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ABSTRACT

This paper details the importance of a successful implementation of technology into the business school curriculum and the Christian Brothers University's (CBU) (Tennessee) approach to such integration. The technology awareness of students and technology planning with regard to facilities, and curriculum are outlined. An overview of the following "infotrends" identified by Poppel and Goldstein includes the concepts of: globalization; content; disintermediation; interoperability; and convergence. CBU's implementation of technology in accounting, economics and finance, management and marketing, and information technology management is then described. Appendices include the CBU survey on information systems; a graduation checklist of courses; and the auditing research project student handout. (AEF)

The Critical Importance of Technology Integration In the Business School Curriculum

How Christian Brothers University Is Meeting This Challenge

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ABSTRACT

Higher education institutions today are integrating information technology into the business school curriculum. The issues driving this integration and the underlying importance of a successful implementation are the focus of this paper. How Christian Brothers University developed from vision to implementation is presented. The importance of a proper foundation in the core business curriculum and the subsequent *threading* of this foundation throughout the entire fabric of the business school is developed and explained. This core foundation, based upon technology trends, is a key component for success. Other factors leading to a successful implementation are listed. Finally, recommendations are presented to aid in the integration of information technology into the business school curriculum.

The Critical Importance of Technology Integration in The Business School Curriculum

How Christian Brothers University Is Meeting This Challenge

The April 13, 1992 cover story in TIME magazine opened with this prediction for American institutions of higher education:

> By the year 2000, American colleges and universities will be lean and mean, service oriented, and science minded, multicultural, and increasingly diverse--if they intend to survive their fiscal agony.

Coupled with that prediction, HEIR (The Higher Education Information Resources Alliance) added yet another challenge: "Like it or not, prepared or not, our institutions of higher education are entering the information age." (HEIR. Report#1:1). It was precisely that future vision that led Christian Brothers University and its School of Business to adopt a concept and a plan designed to picture and to prepare itself for this future.

Christian Brothers University

Christian Brothers University was founded November 19, 1871, by members of the Institute of the Brothers of Christian Schools, a Roman Catholic religious teaching congregation. The university offers baccalaureate degrees in Business, Computer Science, Engineering, Liberal Arts, and Science with graduate level degrees in Business, Engineering and Education. The institutional mission of the university emphasizes excellence in teaching and individualized

attention to the whole person in a values oriented, inter-faith educational community. The university prepares students for professional careers and advanced study in the arts and sciences, engineering, and business, and for lives of moral responsibility and constructive community involvement. (Christian Brothers University, 1995-96)

School of Business

The School of Business is organized into four departments, each with its own Chairperson. These Departments are: Accounting; Economics and Finance; Management and Marketing; and Information Technology Management. The graduate offerings include a Masters of Business Administration degree with seven options: Accounting; Finance; Health Care Management; Information Technology Management; Marketing; and a general MBA. An Executive MBA with options in Information Technology Management, Health Care Management, and Strategic Management is also offered..

Students in the School of Business

The School of Business is the largest school of the university representing approximately 51 percent of the students enrolled at the university. The school has a daytime program comprised primarily of traditional first-time students. A large Evening School serves what is characterized as the "adult student" consisting of already employed persons working on an initial degree or taking preparatory courses to qualify for advanced degree programs. The breakdown of these students is shown in Table 1-School of Business Student Enrollment:

Table 1 - School of Business Student Enrollment - 1995-96

School of Business Student Enrollment-1995-96				
Major	**Total Day**	**Total Evening**	**Total All**	**Per Cent**
Accounting	75	88	163	26%
Economics/Finance	40	37	77	12%
General Business	18	22	40	6%
Information Tech. Mgmt	48	88	136	21%
Management/Marketing	79	107	186	29%
Unspecified Business	34	3	37	6%
Totals	**294**	**345**	**639**	**100%**

Source: Christian Brothers University; Office of Institutional Research, Majors by Year Statistics, 1995-96.

Technology Awareness of Students

A survey was conducted in 1991 (Wade, 1991) to access student understanding of technology and its potential benefit *as they perceived it*. Appendix A contains a sample of that survey form along with the result. What was learned was that our students were highly computer literate and more than 65% of them owned or had access to a personal computer. More important perhaps, 94% believed that their career objectives would be enhanced by having increased knowledge of the proper use of personal computers. The School of Business began to develop a vision designed to move the school into the technology age. Building upon the experience gained with the earlier establishment of The Center for Telecommunications, the school rapidly positioned itself to offer additional degrees in technology and to insure that technology facilities were a major part of the planned construction of a new facility.

