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THE DATABASE MANAGEMENT COURSE AT CAMDEN COUNTY COLLEGE
AND THE EFFECT ON THE TECHNOLOGICAL
NEEDS OF INDUSTRY

by
Jennifer R. Lupo

A Thesis

Submitted in Partial Fulfilment of the Requirements of the
Master of Arts Degree in the Graduate Division of
Rowan College in Computer Science Education
1995

Approved By

John Sooy, Professor

Date Approved 5/1/95

ABSTRACT

Jennifer R. Lupo, The Database Management Course at Camden County College and the Effect on the Technological Needs of Industry, 1995, J. Sooy, Computer Science Education

The purpose of this study was to evaluate the Database Management course at Camden County College to determine if it currently meets the needs of businesses in Camden County. A review of recent literature and the proposal of the Data Processing Management Association expressed that technological courses should be reviewed every two years. The researcher queried one hundred randomly chosen Camden County businesses and twenty-seven Camden County College Database Management students from the Spring, 1995 semester. Opinionnaires were mailed to local businesses and a survey was administered to the students. A comparison was made between industry's needs and the students' perception of industry's needs through compilation of percentages per response. It was concluded that Camden County College's Database Management course is presently providing the hardware and "hands-on" experience that industry requires for their entry level employees. The software requirements were inconclusive. Also, a strong indication for a second level course to provide an in-depth experience for the students was evidenced.

MINI-ABSTRACT

Jennifer R. Lupo, The Database Management Course at Camden County College and the Effect on the Technological Needs of Industry, 1995, J. Sooy, Computer Science Education

The purpose of this study was to evaluate the current database management course to determine if it meets the needs of industry. It was concluded that the current course was providing hardware and "hands-on" experience; however, software requirements were inconclusive as to industry's needs. There was an indication for a second level course.

TABLE OF CONTENTS

Dedication	iv
Acknowledgments	v
List of Tables	vi
List of Figures	vii
Chapter	
1. Introduction to the Study	1
Background	2
Problem	3
Significance of the Problem	3
Limitations	4
Definitions	5
Procedures	7
2. Review of Related Literature	14
Introduction	14
Review of Related Literature	14
Purpose of Revision	14
Developmental Guidelines	16
Local Database Management Curricula	17
3. Procedures	23
Introduction	23
Procedures	23

Investigative Beginnings	23
Educational and Industrial Materials	24
The Surveys	25
4. Analysis of Data	28
Introduction	28
Analysis of Data	29
The Opinionnaire	29
The Survey	34
5. Summary of Findings, Conclusions and Recommendations	38
Introduction	38
Summary of Findings	38
Conclusions	39
Recommendations	40
Appendices	
A. Database Management Course Syllabus	42
B. The Opinionnaire	46
C. Survey	49
Bibliography	51

DEDICATION

This work is dedicated to

Muriel Lupo,

My Mother.

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Lael Brattan

Marcella Brattan

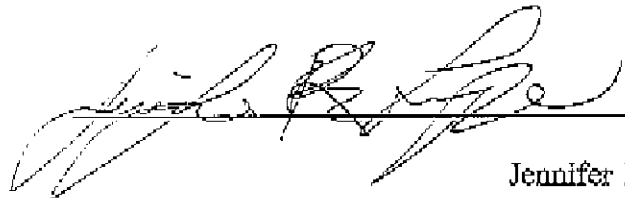
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William Taylor



Jennifer R. Lupo

May, 1995

LIST OF TABLES

Table

1. Companies Utilizing Data Processing Personnel
An Opinionnaire 29

LIST OF FIGURES

Figure

4.1	Company Opinionnaire Responses Degree vs Certificate	30
4.2	Company Opinionnaire Responses PC vs Networking vs Mainframe Experience	31
4.3	Company Opinionnaire Responses PC vs Mini/Mainfram Operating Sys.	31
4.4	Company Opinionnaire Responses "Hands-on" vs. "In-House" Training	31
4.5	Survey of Database Management Students Currently Employed	32
4.6	Survey of Database Management Students Reason for Enrollment	33
4.7	Survey of Database Management Students Employment Location	33
4.8a	Survey of Database Management Students Minicomputer/Mainframe DB Software	33
4.8b	Survey of Database Management Students PC/Mac Database Software	33
4.9	Survey of Database Management Students Enroll in Second Level DB Course	34

CHAPTER 1

Introduction to the Study

Today, databases have found a place in all aspects of the business world. They are diverse in their use as tools in any conceivable area where data is related and must be stored for easy retrieval.¹ Therefore, there is a need for professionals to manage these sometimes massive systems. The community colleges have made it one of their objectives to train these professionals. One of the goals in the mission statement of Camden County College is:

2. To provide full-time and part-time learners with diversified programs leading to appropriately varied educational and occupational goals, including transfer to other institutions and entry at various career levels of employment.² [emphasis added]

In order to offer students the opportunity to develop their skills in database management and with the speedy movement of trends in technology, it is important to maintain a similar trend in academia.

This chapter presents the Database Management course that was developed at Camden County College. Evaluation of the course as it pertains to entry level positions in industry and recommendations are set forth.

Background

In 1988, a course in database management was introduced at Camden County College. The course was entitled "dBASE III"³ and was offered as an elective. From 1988 through the publication of the 1992-1994 twenty-fifth anniversary catalog, the course description remained as follows:

120-060 dBASE III

3 credits

Prerequisite: One previous computer course or microcomputer experience

The dBASE III course is one of the most popular software packages for personal computers. The course is designed for students in business, accounting, computer studies or related fields, where learning to use a database as a problem solving tool is necessary. The course has been designed to provide students with hands-on experience with microcomputers using dBASE III. The course has been designed to take students command-by command through the use of the software, the capabilities of the program, and its advantages/disadvantages for given applications.⁴

However, in the fall of 1993, the course name changed to Database Management and the software changed to dBASE IV, but the course description remained the same. The reference to dBASE III was replaced with Database Management in the above course description. The description leads one to believe that Database Management is the software being taught instead of the concept.⁵ Through the author's conversation with the Chairman of Computer Studies, in 1994, the Database Management course was described as an entry level course to deal with the concepts of database management through hands-on use of the dBASE software.

