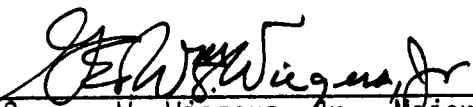
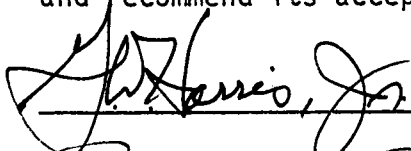


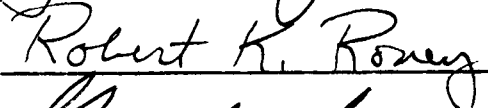
To the Graduate Council:

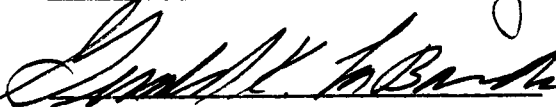
I am submitting herewith a dissertation written by Richard L. Bowling entitled "A Needs Assessment of the Knoxville Labor Market to Determine a Post Secondary Graphic-Arts Program for the State Technical Institute at Knoxville, Tennessee." I have examined the final copy of this dissertation for form and content and recommend that it be accepted in partial fulfillment of the requirements for the degree of Doctor of Education, with a major in Vocational-Technical Education.

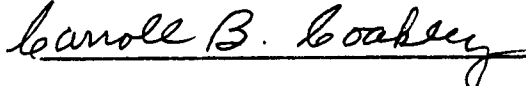
  
George W. Wieggers, Jr., Major Professor

We have read this dissertation  
and recommend its acceptance:

  
J. W. Harris, Jr.

  
Robert K. Roney

  
Donald L. B. B. B.

  
Carroll B. Coakley

Accepted for the Council:

  
The Graduate School

A NEEDS ASSESSMENT OF THE KNOXVILLE LABOR MARKET  
TO DETERMINE A POST SECONDARY GRAPHIC-ARTS  
PROGRAM FOR THE STATE TECHNICAL INSTITUTE  
AT KNOXVILLE, TENNESSEE

A Dissertation  
Presented for the  
Doctor of Education  
Degree  
The University of Tennessee, Knoxville

Richard L. Bowling  
June 1984

## ACKNOWLEDGMENTS

The assistance and cooperation of many are needed in research of this type. The limitations of space will not permit listing everyone who contributed to the study. The researcher, however, would like to mention those who are directly involved.

Sincere appreciation is expressed to Dr. George W. Wieggers, Jr., who served as the major advisor on this project. His guidance, encouragement, and technical assistance provided the catalyst for its completion.

Appreciation is also expressed to other members of the committee: Dr. Carroll B. Coakley, Dr. Gerald K. LaBorde, Dr. George W. Harris, Jr., and special appreciation to Dr. Robert K. Roney, who was kind enough to enter this project at midstream.

Appreciation is also expressed to each member of the panel of experts from the business community, who provided their time and commitment to this project. To Mr. Bob Muenchen, for his technical assistance in computer analysis and Mrs. Marilyn Caponetti, whose typing and layout skills provided the final manuscript for this project.

The author is especially grateful to his wife, Ellie, and son, Dusty for their love, patience and understanding through some trying times during the course of this study.

## ABSTRACT

The purpose of this study was (1) to determine by a survey of the Knoxville Labor Market Area, the present and future needs of a post secondary graphic-arts program, (2) to determine the interest in a post secondary program by means of a follow-up study of the graduates within the Knoxville Labor Market Area, and (3) to determine a feasible curriculum, applicable to local industry and the State Technical Institute at Knoxville, Tennessee.

Two questionnaires were used to collect the data, one for the printing industry and one for the former students of the secondary graphic-arts programs in the Knoxville-Knox County area. The population consisted of 225 businesses in the Knoxville Labor Market Area directly involved in the printing and/or graphic-arts industry, and 149 former graphic-arts students who had completed at least two years in the vocational graphic-arts programs within the Knoxville-Knox County, Tennessee area between the years 1978 and 1982.

Answers to the following questions were sought:

1. Does the printing industry in the Knoxville Labor Market Area recognize the need for continued training in a post secondary graphic-arts program? It was found that 86.7 percent of the respondents from industry felt that a post secondary program of this nature was needed in this area. In addition, 49.3 percent indicated they would utilize the program for new employee training, while 45.1 percent would use it for retraining. The majority of the

respondents, 57.8 percent, stated the program would be used to update present employee skills.

2. Do the graduates of secondary education vocational graphic-arts programs recognize a need for continued training in a post secondary graphic-arts program? All of the secondary vocational education graphic-arts graduates responding indicated that a program of this type was needed in the Knoxville area. Sixty-seven percent of them stated that some additional training would be needed, beyond their current level, in order to gain employment in the graphic-arts or a related field. Of the graduates responding 62.8 percent stated that they would attend such a program if it were offered at the State Technical Institute, and 83.0 percent felt that an Associate of Arts Degree in Graphic-Arts would enhance their employment opportunities.

3. Can the printing industry representatives of the Knoxville Labor Market Area identify curriculum areas needed for a post secondary graphic-arts program? It is apparent from the responses recorded in Tables 24 through 79 of this study that the local graphic-arts industry can "tailor" a curriculum to fit localized needs. Of the 27 courses presented in these tables, only two were not given favorable consideration--these were Introduction to Chemistry and Introduction to Physics.

4. Does the size of the industry and its annual gross sales affect the stated need for the curriculum of a post secondary graphic-arts program in the Knoxville Labor Market Area? The data summarized

in Tables 78 and 79 of the study indicate that when all 27 courses listed for consideration were rank ordered and compared "Position" to "Annual Gross Sale" there was very little variation in course ranking. Additionally, when the same courses were compared by "Annual Gross Sales" only, the variation between the larger companies versus the smaller companies, there was also very little variation in the rank ordering according to importance within the curriculum. It should be mentioned, however, that the larger companies offered more specialization, whereas the smaller companies employees tended to be involved in all processes of the trade.

The major conclusions drawn from the reported data regarding the proposed Graphic-Arts Program for the State Technical Institute at Knoxville were: (1) As a group, the need for a post secondary graphic-arts training facility for this geographical area is recognized not only by the local industry but also the former students of the secondary programs. (2) Most respondents felt that a program of this nature would lead to a better and higher paying job upon completion of the proposed course of instruction. (3) Not only did the industry recognize the need for the proposed program, but were able to tailor a program which would, if implemented, impact the local industry and the community. (4) If such a program is not implemented, the local industry would be forced to look outside the Knoxville Labor Market Area for skilled workers and training in order to keep up with rapid changes within the industry. Other detailed data, including recommendations for the program may be found in Chapters IV and V of this study.

## TABLE OF CONTENTS

| CHAPTER                                                | PAGE |
|--------------------------------------------------------|------|
| I. THE PROBLEM OF THE STUDY. . . . .                   | 1    |
| Introduction. . . . .                                  | 1    |
| Statement of the Problem. . . . .                      | 3    |
| Rationale . . . . .                                    | 3    |
| Objectives. . . . .                                    | 5    |
| Questions to be Answered by This Study. . . . .        | 6    |
| Assumptions . . . . .                                  | 6    |
| Definition of Terms . . . . .                          | 7    |
| Delimitations . . . . .                                | 8    |
| Organization of the Study . . . . .                    | 8    |
| II. REVIEW OF LITERATURE. . . . .                      | 10   |
| Curriculum Planning . . . . .                          | 19   |
| Need Implementation . . . . .                          | 27   |
| Curriculum Evaluation . . . . .                        | 32   |
| Placement . . . . .                                    | 35   |
| Summary . . . . .                                      | 37   |
| III. METHODOLOGY AND PROCEDURES. . . . .               | 38   |
| Methods of Research . . . . .                          | 38   |
| The Population. . . . .                                | 39   |
| Data Gathering Techniques . . . . .                    | 40   |
| Data Collection . . . . .                              | 41   |
| Analysis of Data. . . . .                              | 44   |
| IV. ANALYSIS OF DATA. . . . .                          | 45   |
| Industrial Respondents (General). . . . .              | 46   |
| Graduate Respondents. . . . .                          | 59   |
| Industrial Respondents (Curriculum) . . . . .          | 69   |
| V. SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS . . . . . | 134  |
| Summary . . . . .                                      | 134  |
| Printing Industry Characteristics . . . . .            | 137  |
| Former Student Characteristics. . . . .                | 138  |
| Printing Industry Perceptions . . . . .                | 139  |
| Conclusions . . . . .                                  | 139  |
| General Recommendations . . . . .                      | 140  |
| Course Recommendations. . . . .                        | 141  |
| BIBLIOGRAPHY. . . . .                                  | 146  |
| APPENDICES. . . . .                                    | 157  |

| CHAPTER             | PAGE |
|---------------------|------|
| APPENDIX A. . . . . | 158  |
| APPENDIX B. . . . . | 160  |
| APPENDIX C. . . . . | 162  |
| APPENDIX D. . . . . | 164  |
| APPENDIX E. . . . . | 171  |
| APPENDIX F. . . . . | 175  |
| APPENDIX G. . . . . | 177  |
| APPENDIX H. . . . . | 179  |
| APPENDIX I. . . . . | 181  |
| APPENDIX J. . . . . | 184  |
| APPENDIX K. . . . . | 188  |
| VITA. . . . .       | 190  |

## LIST OF TABLES

| TABLE                                                                                                                                     | PAGE |
|-------------------------------------------------------------------------------------------------------------------------------------------|------|
| 1. Type of Business by Industrial Respondents . . . . .                                                                                   | 47   |
| 2. Position in Firm by Industrial Respondents . . . . .                                                                                   | 47   |
| 3. The Major Printing Process Used by Industrial<br>Respondents. . . . .                                                                  | 49   |
| 4. The Existing Format for Firm by Industrial Respondents . .                                                                             | 49   |
| 5. The Total Number of Full and Part Time Employees by<br>Industrial Respondents . . . . .                                                | 50   |
| 6. The Main Source for Entry Level Personnel by Industrial<br>Respondents. . . . .                                                        | 50   |
| 7. The Average Beginning Salary for Non-Trained Employees<br>by Industrial Respondents. . . . .                                           | 51   |
| 8. Annual Gross Sales by Industrial Respondents . . . . .                                                                                 | 53   |
| 9. Entry Level Employment Outlook by Industrial Respondents .                                                                             | 53   |
| 10. Starting Salary Technical Graduates Could Expect by<br>Industrial Respondents . . . . .                                               | 54   |
| 11. Industrial Respondents Desire to Utilize Program for<br>Training . . . . .                                                            | 56   |
| 12. Utilization of Program for Retraining by Industrial<br>Respondents. . . . .                                                           | 56   |
| 13. Utilization of Program for Updating Skills by Industrial<br>Respondents. . . . .                                                      | 57   |
| 14. Service in an Advisory Capacity by Industrial Respondents.                                                                            | 57   |
| 15. Need for a Post-Secondary Graphic-Arts Program at The<br>State Technical Institute at Knoxville by Industrial<br>Respondents. . . . . | 58   |
| 16. Need for a Post Secondary Graphic-Arts Program at The<br>State Technical Institute at Knoxville by Graduates. . .                     | 60   |

| TABLE                                                                                        | PAGE |
|----------------------------------------------------------------------------------------------|------|
| 17. Secondary Program Graduates Employment Status by Year of Graduation . . . . .            | 61   |
| 18. Graduates Opinion of Secondary Training by Year of Graduation . . . . .                  | 62   |
| 19. Graduates Use of Secondary Graphic-Arts Training by Year of Graduation. . . . .          | 63   |
| 20. Graduates Feelings Toward Post Secondary Training by Year of Graduation. . . . .         | 64   |
| 21. Graduates Perception of Employment Opportunities by Year of Graduation. . . . .          | 65   |
| 22. Graduates Expected Starting Salary by Year of Graduation .                               | 66   |
| 23. Graduates feeling Toward Further Training by Year of Graduation . . . . .                | 67   |
| 24. Value Placed on a Course in Basic Writing Skills by Industrial Respondents . . . . .     | 71   |
| 25. Value Placed on a Course in Basic Writing Skills Related to Sales . . . . .              | 72   |
| 26. Value Placed on a Course in Patterns of Composition by Industrial Respondents . . . . .  | 73   |
| 27. Value Placed on a Course in Patterns of Composition Related to Sales . . . . .           | 74   |
| 28. Value Placed on a Course in Oral Communication by Industrial Respondents . . . . .       | 75   |
| 29. Value Placed on a Course in Oral Communication Related to Sales . . . . .                | 76   |
| 30. Value Placed on a Course in Mathematical Computation by Industrial Respondents . . . . . | 77   |
| 31. Value Placed on a Course in Mathematical Computation Related to Sales . . . . .          | 78   |
| 32. Value Placed on a Course in Introductory Physics by Industrial Respondents . . . . .     | 79   |

