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How Effective Is the Mathematics and Technology Education Provided by Fremont Public Schools?

Edward L. Gilbreath

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How Effective Is the Mathematics
and Technology Education Provided by
Fremont Public Schools?

A Field Project
Presented to the
Department of Educational Administration and Supervision
and the
Faculty of the Graduate College
University of Nebraska

in Partial Fulfillment of
the Requirements for the Degree
Educational Specialist
University of Nebraska at Omaha

by
Edward L. Gilbreath

July 1991

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PROPOSED FIELD PROJECT ACCEPTANCE

Accepted for the Graduate Faculty, University of Nebraska, in partial fulfillment of the requirements for the degree Specialist in Education, University of Nebraska at Omaha.

Supervisory Committee

Name	Department
<u>R. C. Kery</u>	<u>Ed Admin</u>
<u>Ronald J. Grandquist</u>	<u>Teacher Education</u>

Blaine E. Ward
Chairman

Aug 21, 1991
Date

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CHAPTER ONE

Introduction

Futurists agree that society and technology are experiencing accelerating rates of change, and in order to survive, it is imperative that individuals develop a capacity to adapt and modify their lives accordingly (Daniels, Karmos, and Junge, 1983). The most salient and pervasive trend within this change is the shift from an industrial society to an information society (Naisbitt, 1982).

The education received by graduates of Fremont Public Schools in mathematics and technology has been thought to be excellent by employees of the school. Studies conducted at Los Rios Community College in California contradict the local impression and have indicated that discussions between business and education leaders often revealed a mismatch between what business wanted its employees to know and what vocational training programs were providing. (Coffey, 1984). The existence of the contradictory studies has caused Fremont Public School staff to question whether the same view is held by the business community of Fremont Nebraska.

The Fremont Public School system has never surveyed the training needs of businesses in the community. The purpose of this research project is to determine whether the business community believes that the education received by graduates

of Fremont Public Schools meets the needs of the business community. Furthermore, the research project will determine if businesses are willing to financially support the training of current and/or future employees.

Statement of the Problem

Problem 1. Does the training in mathematics and technology received by graduates of Fremont Public Schools meet the needs of the businesses in the community?

Problem 2. Do current employees of Fremont businesses need additional training in mathematics and technology to meet the needs of businesses in the community?

Problem 3. Is the business community willing to provide funds for public school training of students?

Problem 4. Is the business community willing to provide funds for public school training of employees?

Hypotheses to be Tested

Hypothesis 1. The training provided graduates of Fremont Public Schools in mathematics and technology meets the needs of the businesses in the community.

Hypothesis 2. Current adult employees of Fremont, NE businesses are sufficiently well trained in mathematics and technology.

Hypothesis 3. The business community is willing to provide funds or other support to Fremont Public Schools to train students in mathematics and technology.

Hypothesis 4. The business community is willing to provide funds or other support to Fremont Public Schools to train employees in mathematics and technology.

Significance of the Problem

The district strategic plan has provided several strategies that will be addressed by this survey. The strategies include:

1. We will assume a leadership role in Fremont area economic development activities.
2. We will aggressively pursue innovative funding from public and private sources.
3. We will develop and aggressively implement an adult continuing education program (Strategic Plan, 1987).

This survey will provide useful information to the administration of Fremont Public Schools and to the board of education concerning the status of the three strategies from the strategic plan. The survey will help staff members write and maintain curriculum that is responsive to the needs of the community.

Assumptions and Limitation

Assumption The study assumes that business people are capable of assessing the effect an education from Fremont Public Schools has on the skills of current and future employees.

Limitation 1. A limiting factor is that some business

people do not hire recent graduates of Fremont Public Schools and cannot assess their competence.

Limitation 2. The impression of the business people may be skewed concerning the majority of graduates since many graduates leave the area to seek additional education.

Definition of Terms

Technology is defined as the use of microcomputers by businesses for word processing, spreadsheet analysis, computer assisted design, and other related activities.

Manufacturing is defined as any business that makes goods for sale either by hand or by machinery.

Professional is defined as anyone engaged in a vocation or occupation requiring advanced education and training, such as law, medicine, theology, or engineering.

Retail is defined as any business that sells goods at retail.

Service is defined as any business not included in the other three categories.

CHAPTER TWO

Review of Related Research and Literature

Literature available for secondary schools concerning mathematics and technology instruction for business needs is limited. Most of the literature available is concerned with post secondary schools and with vocational education.

Moursund (1985) states "It is clear that a certain level of mathematical knowledge and skill is quite important in our society. For that reason, mathematics (arithmetic) is considered to be one of the three basics of education, and math instruction is built into the core curriculum starting in earliest grades" (p. 146). He contends that we educate people in mathematics until they reach a level of frustration that prevents them from continuing their math education.