The course is required for either a certificate as a PC Specialist or an Associate in Applied Science Degree. No other Computer Studies programs require this course,

it is an elective.⁶ Both programs are designed for students who wish to learn database concepts, but the students have different goals for their knowledge. The Certificate program addresses those students with a desire to learn the software but not as a profession, whereas, the Associate in Applied Science program is designed for those students who wish entry level positions or who are currently working in these positions to upgrade their skills.⁷

Problem

This study is to evaluate the Database Management course at Camden County College to determine if it meets the needs of industry and to make recommendations.

Significance of the Problem

The functions of Junior and Community Colleges include transfer, vocational and other programs (Cohen and Brawer, 16). The vocational programs are geared to meeting the needs of the business world. The Database Management course at Camden County College is one such course developed to meet industry's needs. This course originated in the Spring of 1988.⁸ Its title stemmed from the name of the software - dBASE III Plus, which was an industry standard at that time⁹. From the course's inception to the present time, the course title has changed twice and the software and hardware have been infrequently upgraded.

The course was offered as an elective toward non-transfer programs;¹⁰ therefore, it evolved for industry. The needs of industry however, have changed rapidly over the last five to ten years. Viewing the various Help Wanted Advertisements in the local newspapers¹¹, employers are looking for knowledgeable database personnel whose experience is with database packages other than dBASE IV. Employers are looking for database programmers, administrators, and managers with experience in database software such as Sybase, Oracle, FoxPro, Paradox, Unify, DataEase, and Access.

Limitations

The research is limited to the Database Management course at Camden County College and the growth of databases over the last five to ten years in the Camden County business community. Entry level job opportunities in computers are more numerous in an urban area. Therefore, students tend to seek employment outside of Camden County. The Database Management course syllabus will be compared to a sampling of two- and four-year college syllabi for database management courses taught at area colleges in Pennsylvania and Southern New Jersey.

Definitions

The following definitions may assist the reader in reading this study.

Database: A collection of interrelated data stored together.¹²

Database Management System: A collection of software programs (such as dBASE) designed to manage and maintain a collection of records (database) by providing facilities for storing, organizing, and retrieving related information as required. The three types of systems are hierarchical, network, and relational.¹³

DataEase: A relational database management system for personal computers from DataEase International, Inc. It provides a menu driven interface for developing applications without programming and is noted for its ease of use across the spectrum from beginners to experienced users.¹⁴

DB2: A relational database management system from IBM that runs on large mainframes. It is a full featured and powerful database system that has become IBM's major database management system product. DB2 uses the SQL language interface.¹⁵

dBASE: A database management program designed for personal computers and marketed by Ashton-Tate (Borland). In 1984 dBASE III was introduced for IBM and an industry-standard personal computers, and two years later, dBASE Plus provided an easy to use menu driven

system. In 1988 Ashton-Tate released dBASE IV which included Structured Query Language (SQL).¹⁶

FoxPro: Introduced in 1989. A program that altered the face of database management. It took interface design and flexibility of the Macintosh FoxBASE+/Mac and transferred these features to the personal computer world without losing the speed advantage that is the trademark of all its products. Developed originally by Fox Software.¹⁷

Oracle: A relational database management system from Oracle Corporation that runs on a wide variety of microcomputers, minicomputers, and mainframes. It was the first database management system to incorporate the SQL language.¹⁸

Paradox: A network-ready relational database management system for personal computers from Borland International. It has a unique programming language, called PAL, for application development. Paradox was the first relational database with true multiuser, multitasking capabilities.¹⁹

SQL: Structured Query Language, an ISO data definition and data manipulation language for relational databases.²⁰

Unify: Runs on a UNIX system and was developed by Unify Corporation as a relational database.²¹

Procedures

As an introduction to this study, a brief history of the development of the Database Management course at Camden County College, from its inception to the present, will be addressed. Through the examination of the DPMA model curriculum and syllabi from various two- and four-year colleges in Southern New Jersey and Pennsylvania, the important elements of a database management course will be discovered as it applies to education. The course at Camden County College was developed for industry; therefore, "Opinionnaires" will be sent to businesses in the Camden County area. The "opinionnaire" will be developed and presented to the Computer Science Faculty at Camden County College and to the Mathematics Seminar Class for discussion and revision.

Related literature and research show the importance of keeping up with technological advances. There is a repetitive theme in the literature - the need to revise curricula frequently in technological courses. Research studies done by Professional Secretaries International provides a model for an ideal entry level database course. A comparison of PSI's model and the syllabi provided from local colleges, with the current syllabus for the Database Management course at Camden County College, will determine whether a need to revise the course exists. If a need exists then recommended modifications will be made.

ENDNOTES

1. Patton, Jan, Murray, Dailena, Business Computer Applications I. Curriculum Guide and Simulations and Test Bank, "Concepts of Database Management", East Texas State University, Commerce Educational Development and Training, 309
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9. Spring 1988 Lecture by Professor Robert King at Camden County College.
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18. Freedman, Alan, Computer Glossary, Fifth Edition (1991), 425

19. Freedman, Alan, Computer Glossary, Fifth Edition (1991), 435; Nader, Jonar C., Dictionary of Computing, (Prentice Hall, 1992), 337
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21. Software Data Sources, First Edition (1993), L-5

CHAPTER 2

Review of Related Literature

Introduction

One of the dangers in training information systems (IS) personnel by the Junior and Community Colleges is the rapid change in technology. The Data Processing Management Association (DPMA) suggests that colleges revise technological courses every two years. To assist these colleges, the DPMA publishes curriculum guidelines. Likewise, Professional Secretaries International (PSI) provides a framework for the curriculum revision process. The work of the DPMA and Professional Secretaries International (PSI) provide a foundation for this study.

Related Literature

Purpose of Revision

It is the opinion of Teresa Sullivan that faculty should be committed to the practical application of computers in the business world and should address the needs of students for immediate employment.¹ Teresa Sullivan describes the need to change

the database management software and hardware at Kansas City Kansas Community College (KCKCC) (Sullivan, 4). Sullivan emphasized the importance of keeping track of the ever changing marketplace in the computer field. Gradual changes in the business community have resulted in changes in job openings for the associate degree student (Sullivan, 4). As these changes occur, the curriculum must change to meet these needs (Sullivan, 4).