| TABLE                                                                                                    | PAGE |
|----------------------------------------------------------------------------------------------------------|------|
| 33. Value Placed on a Course in Introductory Physics Related to Sales . . . . .                          | 80   |
| 34. Value Placed on a Course in Introductory Chemistry by Industrial Respondents . . . . .               | 82   |
| 35. Value Placed on a Course in Introductory Chemistry Related to Sales . . . . .                        | 83   |
| 36. Value Placed on a Course in Industrial Safety by Industrial Respondents . . . . .                    | 84   |
| 37. Value Placed on a Course in Industrial Safety Related to Sales . . . . .                             | 85   |
| 38. Value Placed on a Course in Industrial First Aid by Industrial Respondents . . . . .                 | 86   |
| 39. Value Placed on a Course in Industrial First Aid Related to Sales . . . . .                          | 87   |
| 40. Value Placed on a Course in Human Relations by Industrial Respondents. . . . .                       | 88   |
| 41. Value Placed on a Course in Human Relations Related to Sales. . . . .                                | 89   |
| 42. Value Placed on a Course in Introduction to Labor Relations by Industrial Respondents. . . . .       | 91   |
| 43. Value Placed on a Course in Introduction to Labor Relations Related to Sales . . . . .               | 92   |
| 44. Value Placed on a Course in Small Business Management by Industrial Respondents. . . . .             | 93   |
| 45. Value Placed on a Course in Small Business Management Related to Sales . . . . .                     | 94   |
| 46. Value Placed on a Course in Facility Organization and Management by Industrial Respondents . . . . . | 95   |
| 47. Value Placed on a Course in Facility Organization and Management Related to Sales. . . . .           | 96   |
| 48. Value Placed on a Course in Introduction to Technical Drawing by Industrial Respondents. . . . .     | 97   |

| TABLE                                                                                              | PAGE |
|----------------------------------------------------------------------------------------------------|------|
| 49. Value Placed on a Course in Introduction to Technical Drawing Related to Sales . . . . .       | 98   |
| 50. Value Placed on a Course in Technical Drawing 1 by Industrial Respondents . . . . .            | 100  |
| 51. Value Placed on a Course in Technical Drawing 1 Related to Sales . . . . .                     | 101  |
| 52. Value Placed on a Course in Introduction to Micro-computers by Industrial Respondents. . . . . | 102  |
| 53. Value Placed on a Course in Introduction to Micro-computers Related to Sales . . . . .         | 103  |
| 54. Value Placed on a Course in Still Photography 1 by Industrial Respondents . . . . .            | 104  |
| 55. Value Placed on a Course in Still Photography 1 Related to Sales . . . . .                     | 105  |
| 56. Value Placed on a Course in Darkroom Technique by Industrial Respondents . . . . .             | 106  |
| 57. Value Placed on a Course in Darkroom Technique Related to Sales . . . . .                      | 107  |
| 58. Value Placed on a Course in Introductory Typesetting by Industrial Respondents . . . . .       | 109  |
| 59. Value Placed on a Course in Introduction to Typesetting Related to Sales . . . . .             | 110  |
| 60. Value Placed on a Course in Advanced Typesetting by Industrial Respondents . . . . .           | 111  |
| 61. Value Placed on a Course in Advanced Typesetting Related to Sales . . . . .                    | 112  |
| 62. Value Placed on a Course in Introduction to Graphic-Arts by Industrial Respondents. . . . .    | 113  |
| 63. Value Placed on a Course in Introduction to Graphic-Arts Related to Sales . . . . .            | 114  |
| 64. Value Placed on a Course in Basic Layout and Design by Industrial Respondents . . . . .        | 116  |

| TABLE                                                                                                    | PAGE |
|----------------------------------------------------------------------------------------------------------|------|
| 65. Value Placed on a Course in Basic Layout and Design<br>Related to Sales . . . . .                    | 117  |
| 66. Value Placed on a Course in Introduction to Printing<br>Processes by Industrial Respondents. . . . . | 118  |
| 67. Value Placed on a Course in Introduction to Printing<br>Processes Related to Sales . . . . .         | 119  |
| 68. Value Placed on a Course in Advanced Printing Techniques<br>by Industrial Respondents. . . . .       | 120  |
| 69. Value Placed on a Course in Advanced Printing Techniques<br>Related to Sales . . . . .               | 121  |
| 70. Value Placed on a Course in Graphic-Arts Production by<br>Industrial Respondents . . . . .           | 122  |
| 71. Value Placed on a Course in Graphic-Arts Production<br>Related to Sales . . . . .                    | 123  |
| 72. Value Placed on a Course in Special Problems in Graphic-<br>Arts by Industrial Respondents . . . . . | 125  |
| 73. Value Placed on a Course in Special Problems in Graphic-<br>Arts Related to Sales. . . . .           | 126  |
| 74. Value Placed on a Course in Related Research in Graphic-<br>Arts by Industrial Respondents . . . . . | 127  |
| 75. Value Placed on a Course in Related Research in Graphic-<br>Arts Related to Sales. . . . .           | 128  |
| 76. Value Placed on a Course in Technical Internship by<br>Industrial Respondents . . . . .              | 129  |
| 77. Value Placed on a Course in Technical Internship Related<br>to Sales . . . . .                       | 130  |
| 78. Summary of Values Placed on Courses Rank Ordered by<br>Industrial Respondents . . . . .              | 131  |
| 79. Summary of Values Placed on Courses Rank Ordered by<br>Annual Sales . . . . .                        | 132  |

## CHAPTER I

### THE PROBLEM OF THE STUDY

#### I. INTRODUCTION

No other time in the history of the graphic-arts industry of the United States of America has the demand for trained technicians been greater than the present. With the advent of micro-circuitry, computer-assisted machines and laser technology, the graphic-arts industry has made technological advances, which were only dreams a decade ago. As the 1980's begin, the Graphic-Arts industry is at the threshold of what may prove to be the most influential period in the "state of the art" since Gutenberg. If the industry is to progress and grow, so must the knowledge and understanding of all involved.

In order to produce technicians of the future and retrain technicians in the field, great care should be taken to insure that the needed training is available and in tune with current industry trends and demands.

With new and more sophisticated equipment being produced and marketed daily, the demand for localized training is becoming more and more apparent. A survey conducted by the Tennessee State Department of Employment Security in 1976 revealed that if current trends held true, an additional 860+ printing technicians would be needed by 1985. This figure was predicted prior to the

"technological boom" of the 1980's. Burkett (1969) indicated that if the foregoing needs are to be met, both the industrial and educational communities will be required to cooperate very closely to expedite this training and retraining. According to Riendeau (1977)

. . . the faster the rate of change, the greater the pressure placed on our schools to develop new methods of preparing our citizens to become useful and productive.

Further, he added,

If the schools are to meet their challenges, they must develop and maintain a close relationship with business and industry. Only in this way can we insure the relevancy of their educational programs to the needs of society and the economy.

It seems only appropriate that the State of Tennessee get involved with this technological boom, not only in the graphic arts field, but also in other high technology fields. This realization and the apparent far sightedness on the part of the Governor and Legislature will hopefully move Tennessee and particularly East Tennessee toward creating and updating the salable skills of the work force and attract new industry to the State. Governor Lamar Alexander has approached this situation on three fronts: (a) the Better Schools Program, whereby an incentive pay system will keep the best teachers in the classroom and inspire classroom excellence, thereby assuring a good educational foundation (State Department of Education, 1983); (b) the Governor's Task Force, appointed to examine the feasibility of establishing a "technology corridor" to facilitate expansion and attraction of high technology and industry; and (c) implementing plans to relocate and expand

the State Technical Institute at Knoxville has been made the number one priority by the Tennessee Higher Education Commission, so this post secondary training facility can be the hub of high technology training for this area.

## II. STATEMENT OF THE PROBLEM

Each year students of the various graphic-arts programs in the Knoxville Labor Market Area, which is comprised of Anderson, Blount, Campbell, Grainger, Hamblin, Jefferson, Knox, Loudon, Monroe, Roane, Sevier and Union Counties (see Figure 1), have completed a two year course of study and have expected to be employed in the general area for which they had trained. Much to the students' dismay, in most cases, the prospective employer looked for more and broader backgrounds than were afforded at the secondary level. Once these students left high school, there was no other training facility in the area which offered additional, specialized graphic-arts training. Further, a retraining facility for the post-secondary level appeared to be needed to update and retrain technicians presently employed in the field. The purpose of this study, therefore, was to determine the need for and interest in a comprehensive post secondary graphic-arts program within the Knoxville Labor Market Area.

## III. RATIONALE

This nation's current demand for printed products has continually increased. The demand has led the way in providing the

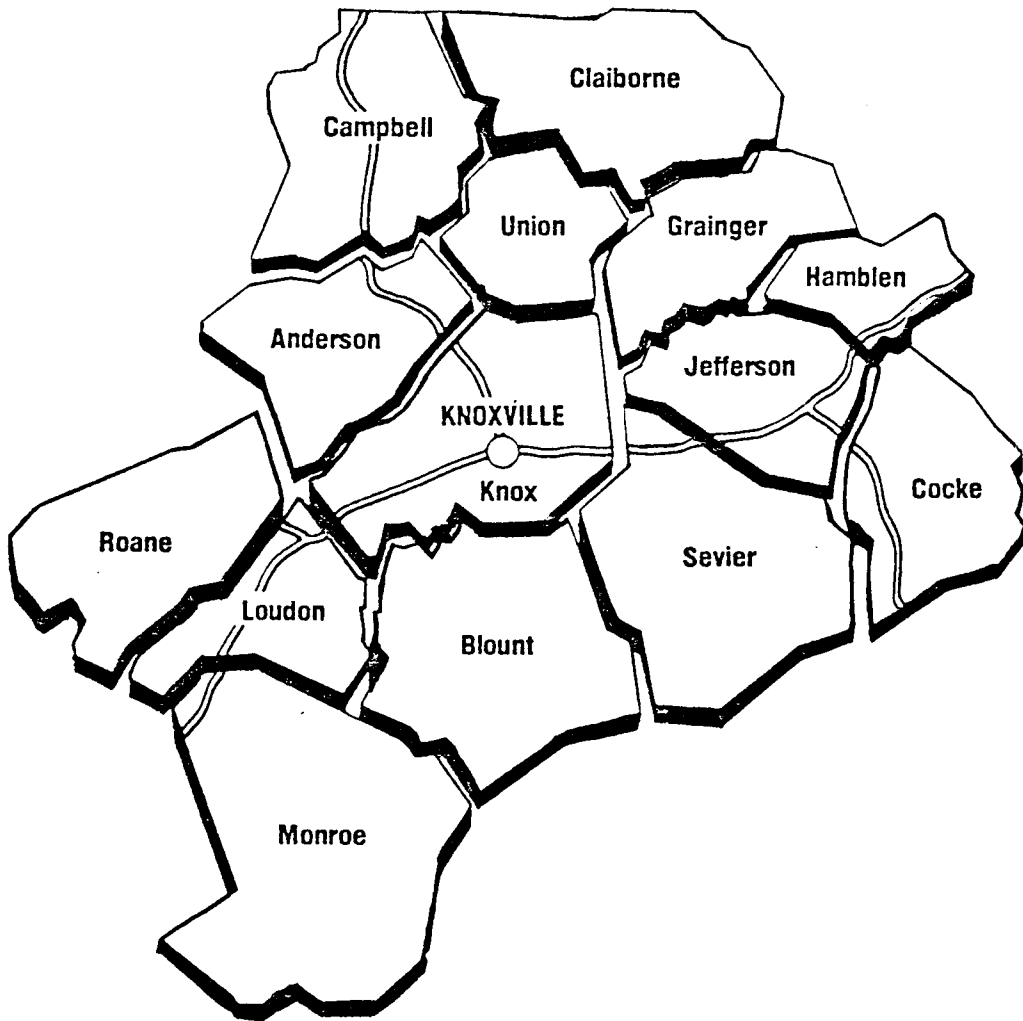


Figure 1. Knoxville Labor Market Area.

impetus for newer and better technology as a means of producing more, faster, and better products. The use of new technology in the graphic-arts industry indicated that technicians will need a well rounded training program to meet the growth of this technological trend.