The Technology Plan-Facilities

With the occupation of a new multi-million dollar facility for the School of Business in 1992, the business school began to quickly implement the technology plan incorporated in its vision. Three fully equipped computer classrooms are now available in this facility providing networked terminals for each student. An instructor podium with full control of the multimedia available in the classroom as well as a teaching terminal are provided.

Further multimedia capability includes ceiling mounted overhead video projectors. These projectors are networked to allow instructor selectable transmission of computer output from the instructor computer console, as well as outputs from video or audio tapes, viewing of television satellite transmissions, and transparencies. Two auditoriums in the facility are similarly equipped to provide an opportunity to host large group presentations. In addition the facility has a well equipped groupware lab/classroom, a distance learning center classroom with the capability for live broadcast to an off-site location as well as receiving broadcasts from other similarly equipped classrooms. In addition to those facilities, several case study classrooms are permanently equipped with console podiums that offer computer, video, audio and satellite links to multimedia viewers/projectors for display to the entire class. A rolling cart with a multimedia computer and attached video projector is available to faculty for use in classrooms not equipped for multimedia. For development of faculty presentations a multimedia center was added and is now available for faculty use. This center contains a multimedia equipped personal computer, fax machine, scanner and laser printer. It is open to all faculty at any time. In addition each

faculty member has a personal computer available in their office. Through networking of these faculty computers access to e-mail, the *Internet* and other campus facilities such as the library and computer center are easily accomplished.

The entire campus is networked via fiber optic links. Students have access to e-mail, the *Internet,* and other resources via this campus network, or from home via modem. The computer center offers students access to a variety of on-line research materials, general software in support of word processing, spreadsheets, accounting, databases, statistical analysis, and the *Internet.* Access to this facility is available to students in excess of 80 hours each week. The *Plough Memorial Library* has additional computer terminals available for research, CD-ROM databases listing current periodical and other research databases, and the library catalog which is on-line and available over this same network.

The Technology Plan-Curriculum

CBU requires a 43 credit hour liberal education core curriculum for all students enrolled in the university. The School of Business requires a core business curriculum consisting of another 42 credit hours. The general core requirement is based upon a strong liberal arts concentration in English, Math, Social Science, Natural Science and Religion. The planning worksheet included in Appendix B gives the reader a more detailed example of these requirements. Understanding of the business core concentration is important because it is in these *core areas* that the reinforcement of technology is properly integrated and implemented. If the overall goal is an informed student then all department must be involved.

The concentration in the business core is divided into five key areas. These areas are presented in Table 2 - Business Core Curriculum Requirements.

Table 2 - Business Core Curriculum Requirements

CORE CURRICULUM HOURS - BUSINESS CORE	
Information Technology	6 Credit hours
Accounting Principles	6 Credit hours
Business Law/Statistics	12 Credit hours
Economics/Finance	9 Credit hours
Management/Marketing	9 Credit hours

Source: CBU 1995-1996 Catalog:p. 7

The use of the facility to empower technology and the companion emphasis on curriculum was extremely critical to the stated vision of the School of Business. That vision was to produce business leaders with strong technology *awareness.* In order to assure that this awareness was properly placed. it is important to state and to understand the role played by key technology threads that exist throughout the business curriculum. It is not enough to develop technology skills which students use in the major fields of study. They must possess a keen awareness of appropriate selection of technologies to be used in a particular business situation. It is the understanding of this need for awareness and the application of that awareness to business problem solving thorough appropriate use of technology that enables the business school to best prepare students for success.

Technology Trends - How They Guide Response

John Scully, former CEO of *Apple Computers*, wrote this introduction to a well known book on technology:

> I believe the world is going through a fundamental change. This poses a formidable challenge to educators - teach the rest of us to cope with the acceleration of knowledge and especially teach young people (who are going to spend the majority of their lives in the twenty-first century) the process of learning. (Poppel and Goldstein, 1987:xi)

What are these *fundamental changes*? How do they influence and affect the business school curriculum? What should faculty do to prepare themselves and their students for this information age? To understand this and to formulate an appropriate response one must clearly understand how major technology trends affect what business enterprises demand from technology, why they demand it and how technology potentially answers those demands.