Henry Pollak (1987), a noted industrial mathematician, recently summarized what industry expects of its new employees, as:

- the ability to set up problems with the appropriate operations;
- knowledge of a variety of techniques to approach and work on problems;
- understanding of the underlying mathematical features of a problem;
- the ability to work with others on problems;

- the ability to see the applicability of mathematical ideas to common and complex problems;
- preparation for open problem situations, since most real problems are not well formulated; and
- belief in the utility and value of mathematics (NCTM, 1988).

Substantial research now suggests that computer-assisted instruction can (on average) produce significant gains in rate of learning while maintaining current attitudes and long term knowledge and skills (Moursund, 1985).

Kulik, Kulik, and Bangert-Drowns, (1984) conducted a meta-analysis of twenty-nine studies which compared the use of Computer Assisted Instruction (CAI) drill and practice and tutorials with more traditional drill work and concluded that computer based education has had a positive effect on the performance of elementary school students. In twenty-five of the studies, it was proven that CAI drill and practice and tutorials increased student performances by .48 standard deviations.

While mathematics needs are changing in the business place, computers are changing the business place. "The computer's widespread use is changing the demand for labor, the content of work, the location of the work place, and the quality of working life as well as the training required for jobs" (Wirtz, 1985, p. iii).

Goldstein and Fraser (1985) conclude that computer use is widespread and growing rapidly, but relatively few workers need extensive training or education in computer-related skills. About one in eight workers is found to be using computers in one form or another. The authors conclude that the training necessary for the majority of workers is a few days to a few weeks and not an extensive period (p.1). Most computer users will operate programs that have already been written and well tested to eliminate bugs. Software producers will continue to write programs that require limited training to operate. They find that "the computer skills in any occupation are only a small part of the total work skills; and ample opportunity for practice is essential in learning computer operating and programming skills" (p.1).

Knold (1986) advocates that a strong core curriculum emphasizing the basics of English reasoning, and problem-solving skills, math and science should be the primary offering for all secondary students whether bound for the work force or college.

School-business partnerships are not as effective as schools would like in providing additional financial support. Sixty percent of the employer respondents to the survey had been involved in a school-business partnership. The distressing fact is that the partnership usually manifested

itself as a plant tour (Knold, 1986).

A comprehensive needs assessment in post secondary education was conducted by Mehalis (1978) at Broward Community College. Three interviewers personally surveyed 400 Broward County, Florida employers who had fifty or more employees. The conclusion of the study was that several areas needed supplemental training to upgrade and train people already employed. The recommendations included one in which Broward County employers and educational agencies at all levels develop stronger communication links to implement needed programs.

Johnson (1985) reported a study by Atlanta Junior College. The study indicated "a need for area schools to promote better skills in communications and mathematics, better work attitudes, and abilities to adapt to changing technologies" (p.5).

Clagett (1988) in Prince George's County Business Training Needs Assessment indicates that nearly 60% of the responding firms had employees that participated in some form of formal education or training within the last year. The same survey showed that "over 60% would financially support employee professional development" (p.7). More than half of the respondents indicated a need for microcomputer skills and word processing skills. Most of the respondents preferred that the courses be offered weekday evenings.

The business leaders of Indianapolis were unhappy about the level of basic skills training achieved by schools. The survey indicated that more financial support would be forthcoming if the businesses would have a greater involvement in the schools operation (Adams, 1983).

It appears that most businesses require reasoning, problem-solving skills, communications skills, work attitudes, and the ability to adapt to changing technologies. Literature indicates that businesses will train employees in technical skills if all other skills are in place.

Chapter Three

Design of the Study

This study was conducted between October 25, 1989 and November 25, 1989. The study was conducted in Fremont, Nebraska. Initially, contact was made with the Fremont Chamber of Commerce to get support for the study and to get the names of the Fremont businesses that are members of the Chamber. The information from the Chamber included size of the business, name of business, owner, phone, and address.

Ten of the businesses were selected with the help of the director of the chamber and a cover letter (See Appendix A) and questionnaire was mailed to them. The sample questionnaire was reviewed by the businesses and suggestions for improvement of the questionnaire were requested from the businesses.

The final questionnaire (See Appendix C) was sent to all of the businesses in Fremont that are members of the Chamber of Commerce. The questionnaire was sent with a cover letter (See Appendix B) in the monthly chamber newsletter. The editor of the newsletter did a news gory on the survey in an effort to improve the rate of return. A business may have had the opportunity to respond to two of the surveys by being in the original group of ten businesses that reviewed the questionnaire and by being in the final group.

In addition to the news story, the subgroup of the chamber that deals with area personnel directors was addressed during a dinner meeting. During the question and answer period of the dinner meeting I was provided feedback on the proposed survey.

Seventy of the 350 (20 percent) area businesses that are members of the chamber chose to respond to the survey. Chamber officials indicated that the response was better than expected.

Chapter Four

Presentation and Analysis of Data

The majority of businesses responding to the survey considered themselves to be in the service sector of the economy with either 1-5 full time employees or more than 20 full time employees. The following tables show significant responses of Agree or Strongly Agree to questions on the survey.