The graphic-arts industry will be required to spend millions of dollars annually to keep abreast of the technological advances of the industry. Training and retraining of personnel is costly and time consuming but a necessary expenditure in the long run. By localizing this training and using existing public facilities, some of this cost burden can be reduced not only on the part of industry but also to the eventual consumer. Further, by localization of this training, a common educational base could be established for further exchange of educational and technological ideas.

#### IV. OBJECTIVES

The purposes of this study were:

1. To determine by a survey of the Knoxville Labor Market Area the present and future needs of a post secondary graphic-arts program.
2. To determine the interests in a post secondary program by means of a follow-up study of the graduates within the Knoxville Labor Market Area.
3. To determine a feasible curriculum, applicable to local industry and the State Technical Institute at Knoxville.

## V. QUESTIONS TO BE ANSWERED BY THIS STUDY

To resolve the statement of the problem, the following questions were formulated for this study:

1. Does the printing industry in the Knoxville Labor Market Area recognize a need for a post secondary graphic-arts program?
2. Do the graduates of secondary education vocational graphic-arts programs recognize a need for continued training in a post secondary graphic-arts program?
3. Can the printing industry representatives of the Knoxville Labor Market Area identify curriculum areas needed for a post secondary graphic-arts program?
4. Does the size of the industry and the annual gross sales affect the stated needs for the curriculum of a post secondary graphic-arts program in the Knoxville Labor Market Area?

## VI. ASSUMPTIONS

This study was based on the following assumptions:

1. The respondents were representative of a larger population in and around East Tennessee and the graphic-arts industry.
2. Identification of the competencies needed for entry level technicians would be beneficial to the industry as well as to the community.
3. Curriculum revision in vocational-technical education, at all levels, must be an on-going process in order to meet the needs of the industry.

## VII. DEFINITION OF TERMS

For the purposes of this study the following definitions are proposed:

Graphic-Arts Industry: All companies involved in printing, packaging, or publishing, whether commercial or in-plant printing.

Knoxville Labor Market Area: The 16 surrounding counties of Metropolitan Knoxville, from which workers or potential workers commute daily to be gainfully employed.

Competency: Having the requisite abilities or skills needed to perform tasks effectively at a proficiency level for entry into the graphic-arts job market.

Entry Level: The skills or competencies deemed necessary by industry for securing, holding and updating in a specific occupational area in the graphic-arts.

In-Plant Shops: Printing facilities that are located within non-printing industries, such as schools, hospitals, government, and large corporations.

Job Shop: Businesses that offer a variety of printing services including printing, xerographing, binding, and collating to the consumer.

Specialty Shop: Establishments within the printing industry which provide special services to other printing firms. They may include typesetting, color separation, bindery, negative stripping, plate-making and layout.

Format: Overall maximum measurements for a finished printed product. Usually expressed in inches. The most common are 10x15 and 11x17.

Industrial Respondent: Those individuals from the printing industry who responded to the questionnaire. They were Owners, Managers and "Others". "Others" are the individuals assigned the tasks of day-to-day operation of the business.

Graduate Respondents: Those students who graduated from the various graphic-arts programs between 1978 and 1982.

#### VIII. DELIMITATIONS

The scope of this study was confined to data collected from graduates of the various two year graphic-arts programs within the Knoxville-Knox County area for the school years 1978 through 1982. Furthermore, selected local industries which employ or have need for graphic-arts technicians were surveyed.

#### IX. ORGANIZATION OF THE STUDY

The main body of this study is reported in five chapters. In addition, a bibliography and appendices are included.

Chapter I consists of an Introduction to the Problem, Statement of the Problem, Rationale, Objectives, Questions to be Answered, Assumptions, Definition of Terms, Delimitations, and the Organization of the Study.

Chapter II presents the Review of Related Literature and Research. The Review of Literature was conducted to gain insight into specific approaches to the problems posed by this study.

Chapter III presents the Methodology and Procedures followed during the course of this study. Included also are methods of research, identification of the population, and the sample, data gathering techniques and methods of data analysis.

Chapter IV presents the discussion of data collected. Analyses are presented by total group and individual group responses.

Chapter V presents the summary, conclusions and recommendations.

## CHAPTER II

### REVIEW OF LITERATURE

As one looks at the graphic-arts industry, a number of significant events have changed the course of history. Certainly man's first attempt in graphic communication dates back 30,000 years. Though crude, it set the spark which ignited man's desire to improve communication with his peers (Bruno 1979). With the advent of movable type from China and Korea in the 11th century, Gutenberg's printing press, in 1440, Ottmar Mergenthaler's typesetting machine, in 1886, and Ira Rubel's offset printing press, in 1906, man was making communication much more universal; yet his instruments or "tools of the trade" were becoming more and more complex.

A review of the past 15 years revealed that certain major growth patterns were much more accelerated than those of the past 200 years. The trend to offset lithography, to phototypesetting, and to color reproduction are good examples. Hand processing of photographic materials has been replaced by mechanized processing. The trend is to replace stripping steps with greater reliance on paste-up. There is a move from darkroom safelite handling of photo materials to room light.

Changes in the next five to ten years also will be evolutionary, proceeding in carefully considered and well documented stages. Consider the following:

1. 1968 - Video Display Terminals first applied to photo-typesetting.
2. 1970 - The first practical application for an Optical Character Reader.
3. 1972 - The first practical use of lasers in graphic-arts.

According to Sundeen (1980), there is no question that the graphic-arts industry is in the midst of a period of major change. In order that technicians in the field be kept abreast of the changes, vast amounts of research are needed. Further, the information obtained from these research projects will need to be disseminated to all aspects of the industry. It should be organized and easily accessible to the prospective user, whether experienced professional or novice.

According to Adams (1980), the key problem for most students in the graphic-arts is locating accurate and up-to-date information about their new field of study. Even individuals who have been in the field for many years report the same major problem--how to locate information in the volumes of material being published every year about the ever growing field of printing. Teachers need continually to monitor changing ideas and products. Researchers need continually to be aware of advances in their field by other researchers. Printers must be aware of advances and changes in their part of the market. Suppliers continually have to update their knowledge of trends and materials. Manufacturers also want

to know what is happening in their specialty, or in new areas of interest.

The process of finding that information can be confusing, frustrating, and sometimes fruitless. There is so much information that a random, unorganized search is pointless.

By effectively utilizing the various sources available, such as basic printing textbooks, libraries (college or technical institute), Subject Guide to Books in Print, Subject Catalog of the Library of Congress, Business Periodical Index, Graphic-Arts Abstracting Service, or ERIC, several avenues are open to the researcher. Many articles and publications were reviewed using the above media, and the following narrations were chosen due to their pertinence to this study.

One of the more relevant publications dealing with industry manpower needs was prepared by the Eastman Kodak Company in 1973. In the final report, respondents to Kodak's questionnaire indicated the primary problem in hiring both skilled and management personnel was the shortage of qualified applicants, while inadequate skills was listed as a contributing factor in the retention of skilled personnel.

The Kodak study further concluded that existing secondary level vocational graphic-arts programs could not supply the manpower needs for the graphic-arts industry during the 1980's, but included the following recommendations to the educational community:

1. It is recommended that new personnel be prepared for managerial and lithographic production opportunities.
2. Instructional programs should place additional emphasis on developing technical knowledge in science-oriented areas which are becoming increasingly important to graphic-arts technology.
3. Graphic-arts programs beyond the high-school level should include areas of safety and environmental control as an integral part of the curriculum, and that the post-secondary level program include some instruction in the application of computers to the graphic-arts technology in management.
4. Post-secondary programs should consider offering continuing education activities in the unique aspect of graphic-arts management, with emphasis on technological growth and development of students (Kodak 1973).

Another study which added insight into the graphic-arts community was conducted by Clemson University. Crouch (1972) provided information for the curriculum planners concerning the "state of the art" in the graphic-arts industry and the opinions of those who comprise that industry. The second category of the survey dealt with the technical knowledge, skills, and educational background of those responding.

As previously mentioned, the data were gathered for curriculum development, and some surprising responses were given. It was discovered that the primary source of labor was walk-in applicants, off the street, with little or no formal training. The second most common source was recruitment from other shops within the geographical area. The most interesting finding was that vocational-technical program graduates were not given consideration for entry-level personnel. It was felt that schools which offered programs

exposing students to broad categories of experiences emphasizing offset preparation and presswork theory appealed more to the industry. It also was reported that the greatest shortage of qualified workers was in the layout and design and press operation section.

Spence (1981) suggested for the printing industry, new technology often results in new equipment; at the same time new skills are required for its operation. The printing industry needs to rethink its approach to education and training. The industry must have appropriate educational facilities to teach industry people how to react and interact with technological change. Printers must use technology to provide their customers with new products, greater flexibility, lower unit costs and consistent high quality; yet at the same time profits must still provide an adequate return for future developments. Rutherford (1981) stated in keeping with the time-honored craftsmanship of the printing industry, printers preparing for these technological advances should continually challenge, question, and oversee their local sources of trainees. Instructors can still be found teaching students to run letterpress or set metal type by hand, and vocational schools are often no better than regular high schools. Even commercial arts schools often neglect to offer courses in typesetting and printing processes. High school students should consider typing a mandatory course and students should be introduced to minicomputers in the classroom. Printers should visit vocational and high schools in their geographical area to explain job possibilities, to discuss the industry,

to make sure students are receiving adequate training, and to recruit this new talent.

According to numerous trade publications such as the American Printer and Lithographer (December 1981), developments in the printing and information industry during the 1980's will center around software; this will increase cost effectiveness by increasing the utilization of digital computers. Bruno (1981) stated new equipment, techniques and methods which will be developed will not replace, but will complement and enhance, conventional printing methods and products. Significant software developments are anticipated in areas of computer storage, color scanning, photography and press control systems. Work will also continue in all areas of plate-making and in the development of ink drying and curing systems. The bindery area will continue to grow through automation and electronics. Computer controlled industrial robots that have been used successfully in many industries are now making their way into the printing industry. Over the next five years, the printing industry is expected to grow at about the same rate as the gross national product. This is further substantiated by the National Association of Printers and Lithographers (1981), which conservatively predicted a 3.4-4.5 percent growth in output for the printing industry during the first quarter of 1981, while the Department of Commerce estimated a 6.5 percent growth in the Gross National Product (GNP) for the same period of time.

According to Gallenda (1981), another sleeping giant is the independent quick printer. These independent quick-printing

establishments are believed to outnumber quick-printing franchises by three to one, with an estimated 11,500 independent printers, as compared to 3,300 franchises reported by the Department of Commerce. Of the \$2.8 billion in 1980, quick-print sales of \$2.3 billion (80 percent) went to independent quick printers. Ironically, each of these businesses employed fewer than 10 workers, a good indication that automation and modern business practices have contributed greatly to efficiency.

According to Dickenson (1981), growing microprocessor use throughout the industry has resulted in a number of electronic devices that have provided numeric pressroom controls which save countless manhours; yet these types of controls are worthless unless the crews have been retrained to operate them properly. With today's economic conditions, it is no longer possible to run a pressroom using worker numbers that feel good. There must be a plan to make the numbers work and they must be understood, evaluated, and used to produce results. It is, therefore, necessary for managers to make the commitment to retraining. They must learn the numbers, what they mean, and how to utilize them.