It is appropriate at this point to define the phrase *information technology*. A definition often used in my classes was first introduced by Poppel and Goldstein. They defined information technology as "the use of computers and telecommunications to create, manipulate, and distribute enlightenment and entertainment. Information technology is an increasing pervasive and powerful life force. At times a stimulant, occasionally an irritant, and too frequently a tranquilizer" . (Poppel & Goldstein, 1987:xv,xvii)

In my classroom experience with students they are inclined to view technology as a stimulant or as entertainment rather than as enlightenment. Our challenge, as educators, is to increase the level of student awareness to a recognition of the importance of *enlightened* use of

technology. All too often students are simply exposed to technology as a *skill* to be acquired as opposed to a *learning tool* in support of a particular business decision process.

This concept of providing critical thinking by way of technology enlightenment is central to a successful technology curriculum. John Scully was correct when he identified the *"process of learning"* as a principal key to the twenty-first century. Poppel and Goldstein also define the technology industry as having a supply and demand dimension. (Poppell and Goldstein, 1987) It is important to insure that students understand this and do not view technology simply as a personal computer with software. An example of the industry they envision might look like the model shown in Fig. 1 - The Technology Industry.

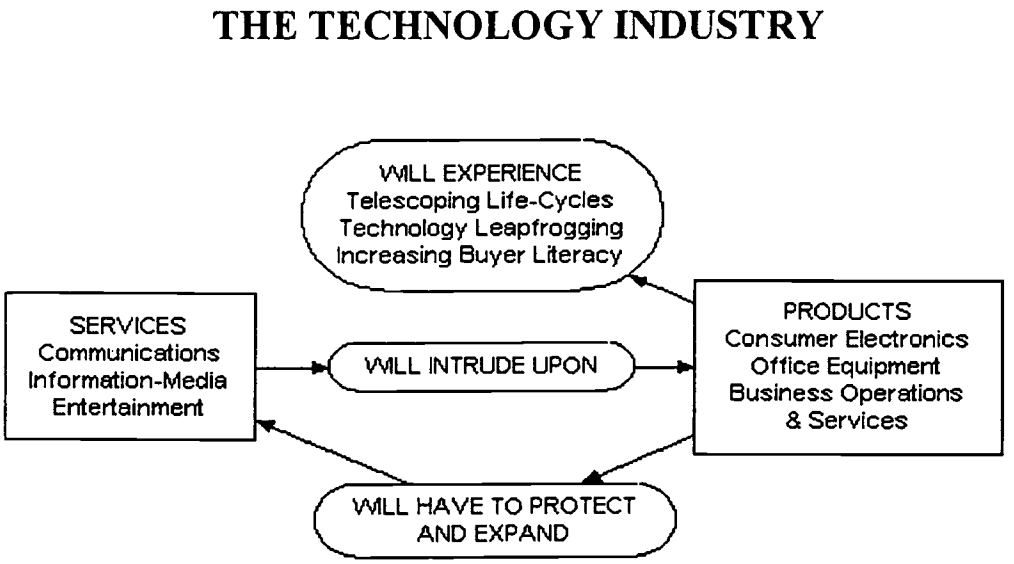

Fig. 1 - A Potential View of the Technology Industry

Considering the supply and demand side of the industry the students should be led into an understanding of the reasons why business is often slow to embrace technology as a cure-all for their problems. Some potential reasons for this are:

1. Lack of proper functionality of available products/services
2. Too expensive a solution for perceived benefit
3. Incompatibility of hardware/software or other services
4. Belief that only technicians can understand and use technology solutions
5. Fear, uncertainty and doubt (FUD) - the intimidation factor.

Classroom discussion of these key issues and building a curriculum to help overcome popular misconceptions about technology are very important. The simple introduction of technology (skill) in the classroom, in and of itself, is not adequate. The business issues of technology must be strongly threaded throughout each of the business school disciplines in order to prepare students for success in using technology wisely.

Technology Trends-What Are They?

In most discussions regarding technology today students anticipate that the topics covered will include such modules as discussions of networking, operating systems, hardware and software, programming languages and other similar technical topics. While these are certainly important, and should be included, it is my belief that in the business school curriculum the presentation of technology must have an established foundation. This *bedrock* foundation must be based upon *business* not *technology*. There needs to be a clear understanding by the student that the technology industry consists of more than personal

computers and software. A method appropriate for this is a clear presentation to students of major trends driving the development of information systems in today's business enterprise. This foundation, if applied in the beginning core computer concepts course, will prepare the student to understand how application of technology to business problems is strategic.

Infotrends-The Business of Technology

There are five general infotrends as identified by Poppel and Goldstein. (Poppel & Goldsten, 1987) The proper presentation and classroom discussion of these major trends will allow students to grasp (without prior business experience) what is driving business to turn to technology as a tool for business strategy and asset development. The trends help explain how technology has matured from a pure business expense (being used primarily for accounting record keeping) into a strategic business partner used to enhance and support the generation of profit or services. This understanding of the maturing of technology should be included in the core course content so the students can understand how business is being altered as information technology use expands and improves. The infotrends are identified in Table 3.