In 1993, Professional Secretaries International conducted a study that resulted in a Model Curriculum for Office Careers.² The Model Curriculum focuses "on changes taking place and issues being addressed in the workplace...The curriculum is built on a solid business/education partnership" (PSI, 1). The curriculum developed "uses technology to teach as well as teaching about technology." (PSI, 3). The importance of database management to entry level office workers prompted PSI to include database management in the study. The course developed is for hands-on learning using dBase IV or dBase for Windows (PSI, 36).

In the recent draft of the Two Year Curriculum Model for Information Systems (IS) Professionals, the Data Processing Management Association created a model for hands-on database management courses.³ The Committee states that two year colleges play a unique and important role in the education and retraining of American society (DPMA Draft).

"The future of the IS profession in industry and education will be determined by our willingness to use methods capable of dealing with changing and strategic requirements...this involves changing ourselves and the environment in the same process." (DPMA Draft)

Developmental Guidelines

The development of a Database Management course contains elements which will familiarize students with database management concepts and standard database management software.⁴ There are two approaches to the methodology of presenting these elements - "hands-on" and "theory".⁵

The elements proposed in the DPMA Model Curriculum are:

- Contributions to a team managed project;
- Design and implementation of a database application;
- Designation and development of a limited scope project;
- Development of applications using a higher level language;
- Demonstration of the use of human computer interfaces;
- Proposal, presentation and defense of a computer application.

Laboratory time is essential to learning objectives, however, because of extensive software and hardware on the market, specific requirements would be made at the local college level (DPMA draft).

The elements proposed in the PSI Model Curriculum for Office Careers are:

- Demonstration of an understanding of database management concepts and terminology;
- Designation and creation of a database using specific criteria;
- Modification of a database file structure;
- Modification of records to produce a desired output;
- Demonstration of understanding file management techniques;
- Demonstration of the ability to use basic commands and expressions and relational operations;

Knowledge of printing and output techniques;
Designation and creation and modification of custom screen formats;

Creation and manipulation of data using multiple databases;

Performance of mathematical operations relating their application to existing information in a database (PSI, 48).

These elements reflect "workplace-know how's" which PSI feels should be included in order to show outstanding job performance (PSI, 8).

The Database Course System at Texas University is designed to provide a "hands-on" application experience by creating, designing, setting-up, utilizing, and integrating databases. The course consists of ten percent principles, thirty-five percent applications, thirty-five percent development and use, and twenty percent documentation (O'Neill, 15).

Local Database Management Curricula

In order to establish the software and hardware utilization for training database management personnel, the syllabi from two- and four year colleges in the Pennsylvania and Southern New Jersey area were obtained. A comparison of the syllabi obtained with Camden County College's syllabus showed conformity.

Burlington County College has an equivalent course called, "Introduction to dBase III & Programming". This course teaches the dBase III Plus software on microcomputers. The goals/objectives are:

Relation Data Base Design;

Multiple Database Updates;

Inventory Databases;
Business Problem Solving;
Tips for individual Applications.

Burlington County College provides both theory and "hands-on" experience.⁶

Gloucester County College named the equivalent course "Concepts of Database Management Systems". This course teaches the dBase III Plus software on microcomputers. The objectives of this course are:

Conventional file storage and processing;
Indexing and Sorting;
Primary, Secondary, and concatenated keys;
Relational Databases;
Menu Driven Systems;
Query;
Screen Design and Development;
File Maintenance;
Report Generation;
Data Dictionary;
Data Independence;
Database Administrator.

Gloucester County College provides theoretical instruction ranging from file organization of relational databases to file organization of hierarchial databases.

Students are provided with "hands-on" experience through the development and implementation of a dBase III application.⁷

Cumberland County College has a course titled, "Database Programming Development". This course provides students with experience using dBase III Plus on microcomputers.⁸ Charles Biondi of Cumberland County College states that the software has been changed as of January 1995 to dBase IV version 2.0.⁹ The objectives are "to teach the student fundamentals of database management systems. Organization and structures of databases will be stressed along with programming commands and techniques."

Stockton State College provides a course titled, "Database Systems" which provides practical and conceptual introduction to design, implementation, and management of microcomputer database systems. The dBase software is used.¹⁰

Rutgers University - Camden provides a course titled, "Database Systems". This course focuses on relational database theory. Hierarchical and networking are also discussed. The software used in this course is Paradox for Windows. The objectives of this course are:

- The ability to work in groups;
- Knowledge of Database Management Systems;
- Implementation of Database Management Systems;
- Definition of Database Structures;
- Structured Query Language;
- Normalization Techniques;

Exposure to a Commercial Database Manager;
Database Views;
Relational Algebra and Calculus;
Semantic Modeling.

Experience is gained outside of the classroom. Students are expected to report to the computer laboratory to complete out of class assignments.¹¹

Temple University does not provide a Database Management course, however, in their Introduction to Management Information Systems course which covers all aspects of office automation, there is a five week session on Database Management utilizing the dBase III Plus software on microcomputers. Temple University provides both methods - theoretical lectures and scheduled "hands-on" laboratories.¹²

University of Pennsylvania's Database Management Systems course utilizes the theory approach to learning database management. The topics in this course cover all types of database management systems with assignments performed by the students on an ENIAC computer. This gives students "experience with different flavors of database management systems".¹³

The Database Management course at Camden County College is described as follows in the official course syllabus:

"This course is designed for students in business, accounting, computer studies, or related fields where learning to use database software is necessary. Students will be introduced to the basic database management concepts. Students will get hands-on experience using an up-to-date database management package. The course has been designed to allow students to master the software commands, learning the capabilities of the software, and understand the advantages and

disadvantages of the program. Students will also learn to program elementary applications. SQL will also be introduced."