Watkinson (1981) stated the prepress area of the industry is where the greatest technological advances are taking place. Word processors and computers with the ability to store, sort, and retrieve information are ideally suited for the job of printing newspapers, books, and magazines; yet, according to Mingoutis and Lyman (1981), prepress requires both intelligence and manual skill.

In order to more easily locate and train persons for prepress operations, the in-plant manager should consider reducing the amount of manual skill required of the job.

A three-year study conducted by Handy Associates (1979) concluded that the primary reason for job shifts today is not money, but rather the opportunity for a better long-term career elsewhere. In order to satisfy an employee's needs for career fulfillment, a manager should emphasize the importance of that individual. This may be done through direct counseling, skill-enhancement workshops and decision decentralization. A manager should recognize an individual's efforts and allow the employee to develop styles whenever possible. Hayes (1981) stated the manager who encourages an employee's job fulfillment will help the employee develop a loyalty to the company--a loyalty that inhibits the desire to change jobs.

Dooley (1981) related that another consideration which has played a greater role in employee relations is a safe in-plant shop environment. This not only reduces accidents, but also adds to worker morale and promotes efficiency within the department. Proper equipment handling and proper fire prevention are very important in creating and maintaining a safe in-plant environment. Good housekeeping and the maintenance of a clear, even traffic flow help to minimize accidents. Areas in which smoking is prohibited or hazardous equipment is used should be clearly marked; shop notices should be strictly enforced. First-aid equipment should be easily accessible, and at least one employee within the

shop should be trained in the administration of first aid. It has been found that written rules are more effective than oral tradition.

Cluett (1981) stated that as the printing industry progresses and grows, greater individualism, as pointed out in other articles, begins to develop. The overall union membership associated with all phases of the printing industry has suffered great declines in the past few years. This could be attributed to a growing number of print shops overcoming productivity problems by increasing profits and by instituting profit-sharing plans.

According to Bergland (1981) a survey of quick-printing franchises representative of the U.S. primary market sectors indicated that most quick printers viewed their operation as a business venture rather than a craft. Further, the printers agreed that their annual sales must total at least \$80,000 to insure survival. Of course, some markets such as the Knoxville and surrounding counties have experienced continued sales and moderate growth. Printers generally felt long-range planning could be the key to success, and a varied customer base would act as an insurance against a single facet in the market. According to an article in the Graphic-Arts Monthly (1982), if President Reagan's economic policies work, graphic-arts shipments will top \$82 billion in 1982, an increase of 10.6 percent. The overall industry growth rate was expected to maintain a 3.1 percent growth rate. The same outlook held true for the State of Tennessee in 1981. The total labor force was estimated at

2.21 million; employment projections for 1977 through 1985 indicate 20,000 individuals directly employed in graphic-arts in 1978 with 22,500 by 1985. The stability of the Tennessee work force was further demonstrated with an annual attrition rate of 870, which is offset with 603 new jobs created through new technological advances within the industry (Tennessee Department of Employment Security 1981).

### I. CURRICULUM PLANNING

In an unpublished dissertation Ledford (1981) made interesting and appropriate points. He stated: "One of the best ways to improve the educational system is to strengthen communication between educators and the lay public." In its sixth report the Tennessee State Advisory Council on Vocational Education (1976, p. 2) stated: "A more informed and concerned public will assist in developing an educational system that will do more for all the people."

Burt (1976) illustrated the mutual role that educators and industry should play:

There is a general unanimity among educators that industry leaders regard the desirability and mutual benefits to be derived through cooperative efforts in the development and conduct of the vocational and technical education program offerings of local schools and school systems. Employers can gain desired training facilities, reduce their own training costs, and future employees. . . . The benefits realized by schools offering courses in instructional training programs attuned to the needs of industry and labor, therefore play a more meaningful role in the community which hopefully provides a broad base of community support (p. 42).

A prospective or present employee will benefit by having assurance that course standards are acceptable to industry (p. 36).

Cochran (1981) suggested there is no doubt that the utilization of an adequate system of planning between education and industry would enhance the vocational training programs throughout our nation as well as in the State of Tennessee. According to Cochran (1980, p. 286):

The success of curriculum planning depends on the degree to which it facilitates good judgment, aids in the attainment of objectives, serves as a guide for action and serves as a communication device for those involved in or associated with the plan.

The Tennessee State Advisory Council on Vocational Education (1975, p. 4) encouraged utilization of local vocational advisory committees and increased input from local business and industry. At a public hearing by the Council, an industrial participant pleaded for communication between industry and vocational education the objectives of our educational system and our work community are inextricably intertwined and inseparable.

In a study done by the United States Employment Service, Burt (1967, p. 4) noted:

Both educators and industry agree that only by their cooperative effort in all phases of and at all levels of occupational education can the public schools meet its responsibilities to the students, to potential employers of students, and to the public.

More times than not, when education experiences problems, it looks to the federal government for legislative and financial

assistance. The Tennessee State Board of Education in its Rules, Regulations and Minimum Standards states that:

the responsibility for the support and control of education in the United States has been recognized as belonging to the respective states (Tennessee, 1975, p. i).

This means that planning for curriculum development must start within the local government and within the local environment. Neither industry nor education's role in planning is ascendant; rather, work must be done cooperatively (Horne, 1972, p. 71). The 1974 annual evaluation report of the State Advisory Council on Vocational Education underscored the present problem:

The State Advisory Council encountered overwhelming evidence that the need for meaningful input from local citizens is even greater than previously thought. Informal sampling of various local committees, along with the testimony given during the Council's public hearing, indicates that most local committees are not actively involved in the vocational education program planning and evaluation, and in many instances when they are active, their suggestions are not given very serious consideration (Tennessee, 1974, p. 6).

According to Ledford (1981) the findings indicated that the essential ingredient of teamwork is missing at this time. Hence, education and industry must begin working together more closely to obtain optimum results. One difficulty which seems to be hampering cooperation is that doubt exists concerning educators' knowledge and understanding of industry. To help remedy this problem, the California State Board of Education passed and published a resolution specifying that:

our education today urgently needs the participation and the understanding of business and industry. We urge that business, industry, and education in all parts of the State of California get together, know of each other and participate (Horne, 1972, pp. 70-72).

The Vice President of the National Association of Manufacturers indicated that the interdependence of business and industry was understood well by most businessmen. In fact, dependency is probably better understood by businessmen than by most educators. Lee (1972, pp. 73-74) reported that education depended upon the rest of the community to absorb its products, while industry depended upon education to provide raw materials required to produce the products and services we all require. It is essential, therefore, that industry and education work together to utilize the tremendous resources vital to the future existence of both. As Carlson (1970, p. 45) noted, "the partnership involves an exchange of commitment between the school and industry." Stiner and Struck further emphasized that local interest, initiative, and effort will provide strength, vitality, and dynamic power to vocational education (Stiner, 1968, pp. 4-9; Struck, 1947, pp. 89-107).

Bohn stated the role of teacher planning:

Behind every well-presented discussion or demonstration, every well-run student organization, and every neat and orderly laboratory or shop will be found a teacher or teaching team that has carefully planned the instructional program. This planning may include the course or program goals, behavioral objectives and the needed subject matter, plans for lessons and demonstration, plans for a student directed organization, necessary references, and other written materials believed necessary for the instructional program (Bohn, 1976, p. 143).

This kind of curriculum planning is not enough in industrial-vocational education. In this type of education, planning must be extended further, as Burt stated:

When industry and education ignore each other or fail to actively cooperate, the inevitable result is schools turning out unqualified workers and industry suffering skilled manpower shortages. The student and the community are cheated while industry is forced to engage in expensive in-plant training or be satisfied with untrained workers giving low grade performance. The cost is passed on to the public who thus pays twice, once for the ineffective schools and again for the expense of ineffectively trained workmen in industry. The effect on our nation's manpower development and utilization efforts is not only negative, but, when allowed to persist, disastrous (Burt, 1967, p. 42).

Technological changes in our society have brought about a need for increased emphasis for cooperation and planning between business and industry and vocational education. Willis (1964, p. 620) commented that industry and education must join forces in creating opportunities for meeting requirements for supervision, research, engineering, maintenance and cost analysis. Training and retraining in job skills must keep pace with technological progress, which requires continual reappraisal and revision of the vocational curriculum.

Evans (1969, pp. 1-5) implied that indifference or lack of urgency on the part of community representatives concerning the value of training specifically for employment, in light of changing technology and the changing mix of industries, services and business establishments, could be detrimental to the total community. Horne (1972, p. 72) suggested that in our educational

institutions, it is not the rate of change but the lack of community participation that causes problems. Even so, he agreed that a time of rapid change is forthcoming. Many jobs are disappearing and new ones are being created. The skill levels and types of skills required are also changing with the various occupations. Lamar (1971, p. 31) warned that "we should be aware of the many problems confronting our educational system . . . problems which include a multifaceted curriculum, appropriate types of school organizations, school-community cooperation that should come to grips with the realities of our social, economic, educational and cultural environment."

The Newark Chamber of Commerce (1973) report specified that:

in order for vocational education programs to be worthwhile, they should be related to the job needs of the city and surrounding area. There is little point in training students for jobs that do not exist or are not expected to exist.

Further it implied there is a tremendous need for training-program planning that will provide proficiency in experiences which will mean success or failure in the world of work. Training courses must be meaningful and realistic in preparing the student for the world of work. Vocational education's goals should be to provide a marketable skill for each youth and adult. The idea of providing vocational education for all young people would make vocational education more effective. Nothing less can answer our social needs and the needs of the individuals that we serve. Where there is little or no planning and cooperation between the educational system

and industry, there are dull, irrelevant training programs. The United States Office of Education (1971), released a report that summarizes the problem:

In many schools throughout the country young people complain that curriculums are dull and irrelevant . . . more appropriate curriculums must be developed, validated, and installed, and they must be used more realistically if we are to meet the needs and desires of students and serve the purposes of society (U.S. Office of Education, 1971, p. 1).

Further, this report implied that the majority of specific activities performed by industry personnel is concerned primarily with advisory committees and cooperative education. In addition to these two major kinds of activities, the National Advisory Council on Vocational Education and the U.S. Office of Education made reference to youth organizations and teacher training programs as being viable means through which business and industry services may be available to educational institutions. One of industry's major and constant concerns has been how to keep costs to a minimum in order to keep their products in a competitive market. One manpower expert said:

Wouldn't it make sense for business to invest some of its time and whatever resources it could in working together with educators in developing partnerships that would result in business having to spend less than 15 billion dollars each year in training and retraining the people it hires? (Winter, 1973, p. 53).

A University of Minnesota study (1968) reported the primary purpose of vocational curriculum should be to prepare students for occupational entry or advancement in a specific job or occupation. When planning curriculum, educators and industry must not only determine the job content in terms of skills and knowledge

requirements of an occupation but must "also rationalize the instructional program to meet the common and current needs of a majority of the employers in their community." Burt (1967) stated initiating and establishing new programs in vocational and technical education need not be speculative ventures if the manpower needs of area employees are first taken into consideration (Burt, 1967, pp. 42-72).

Further he added when planning new areas of training for a school, (the curriculum) educators must be concerned with the sale of their end product, that is, they must consider the placement of their students.

Allen stated:

there is little doubt, in many instances, that vocational education has failed to market its product with the same vigor and professional approach which characterize promotion practice in the business world (Allen, 1972, p. 5).

Hall implied that:

vocational educators must take into account the fact that over 90 percent of the gainfully employed individuals in our society are job holders . . . that is, they are paid employees, not independent entrepreneurs or independent practicing professions who collect fees for their services rendered (Hall, 1972, p. 209).

The potential employers of this 90 percent must be consulted when programs are being planned and implemented.

Burt (1971) implied that most geographic areas are made up of a diversity of manpower requirements. Each area is unique in its requirements. When educators become involved in their own particular area, they become familiar with the needs of that area. This is necessary if they are to answer questions concerning

requirements for training to use particular types of machinery and equipment. Advisory committee personnel need to be involved in an activity that will make some worthwhile contribution in the field of education, and they can. According to Burt (1971) industry wants an effective utilization of its expertise and interest in serving one of the most important components of the community . . . the school and its students.