TABLE 3 - Poppell and Goldstein's Infotrends

POPPEL & GOLDSTEIN'S INFOTRENDS	
I.	GLOBALIZATION
II.	CONTENT
III.	DISINTERMEDIATION
IV.	INTEROPERABILITY
V.	CONVERGENCE

(Source: Poppell and Goldstein, 1987:p4)

It is beyond the scope of this paper to describe the Infotrends in detail. However, it is appropriate to present a quick overview. To paraphrase Poppel and Goldstein's view on the infotrends:

Globalization

Information technology is a cause and an effect of global markets. The advent of the technology age has meant increased leverage for business organizations with international aspirations and connections. The idea that a company can ignore this trend and be successful is rapidly disappearing. The popular phrase today is that we are living in a "wired world."

Content

Content consisting of software, databases, and expert system support services is gaining strategic value at the expense of facilities, computer power, storage and bandwidth. In this one area, as perhaps in no other, the dollar cost savings of information technology are apparent. The replacement of human tasks of drudgery with computer efficiency is well understood. What is now becoming better understood as well is the use of computer databases (content) to increase company profitability. The mining of data as an asset of the company has increased the executive perception of information technology and moved information aware professionals into the executive suites of most large companies. Content is the driving force behind many new ventures being undertaken in the information rich world of the present.

Interoperability

The ability of two or more parties, machine or human, to make a perfect exchange of content is a proper definition of interoperability. " Perfect" must then be defined as exchanging

content with no perceptible distortion nor unintended delays between content origin, processing and use. This implies such a transfer must take place between physical and logical components of the information processing system. It transcends hardware, software, procedures, data, and people. Interoperability may be the one remaining challenge to be overcome in the unparalleled explosion of information technology in business.

Disintermediation

Disintermediation implies that markets will attempt to minimize the number of intermediary stages between buyer and seller. This is leading to massive restructuring of the manner and the alliances which businesses once maintained. Mergers and consolidations for the sake of new skills, new research, new markets, new talents, and the like are becoming commonplace as businesses attempt to position themselves to challenge each other in an increasingly competitive global economy. It has been widely speculated that today's college graduates will change jobs approximately six to eight times in their lifetime. A number of these job changes will be due to disintermediation and convergence. This trend is not only appropriate as an infotrend, it is absolutely essential for the future well being of the student who must understand what the future holds and how they must prepare for that future.

Convergence

Convergence is the ultimate result of the other four trends. It enhances the blurring of products and services, content and facilities, home and business uses of technology, the merging of information and entertainment. Another appropriate word for convergence might be consolidation or merger. The constant restructuring of business today with downsizing,

rightsizing, then resizing to meet the challenge of competition will force many students to seek more education throughout their working lives. Properly placing the importance of information technology as both a cause and effect of convergence is reason enough to expose students to these concepts. (Poppell and Goldstein, 1987)

Infotrends and the Curriculum

The real purpose of this discussion of trends is to insure that curriculum at the "core level" supports the incorporation of this kind of material. It facilitates student understanding of technology in a *business way*. Technology should be presented in the business core as a means to an end, not as the end. Skill training is not appropriate to this context. Learning to reason, to support, and to enhance one's critical thinking processes is the purpose of technology in core courses. Any *skill* acquired "along the way" is simply an added benefit. However, proper application of technology and its mastery should enable students to acquire additional needed skills on their own. Little class time should be devoted to acquiring specific software skills or sponsoring keystroke driven training as these can be mastered as needed. Accordingly, the core curriculum at CBU has been designed with this concept in mind. We do not teach skill driven classes in the software we provide: *Microsoft Word*, or *Excel, or Access* or *Peachtree Accounting*. Rather we expose students to the proper *application* of text processing, of spreadsheets, databases, and electronic accounting, statistics and other available software presented as solutions to business problems. Once these core applications have been presented it is equally important to carry forward the use of this newfound application of technology into

other higher level (and discipline intensive) courses. It is in this area that departmental collaboration and understanding of the importance of technology must weave itself into the fabric of the entire business curriculum. The understanding, application, and implementation by all departments of this central theme is critical to the success of the business school if it is to prepare students for proper entry into an technology driven business environment.