Table 1. Survey Question 17. "Fremont Public Schools should provide future graduates with additional training in technology."

Firm Size	Service	Manufacturing	Professional	Retail
20+	N = 12 % = 92.3	N = 7 % = 70	NR	N = 4 % = 100
11 - 20	N = 10 % = 91	NR	N = 2 % = 100	NR
6 - 10	N = 3 % = 100	N = 0 % = 0	N = 1 % = 100	N = 2 % = 100
0 - 5	N = 11 % = 73.3	N = 1 % = 100	N = 3 % = 75	N = 1 % = 50

Note NR is No Response

Table 1 represents responses to question 17, "Fremont Public Schools should provide future graduates with additional training in technology". The businesses

responding to the questionnaire support additional technology training for Fremont graduates.

The responses to survey question 26 demonstrate what types of additional technology training should be given Fremont Public School graduates (See Table 2). The responses suggest that graduates should have additional training in word processing, databases, and spreadsheets.

Table 2. Survey Question 26. "I would like to have graduates of Fremont Public Schools receive additional training in the following areas: (a) word processing; (b) databases; (c) spreadsheets; (d) telecommunications; (e) Electronic Mail."

	a	b	c	d	e	Total Possible
Service	20 (47)	21 (49)	26 (60)	16 (37)	10 (23)	43
Manufacturing	8 (67)	8 (67)	8 (67)	2 (17)	3 (25)	12
Professional	7 (100)	4 (57)	4 (57)	3 (43)	1 (14)	7
Retail	<u>6 (75)</u>	<u>6 (75)</u>	<u>5 (63)</u>	<u>0 (0)</u>	<u>1 (13)</u>	<u>8</u>
Total	41 (59)	39 (56)	43 (61)	21 (30)	15 (21)	70

Percent of total responses are shown in parentheses.

Survey responses of "Disagree or Strongly Disagree" are shown in Table 3. The businesses polled indicate limited concern for the mathematics training of Fremont Public School graduates. Businesses appear satisfied with mathematics training of Fremont graduates.

Table 3. Survey Question 18. Fremont Public Schools provides current graduates sufficient training in mathematics to be considered of value in my business.

Firm Size	Service	Manufacturing	Professional	Retail
20+	N = 2 % = 15	N = 1 % = 10	NR	N = 1 % = 25
11 - 20	N = 1 % = 9	NR	N = 0 % = 0	NR
6 - 10	N = 0 % = 0	N = 0 % = 0	N = 1 % = 100	N = 0 % = 0
0 - 5	N = 4 % = 27	N = 1 % = 100	N = 2 % = 50	N = 1 % = 50

Note NR is No Response

The responses to Question 27, "I would like to have graduates of Fremont Public Schools receive additional training in the following areas: (a) additional training is not necessary; (b) Algebra; (c) Geometry; (d) Problem Solving; (e) basic mathematics", are shown in Table 4. Less than 13% of the responding businesses indicated that additional training is not necessary. The responses indicate that businesses are most concerned with student skills in "Problem Solving" and "basic mathematics". The concern expressed in this survey is not a mandate for additional courses but a concern for additional mathematics training for graduates.

Table 4. Survey Question 27. "I would like to have graduates of Fremont Public Schools receive additional training in the following areas: (a) additional training is not necessary; (b) Algebra; (c) Geometry; (d) Problem Solving; (e) basic mathematics."

	a	b	c	d	e	Total Possible
Service	5 (12)	6 (14)	6 (14)	21 (49)	10 (23)	43
Manufacturing	2 (17)	2 (17)	3 (25)	6 (50)	3 (25)	12
Professional	1 (14)	1 (14)	1 (14)	5 (71)	1 (14)	7
Retail	<u>1 (13)</u>	<u>0 (0)</u>	<u>0 (0)</u>	<u>1 (13)</u>	<u>1 (13)</u>	<u>8</u>
Total	9 (13)	9 (13)	10 (14)	33 (47)	27 (39)	70

Percent of total responses are shown in parentheses.

The remaining tables represent responses to questions about employees rather than graduates of Fremont Public Schools.

Table 5 includes responses to survey questions 6, 7, and 8. Survey question 6 is "Some of my employees have sufficient skills in mathematics". The tally for question 6 in Table 5 represents the number of "Disagree" or "Strongly Disagree" responses. Employers are very satisfied with employee skills in mathematics.

The responses to question 7 "The majority of the employees of my business need additional training in mathematics to be of full value to my business.", are shown in Table 5, column 7. Ten employers or 14% "Agree" or "Strongly Agree" that employees need additional training in mathematics.

The column headed by "8" in Table 5 contains the "Agree"

Table 5. Employee Mathematics Survey Questions. Responses to Questions 6, 7, and 8 on the Business Survey.