The Tennessee State Board for Vocational Education (1975, p. 6) recommended that when new training programs are initiated, industry's input is especially valuable in planning, initiating and providing public support for the program. Discussion during a conference at the University of Wisconsin brought out that there must be a closer planning relationship with industry and with other groups in developing information about the "world of work" and how it fits into society (Wisconsin, 1970, p. 15). Prozzia (1967, p. 1) indicated that too often "curriculum decisions are made solely by 'experts' who are somewhat detached from the problem and generally untouched by the consequences of their decisions." This would indicate that the proper people must be selected to serve on advisory and planning committees, and, once they are selected, they must have a clear understanding of their functions.

## II. NEED IMPLEMENTATION

According to Ledford (1981), the implementation of new vocational training programs or revisions of existing programs may

be of little help to the local labor market without the assistance and input from the local labor consumer. Input and assistance from local labor consumers are so important that laws have been passed to ensure some cooperation between education and industry. This concept came as a result of the Educational Amendments of 1976 which stated:

funds will be distributed to eligible recipients on the basis of applications which have been developed in consultation with the local advisory council required to be established by this Act to assist such recipients (94th Congress, Public Law 94-482, 1976, p. 2177).

The Tennessee State Board of Vocational Education (1975, p. 4) has required each local education agency to establish an advisory committee to assist in planning, conducting, and evaluating vocational education curriculums. A document published by the Tennessee State Advisory Council on Vocational Education (1976, p. 2) stated that "volunteer citizen advisory committees have historically been a feature of American education." Vocational education has utilized such committees in some form since 1917; however, it is only now that their value is being recognized and their need imperative to the success of vocational education. In its 1975 report, the Tennessee State Advisory Council on Vocational Education pointed out that local advisory committees including employers and organized labor are involved in the planning, operation, and evaluation of vocational-education programs. It also suggested that a greater degree of acceptability on the part of employers could be achieved by close

cooperation with employers and organized labor (Tennessee, 1975, pp. 3-13).

Burt (1971, p. 31) indicated that local advisory committees have the most direct influence on curriculum and provide the most tangible assistance to vocational educational programs. He further suggested that without an advisory committee involving industry personnel, occupational education programs will probably not be of much value in preparing students for the world of work. Burt also alluded to the fact that when an administrator decides not to make use of an advisory committee, he may as well decide to eliminate his vocational programs. Carey (1964), in one of his speeches claimed:

If I were allowed to make just one recommendation for the strengthening of our vocational training system, it would be that advisory committees be expanded to every community in the nation. I honestly believe that they are that important to the success of the job that we are trying to perform today.

In a New Hampshire study for curriculum modification, Annis (1968) reported:

It was felt that changes were needed to increase the value of occupational training for persons who are its students and teachers, and to create optimum use of educational facilities serving these people. It was also felt that an attempt should be made to discover what are the realistic needs that education should fulfill for employers in the state of New Hampshire. . . . There seemed to exist a need for intensified communication among business . . . and education.

In 1969 the American Vocational Association stated that:

one of the major functions of a school's general advisory committee is to advise the school administration of the

types of offerings required to satisfy the preparatory as well as the retraining and upgrading needs of the individuals of the community. In order to do this effectively, the committee must have more to draw upon than the experience and background of its members (American Vocational Association, 1969, p. 18).

The article went on to imply that an occupational survey can supplement this knowledge. When information from such a survey is obtained, industry would be involved. This information should facilitate achievement of objectives, thereby enabling the school system to upgrade those training programs not meeting the needs of the local labor consumer.

A survey, whether in the form of a questionnaire or personal contact, is one of the best ways to promote communication. Educators have a tendency to become involved with students and not get out into the labor market. However, if educators were forced to conduct a labor survey, they would become involved and would be made aware of all aspects of industry which they must know to accomplish their training objectives. One aspect of primary importance is the constant need for curriculum revisions and updating of training equipment in schools to keep it consistent with what the student will find when he takes a job. According to Dunbar (1972), "only schools which are in constant contact with industry can make these revisions."

The Tennessee State Advisory Council on Vocational Education (1976), listed the following as purposes and duties of advisory committees:

- Help determine the occupations for which training is needed.
- Set up short-term goals for the training program.
- Recruit students that are in need of the training.
- Help keep the curriculum up-to-date as to the jobs available.
- Provide jobs for the students.
- Act as public relations people.
- Help secure needed materials.
- Give advice and encouragement to students.
- Create rapport between industry, business, and the vocational education program.
- Make suggestions for sub or occupational committees.
- Assist in securing permanent job placement for students.
- Make suggestions for other types of programs needed in the community.
- Help in finding suitable training stations.
- Assist in the evaluation of the program (Tennessee, 1976, p. 2).

Morse (1968) pointed out that it was essential for educators to have knowledge about effective use of advisory groups if these units were to be beneficial. Further he stated that program personnel are better able to provide more realistic and meaningful education for individuals in their communities when they are assisted by advisory personnel from within the local labor market. The vocational teacher is the key to effective vocational programs. According to Keller (1948, p. 288):

if faculty and advisory committees maintain the highest ethical standards for the profession and demand them of the students, students are likely to carry on worthily to the highest ideals of the profession (Keller, 1948, p. 288).

Barlow (1974) has pointed out that instructors must be thoroughly acquainted with the standards of quality inherent in the occupation for which they are preparing students. "The vocational teacher is the heart and brains of the instructional program. If we do not have good qualified teachers, we do not have anything with

which to start." Still, as one analyst pointed out: "Instructors should be good to get into the program; they must be better to stay" (Barlow, 1974, pp. 268-270). Burt stated that well-informed advisory-committee personnel could no doubt assist in ensuring that vocational instructors continually increase their degree of professional proficiency. Burt has supported this philosophy, saying that successful applicants for teaching positions should pass a qualifying examination in theory and practice, in addition to having an oral interview (Burt, 1967, pp. 186-187). This would certainly ensure that instructional personnel would make some honest attempt to remain proficient in their instructional area.

### III. CURRICULUM EVALUATION

Bohn (1976, p. 313) suggested the curriculum evaluation procedures are the means for determining the success of an instructional program. The primary goal of curriculum evaluation is to help teachers and program developers identify the most effective instructional procedure; "numerous measurements contribute to the determination of effective instructional procedures." As Bohn showed, evaluation and updating of the curriculum is a continuous process, integrated into the total program, and it is a process that must be studied with special care.

According to Burt,

Some educators depend upon employer opinions of graduates and graduates' opinions of the schools, obtained through formal surveys or other techniques, in order to evaluate their vocational programs (Burt, 1967, p. 252).

On the other hand, according to Odell,

perhaps the most critical test of the occupational program of a school system is the opinion of the local employers who have had direct experience with the produce of the school system (Odell, 1967, p. 222).

Burt pointed out that advisory committees or consultants at the local program level are especially helpful in the following ways:

1. Providing information concerning desirable aptitudes and educational and experience background needed by students in an occupational area to be qualified for entry level employment.
2. Evaluating physical conditions, adequacy of equipment, and layouts of laboratories and shops.
3. Assisting in the development and evaluation of course content to assure its currency in meeting the changing skill and knowledge needs of industry and business.
4. Assisting in the development of evening school skill-improvement and technical courses for employed plant personnel.
5. Assisting in the development of apprenticeship and on-the-job training related educational courses.
6. Compiling and publishing directories of community resources and personnel available to teachers, schools, and the school system for various volunteer services (Burt, 1976, p. 280).

Bohn indicated good evaluation procedures result in improved student growth and development.

They help students develop a realistic appraisal of their abilities and limitations and teach them to use their strengths to overcome their shortcomings. Evaluation also provides information that will help the teacher and program developers identify units poorly taught or in need of revision (Bohn, 1976, p. 313).

Bohn (1976, p. 313) further stated that the need to make the instructional program accountable to the student, the teacher, and society is a primary function that can be accomplished through the use of local labor consumers.

Many vocational and technical educators agree with the U.S. Office of Education that one of the major functions

of an occupational advisory committee is to participate in the evaluation of the instructional program (Burt, 1967, p. 257).

The U.S. Office of Education in its 1960 booklet on advisory committees stated:

There should be a continuous evaluation of the instructional program. The advisory committee's suggestions for improvement will represent the opinions of the community and will enable the school to maintain a curriculum at a level of instruction practical for the needs of the community. Members of the craft committees should be urged to visit the schools frequently and participate in the follow-up studies and interviews of graduates and employers. Instructional materials, equipment, standards for production work, and course outlines should be reviewed periodically by the advisory committee to keep them up-to-date and functional. In this way the instruction can be coordinated with the demands of the occupation (U.S. Office of Education, 1960, p. 12).

Evaluation of vocational and technical-education programs should be an on-going process, according to Burt,

one that is run day in and day out, by school personnel, students, graduates, parents, employers, civic groups, trade associations, labor organizations, and the general public (Burt, 1967, p. 279).

In Burt's summary on evaluating school programs, he states:

It (evaluation) may be critical or defensive, depending on who is making the evaluation, the motives behind the evaluation, the information, the information available to the evaluator, and his knowledge of educational philosophy, school policy and practice; unfortunately, occupational program evaluations are seldom based on carefully collected and analyzed information. It is rarely presented in a way which lends itself to meaningful and effective recommendations by industry people.

It is in the utilization of industry representatives for evaluation of school programs that minimum effort and very little sophistication exists on the part of vocational and technical educators. Not much can be expected from one annual meeting of two or three hours called for the purpose

of evaluating a school program, of which two or three hours are spent dining and listening to reports, with the remaining hour being spent walking through the shops and classrooms. At best, a few suggestions about the need for some new equipment and some complaints about some graduates are obtained.

However, an examination of program evaluation reports by industry groups and advisory committees, developed with the use of guideline questions and checklists provided by the educators appear to be much more constructive and penetrating than evaluations prepared without such guidelines.

Further they can be substantially assisted in evaluating occupational education and training programs by representative of industry, usually organized as advisory committees, both for occupational programs and for the total occupational education program of the school or school system (Burt, 1967, pp. 279-283).

Ledford (1981) felt this notion would indicate that a substantial amount of support is being or can be provided by advisory committee personnel in the area of evaluating vocational training programs.

#### IV. PLACEMENT

According to Bohn, the placement of students on the job upon completion of a vocational training program becomes the responsibility of many people, but this problem can be cut to a minimum through the use of craft advisory committees. Bohn adds:

One of the unique aspects of formulating educational specifications for an occupational education program is the opportunity to involve members of the Craft Advisory Committee in formulating the behavioral objectives. These persons are very concerned about competencies, as expected outcomes, to be demonstrated by the students. Because of the personal involvement and experiences of these people in the occupations, they take strong positions on the competencies needed for entry-level employment.

One of the concomitants of the program is there be little question about placement opportunities for those students who successfully complete the program and are able to demonstrate the competencies that accrue from the outcomes of instruction (Bohn, 1976, p. 135).

The Tennessee State Advisory Council (1976, p. 1) stated that one of the primary duties of the advisory committee is to provide jobs for students. In order to fulfill the purposes of the advisory committees the council further stated that it shall be the function of the local advisory committee to:

1. Advise on the types of programs needed to prepare students for entrance into specific occupations.
2. Provide the informational basis for the up-dating and/or abolishment of on-going programs.
3. Disseminate information about the school's vocational education program to the community, unions, and prospective employers.
4. Provide information on job opportunities in the specific occupation.
5. Identify the most recent educational and employment trends in the specific industry.
6. Provide assistance and counsel in regard to preparing students for the world of work.
7. Recommend the physical facilities and type of equipment necessary for the program.
8. Assist in program and student evaluation models (Tennessee, 1976, p. 4).

Of these eight functions each points directly or indirectly at placement of students in the labor market. This would indicate that the advisory committee can play a very vital part in ensuring that students are placed on the job with adequate skills and attitudes to retain them (Ledford, 1981, pp. 18-35).

## V. SUMMARY

This review of literature, both articles and texts, made several points very clear. The printing industry in this country was big business and was heavily relied upon by other industries for information publication. The printing industry was changing with the times to meet modern demands. The modern industry was looking for multitalented technicians--the employee who could function manually, manipulate sophisticated computers and similar paraphernalia, deal with internal social interactions, and turn a profit for the company. It was evident that without proper training, or retraining, and the willingness to accept change, production would falter and the printing industry would not keep up with other industries.