This course currently uses dBase IV version 1.5/2.0 for business, student version.¹⁴

ENDNOTES

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2. "PSI Model Curriculum for Office Careers", Southwestern Publishing Company, (1993), 1-92.
3. The DPMA Two-Year Model Curriculum for IS Professionals, Draft 5/6/93
4. O'Neil, Sharon Lund, Information Systems Curriculum, Houston University, Texas College and University System, Austin, 1987
5. The DPMA takes a theoretical approach whereas the PSI's Model Curriculum and O'Neil's Information System Curriculum takes a "hands-on" approach.
6. Burlington County College Course Outline, 3/93
7. Gloucester County College, Business Studies Area, Spring 1994
8. Cumberland County College, Syllabus, September 1994
9. Letter to Jennifer Lupo from Charles Biondi, Postmarked December 19, 1994
10. Stockton State College, Description from Course Catalog, Postmark November 7, 1994
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14. Camden County College, Course Syllabus, Database Management, 1993

CHAPTER 3

Procedures

Introduction

This study originated in 1992 from the concerns of Database Management students at Camden County College. The students expressed to the researcher that some of the course material being taught was not helpful in meeting the students' job requirements. Investigation began with a look at the developmental history of the Database Management course.

Procedures

Investigative Beginnings

Lectures given by Robert King at Camden County College prompted private discussions on the inception of the Database Management course at the College.¹ Other sources on the course were collected at Camden County College. The sources consisted of syllabi and course catalogs dated between 1988 and 1995.

The Savitz Library at Rowan College of New Jersey provided periodical information between 1985 and 1995. Related literature and research showed the importance of keeping up with technological advances. There was a repetitive theme in the literature - the need to revise curricula frequently in technological courses.

Research studies done by Professional Secretaries International (PSI) provided a model for an ideal entry level database course.² The Data Processing Management Association (DPMA) forwarded to all two-year colleges a model curriculum for information systems professionals (IS'93) as a guide to developing the college curriculum.³ A comparison of PSI's model, the DPMA model and the syllabi provided from local colleges, with the current syllabus for the Database Management course at Camden County College, determined whether a need to revise the course existed. This information incorporated the elements in a database management course as it applied to industry and education.

Books on database software and Dictionaries of computing terms were referenced to provide insight into database concepts for the non-computing professional.

Educational and Industrial Materials

The Computer Science Departments of the following two- and four-year colleges in Southern New Jersey and Pennsylvania were contacted: Gloucester County College, Burlington County College, Atlantic Community College, Cumberland County College, Philadelphia Community College, Camden County College - Blackwood,

Rutgers University - Camden, Trenton State College, Stockton State College, University of Pennsylvania, Drexel University, Villanova University, and Temple University. Review of the syllabi from these two- and four-year colleges provided insight into the important elements of a database management course as it applies to education.⁴

The functions as described by Cohen and Brawer for Junior and Community Colleges include transfer, vocational and other programs.⁵ The needs of industry are met by the vocational function of Community Colleges. Therefore, to determine the current data processing requirements of industry, "opinionnaires" were sent to 100 random businesses in the Camden County area. These businesses were selected from the following sources: Chamber of Commerce of Southern New Jersey, Camden County Telephone Directory, and Help Wanted Advertisements in the Courier Post and Philadelphia Inquirer newspapers.

The Surveys

An "opinionnaire" to local businesses and a survey to students at Camden County College were developed by the researcher and presented for validation to the Computer Science Faculty at Camden County College and to the "Problems in Mathematics Education [Computer Science]" thesis seminar. The results of the "opinionnaire" were compared to the current Database Management syllabus at Camden County College to determine any recommendations. The survey conducted of the students enrolled in the Spring 1995 Database Management courses determined

whether the students working in Camden County attained adequate experience for their employment.

ENDNOTES

1. Robert King was the originator of the Database Management course at Camden County College, then known as dBase III.
2. "PSI Model Curriculum for Office Careers", (1993)
3. DPMA Two-Year Model Curriculum for IS Professionals, Draft 5/6/93
4. For copy of letter sent to colleges, see appendix
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CHAPTER 4

Analysis of Data

Introduction

The purpose of this study is to evaluate the Database Management course at Camden County College to determine if it currently meets the needs of businesses in Camden County. The course currently is taught on personal computers with a Disk Operating System (DOS) and dBase IV student software with emphasis on small business and personal use¹ as opposed to using a mainframe or minicomputer running a UNIX, CMS or MVS operating system with Oracle or DB2 software, which would be used by mid- to large size companies.² In the Spring semester of 1995, an Opinionnaire was mailed to one-hundred random businesses. The Opinionnaire was devised to determine what local industry felt the college should offer to better equip its future employees in Database Management. In addition, a survey of the Database Management students at Camden County College was performed to compare their reasons for taking the course with industry's opinions of what industry needed.

Analysis of Data

The Opinionnaire

The Opinionnaire was designed to determine the following with the results displayed in Table 1: Utilization of computers, plan for future computerization, interest in hiring graduates from Camden County College whether degree or certificate earned, preference as to personal computer or mini/mainframe Database software,

Table 1
Companies Utilizing Data Processing Personnel
An Opinionnaire

Q ^a	N ^b	Yes	No	Agree	Undecided	Disagree
1	38	37 (97.4%)	1 (2.6%)			
2	10	8 (80.0%)	2 (20.0%)			
3	35			18 (51.4%)	11 (31.4%)	6 (17.1%)
4	35			18 (51.4%)	10 (28.6%)	7 (20.0%)
5	35			16 (45.7%)	4 (11.4%)	15 (42.9%)
6	35			4 (11.4%)	6 (17.1%)	25 (71.4%)
7	35			21 (60.0%)	2 (5.7%)	12 (34.3%)
8	36			19 (52.8%)	5 (13.9%)	12 (33.3%)
9	35			13 (37.1%)	3 (8.6%)	19 (54.3%)
10	35			21 (60.0%)	6 (17.1%)	8 (22.9%)
11	36			7 (19.4%)	6 (16.7%)	23 (63.9%)
12	34			28 (82.4%)	2 (5.9%)	4 (11.8%)
13	35			18 (51.4%)	9 (25.7%)	8 (22.9%)