Question No.	6		7		8		Total Possible
Service	37	(86)	3	(7)	8	(19)	43
Manufacturing	10	(83)	4	(33)	2	(17)	12
Professional	7	(100)	1	(14)	1	(14)	7
Retail	<u>6</u>	(75)	<u>2</u>	(25)	<u>0</u>	(0)	<u>8</u>
Total	60	(86)	10	(14)	11	(16)	70

Percent of total responses are shown in parentheses.

or "Strongly Agree" responses to survey question 8, "My business will provide reasonable financial support to Fremont Public Schools for employee inservice training in mathematics". Sixteen percent of the employers responded that they would support employee inservice training. The support for employee training in mathematics agrees with the expressed need employee training in mathematics.

Table 6 represents responses to Question #21, "I would like to have some of my employees receive additional training in the following areas: (a) additional training is not necessary; (b) Algebra; (c) Geometry; (d) Problem Solving; (e) basic mathematics". The results from Table 6 indicate that additional training is not necessary for 34 businesses or 49% of the surveys. Some concern for additional training in "Problem Solving" and "basic mathematics" is shown by businesses.

The results of Table 6 showing that businesses would like additional training in "Problem Solving" and "basic

Table 6. Survey Question 21. "I would like to have some of my employees receive additional training in the following areas: (a) additional training is not necessary; (b) Algebra; (c) Geometry; (d) Problem Solving; (e) basic mathematics."

	a	b	c	d	e	Total Possible
Service	23 (54)	0 (0)	1 (2)	7 (16)	10 (23)	43
Manufacturing	4 (33)	1 (8)	2 (17)	4 (33)	5 (42)	12
Professional	4 (57)	0 (0)	0 (0)	2 (29)	2 (29)	7
Retail	<u>3 (38)</u>	<u>0 (0)</u>	<u>0 (0)</u>	<u>1 (13)</u>	<u>1 (13)</u>	<u>8</u>
Total	3 (49)	1 (1)	3 (14)	14 (20)	18 (26)	70

Percent of total responses are shown in parentheses.

mathematics" agree with the results from Table 4 indicating that additional training is necessary.

Responses to question 9, "My business can use computerized data files of customers to produce personalized

Table 7. Survey Question 9. "My business can use computerized data files of customers to produce personalized form letters."

Firm Size	Service	Manufacturing	Professional	Retail
20+	N = 10 % = 77	N = 3 % = 30	NR	N = 4 % = 100
11 - 20	N = 6 % = 55	NR	N = 2 % = 100	NR
6 - 10	N = 3 % = 100	N = 0 % = 0	N = 1 % = 100	N = 2 % = 100
0 - 5	N = 9 % = 60	N = 0 % = 0	N = 2 % = 50	N = 1 % = 50

Note NR is No Response

form letters", is shown in table 7. Sixty-one percent of the businesses that responded indicated that they can use data files to produce personalized form letters.

The responses to question 10, "My business can benefit from training in spreadsheets to keep track of inventory, sales, accounts receivable, or accounts payable", are shown in Table 8. More than half of the respondents (63%) indicated that training in spreadsheets would be of benefit to their businesses.

Table 8. Survey Question 10. "My business can benefit from training in spreadsheets to keep track of inventory, sales, accounts receivable, or accounts payable."

Firm Size	Service	Manufacturing	Professional	Retail
20+	N = 7 % = 54	N = 5 % = 50	NR	N = 1 % = 25
11 - 20	N = 9 % = 82	NR	N = 2 % = 100	NR
6 - 10	N = 2 % = 67	N = 1 % = 100	N = 1 % = 100	N = 1 % = 50
0 - 5	N = 11 % = 73	N = 1 % = 100	N = 1 % = 25	N = 2 % = 100

Note NR is No Response

Table 9, indicates the responses to question 13, "My employees need the opportunity to stay abreast of the most current aspects of technology - for example hard disks, local area networks, laser printers, utility

software, and scanners. Sixty-one percent of the responding businesses indicated that employees need the opportunity to stay abreast of current aspects of technology.

The businesses reporting attach the same needed importance of keeping employees current in technology as they do to training employees in spreadsheets.

Table 9. Survey Question 13. "My employees need the opportunity to stay abreast of the most current aspects of technology - for example hard disks, local area networks, laser printers, utility software, and scanners."

Firm Size	Service	Manufacturing	Professional	Retail
20+	N = 9 % = 69	N = 5 % = 50	NR	N = 4 % = 100
11 - 20	N = 8 % = 73	NR	N = 2 % = 100	NR
6 - 10	N = 2 % = 67	N = 0 % = 0	N = 1 % = 100	N = 0 % = 0
0 - 5	N = 8 % = 53	N = 0 % = 0	N = 2 % = 50	N = 2 % = 100

Note NR is No Response.

Responses to question 22, "I would like to have some of my employees receive additional training in the following areas: (a) Network Design; (b) MS-DOS-IBM operating system; (c) Macintosh operating system; (d) Software choices; (e) Printing", are shown in Table 10.

