 27, 4, 1-8. Retrieved 1999 from the World Wide Web :<http://www.scup.org/pv27n4.htm>.

Levy, S. (1995). Sources of current and future funding. New directions for student services, 70, 39-49.

Mayer, E., & Gutierrez, G. (1996) . Visioning an information revolution that works for everyone. In Preliminary Program of the Eighth General Assembly of the World Future Society.

Memorial University of Newfoundland. (1994). Launch forth: A strategic plan for Memorial University of Newfoundland.

Memorial University of Newfoundland. (1999). Office of learning technologies. A proposal for the development of interactive student services.

Memorial University of Newfoundland. (1999). Student Affairs and Services on-line. Retrieved from the World Wide Web: <http://www.mun.ca/student/leadership>.

Milam, J. (1999). Internet resources for institutional research. Retrieved from the World Wide Web: <http://apollo.gmu.edu/~jmilam/air95.html>.

Moneta, L. (1997). The integration of technology with the management of student services. New Directions for Student Services, 78, 5-16.

Mills, D.B. (1990). The technological transformation of student services. In M.J Barr, M.L Upcraft & Associates, New futures for student affairs: Building a vision for professional leadership and practice. San Francisco: Jossey-Bass.

Northern Territory University. (1999). General information. Retrieved from the World Wide Web: <http://www.ntu.edu.au/aboutntu>.

Norris, D.M., & Dolence, M.G. (1996). IT leadership is key to transformation. CAUSE/EFFECT, 19 (1), 12-20.

Olsen, F. (1999). Mount Holyoke finds that web publishing improves class instruction. The Chronicle of Higher Education, Information technology. Retrieved 1999 from the World Wide Web: <http://chronicle.com/infotech>

Rhoades, G. (1995). Rising, stratified administrative costs: Student services place. New Directions for Student Services, 70, 25-37.

Sewart, D. (1993). Student support systems in distance education. Open Learning, 8(3), 3-12.

Simonson, M. (1997). Distance education: Does anyone really want to learn at a distance? Contemporary Education, 68(2), 104-107.

Southern Illinois University. (1999). Student affairs on the internet. Retrieved from the World Wide Web: <http://www.siu.edu/staffair/saihome.html>.

Sproull, L., and Kiesler, S. (1995). Computers, networks, and work. Scientific American, 6, (1), 128-139.

University of Minnesota Duluth. (1999). Student handbook on-line. Retrieved from the World Wide Web: <http://www.d.umn.edu/student>.

United Way of America's Strategic Institute. (1989). What lies ahead: Countdown to the 21<sup>st</sup> century. Alexandria, Va. United Way of America.

Willis, Barry, E. (1998). Effective distance education planning: Lessons learned. Educational Technology, 38(1), 57-59.

Zelesky, J. (2000). By way of the pendulum: The effect of technology on the future of student affairs. [On-line]. Retrieved January 2000 from the World Wide Web: [http://www.activities.cornell.edu/sa\\_online/article6\\_p.htm](http://www.activities.cornell.edu/sa_online/article6_p.htm)