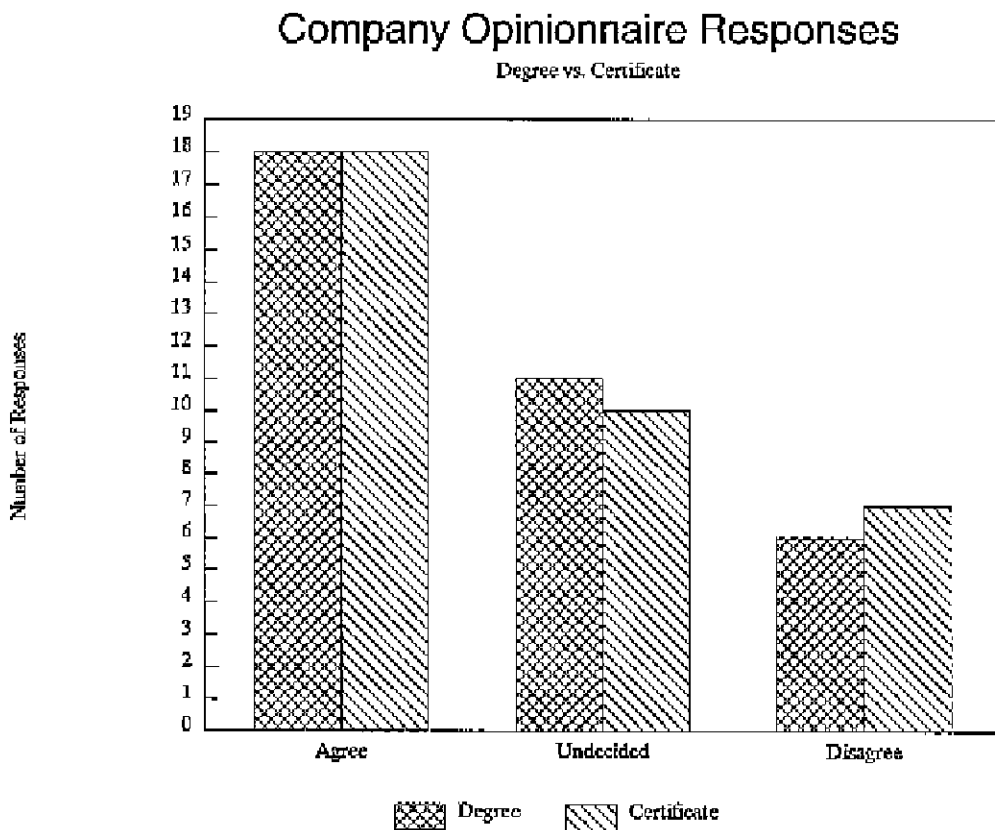
^a Question Number

^b Number of responses varies due to omission by respondents.

preference as to personnel trained in personal computer hardware, networking, or mini/mainframe hardware, experienced personnel in personal computer operating systems or mini/mainframe operating systems, and train employees in-house or hands-on training by a college or corporation. (Appendix B).

The results of the Opinionnaire show that 97.4% of the randomly chosen companies use computers. Figure 4.1 shows that prospective employees should have a degree or certificate.

Figure 4.1



Companies evenly agreed and disagreed as to the type of database software experience required. Relative to the hardware figure 4.2 shows the desired experience to be in Personal Computers and Networking.

Figure 4.2
Company Opinionnaire Responses

PC vs. Network vs. Mainframe Experience

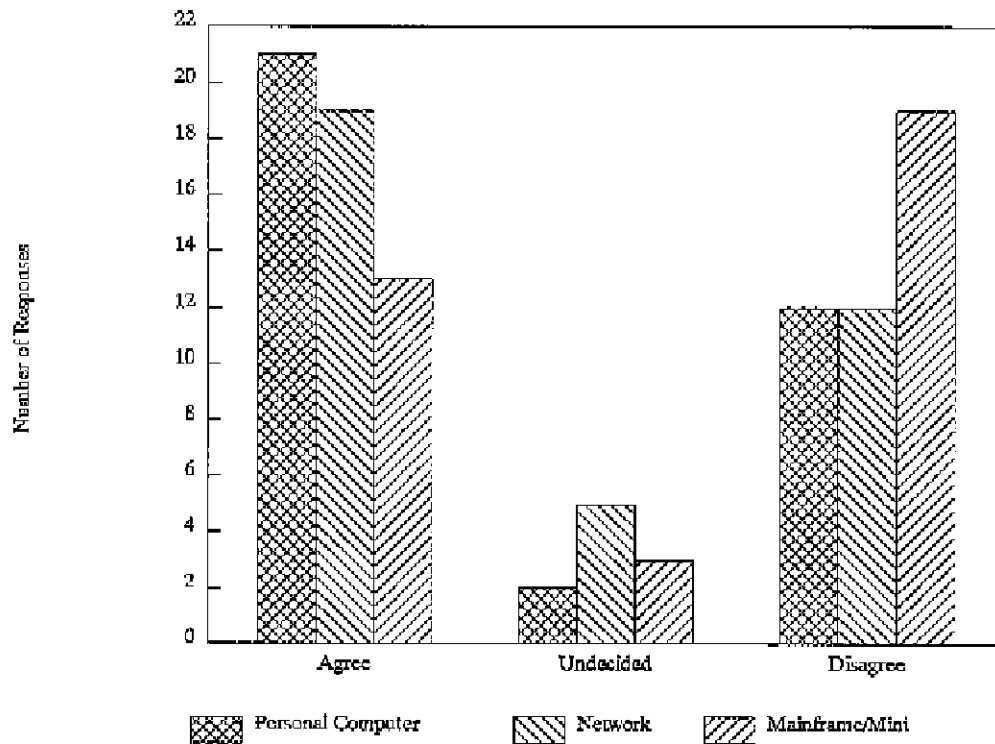


Figure 4.3 shows that the personal computer operating systems were favored.