CBU's Implementation of Technology In The Business Curriculum

At the freshman level all incoming business majors must take two core information technology classes These are:

CIS 152 - Introduction to Computer Systems

CIS 153 - Microcomputer Applications

The first course, CIS 152, presents an overview of computer information systems, defining the elements of hardware, software, people, data, procedures and how they must be properly integrated to be successful. The first application of computers in text processing and graphics is taught using *Microsoft Word* and *Microsoft Power Point software.* Application of technology is stressed versus skill training. Basic research is required on the *Internet* using personal computer terminals to develop a research paper using the tools provided. The idea is to insure a base level for all students in the terminology of technology, the application of technology, and understanding its importance in whatever their major field of study happens to be. Students are told that the use of tools they are learning will be used throughout their course work in their major field of study.

The second core level course, CIS 153, is designed to provide practical application of information technology to solving basic business problems. It is intended to provide a working knowledge of the application of personal computers to business problem solution using spreadsheets and databases. The integration of both of these with text processing and graphics (for presentations) is also stressed in order to link the two core courses together. Again, it is important to stress to the students that what they are learning will be utilized throughout their academic life and later in their chosen career. This is the proper place for the "enlightenment" concept previously mentioned to take place. If technology is to be used as a creative tool then students must learn this now, in this core curriculum offering. That is why all business students are required to take these two courses.

Beyond the core level, each department in the School of Business, has introduced other key technology-driven modules. These modules are to reinforce and stretch the core concepts learned in the introductory classes. Some brief examples of how this is done is presented in the following departmental summary.

Accounting

The Accounting Department requires all accounting majors to learn (on their own) to utilize an accounting package (currently *Peachtree Complete Accounting III*) as an example of the electronic posting of accounting records. This is stressed in basic and intermediate accounting courses. Limited classroom time is involved in teaching software and the students are expected to complete their assigned accounting homework working in the student labs. This enables the accounting faculty to contrast the basic principles of accounting learned in the

manual posting of accounting worksheets to the time-savings and other advantages potentially available through the use of electronic posting systems.

In other accounting courses, for example Federal Income Tax, the use of technology is enforced through requirements that the students utilize lab software for tax research as well as the actual creating of tax returns using tax preparation software. In the auditing theory course the student is given an extensive audit research case to complete. This case involves using database software to develop and build audit evidence, conclusions, and reports. A copy of the current *Auditing Research Project* case document student handout is included in Appendix C. One testimonial to the success of this approach is the high performance of CBU accounting graduates on the CPA exam, which demands a strong understanding of the role and the practice of technology in accounting today.

Economics and Finance

The use of computer software in the Economics and Finance Department includes frequent student case assignments which utilize computer modeling and student development of supporting spreadsheets and/or databases. The regular use of EUS (*Execustat*) and *SPSS* statistical software is expected in completion of student projects. Databases are built in economics classes by first defining and then designing the basic research required to retrieve needed data. The *Internet* provides students with access to *EDGAR* and other business databases. They can also look at company annual reports in the CD-ROM databases in the library. Finally, presentation software is required to build the case presentations for viewing by the entire class.

Management and Marketing

The primary use in this area is the development of research supported by appropriate graphics and presentations. Frequent use of the *Internet* and business databases is required for homework assignments. *Power Point* and *Freelance Graphics* (both available in student labs) are requirements for most student case presentations. Students are expected to make quality *business oriented* presentations. In addition computer business model simulation software is used in business policy and selected other management and marketing courses.

Information Technology Management

The foundation built in the core curriculum is also important to the information technology student. CBU offers two tracks in this department - a management information systems track and a telecommunications track. The MIS track focuses on systems analysis and design, database design and object oriented analysis and design. The telecommunications track includes networking, telephony, satellite and other telecommunications courses. A programming language is required in both tracks. A newly created group processes course prepares the student for collaborative computing with its focus on group decision processes, group decision software applications and workgroup design and implementation. A course offering for senior level students is *Information Technology Management.* Here students focus on the vision, strategy and implementation of technology solutions using the discussion case study method. Students analyze, discuss, and critique various approaches taken by business enterprises to resolve technology driven challenges. This course is designed to apply their learned experiences to real world experiences.