The review of literature also revealed that the training needs of the printing industry could not be met at the secondary level and must become a tenant of post secondary, continuing education and on-the-job training. The literature shows that this should be done through the interaction and involvement of the instructor, administration and advisory committee, which will insure that business, industry, education and the local community become active participants in the training and employment process.

## CHAPTER III

### METHODOLOGY AND PROCEDURES

The purpose of the study was (a) to survey the Knoxville Labor Market Area to determine the feasibility for establishing a post secondary graphic-arts training program in association with the State Technical Institute at Knoxville; (b) to do a follow-up of the graduates of the secondary level graphic-arts programs within the Knoxville-Knox County area to determine their interests in such a program; and (c) to determine a curriculum appropriate for the program to be developed.

#### I. METHODS OF RESEARCH

This study was a descriptive survey. Warmbrod (1978, p. 1) stated in a paper presented to the faculty and graduate students of the Department of Vocational-Technical Education, The University of Tennessee that:

An examination of the literature in educational research reveals two interesting observations concerning survey research. The first is that the survey, survey research, is probably the most frequently used methodology in education . . . survey methodology is as appropriate and viable for research in education as it is in the social sciences where descriptive research is a mainstay. It is imperative that survey research in education be scientific, that is, conform to the logic and rigor of the method of science. A major requisite in any meaningful research endeavor is a significant and important problem for investigation that is firmly grounded in theory, related research, or a series of consistent and logical propositions derived from experience.

Further he stated:

The basic strategy of survey research is to generalize the findings from a sample to the population of which the sample is representative. Through sampling, the researcher wishes to estimate or infer the characteristics of a group or situation from studying a part of the population. The strategy requires, then, a methodology of selecting from a population units to be studied such that the representativeness of the sample can be defended thereby assuring that the findings--assuming that they are valid--can be generalized beyond the specific cases measured or observed and the immediate environment within which the research is conducted (Warmbrod, 1978, p. 3).

## II. THE POPULATION

A letter requesting permission to conduct this study was sent to Mr. J. L. Goins, President of the State Technical Institute at Knoxville (Appendix A). Along with his statement of approval and support (Appendix B); he suggested that contact be made with Mr. David Job, who was Department Head of the Engineering Graphics and Graphic Communication Division to ensure that a conflict of programs would not exist. Finding that a conflict would not occur, authorization to proceed with the study was given (Appendix C). Contact was made with the Vocational-Transition Office for Knox County to obtain an up-to-date listing of recent graduates of the various graphic-arts programs within the areas which it served. A listing of graduates for school years 1978 through 1982, along with the address of record of the 149 graduates, was obtained. Also contacted were the Knoxville Chamber of Commerce and the local City Business Directory representative to obtain the addresses

of businesses within the Knoxville Labor Market Area involved in printing and/or graphic-arts. A listing of all businesses was used to contact the 225 printing and/or graphic-arts related businesses within the Knoxville Labor Market Area.

A panel of experts consisting of area graphic communication leaders, local educators, and area businessmen was formed to review the initial proposal and was asked to react to such a project and to offer ideas on its content (Appendix D).

When the proposal for the research project was final, a formal request was made to The University of Tennessee's Committee for Research on Human Subjects (Appendix E) to conduct the study and clear the way for further preparation.

### III. DATA GATHERING TECHNIQUES

Two questionnaires (Appendix I-J) were completed and pre-tested with the cooperation of students currently in the secondary program and the graphic-arts businesses not involved in the study. According to Warmbrod:

The researcher's first and major strategy is to design and conduct the survey to get as high a response rate as possible. The design and layout of the questionnaire and the manner in which it is administered--also factors impacting on measurement error--influence response rate (Warmbrod, 1978, p. 13).

The advisory panel consisted of:

Mr. John Bailey - President of Keith Press, Knoxville, TN

Dr. Carroll B. Coakley - Professor of Vocational Education,  
The University of Tennessee, Knoxville, TN

Mr. J. L. Goins - President of the State Technical Institute, Knoxville, TN

Dr. George W. Harris, Jr. - Professor of Education Administration and Supervision, The University of Tennessee, Knoxville, TN

Dr. Gerald K. LaBorde - Professor of Vocational Education, The University of Tennessee, Knoxville, TN

Mr. Thomas B. Peek - General Sales Manager, Taylor Impressions, Knoxville, TN

Dr. Robert K. Roney - Professor of Education Administration and Supervision, The University of Tennessee, Knoxville, TN

Mr. Jim Stevens - General Sales Manager, Cordage of Knoxville and former graphic arts teacher, Knoxville, TN

Mr. Carl Thomas - Account Executive, Multigraphics, Inc., Knoxville, TN

Mr. Jim Ulrich - President of Ulrich Printing Co., Knoxville, TN

Mr. Harold Vaughan - President of Quickway Printing Center, Knoxville, TN

Dr. George W. Wieggers, Jr. - Professor of Vocational Education, The University of Tennessee, Knoxville, TN

Each of the members of the advisory panel was given a copy of the proposal containing the questionnaires, cover letters and informed consent letters. They were asked to review the questionnaires including a detailed review of the directions and consideration of the question, and a review of other points which might lend themselves to the overall validity of the instruments.

#### IV. DATA COLLECTION

A personalized cover letter on official University letterhead (Appendices F-G) and an Informed Consent Letter (Appendix H)

accompanied each questionnaire. In addition to the initial cover letter, a follow-up post card (Appendix K) was sent to non-respondents, who were identified by a locator code assigned to each questionnaire (Figure 2). This card was sent to all non-respondents two weeks after the first mailing. Additionally, telephone contact was made with some non-respondents after a period of four weeks. Also included in each questionnaire package was a self-addressed, stamped return envelope.

According to Warmbrod, to increase the response rate to mail questionnaires:

1. Respondents should be convinced that the project is important.
2. Preparatory letters should be on the letterhead of a well-known organization or, where appropriate, should be signed by a well-known person. Special populations respond to appeals from their organizations.
3. Rewards may be used (gifts, trading stamps, sweepstakes). Do not offer a copy of the final report unless you are prepared to give it.
4. Make questionnaires attractive (printing on good paper is preferred), easy to read, and easy to fill in, remembering that many people have trouble reading fine print. Longer questionnaires usually lower the response rate.
5. Keep questions simple, clear, as short as possible, and where multiple-choice answers appear, make sure they do not force the respondent to choose answers that do not represent his position.
6. Try to keep early questions interesting and easy; do not leave important questions to the end; keep related questions together, unless there is strong reasons to act otherwise.

0000

## Graphic Arts Program Questionnaire

Please respond to all questions by placing a circle around the letter or a check (✓) mark beside the choice which most closely reflects, your situation.

### 1. TYPE OF BUSINESS

- a. Job Shop
- b. In-Plant
- c. Speciality Printers
- d. Other \_\_\_\_\_

### 2. YOUR POSITION

- a. Owner
- b. Manager
- c. Foreman
- d. Other \_\_\_\_\_

12. IN THE FOLLOWING QUESTION A LISTING OF COURSES, WITH THE EXCEPTION OF THE GRAPHIC ARTS COURSES DENOTED (#) ARE PRESENTLY BEING TAUGHT BY THE STATE TECHNICAL INSTITUTE IN ORDER THAT A WELL ROUNDED CURRICULUM MIGHT BE SUGGESTED. PLEASE INDICATE YOUR FEELINGS BY RANKING THE FOLLOWING ..

- 4 - A must for this program
- 3 - Highly recommended
- 2 - A nice to have experience
- 1 - Of little or no value to this program

| COURSE LISTING | 4 | 3 | 2 | 1 |
|----------------|---|---|---|---|
|                |   |   |   |   |
|                |   |   |   |   |

KCF7902

## Graphic Arts Student Follow-up Questionnaire

PLEASE RESPOND TO ALL QUESTIONS BY PLACING A CIRCLE AROUND OR A CHECK MARK (✓) BESIDE THE RESPONSE WHICH MOST CLOSELY REFLECT YOUR SITUATION.

1. PLEASE INDICATE THE YEAR IN WHICH YOU GRADUATED FROM HIGH SCHOOL

- a. 1978
- b. 1979
- c. 1980
- d. 1981
- e. 1982

7. WOULD YOU ATTEND THE STATE TECHNICAL INSTITUTE FOR ADDITIONAL GRAPHIC ARTS TRAINING IF IT WERE TO BE OFFERED AS AN ASSOCIATE OF ARTS PROGRAM ?

YES

NO

Figure 2. Geographical Locator Codes.

7. Use a high class of mail, first class, airmail, and even special delivery, both for sending the questionnaire and on the return envelope. Do not expect respondent to provide postage.
8. Follow hard-core resistance with repeat questionnaire (the sixth mailing may still be rewarding), telegram, long distance phone calls, or even personal interview. Small response from early mailings may be badly biased.
9. Do not promise or imply anonymity and then retain the respondent's identity by subterfuge, however worthy the cause. Views on anonymity are mixed. If the respondent's identity is needed, get it openly (Warmbrod, 1978, p. 17).

#### V. ANALYSIS OF DATA

Due to the nominal nature of the data collected, only a frequency and percentage of responses were used to record data obtained from industry and former students. The statistical analysis was done in the Computer Center at The University of Tennessee, Knoxville, with technical consultation from Mr. Bob Muenchen.

## CHAPTER IV

### ANALYSIS OF DATA

The questionnaires used were derived from a review of literature and a panel of experts comprised of industry and education leaders. The questions were nominal in nature, the committee established that an instrument of this type would serve two purposes: (1) it would be easy to understand on the part of the respondent and (2) it would assist the researcher in analyzing the data. The questionnaires were professionally printed and mailed to each participant identified for this study. The returned questionnaires represented 74 percent of the local printing industry and 63 percent of the former graphic-arts students who had completed the program at the secondary level. The data from these respondents were tabulated and analyzed.

This chapter presents the data derived from the statistical treatment and answers to the four research questions presented in Chapter I.

The first research question was, "Does the printing industry in the Knoxville Labor Market Area recognize a need for a post secondary graphic-arts program?" The data pertaining to this question are presented on page 58.

The second research question was, "Do the graduates of secondary education vocational graphic-arts programs recognize a need for continued training in a post secondary graphic-arts

program?" The data pertaining to this question are presented on page 60.

The third research question was, "Can the printing industry representatives of the Knoxville Labor Market Area identify the curriculum areas needed for a post-secondary graphic-arts program?" The data pertaining to this question are presented on pages 71-76.

The fourth and final research question was, "Does the size of the local printing industry and the gross sales affect the stated needs for the curriculum of a post-secondary graphic-arts program in the Knoxville Labor Market Area?" The data pertaining to this question can also be found on pages 71-133.

#### I. INDUSTRIAL RESPONDENTS (GENERAL)

As previously stated, there were 225 industry subjects identified as the original population of this study. Of the 225 subjects contacted, 166 (74 percent) responded to the questionnaire. Table 1 depicts the respondents as follows: 114 (68.7 percent) were Job Shops, 8 (4.8 percent) were In-Plant Shops, 7 (4.2 percent) were Specialty Shops and 37 (22.3 percent) were classified as Others, not fitting into the above categories.

In Table 2 the industrial respondents are classified into the three following categories: 68 percent as Owners, 15.7 percent as Managers and 16.3 percent as Others. The "Other" classification included secretaries, bookkeepers, or others, who were delegated the duty to complete the instrument. There were no responses from item C, the Foremen.

Table 1. Type of Business by Industrial Respondents.

| Type      | Respondents |         |
|-----------|-------------|---------|
|           | Frequency   | Percent |
| Job Shop  | 114         | 68.7    |
| In-Plant  | 8           | 4.8     |
| Spacialty | 7           | 4.2     |
| Other     | 37          | 22.2    |
| Total     | 166         | 100.0   |

Table 2. Position in Firm by Industrial Respondents.

| Position | Respondents |         |
|----------|-------------|---------|
|          | Frequency   | Percent |
| Owner    | 113         | 68.0    |
| Manager  | 26          | 15.6    |
| Other    | 27          | 16.2    |
| Total    | 166         | 100.0   |

The printing process most often used by the respondents is identified in Table 3. It was found that 248 (89.2 percent) used Offset presses in their operation while 11 (6.6 percent) used the Letterpress. Other processes made up only 7 (4.2 percent) of the respondents.