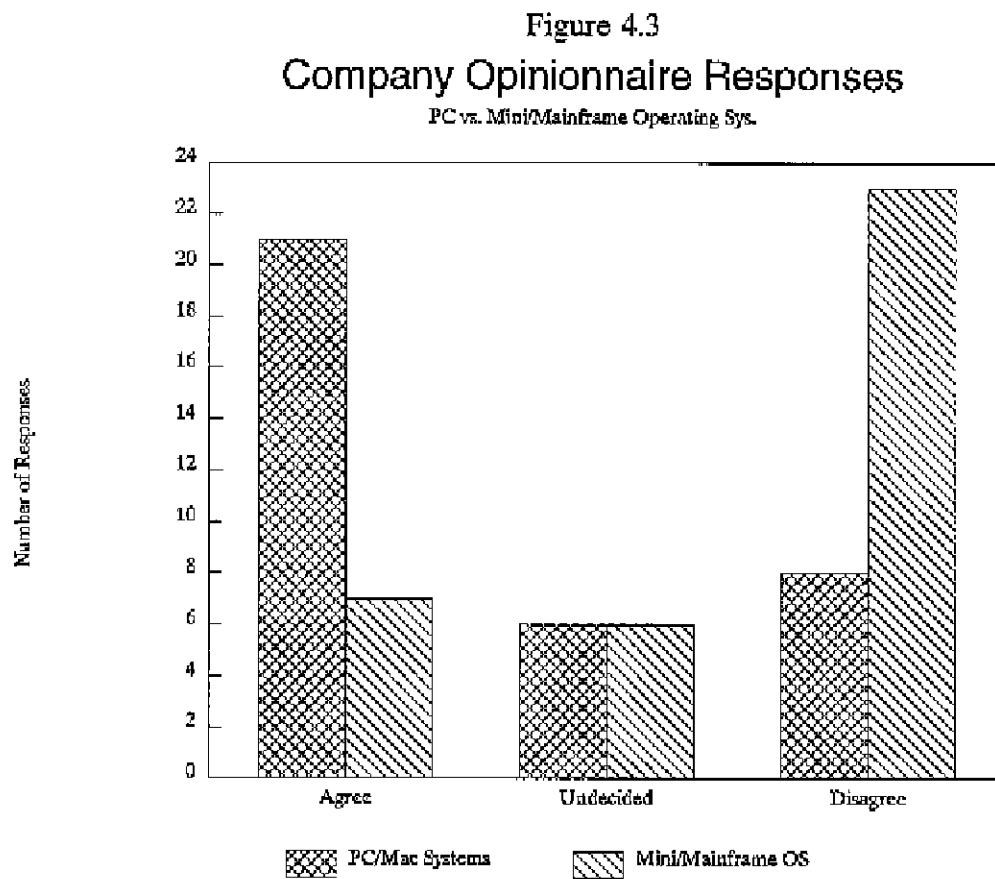
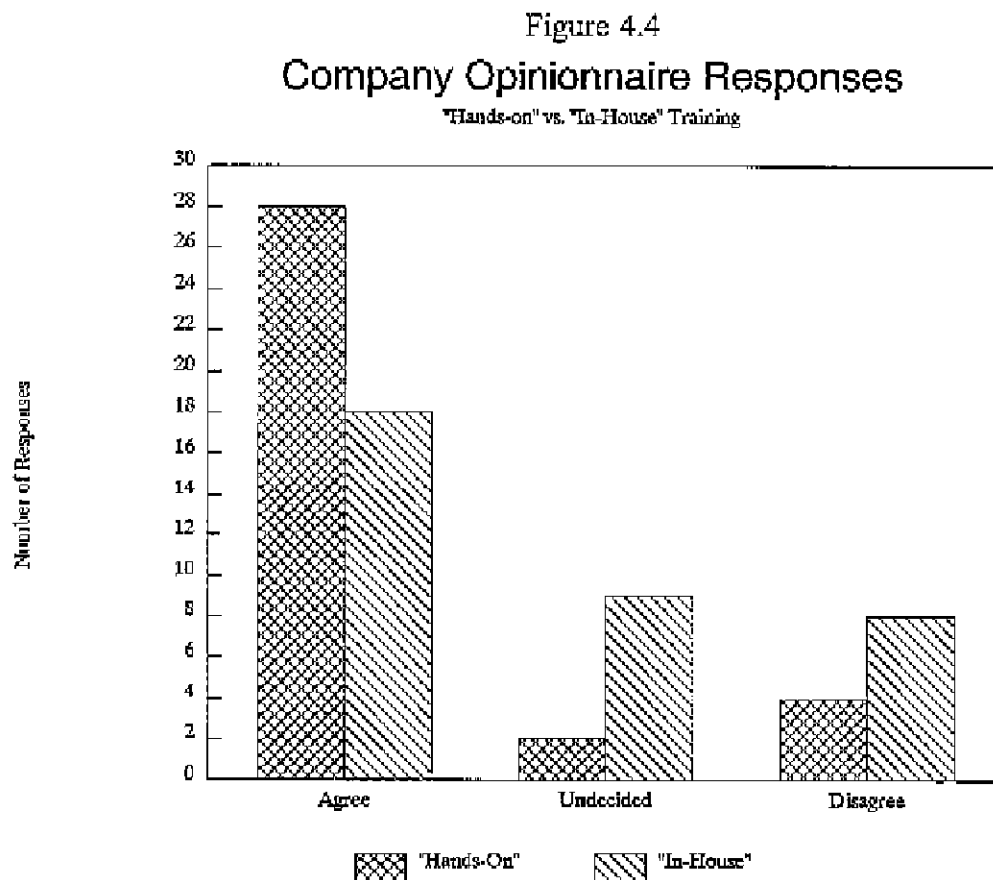


Figure 4.4 shows that most companies desired their employees receive outside "hands-on" training rather than company trained personnel.



The Survey

The survey was designed to determine the following: whether the students are currently employed, taking course for their job, software database used in office, type of hardware used in office, location of employment, and desire for second level database management course. (Appendix C)

Figure 4.5 shows that 70.4% of the students surveyed are currently employed.

Figure 4.5
Survey of Database Management Students
Currently Employed

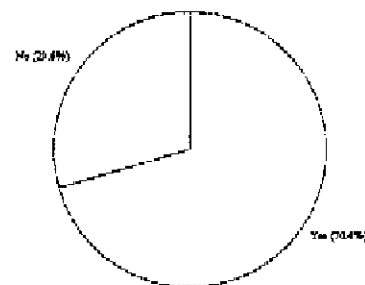


Figure 4.6 shows that 24.5% of the students surveyed took the Database Management course for their employment. Figure 4.7 shows that 70% of the students surveyed were employed in Camden County. The employed students indicated that their jobs did not require use of a mini/mainframe computer with database software.