In a recent article written to alumni of the college, Dr. Joseph Morone, Dean of Rensselaer said:

> Most business schools are obsolete. The curriculum is the same old, same old. The major criticism of business schools everywhere is that their academics work on questions no one cares about. Technical ability alone will not cut it. The businesses that will succeed will be those managed by technologically astute men and women who have learned how to convert technology into profitable new products, processes, services and business ventures. We need a new kind of business school, a school that integrates management and technology. We need to *focus and lead.* (Adams, 1995:18)

Focus and Leadership

Dr. Morone has captured the essence of the challenge--*focus and leadership.* The most pressing problems today involve overcoming the resistance to change on the part of many business school faculties. At CBU the vision and the architecture of that dream has been in place for approximately five years. At the risk of oversimplifying requirements I would offer a simple checklist of requirements for the effective use of technology in the business school:

1. Understand technology trends - make them a part of your curriculum..
2. Empower the faculty to explore technology as a collaborative effort.
3. Provide adequate resources - for faculty and students.
4. Emphasize flexibility in the design of courses; all departments must cooperate and support the basic technology threads in their areas.
5. Stress simplicity - Avoid over-structuring of the curriculum.

6. Never forget the basic foundation, the *bedrock* philosophy which serves as a constant underlying premise. The business school is first, *about* business, not technology.

Or, stated in an overly simplistic but nonetheless effective cliche':

We must not forget our basic *A, B, C's.*

"**A**" for Access (to facilities and to adequate funding)

"**B**" for Brotherhood (at Christian Brothers, the business faculty is both collaborative and cooperative)

"**C**" for Content. (build on business basics, then weave in technology)

As for successful implementation of these tasks I can only add to what Dr. Joseph Morone has already so eloquently stated: (Adams, 1995)

Focus and Lead

Those are the keys to a successful implementation of technology in the business school. Students must *focus* on the true value of technology, not on the technology itself. Faculty must be carefully *led* into an understanding of how intra-discipline collaboration empowers students to see technology as a business tool versus a skill. Administration must provide *leadership* in the form of adequate funding and support for the successful integration of technology into the curriculum. Given this scenario the business school can confidently approach its future with pride and determination that it is serving both the business community and the students it has a responsibility to serve. At Christian Brothers University that strategy is well established and working daily to serve those constituents.

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Notes:

PowerPoint and Microsoft Word are registered trademarks of Microsoft Corporation.

EUS, and SPSS are registered trademarks of their respective companies.

APPENDIX A

Chart I - Christian Brothers University-Survey On Information Systems

Instructions: Please answer EVERY question according to your own experience and beliefs. Thank you for your participation in the survey.

Please carefully read, then answer each question. Check one box only.	Agree	Disagree	Not Sure
Personal Computers (PC's) greatly increase my ability to learn while at CBU.			
Effective use of personal computers is critical to my future job role (assuming my current career choice).			
I have a great deal of personal experience (outside CBU) with a personal computer.			
I have a great deal of personal experience with a mini- or main-frame computer.			
I completed at least one course in computers while in high school.			
Computers and the teaching of computer applications like Lotus 123 or dBASE are important to the graduates of CBU since computers are so predominant in business/government today.			
I have a working familiarity with spreadsheets, database and word processing software on a personal computer.			
I have a personal computer at home, in the dorm, or available to me at my place of work.			
How often do you use this outside computer? Put your answer in terms of number of times per week in the first column.			
Are you familiar with (do you understand) the term "networked computers?"			
Do you understand the term "telecommunications?"			
Do you currently subscribe to an online service such as Prodigy, Dow Jones or CompuServe (or equivalent)?			
Have you ever used the CBU library computer terminal to look up a book by subject, title or author?			
Have you ever used the CBU CD-ROM system terminal to find an article in a periodical?			
If you could dial up the CBU library system(s) and connect via a modem to your own personal PC how often would you use that to search for books or periodicals? Place your answer in terms of times per week in column one.			
Considering the current on-line catalog system at the CBU library do you feel it is superior to the old manual system?			

If you had access to a CBU campus-wide electronic message/mail system for sending and receiving messages from faculty, staff, or students how many times would you estimate you would use it weekly? Place answer in terms of times/week in column one.			
Have you ever used a facsimile (FAX) system to send a document to someone?			
If you could dial into a CBU network and transmit a document by FAX to faculty, staff or students, how many times/week would you expect to use such a system?			
Please list in the three columns your first, second and third choices for items you would submit on the FAX network. (Examples: homework, forms, notes, mail, etc.)			
Would computers available in the dorm areas be useful?			
What do you think of requiring EVERY student at CBU to have a personal computer (many schools do so today.)			
Do you think a student electronic bulletin board system (for meetings, messages, rides, etc., would be useful to you?			
Do you feel it is important to have CBU on a national network with other colleges and universities?			
Since CBU offers telecommunications degrees, do you feel it important for us to have a campus wide network of computers?			
Do you have access to computers as often as you need them through the computer center, K107, or other on-campus facilities?			
Would you rate CBU in terms of computer facilities as satisfactory considering the size of the institution?			
If your answer in the previous question was NOT strongly agree, please describe in the space below your own thoughts as to what is needed to bring CBU up to your expectations?			