Thirty-one percent of the businesses support training in

MS-DOS-IBM and twenty-three percent of the businesses support software training for their respective employees.

Table 10. Survey Question 22. "I would like to have some of my employees receive additional training in the following areas: (a) Network Design; (b) MS-DOS-IBM operating system; (c) Macintosh operating system; (d) Software choices; (e) Printing."

	a	b	c	d	e	Total Possible
Service	5 (12)	15 (35)	1 (2)	8 (19)	4 (9)	43
Manufacturing	2 (17)	2 (17)	0 (0)	3 (25)	1 (8)	12
Professional	1 (14)	4 (57)	0 (0)	2 (29)	0 (0)	7
Retail	<u>1</u> (13)	<u>1</u> (13)	<u>0</u> (0)	<u>3</u> (38)	<u>1</u> (13)	<u>8</u>
Total	9 (13)	22 (31)	1 (1)	16 (23)	6 (9)	70

Percent of total responses are shown in parentheses.

Responses to question 25, "I would like to have some of my employees receive additional training in the following areas: (a) word processing; (b) databases; (c) spreadsheets; (d) telecommunications; (e) Electronic Mail", are shown in Table 11. Businesses would support

Table 11. Survey Question 25. "I would like to have some of my employees receive additional training in the following areas: (a) word processing; (b) databases; (c) spreadsheets; (d) telecommunications; (e) Electronic Mail."

	a	b	c	d	e	Total Possible
Service	13 (30)	11 (26)	19 (44)	7 (16)	5 (12)	43
Manufacturing	4 (33)	4 (33)	4 (33)	1 (8)	2 (17)	12
Professional	2 (29)	2 (29)	3 (43)	2 (29)	0 (0)	7
Retail	<u>3</u> (38)	<u>4</u> (50)	<u>1</u> (13)	<u>0</u> (0)	<u>0</u> (0)	<u>8</u>
Total	22 (31)	21 (30)	27 (39)	10 (14)	7 (10)	70

Percent of total responses are shown in parentheses.

additional training in word processing, databases, and

spreadsheets.

Question 28 responses, "My employees can benefit from training in (a) IBM or compatible computers; (b) Macintosh computers; (c) Apple II computers; (d) other _____", are shown in Table 12.

Table 12. Survey Question 28. "My employees can benefit from training in (a) IBM or compatible computers; (b) Macintosh computers; (c) Apple II computers; (d) other _____."

	a	b	c	d	Total Possible
Service	29 (67)	1 (2)	1 (2)	0 (0)	43
Manufacturing	6 (50)	0 (0)	0 (0)	0 (0)	12
Professional	3 (43)	0 (0)	0 (0)	0 (0)	7
Retail	5 (63)	0 (0)	0 (0)	1 (13)	8
Total	43 (61)	1 (1)	1 (1)	1 (1)	70

Percent of total responses are shown in parentheses.

Businesses desire additional training in IBM or compatible computers. Combining the results of Table 11 and Table 12 provide a mandate that businesses desire additional wordprocessing, database, and spreadsheet training on the IBM or compatible platform.

Less than 40% of the responding businesses believe they can benefit from consulting with Fremont Public School teachers concerning technology applications (See Table 13).

Table 13. Survey Question 15. "I believe that my business can benefit from consulting with Fremont Public School teachers about technology applications.

Firm Size	Service	Manufacturing	Professional	Retail
20+	N = 3 % = 23	N = 4 % = 40	NR	N = 2 % = 50
11 - 20	N = 4 % = 36	NR	N = 1 % = 50	NR
6 - 10	N = 2 % = 67	N = 0 % = 0	N = 0 % = 0	N = 1 % = 50
0 - 5	N = 5 % = 33	N = 1 % = 100	N = 2 % = 50	N = 1 % = 50

Note NR is No Response.

Table 14 is a tabulation of all "Agree" and "Strongly Agree" responses to questions 3, 5, 11, and 12. The column headed by "3" indicates that 33% of the responding businesses are "willing to pay a reasonable amount to Fremont Public Schools for employee training in technology".

The column headed by "5" indicates that only 11% of the businesses are "willing to provide software and/or equipment to the Fremont Public Schools in exchange for an equal value in employee inservice in technology".

Businesses do not want to use Fremont Public School Labs. Four percent of the businesses responded "Agree" or "Strongly Agree" to "My business would use computer equipment in the

Fremont Public School Labs". (See Table 15, column headed by "11".)

Seventeen percent of the businesses responded that they would be "willing to pay a reasonable amount for the opportunity to use Fremont Public Schools computer

Table 14. Survey Questions 3, 5, 11, and 12. Business support of technology in Fremont Public Schools.

	a	b	c	d	Total Possible
Service	16 (37)	5 (12)	3 (7)	5 (12)	43
Manufacturing	5 (42)	2 (17)	0 (0)	2 (17)	12
Professional	1 (14)	0 (0)	0 (0)	3 (43)	7
Retail	<u>1</u> (13)	<u>1</u> (13)	<u>1</u> (13)	<u>2</u> (25)	<u>8</u>
Total	23 (33)	8 (11)	4 (6)	12 (17)	70

Percent of total responses are shown in parentheses.

equipment outside of normal school hours".