Figure 4.6

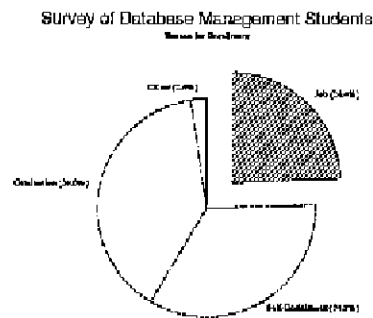
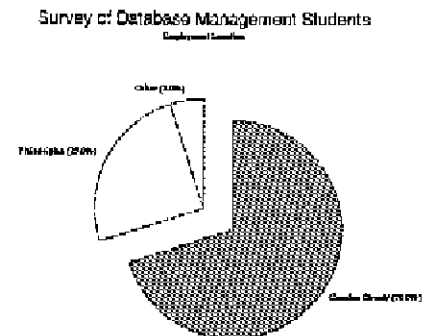


Figure 4.7



In relation to the software used on personal computers, 35% of the students responded that they did not require database software; 65% indicated other types were needed, but of the 65%, the software training desired was for Microsoft Access. (See Figures 4.8a and 4.8b)

Figure 4.8a

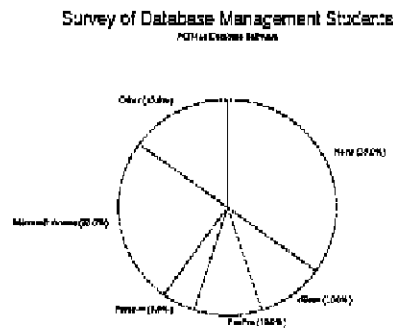


Figure 4.8b

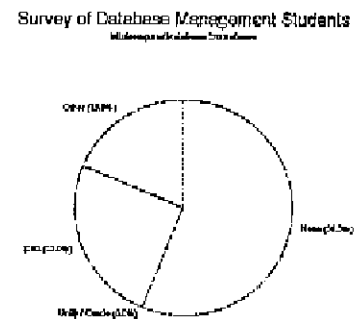
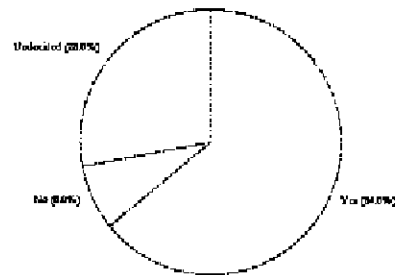


Figure 4.9 shows that 64% of the students desired a second level database management course be offered by Camden County College.

Figure 4.9
Survey of Database Management Students
Desired to Take a Level DB Course



ENDNOTES

1. Camden County College, Course Syllabus, Database Management, 1993
2. Nader, Jonar C., Dictionary of Computing, (Prentice Hall, 1992)

CHAPTER 5

Summary of Findings, Conclusions and Recommendations

Introduction

In the evaluation of the Database Management course offered at Camden County College, local industry and students currently enrolled in the course were queried, in different ways, as to what would fulfill their needs and requirements from the course. What hardware and software training is necessary? Is a degree or certificate mandatory? Would more advanced training be preferred? Should the training be "hands-on" or would the company prefer training to be "in-house"? The tools used to answer these questions were the Opinionnaire to local companies and a survey of students.

Summary of Findings

The majority of companies that responded to the Opinionnaire utilize computers. The preferred hardware was determined to be personal computer hardware. There was no significant personal computer database software that was preferred. The

Opinionnaire showed that local businesses in Camden County did not require mini/mainframe computer hardware or software experience for their personnel.

Companies elected for their personnel to have either a degree or certificate; however, there was no preference between the two.

The student surveys indicated that the majority of the students were working while enrolled. Most of the working students are employed in Camden County, some of whom took the course to enhance their office skills. It was important to these students to learn personal computer database software. These same students showed an interest in taking a second level course in database management, if Camden County College offered one.

Conclusions

Based on the findings of this study, the following conclusions can be drawn:

1. Personal Computer database experience is preferred over mini/mainframe database experience.
2. Industry, in particular, would prefer its employees to have networking experience.
3. Employee training should be "hands-on".
4. Colleges, universities, and professional training companies indicated that dBase was the preferred software to be utilized; however, students

employed in Camden County indicated that they would prefer MicroSoft Access.

5. Students should complete either a degree or certificate program if they choose to enter the data processing field.

This study hoped to pinpoint where the Database Management course at Camden County College needed revision; however, the author concludes that the course meets the minimum entry level requirements for database personnel in Camden County.

Recommendations

There is a need for further study over a larger geographic area because Camden County College students may live and be employed outside of Camden County. The study should ensure that the companies chosen utilize data processing personnel.

While this investigation is not as thorough as that done by the DPMA or PSI, it is recommended that Camden County College follow their suggestions to review the course curriculum frequently because of the rapid technological changes. Additionally, this author would like to make the following recommendations:

1. The software should be upgraded to one that can accomplish dynamic data exchange. This will provide a learning experience that will work in a network personal computer environment with a shared database system.

2. Networked computer classrooms should be developed and made available by Camden County College.
3. Research for a second level advanced course in database management should be undertaken.

APPENDIX A

The Database Management Course
at Camden County College

CAMDEN COUNTY COLLEGE
COURSE SYLLABUS
BLACKWOOD, NJ 08012

Course Title: Database Management
Course Number: 120-060
Date of Last Revision: 1993
Dept./Program affiliation: Computer Studies
Credits: 3
Contact Hours: Lecture 3
Lab 0
Prerequisites: None - PC Applications or Computer Literacy recommended

Course Description:

This course is designed for students in Business, Accounting, Computer Studies, or related fields where learning to use database software is necessary. Students will be introduced to basic database management concepts. Students will get hands on experience using an up to date database management package. The course has been designed to allow students to master the software commands, learn the capabilities of the software, and understand the advantages and disadvantages of the program. Students will also learn to program elementary applications. SQL will also be introduced.