Table 4 shows that the respondents used a combination of equipment formats, rather than relying upon one size. Ten (6 percent) utilized a 10"x15" format, 42 (31.3 percent) utilized 11"x17", 34 (20.5 percent) utilized a larger than 11"x17" format and 16 (9.6 percent) utilized a Web press. Finally, 64 (38.6 percent) utilized a combination of the above.

Fifty-six percent (93 of the industrial respondents) had fewer than 5 employees, while 9 percent (15) had between 6 and 10 employees, 11.4 percent (19 industrial respondents) employed between 11 and 20 persons, and 22.9 percent (38) employed more than 21 in their operational staffs (Table 5).

The data in Table 6 reveal that 78 (46.9 percent) of the industrial respondents employ most of their entry level personnel through methods other than those listed on the questionnaire. While 47 (28.3 percent) relied upon walk-in applicants, employment agencies supplied 15 (9 percent) of the personnel, whereas 16 (9.7 percent) attracted employees from other shops and only 10 (6 percent) used High School Vocational Programs for entry level personnel.

It is indicated in Table 7 the majority of the industrial respondents, 75.9 percent (126) pay the average non-trained employee

Table 3. The Major Printing Process Used by Industrial Respondents.

| Printing Process | Respondents |         |
|------------------|-------------|---------|
|                  | Frequency   | Percent |
| Offset           | 148         | 89.2    |
| Letter-Press     | 11          | 6.6     |
| Other            | 7           | 4.2     |
| Total            | 166         | 100.0   |

Table 4. The Existing Format for Firm by Industrial Respondents.

| Format<br>(Press Size) | Respondents |         |
|------------------------|-------------|---------|
|                        | Frequency   | Percent |
| 10" x 15"              | 10          | 6.0     |
| 11" x 17"              | 42          | 31.3    |
| Larger than 11" x 17"  | 34          | 20.5    |
| Web                    | 16          | 9.6     |
| Combination of Above   | 64          | 38.6    |
| Total                  | 166         | 100.0   |

Table 5. The Total Number of Full and Part Time Employees by Industrial Respondents.

| Number of Employees | Respondents |         |
|---------------------|-------------|---------|
|                     | Frequency   | Percent |
| 1 - 5               | 93          | 56.0    |
| 6 - 10              | 15          | 9.0     |
| 11 - 20             | 19          | 11.4    |
| 21 or More          | 38          | 22.8    |
| Other               | 1           | .6      |
| Total               | 166         | 100.0   |

Table 6. The Main Source for Entry Level Personnel by Industrial Respondents.

| Source            | Respondents |         |
|-------------------|-------------|---------|
|                   | Frequency   | Percent |
| Walk-In           | 47          | 28.3    |
| Employment Agency | 15          | 9.0     |
| Other Shops       | 16          | 9.7     |
| H.S. Vocational   | 10          | 6.0     |
| Other             | 78          | 46.9    |
| Total             | 166         | 100.0   |

Table 7. The Average Beginning Salary for Non-Trained Employees  
by Industrial Respondents.

| Average Salary | Respondents |         |
|----------------|-------------|---------|
|                | Frequency   | Percent |
| \$3.35 - 4.00  | 126         | 75.9    |
| \$4.01 - 5.25  | 33          | 19.8    |
| \$5.26 - 6.00  | 3           | 1.8     |
| Other          | 4           | 2.4     |
| Total          | 166         | 100.0   |

between \$3.35 and \$4.00 per hour, while 19.9 percent (33) pay \$4.01 to \$5.25 per hour. Only 1.8 percent (3) started employees at a rate of \$5.26 to \$6.00 per hour. Further 2.4 percent (4) did not respond to the question.

Table 8 is based upon the annual gross sales generated by the respondents. The data presented show 51 firms (30.7 percent) of the respondents grossed between 70 and 100 thousand dollars for the calendar year of 1982, 58 (34.9 percent) reported 101 to 200 thousand dollars, 12 (7.2 percent) reported 201 to 300 thousand dollars, 3 (1.1 percent) reported 301 to 400 thousand dollars gross income for the calendar year 1982. Further it should be noted that 2 (1.2 percent) did not choose to respond to the question.

Table 9 addresses the question as to the employment outlook by respondents of the entry level personnel upon graduation from the proposed technical program. It was found that 19.3 percent (32) felt that there was a Very Good Opportunity for Employment upon graduation, 74.1 percent (123) felt there was a Good Opportunity for Employment, 4.8 percent (8) felt that the employment opportunity was not good and only 1.8 percent (3) felt that there would be no opportunity for employment.

According to Table 10 the starting salary that a program graduate could expect would be about average compared to the industry scale for this geographical area. Twenty-five (15.1 percent) felt that the starting salary would be above average, 130 (78.3 percent), the majority, felt the salary would be average, 8 (4.8 percent)

Table 8. Annual Gross Sales by Industrial Respondents.

| Gross Sales (In<br>Thousands of Dollars) | Respondents |         |
|------------------------------------------|-------------|---------|
|                                          | Frequency   | Percent |
| \$ 70 - 100                              | 51          | 30.7    |
| \$101 - 200                              | 58          | 34.9    |
| \$201 - 300                              | 12          | 7.2     |
| \$301 - 400                              | 3           | 1.0     |
| \$401 - More                             | 40          | 24.0    |
| Other                                    | 2           | 1.2     |
| Total                                    | 166         | 100.0   |

Table 9. Entry Level Employment Outlook by Industrial Respondents.

| Employment Opportunity | Respondents |         |
|------------------------|-------------|---------|
|                        | Frequency   | Percent |
| Very Good Opportunity  | 32          | 19.2    |
| Good Opportunity       | 123         | 74.0    |
| Not a Good Opportunity | 8           | 4.8     |
| No Opportunity         | 3           | 1.8     |
| Total                  | 166         | 100.0   |

Table 10. Starting Salary Technical Graduates Could Expect by Industrial Respondents.

| Salary Range  | Respondents |         |
|---------------|-------------|---------|
|               | Frequency   | Percent |
| Above Average | 25          | 15.1    |
| Average       | 130         | 78.3    |
| Below Average | 8           | 4.8     |
| Other         | 3           | 1.8     |
| Total         | 166         | 100.0   |

felt the salary would be lower than average, and 3 (1.8 percent) did not respond to the question. Table 11 reports 49.3 percent (82) of the respondents would use the program for training purposes, while 39.7 percent (66) would not. Three percent (5) responded in statements other than called for and 7.8 percent (13) did not respond to the question.

Table 12 shows that 75 (45.2 percent) of the respondents would use the proposed program for retraining employees; yet about the same amount 70 (42.2 percent) said they would not. Eleven (6.6 percent) responded in statements other than called for on the questionnaire, and 10 (6 percent) did not respond to the question.

A study of Table 13 reveals that 57.8 percent of the 96 respondents would use the proposed program for updating the skills of their employees while 30.7 percent (51) stated they would not. Nine (5.4 percent) responded in ways other than called for on the questionnaire, and 6 percent (10) did not respond to the question.

Table 14 identifies the number of industrial respondents who had expressed a willingness to serve in an advisory capacity to the proposed program. It was found that 78 (47.0 percent) of the respondents were willing to serve, while 68 (41.0 percent) were not. Five others (3.0 percent) indicated in a way other than called for on the questionnaire and 15 (9.0 percent) did not respond to the question.

Table 15 depicts data which were crucial to the study. One hundred forty-four (86.7 percent) felt that a post secondary

Table 11. Industrial Respondents Desire to Utilize Program for Training.

| Training    | Respondents |         |
|-------------|-------------|---------|
|             | Frequency   | Percent |
| Yes         | 82          | 49.3    |
| No          | 66          | 39.7    |
| Other       | 5           | 3.0     |
| No Response | 13          | 7.8     |
| Total       | 166         | 100.0   |

Table 12. Utilization of Program for Retraining by Industrial Respondents.

| Retraining  | Respondents |         |
|-------------|-------------|---------|
|             | Frequency   | Percent |
| Yes         | 75          | 45.2    |
| No          | 70          | 42.2    |
| Other       | 11          | 6.6     |
| No Response | 10          | 6.0     |
| Total       | 166         | 100.0   |

Table 13. Utilization of Program for Updating Skills by Industrial Respondents.

| Updating Skills | Respondents |         |
|-----------------|-------------|---------|
|                 | Frequency   | Percent |
| Yes             | 96          | 57.8    |
| No              | 51          | 30.7    |
| Other           | 9           | 5.4     |
| No Response     | 10          | 6.0     |
| Total           | 166         | 100.0   |

Table 14. Service in an Advisory Capacity by Industrial Respondents.

| Willingness to Serve | Respondents |         |
|----------------------|-------------|---------|
|                      | Frequency   | Percent |
| Yes                  | 78          | 47.0    |
| No                   | 68          | 41.0    |
| Other                | 5           | 3.0     |
| No Response          | 15          | 9.0     |
| Total                | 166         | 100.0   |

Table 15. Need for a Post-Secondary Graphic-Arts Program at The State Technical Institute at Knoxville by Industrial Respondents.

| Need        | Respondents |         |
|-------------|-------------|---------|
|             | Frequency   | Percent |
| Yes         | 144         | 86.7    |
| No          | 17          | 10.2    |
| Other       | 1           | 1.2     |
| No Response | 3           | 1.8     |
| Total       | 166         | 100.0   |

program of this type was needed, while 10.2 percent (17) felt that it was not. There were 2 (1.2 percent) who answered in a way other than called for on the questionnaire, and 3 (1.8 percent) did not respond to the question.

## II. GRADUATE RESPONDENTS

Tables 16 through 23 are a series of tables presenting the data that were gathered from the 149 secondary program graduates for the years 1978, 1979, 1980, 1981 and 1982. Of the 149 graduates located, 94 (63 percent) responded to the questionnaire. Further, several questions presented to the industrial subjects were also presented to the graduates and will be elaborated on in this section. Table 16 addresses the same question as Table 15, whether there is a need for a post-secondary graphic-arts program at the State Technical Institute at Knoxville. Ninety-four graduate respondents felt there should be a program of this type in the Knoxville area.

Table 17 classifies the employment status of the graduates. It was found that 35 (37.2 percent) of the graduates were employed Full Time, 12 (12.8 percent) were employed Part Time, 27 (28.7 percent) were employed Part Time and Going to School, 9 (9.6 percent) were Unemployed, and 11 (11.7 percent) were attending school full time and not employed.