Table 15 indicates that 30% of the businesses are willing to "volunteer my skills and/or employee skills in mathematics and technology, to Fremont Public School teachers" (See column headed by "14"). Four people are willing to serve on

Table 15. Survey Questions 14, 23, and 24. Business advisory support of mathematics and technology in Fremont Public Schools.

Question No.	14	23	24	Total Possible
Service	13 (30)	3 (7)	3 (7)	43
Manufacturing	2 (17)	1 (8)	2 (17)	12
Professional	3 (43)	0 (0)	1 (14)	7
Retail	<u>3</u> (38)	<u>0</u> (0)	<u>1</u> (13)	<u>8</u>
Total	21 (30)	4 (6)	7 (10)	70

Percent of total responses are shown in parentheses.

advisory committees for mathematics (See column headed by "23") and seven people are willing to serve on advisory committees for technology (See column headed by "24").

Table 16. Survey Question 16. "The Chamber of Commerce should serve as a clearing-house to identify similar needs for inservice and training within the business community."

Firm Size	Service	Manufacturing	Professional	Retail
20+	N = 7 % = 54	N = 3 % = 30	NR	N = 4 % = 100
11 - 20	N = 4 % = 36	NR	N = 2 % = 100	NR
6 - 10	N = 3 % = 100	N = 1 % = 100	N = 1 % = 100	N = 2 % = 100
0 - 5	N = 9 % = 60	N = 0 % = 0	N = 2 % = 50	N = 0 % = 0

Note NR is No Response.

Over half of the responding businesses (See Table 16) believe that the Chamber of Commerce should serve as a clearing-house to identify similar needs for inservice and training within the business community. The Chamber could provide communications between businesses and Fremont Public Schools.

CHAPTER FIVE

Summary, Conclusions, and Recommendations

Restatement of the Problem

The purpose of this study was to determine if businesses in Fremont require more training in mathematics or technology of graduates and current employees. The problem of businesses providing funding or other support to Fremont Public Schools for training in mathematics and technology was also addressed.

The hypotheses tested were: Training of Fremont Public School graduates and employees of Fremont businesses meets the mathematics and technology needs of the businesses. A second set of hypotheses tested involves business support of mathematics and technology training by Fremont Public Schools.

Description of Procedures Used

A questionnaire was developed to assess members of the Fremont Chamber of Commerce concerning the hypotheses to be tested. Ten businesses were chosen to review the questionnaire and suggest changes. The final survey was sent to all members of the Fremont Chamber of Commerce. At the end of two weeks seventy of the 350 area businesses returned questionnaires. Since the 20% return exceeds the average Chamber return it was decided that an additional mailing

would not significantly increase the return.

Principal Findings and Conclusions

Additional technical training is needed by Fremont Public School graduates as shown in Table 1. The service sector of the Fremont businesses gave the strongest message that graduates need additional training. Training is especially needed in word processing and databases. (See Table 2). The respondents recommend training in MS-DOS-IBM environment. (See Table 12).

Tables 3 and 4 indicate that most businesses agree that Fremont graduates do need additional training in mathematics. The main areas for additional training include "Problem Solving" and "basic mathematics". Fremont Public Schools should consider options for meeting the mathematics needs of Fremont Public Schools graduates to make them more employable by Fremont businesses.

Fremont businesses see little need for additional employee training in mathematics. (See Table 5). Nor are the businesses willing to support mathematics training provided by Fremont Public Schools for current employees. In that vein, businesses will not provide funds for mathematics training of employees by Fremont Public Schools staff.

Responses shown in Table 6 seem to disagree with the responses in Table 5. According to the responses in Table 6, businesses would like to have some of their employees receive

additional training in "Problem Solving" and "basic mathematics".

Some additional employee technology training by Fremont Public Schools staff would be supported by Fremont businesses. (See Table 7, 8, and 9.) Businesses responded that they could benefit from additional employee training in word processing, databases, and spreadsheets on the IBM-MS-DOS platform. (See Table 10 and Table 11.) Table 12 indicates that 61% of the responding businesses support additional training on IBM or compatible computers.

While 61% of the businesses surveyed indicated that they could benefit from additional employee technology training only 33% of the businesses are "willing to pay a reasonable amount to Fremont Public Schools for employee training in technology". (See Table 14). Businesses are reluctant to provide other forms of support for training or facilities provided by Fremont Public Schools. (See Table 14). Fremont businesses have proven that they will support programs that work.

Businesses are willing to support mathematics and technology through volunteering skills and serving on advisory committees as shown in Table 15. Fremont Public Schools should consider accepting the offers for personnel support made by businesses.