What could be done?_____

Please use the remaining space for any comments you would like to make on this survey or any other subject you feel is appropriate to the topic of computers and telecommunications at CBU. Use back of form if necessary.

Chart II - Detailed Survey Results

I. Total number of students participating: 240

II. Current Year in School
- 20% Seniors
- 40% Juniors/Sophomores
- 40% Freshmen

III. Classes Surveyed

Introduction to Computing
Microcomputer Applications
Systems Design & Analysis
Religion and Morality
Accounting
Economics
COBOL Programming
Evening Program-Various
Graduate Program-Accounting

IV. Methodology: The questions were next grouped in the response totals to develop the conclusions presented in the body of the report. This grouping was accomplished as follows:

Grouping of Questionnaire Results

Category	Questions Included In Category
I. Career/Future Jobs	1, 2, 6
II. Computer Experience	3, 4, 5, 7, 8, 9
III. Network/Telecommunications Knowledge	10, 11, 12
IV. CBU Library Services	13, 14, 15, 16, 17
V. CBU Electronic Campus Concept	18, 19, 20, 21, 22, 23, 24
VI. CBU Image in Networking, Computers	25, 26, 27, 28, 29

Detail Survey Results By Question/Grouping

QUESTION	AGREE	DISAGREE	UNSURE
Career/Future Job			
1. PC increase my ability to learn	186	22	32
2. PC critical to my career choice	218	12	10
6. PC Applications important	220	4	16
Computer Experiences			
3. Have PC experience	138	68	34
4. Have main-frame experience	84	160	4
5. Completed HS computer course	150	94	4
7. Familiar with SS/DBASE/WP	201	32	7
8. Have my own PC	186	28	26
9. Avg. Times/Week I use my PC	Average of 6.5 times per week		

Networks/Telecommunications			
10. Understand term network	174	18	48
11. Understand telecommunications	166	4	70
12. Use on-line services	36	202	2
CBU Library Services			
13. Have used library terminal	186	42	12
14. Have used library CD-ROM	126	100	14
15. Have used CD-ROM Disclosure	20	220	0
16. Times I would use weekly			
17. Online superior to card catalog	146	84	10
Electronic Campus Concepts			
18. Times I would use Messaging each week	Average use of 3.5 times per week		
19. I have used a FAX machine	144	66	36
20. Times I would use FAX network	Average of 1.3 documents per week		
21. Top three uses for FAX	Homework	Required Forms	Class Notes
22. Dormitory computers useful	125	70	50
23. Require all students to have a PC	56	111	65
CBU Image Issues			
24. Student BBS-Would it be useful	176	24	40
25. CBU should be on educational networks	205	25	10
26. CBU-network due to degrees offered	210	16	14
27. Present access to computers satisfactory	212	14	14
28. CBU has adequate computer facilities	207	33	10

Question Number 29 asked for comments. Here are some of the more frequent comments.

1. I think the current (CBU) system is a good one.

2. Laser printers badly needed.

3. **Needs to be even more emphasis on telecommunications. It is the future.**
4. **Computers need to be available on a 24 hour basis.**
5. **This is the "wave of the future."**
6. **We all should have our own computer.**
7. **Need access to computer with on-line capability to Prodigy, CompuServe. Should have free use of machine but be charged for time used.**
8. **Need to have access to more up-to-date software.**
9. **Only one scanner on campus. Need more and need access to color printer.**
10. **Since I don't take computer classes I sometimes feel unwelcome in computer center. Need more help for people like me.**
11. **Need a campus wide Messaging system.**
12. **Telecommunications curriculum needs to be more focused on networks versus hardware.**

APPENDIX B

GRADUATION CHECKLIST
CHRISTIAN BROTHERS UNIVERSITY

INFORMATION TECHNOLOGY MANAGEMENT
1995-96 (SAMPLE ONLY)

COURSES OUTSIDE SCHOOL OF BUSINESS: (43 CREDIT HOURS)

ENGLISH		ENG 111 COMP	_____(3)	ENG 112 COMP _____(3)
		ENG 211 LIT	_____(3)	ENG 212 LIT _____(3)
	OR	ENG 221 LIT	_____(3)	ENG 222 LIT _____(3)
	AND	ENG 371 BUS WRITING	_____(3)	

SOCIAL SCIENCE _____(3) _____(3)
Recommended HIST 103/104, 151/152; POL 151/152; PSYC 105; SOC 101/102