Course Objectives/Student Learning Outcomes:

Upon completion of this course, the student will be able to:

1. Explain basic database concepts.
2. Describe how data must be structured.
3. List and explain the essential functions of a database management system.
4. Describe the relational data model.
5. Use current database management software to create, manipulate, and maintain a database.
6. Create, modify, and display a database file structure.
7. Add, change, and delete records from database.

8. Create and use Queries and Views.
9. Link database files.
10. Index a database and use an index to access data.
11. Design and create professional reports using a report generator.
12. Create customized data entry forms.
13. Create mailing labels.
14. Build an application using an applications generator.
15. Program a database application.
16. Execute basic SQL commands.

Course Outline:

- I. Introduction to Database Concepts and Database Software
 - A. Introductory database concepts
 - B. Menu system
 - C. Dot prompt
- II. Creating a Database File Structure and Keeping the Database Current
 - A. Guidelines for designing a database file
 - B. Rules for creating a database file
 - C. Modifying and viewing the database file structure
 - D. Updating database files
 - E. Printing a database file
- III. Querying the Database
 - A. Query design screen
 - B. Filter conditions
 - C. Using aggregate operators
 - D. Grouping records
 - E. Sorting
 - F. Indexing
 - G. Searching
 - H. Linking
- IV. Using the Report Generator
 - A. Understanding the report design screen
 - B. Viewing the report
 - C. Modifying the report

V. Intermediate Database Management Techniques

- A. Linking database files
- B. Using view queries
- C. Using update queries
- D. Customizing data entry forms
- E. Using mail merge documents
- F. Creating mailing labels

VI. Advance Database Management Techniques

- A. Using the applications generator
- B. Using the dot prompt
- C. Creating a simple database program
- D. Using SQL

Course Activities:

The classroom activities will include formal and informal lectures where new material and assigned problems will be explained. Students will have the opportunity to contribute to the discussion and to ask questions about the material. Hands-on work on the computer will be completed in class as well as outside of the regularly scheduled classroom hours.

Student Evaluation:

The professor will define his/her own criteria for evaluating students. Items such as attendance, written assignments, database problems, tests, quizzes, and class participation are included in grading.

Grading:

Grades will be based on the student's performance in the above designed areas.

A - 90 to 100

B - 80 to 89

C - 70 to 79

D - 60 to 69

E - Below 60

I - Incomplete

NA - Not Attending

W - Withdraw (Be sure to notify the registrar before the cutoff date)

AU - Audit

Grades are assigned according to the semester's performance as outlined.

Course Materials:

Textbook:

Ageloff, Colantonio, dBASE IV Version 1.5 For Business,
Course Technology, Inc., Cambridge, MA

Software:

dBase IV version 1.5, student version.

APPENDIX B

Companies Utilizing Data Processing Personnel An Opinionnaire

FOR COMPANIES UTILIZING DATA PROCESSING PERSONNEL

The following statements represent opinions on computer science training needs. Kindly check your companies position on the scale as the statement first impresses you. If your answers to questions 1 and 2 are "NO", do not proceed to question 3, but please return.

1. Does your company utilize computers? YES NO
2. Does your company plan to computerize? YES NO

	Strongly Agree	Agree	Undecided	Disagree	Strongly Disagree
3. Students with a two year degree in Computer Studies, Personal Computer Track, would be considered for a position in this company.					
4. Students with a Certificate as a Personal Computer Specialist, would be considered for a position in this company.					
5. This company requires personnel with experience in dBASE, FoxPro, Paradox, or Microsoft Access.					
6. This company requires personnel with experience in Unify, Oracle, or DB2.					
7. This company requires personnel with experience in Personal Computer hardware.					
8. This company requires personnel with experience in networking.					
9. This company requires personnel with experience in minicomputers or mainframes.					
10. This company requires personnel with experience in DOS, System 7, or OS2.					
11. This company requires personnel with experience in UNIX, AIX, CMS, or MVS.					
12. This company prefers "hands-on" training.					
13. This company prefers to train "in-house".					

Jennifer R. Lupo

608 Timber Creek

Lindenwold NJ 08021

April 30, 1995

Re: Survey of Companies Utilizing Data Processing Personnel

Dear Sir/Madam:

I am an instructor at Camden County College and am involved in the revision of the Computer Science curriculum. Specifically, I am involved in the revision of the Database Management course.

As part of our investigation, my colleagues and I would like to receive input from your company as to your needs in this area.

This course is presently included in the personal computer track AAS degree program offered at Camden County College, as well as the one year certificate program for personal computer specialist. The current course is designed for entry level positions. We would like to improve upon this training to better meet your needs. To that end, I am enclosing herewith an Opinionnaire and ask you to take a few moments to fill out and return in the enclosed stamped self-addressed envelope. I am also providing you with an additional copy so that you may have a record for your file. The results of this survey will be forwarded to you.

Thank you for your assistance in responding.

Very truly yours,

Jennifer R. Lupo

JRL:ml

enc.

APPENDIX C

.

Survey of Database Management Students
at Camden County College

SURVEY OF DATABASE MANAGEMENT STUDENTS
AT CAMDEN COUNTY COLLEGE

Please answer each question below as it pertains to your specific needs. If your answer to question 1 is NO, do not proceed to question 2 and return to your professor.

1. Are you currently employed YES NO
2. I am taking this course:
 - A. for my job.
 - B. for self-enrichment.
 - C. for graduation fulfillment.
 - D. other _____ (specify)
3. My company/business uses the following PC/Mac database software: (please circle all that apply)
 - A. None
 - B. dBase
 - C. FoxPro
 - D. Paradox
 - E. Microsoft Access
 - F. other _____ (specify)
4. My company/business uses the following Minicomputer / Mainframe database software: (please circle all that apply)
 - A. None
 - B. Unify
 - C. Oracle
 - D. DB2
 - E. other _____ (specify)
5. Is your company/business located in:
 - A. Camden County
 - B. Philadelphia
 - C. other _____ (specify)
6. If a second level database management course were offered at Camden County College, would you consider enrolling?
 - A. Yes
 - B. No
 - C. Undecided

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