Clearly businesses want the Chamber of Commerce to

provide a clearing-house for inservice and training needs within the business community. (See Table 16.) Acting as a clearing-house could add a new venue for communications between business and education.

Recommendations for Future Research

The data collected for this study can be used as a baseline for future studies. Funding should be sought to encourage a better response from businesses.

While it appears that some Fremont businesses that returned the survey are reluctant to provide financial support for technology, in reality many businesses have provided financial support to Fremont Public Schools. Specifically the Junior High Industrial Technology program has received grants and financial support from many Fremont businesses.

Personal interviews with businesses may provide more accurate and complete responses. The interviews may prevent the discrepancies that occur in questionnaire responses.

Bibliography

- Adams, J. A., Chase, C., and Hall G.J. Assessing community perceptions and preferences, Spectrum Journal of School Research and Information, 1, (3), fall 1983 p13-15.
- Alreck, P.L. and Settle, R. B. (1985). The Survey Research Handbook. Richard D. Irwin: Homewood, Illinois.
- Backstrom, C. H. and Hursh-Cesar, G. (1981). Survey Research. John Wiley & Sons: New York.
- Clagett, C.A., Prince george's county business training needs assessment, ENSCAN88: market analysis report. Prince George's Community College, Largo MD. Office of Institutional Research and Analysis. (1988).
- Clover V., Bakley, H., (1974). Business Research Methods. Grid, Inc.: Columbus Ohio.
- Coffey, J.C. RETNA: regional employment and training needs assessment project. Los Rios Community College District, Sacramento, CA (1984).
- Converse, J., Presser, S., (1986). Survey Questions, Handcrafting the Standard Questionnaire. Sage University Paper: Beverly Hills, CA.
- Fowler, F.L. (1984). Survey Research Methods. Sage Publications: Beverly Hills, CA.
- Fremont Public Schools (1987). Strategic Plan. Fremont, NE.
- Goldstein, H. Fraser, B. Training for work in the computer age: how workers who use computers get their training. National Commission for Employment Policy (DDL), Washington, D.C. (1985).
- Johnson, B.E. The dekalb county business-industry-labor-student (BILS) needs assessment, Dekalb Community College, Clarkston, GA. (1985).
- Junge, D. A. and others Perception of business and industry: basic skills necessary for successful employment compared to competencies of entry level employees. Southern Illinois University, Carbondale, IL. 1983.

- Knold, J.A. Ed. (1986) Employee training needs as expressed in washington state. Washington state commission for vocational education, Olympia, WA.
- Kulik, C; Kulik, J.; and Bangert-Drowns, R. (1984). Effects of computer-based education on elementary school pupils. Paper presented at the annual meeting of the American Educational Research Association: New Orleans, LA.
- Lantz, J.. (1984) State of the art uses of Computers in vocational education in Ohio. Ohio State Advisory Council for Vocational Education, Columbus, OH.
- Mehalis, M. V. Broward County employers' training needs assessment. ED167 227. Broward Community College. Fort Lauderdale, FL. 1978.
- Moursund, D. (1985) High Tech/High Touch: A computer education leadership development workshop ICCE Publications.
- Naisbitt, J. (1982) Megatrends. Warner Books, New York.
- A Nation at Risk National Commission on Excellence in Education, 1983.
- Nickens, M., Punga, A., Noreiga, P. (1980) Research Methods for Needs Assessment. University Press of America: Washington, D.C.
- Pollak, H. (1987, May). Notes from a talk given at the MSEB Frameworks Conference, Minneapolis, MN.
- Rossi, P.H., Wright, J.D. & Anderson, A.B. Editors (1983) Handbook of Survey Research. Academic Press: New York, NY.
- Vockell, E.L. (1983). Educational Research. Macmillan Publishing Co., Inc.:New York, NY.
- Wirtz, W. (1985) Training for work in the computer age: how workers who use computers get their training. National Commission for Employment Policy (DDL), Washington, D.C. (1985).

Appendix A

July 21, 1989

One of Ten Business Name
Street Address
City, State Zip

Dear *Owner Name*,

The Fremont Chamber of Commerce and Fremont Public Schools are conducting a survey to assess the educational and training needs of Fremont businesses. Specifically we are focusing on Mathematics and Technology for this survey. I have enclosed the first draft of the questionnaire for your analysis. Please read it to determine whether the questions are clear. If you find questions that are unclear please feel free to make comments concerning those questions on the survey form.

It is not necessary for you to comment on each question. When you have finished with the questionnaire please return it to me in the enclosed envelope by July 31. Thank you for your help.

Edward L. Gilbreath

Enclosure

Appendix B

Edward L. Gilbreath
Computer Coordinator
Fremont Public Schools
130 East 9th Street
Fremont, NE 68025
(402) 727-3100

October 2, 1989

Dear Fremont Area Chamber Member,

The Fremont Chamber of Commerce and Fremont Public Schools are in the process of conducting a survey to assess the educational and training needs of Fremont businesses. Specifically we are focusing on Mathematics and Technology for this survey. Your participation is essential if we are to design programs that will be beneficial to you and your employees.