MATH MATH 111 APP. CALCULUS _____(3) MATH 112 FINITE MATH _____(3)

NAT/PHY SCIENCE _____(4)
Recommended BIOL 104/Lab; 107, 113; NSCI 111, 115

PHILOSOPHY 323 BUSINESS ETHICS_____(3) ACCEPT: PHIL 234 OR 220

RELIGIOUS STUDIES _____(3) _____(3) SIX HOURS REQUIRED

SPEECH CA 124 _____(3) FRESHMEN ORIENTATION _____(0)

SCHOOL OF BUSINESS CORE: (42 CREDIT HOURS)

ACCT 261 PRIN OF ACCT I	____ (3)
ACCT 262 PRIN OF ACCT II	____ (3)
CIS 152 INTRO COMPUTERS	____ (3)
CIS 153 MICROCOMPUTER APPS	____ (3)
ECON 211 MACRO ECONOMICS	____ (3)
ECON 212 MICRO ECONOMICS	____ (3)
BUS 221 ELEM STATISTICS	____ (3)
BUS 301 BUS. LAW I	____ (3)
BUS 302 BUS LAW II	____ (3)
BUS 306 INT. STATISTICS	____ (3)
MKT 322 PRINCIPLES OF MKT.	____ (3)
FIN 327 FINANCIAL MGMT I	____ (3)
MGMT 337 ORGANIZATIONAL	____ (3)
MGMT 498 BUS POLICY	____ (3)

MAJOR CORE: (30 CREDIT HOURS)
Varies by major concentration.

FREE ELECTIVES: (16 CREDIT HOURS)

Varies by choice of student.

TOTAL HOURS REQUIRED: 131

APPENDIX C - AUDITING RESEARCH PROJECT STUDENT HANDOUT

This research project consists of using dBASE III Plus (or equivalent database software) and microcomputers in the simulated audit of a company's trade receivable and trade payable accounts. The selected transactions represent an actual business activity of a small manufacturing company that uses Peachtree Complete Accounting III software with its microcomputer. The data files were exported into a dBASE III Plus format for your use in this project.

The following specific steps are to be completed and documented in your written report:

A. Given the nature of this business and existing data file structures, prepare a detailed audit program for both trade receivables and trade payables.

B. Define conditions for both receivables and payables that you should consider as errors or exceptions. Create and enter into the data base 50 transactions to simulate the various conditions which you defined and will test. Split your tests equally between the trade receivable and trade payable files.

C. Specify, in detail, the statistical sampling plan(s) that you will follow in the audit of trade receivables and trade payable. Using the microcomputer, perform one statistical sampling procedure of your own design on each of the two data files.

D. Complete the following ten predefined steps and identify how they fit within your audit programs.
   1. Listing of all transactions in accounts receivable file. (Original file unchanged)
   2. Listing of all transactions in accounts payable file. (Original file unchanged)
   3. Listing of actual transactions in accounts receivable file with subtotals by customer. (Zero transaction omitted.) [Hash and batch totals before and after deletions.]
   4. Listing of actual transactions in accounts payable file with subtotals by vendor. (Zero transactions omitted.) [Hash and batch totals before and after deletions.]
   5. Listing of accounts receivable summary information for accounts with balances equal to or greater than $5,000.00
   6. Listing of accounts receivable summary information for every 12th account.
   7. Listing of accounts payable summary information for accounts with total purchases equal to or greater than $10,000.00
   8. Listing of all purchases in accounts payable file not paid within 10 days of purchase and listing of all purchases paid within 10 days of purchase.
   9. Listing of gaps (missing invoices) in accounts receivable file.

Audit Project (Continued)

10. Listing of all duplicate invoices in accounts receivable file and listing of all invoices in order for accounts receivable file.

E. Describe and complete four additional audit procedures utilizing dBASE III Plus (or equivalent) and the receivable and payable data base files.

F. Explain the advantages and limitations associated with using the microcomputer and database software (dBASE III Plus or equivalent), as general audit software, in this specific simulation.

Your report should identify any specific problems or limitations that you encountered in doing the project, including lack of required computer background. Include in your report copies of any external documents that you used in developing your project. The project will be evaluated based upon your report, overall completeness of activities, and the quality of your analysis.

Source: Professor James Tansey, Christian Brothers University, Department of Accounting
Use: Advanced Auditing Course (CBU, 1995)

U.S. DEPARTMENT OF EDUCATION
Office of Educational Research and Improvement (OERI)
Educational Resources Information Center (ERIC)

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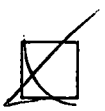

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