The information supplied by you will be kept confidential and will be used only by the organizations named for the purpose of program development. Dr. Buchanan will use the information gained from the survey during the district wide strategic planning sessions in early 1990.

Thank you for your participation and cooperation. Please return the questionnaire to Edward L. Gilbreath at the address listed on the questionnaire. We look forward to hearing from you.

Edward L. Gilbreath

Enclosure

Appendix C
Mathematics and Computer Technology Survey
Fremont Area Chamber of Commerce/Fremont Public
Schools

This scale has been prepared so that you can indicate how you feel about the statements listed below. Please circle the letter(s) on the left indicating how you feel about each statement. (SA-strongly agree, A-agree, U-undecided, D-disagree, and SD-strongly disagree.)

- | | | | | | |
|----|---|---|---|----|--|
| SA | A | U | D | SD | 1. I plan to increase the use of computer technology in my business during the next two years. |
| SA | A | U | D | SD | 2. My business utilizes technology (for example word processing, accounting, or inventory packages). |
| SA | A | U | D | SD | 3. My business would be willing to pay a reasonable amount to Fremont Public Schools for employee training in technology. |
| SA | A | U | D | SD | 4. My business can benefit from training to use computers to produce a company newsletter. |
| SA | A | U | D | SD | 5. My business is willing to provide software and/or equipment to the Fremont Public Schools in exchange for an equal value in employee inservice in technology. |
| SA | A | U | D | SD | 6. Some of my employees have sufficient skills in mathematics. |
| SA | A | U | D | SD | 7. The majority of the employees of my business need additional training in mathematics to be of full value to my business. |
| SA | A | U | D | SD | 8. My business will provide reasonable financial support to Fremont Public Schools for employee inservice training in mathematics. |
| SA | A | U | D | SD | 9. My business can use computerized data files of customers to produce personalized form letters. |
| SA | A | U | D | SD | 10. My business can benefit from training in spreadsheets to keep track of inventory, sales, accounts receivable, or accounts payable. |

- SA A U D SD 11. My business would use computer equipment in the Fremont Public School Labs.
- SA A U D SD 12. My business is willing to pay a reasonable amount for the opportunity to use Fremont Public Schools computer equipment outside of normal school hours.
- SA A U D SD 13. My employees need the opportunity to stay abreast of the most current aspects of technology - for example hard disks, local area networks, laser printers, utility software, and scanners.
- SA A U D SD 14. I am willing to volunteer my skills and/or employee skills in mathematics and technology, to Fremont Public Schools teachers.
- SA A U D SD 15. I believe that my business can benefit from consulting with Fremont Public School teachers about technology applications.
- SA A U D SD 16. The Chamber of Commerce should serve as a clearing-house to identify similar needs for inservice and training within the business community.
- SA A U D SD 17. Fremont Public Schools should provide future graduates with additional training in technology.
- SA A U D SD 18. Fremont Public Schools provides current graduates with sufficient training in mathematics to be considered of value in my business.

Please indicate the response that most nearly matches your situation. In some cases you may find it necessary to circle more than one response.

19. My company employs ___ full-time or full-time equivalent employees (people that work 40 hours per week). (a) 0 (b) 1-5 (c) 6-10 (d) 11-20 (e) over 20.
20. The primary function of my company: (a) service (b) manufacturing (c) retail (d) professional.
21. I would like to have some of my employees receive additional training in the following areas: (a) additional training is not necessary; (b) Algebra; (c) Geometry; (d) Problem Solving; (e) basic mathematics.

22. I would like to have some of my employees receive additional training in the following areas: (a) Network Design; (b) MS-DOS-IBM operating system; (c) Macintosh operating system; (d) Software choices; (e) Printing.
23. I would be willing to serve on an advisory committee for mathematics for Fremont Public Schools: (a) yes; (b) no; (c) possibly.
24. I would be willing to serve on an advisory committee for technology for Fremont Public Schools: (a) yes; (b) no; (c) possibly.
25. I would like to have some of my employees receive additional training in the following areas: (a) word processing; (b) databases; (c) spreadsheets; (d) telecommunications; (e) Electronic Mail.
26. I would like to have future graduates of Fremont Public Schools receive additional training in the following areas: (a) word processing; (b) databases; (c) spreadsheets; (d) telecommunications; (e) Electronic Mail.
27. I would like to have graduates of Fremont Public Schools receive additional training in the following areas: (a) additional training is not necessary; (b) Algebra; (c) Geometry; (d) Problem Solving; (e) basic mathematics.
28. My employees can benefit from training in (a) IBM or compatible computers; (b) Macintosh computers; (c) Apple II computers; (d) other _____.

Name: _____
Business: _____
Address _____
Phone: _____

Please Return To:

Edward L. Gilbreath
130 East 9th Street
Fremont, NE 68025