A review of Table 18 reveals the adequacy of the secondary training received in relation to their employment. Of those responding, 22.3 percent (21) felt the training was adequate for employment in the graphic-arts field, while 67.0 percent (63) felt some

Table 16. Need for a Post Secondary Graphic-Arts Program at  
The State Technical Institute at Knoxville by  
Graduates.

| Year of<br>Graduation | Respondents |    |       |
|-----------------------|-------------|----|-------|
|                       | Yes         | No | Total |
| <u>1978</u>           |             |    |       |
| Frequency             | 5           | 0  | 5     |
| Percent               | 5.3         | .  | 5.3   |
| <u>1979</u>           |             |    |       |
| Frequency             | 18          | 0  | 18    |
| Percent               | 19.1        | .  | 19.1  |
| <u>1980</u>           |             |    |       |
| Frequency             | 18          | 0  | 18    |
| Percent               | 19.1        | .  | 19.1  |
| <u>1981</u>           |             |    |       |
| Frequency             | 21          | 0  | 21    |
| Percent               | 22.3        | .  | 22.3  |
| <u>1982</u>           |             |    |       |
| Frequency             | 32          | 0  | 32    |
| Percent               | 34.0        | .  | 34.0  |
| TOTAL                 | 94          | .  | 94    |
|                       | 100.0       | .  | 100.0 |

Table 17. Secondary Program Graduates Employment Status by Year of Graduation.

| Year of Graduation | Respondents |           |                               |            |                 | Total |
|--------------------|-------------|-----------|-------------------------------|------------|-----------------|-------|
|                    | Full Time   | Part Time | Part Time and Going to School | Unemployed | Going to School |       |
| <u>1978</u>        |             |           |                               |            |                 |       |
| Frequency          | 5           | 0         | 0                             | 0          | 0               | 5     |
| Percent            | 5.3         | .         | .                             | .          | .               | 5.3   |
| <u>1979</u>        |             |           |                               |            |                 |       |
| Frequency          | 12          | 3         | 2                             | 1          | 0               | 18    |
| Percent            | 12.7        | 3.1       | 2.1                           | 1.0        | .               | 19.1  |
| <u>1980</u>        |             |           |                               |            |                 |       |
| Frequency          | 6           | 2         | 3                             | 5          | 2               | 18    |
| Percent            | 6.3         | 2.1       | 3.1                           | 5.3        | 2.1             | 19.1  |
| <u>1981</u>        |             |           |                               |            |                 |       |
| Frequency          | 7           | 1         | 8                             | 2          | 3               | 21    |
| Percent            | 7.4         | 1.0       | 8.5                           | 2.1        | 3.1             | 22.3  |
| <u>1982</u>        |             |           |                               |            |                 |       |
| Frequency          | 5           | 6         | 14                            | 1          | 6               | 32    |
| Percent            | 5.3         | 6.3       | 14.8                          | 1.0        | 6.3             | 34.0  |
| TOTAL              | 35          | 12        | 27                            | 9          | 11              | 94    |
|                    | 37.2        | 12.7      | 28.7                          | 9.5        | 11.7            | 100.0 |

Table 18. Graduates Opinion of Secondary Training by Year of Graduation.

| Year of Graduation | Respondents |                            |                             |     | Total |
|--------------------|-------------|----------------------------|-----------------------------|-----|-------|
|                    | Yes         | Additional Training Needed | Extensive Retraining Needed | No  |       |
| <u>1978</u>        |             |                            |                             |     |       |
| Frequency          | 0           | 4                          | 1                           | 0   | 5     |
| Percent            | .           | 4.2                        | 1.0                         | .   | 5.3   |
| <u>1979</u>        |             |                            |                             |     |       |
| Frequency          | 1           | 16                         | 0                           | 1   | 18    |
| Percent            | 1.0         | 17.0                       | .                           | 1.0 | 19.1  |
| <u>1980</u>        |             |                            |                             |     |       |
| Frequency          | 3           | 11                         | 4                           | 0   | 18    |
| Percent            | 3.1         | 11.7                       | 4.2                         | .   | 19.1  |
| <u>1981</u>        |             |                            |                             |     |       |
| Frequency          | 7           | 13                         | 1                           | 0   | 21    |
| Percent            | 7.4         | 13.8                       | 1.0                         | .   | 22.3  |
| <u>1982</u>        |             |                            |                             |     |       |
| Frequency          | 10          | 19                         | 2                           | 1   | 32    |
| Percent            | 10.6        | 20.2                       | 2.1                         | 1.0 | 34.0  |
| TOTAL              | 21          | 63                         | 8                           | 2   | 94    |
|                    | 22.3        | 67.0                       | 8.5                         | 2.1 | 100.0 |

Table 19. Graduates Use of Secondary Graphic-Arts Training by Year of Graduation.

| Year of Graduation | Respondents     |             |                   |           |                    | Total |
|--------------------|-----------------|-------------|-------------------|-----------|--------------------|-------|
|                    | Currently Using | Some Degree | Not at This Point | Not Using | Have Not Chosen To |       |
| <u>1978</u>        |                 |             |                   |           |                    |       |
| Frequency          | 4               | 0           | 1                 | 0         | 0                  | 5     |
| Percent            | 4.2             | .           | 1.0               | .         | .                  | 5.3   |
| <u>1979</u>        |                 |             |                   |           |                    |       |
| Frequency          | 0               | 5           | 5                 | 5         | 3                  | 18    |
| Percent            | .               | 5.3         | 5.3               | 5.3       | 3.1                | 19.1  |
| <u>1980</u>        |                 |             |                   |           |                    |       |
| Frequency          | 0               | 13          | 1                 | 4         | 0                  | 18    |
| Percent            | .               | 13.8        | 1.0               | 4.2       | .                  | 19.1  |
| <u>1981</u>        |                 |             |                   |           |                    |       |
| Frequency          | 3               | 11          | 5                 | 0         | 2                  | 21    |
| Percent            | 3.1             | 11.7        | 5.3               | .         | 2.1                | 22.3  |
| <u>1982</u>        |                 |             |                   |           |                    |       |
| Frequency          | 7               | 8           | 9                 | 4         | 4                  | 32    |
| Percent            | 7.4             | 8.5         | 9.5               | 4.2       | 4.2                | 34.0  |
| TOTAL              | 14              | 37          | 21                | 13        | 9                  | 94    |
|                    | 14.8            | 39.3        | 22.3              | 13.8      | 9.5                | 100.0 |

Table 20. Graduates Feelings Toward Post Secondary Training by Year of Graduation.

| Year of Graduation | Respondents |      |       | Total |
|--------------------|-------------|------|-------|-------|
|                    | Yes         | No   | Other |       |
| <u>1978</u>        |             |      |       |       |
| Frequency          | 3           | 2    | 0     | 5     |
| Percent            | 3.1         | 2.1  | .     | 5.3   |
| <u>1979</u>        |             |      |       |       |
| Frequency          | 12          | 3    | 3     | 18    |
| Percent            | 12.7        | 3.1  | 3.1   | 19.1  |
| <u>1980</u>        |             |      |       |       |
| Frequency          | 9           | 3    | 6     | 18    |
| Percent            | 9.5         | 3.1  | 6.3   | 19.1  |
| <u>1981</u>        |             |      |       |       |
| Frequency          | 16          | 3    | 2     | 21    |
| Percent            | 17.0        | 3.1  | 2.1   | 22.3  |
| <u>1982</u>        |             |      |       |       |
| Frequency          | 19          | 11   | 2     | 32    |
| Percent            | 20.2        | 11.7 | 2.1   | 34.0  |
| TOTAL              | 59          | 22   | 13    | 94    |
|                    | 62.7        | 23.4 | 13.8  | 100.0 |

Table 21. Graduates Perception of Employment Opportunities by Year of Graduation.

| Year of Graduation | Respondents |     |       | Total |
|--------------------|-------------|-----|-------|-------|
|                    | Yes         | No  | Other |       |
| <u>1978</u>        |             |     |       |       |
| Frequency          | 4           | 0   | 1     | 5     |
| Percent            | 4.2         | .   | 1.0   | 5.3   |
| <u>1979</u>        |             |     |       |       |
| Frequency          | 17          | 1   | 0     | 18    |
| Percent            | 18.0        | 1.0 | .     | 19.1  |
| <u>1980</u>        |             |     |       |       |
| Frequency          | 15          | 0   | 3     | 18    |
| Percent            | 15.9        | .   | 3.1   | 19.1  |
| <u>1981</u>        |             |     |       |       |
| Frequency          | 18          | 1   | 2     | 21    |
| Percent            | 19.1        | 1.0 | 2.1   | 22.3  |
| <u>1982</u>        |             |     |       |       |
| Frequency          | 24          | 7   | 1     | 32    |
| Percent            | 25.5        | 7.4 | 1.0   | 34.0  |
| TOTAL              | 78          | 9   | 7     | 94    |
|                    | 82.9        | 9.5 | 7.4   | 100.0 |

Table 22. Graduates Expected Starting Salary by Year of Graduation.

| Year of Graduation | Respondents   |         |               |                          | Total |
|--------------------|---------------|---------|---------------|--------------------------|-------|
|                    | Above Average | Average | Below Average | No Chance for Employment |       |
| <u>1978</u>        |               |         |               |                          |       |
| Frequency          | 0             | 5       | 0             | 0                        | 5     |
| Percent            | .             | 5.3     | .             | .                        | 5.3   |
| <u>1979</u>        |               |         |               |                          |       |
| Frequency          | 4             | 14      | 0             | 0                        | 18    |
| Percent            | 4.2           | 14.8    | .             | .                        | 19.1  |
| <u>1980</u>        |               |         |               |                          |       |
| Frequency          | 4             | 13      | 1             | 0                        | 18    |
| Percent            | 4.2           | 13.8    | 1.0           | .                        | 19.1  |
| <u>1981</u>        |               |         |               |                          |       |
| Frequency          | 7             | 14      | 0             | 0                        | 21    |
| Percent            | 7.4           | 14.8    | .             | .                        | 22.3  |
| <u>1982</u>        |               |         |               |                          |       |
| Frequency          | 8             | 23      | 0             | 1                        | 32    |
| Percent            | 8.5           | 24.2    | .             | 1.0                      | 34.0  |
| TOTAL              | 23            | 69      | 1             | 1                        | 94    |
|                    | 24.4          | 73.4    | 1.0           | 1.0                      | 100.0 |

Table 23. Graduates Feeling Toward Further Training by Year of Graduation.

| Year of Graduation | Respondents |                                    |           |     |       | Total |
|--------------------|-------------|------------------------------------|-----------|-----|-------|-------|
|                    | Yes         | If Advancement<br>Depended Upon It | Undecided | No  | Other |       |
| <u>1978</u>        |             |                                    |           |     |       |       |
| Frequency          | 4           | 0                                  | 0         | 1   | 0     | 5     |
| Percent            | 4.3         | .                                  | .         | 1.0 | .     | 5.3   |
| <u>1979</u>        |             |                                    |           |     |       |       |
| Frequency          | 0           | 13                                 | 3         | 2   | 0     | 18    |
| Percent            | .           | 13.9                               | 3.2       | 2.1 | .     | 19.3  |
| <u>1980</u>        |             |                                    |           |     |       |       |
| Frequency          | 2           | 11                                 | 4         | 0   | 1     | 17    |
| Percent            | 2.1         | 11.8                               | 4.3       | .   | .     | 18.2  |
| <u>1981</u>        |             |                                    |           |     |       |       |
| Frequency          | 7           | 9                                  | 3         | 2   | 0     | 21    |
| Percent            | 7.5         | 9.6                                | 3.2       | 2.1 | .     | 22.5  |
| <u>1982</u>        |             |                                    |           |     |       |       |
| Frequency          | 7           | 11                                 | 10        | 4   | 0     | 32    |
| Percent            | 7.5         | 11.8                               | 10.7      | 4.3 | .     | 34.4  |
| TOTAL              | 20          | 44                                 | 20        | 9   | .     | 93    |
|                    | 21.5        | 47.3                               | 21.5      | 9.6 | .     | 100.0 |

additional training would be needed. Eight (8.5 percent) felt they would require extensive retraining and 2.1 percent (2) felt that no additional training would be needed before entering the field.

Table 19 relates the extent to which the graduates have been able to use the Graphic-Arts training received in the secondary program. Thirty-seven (39.4 percent) were using the skills to some degree, while 21 (22.3 percent) were not using their skills at this point in time. Thirteen (13.8 percent) are not using their skills at all and 9 (9.6 percent) have not chosen to use their skills.

It is apparent from Table 20 that if a course in Graphic-Arts, resulting in an Associate of Arts degree were to be offered at the State Technical Institute, 62.8 percent (59) would attend the Institute, while 23.4 percent (22) stated No they would not attend. There were 13.8 percent (13) of the respondents, who answered the question in a way other than called for on the questionnaire.

Table 21 reveals that the majority of the graduates felt that an Associate of Arts Degree would increase their employability. Seventy-eight (83.0 percent) felt that it would, and 9 (9.6 percent) felt that it would not increase their employment chances. There were 7 (7.5 percent) of the graduate respondents who answered in a way other than called for on the questionnaire.

Table 22 refers to the same question asked of the Industrial respondents in Table 10, concerning the starting salary of those who completed the proposed Graphic-Arts Program at the State Technical Institute. Of the 94 graduate respondents, 23 (24.5

percent) felt the starting salary would be above the existing geographical average, while 69 (73.4 percent) of the graduates felt the starting wage would be average. Only 1 (1.6 percent) of the graduates felt the starting wage would be below the average, or that there would be little opportunity for employment.

An examination of Table 23 shows that if employment were offered to the graduates with the stipulation that they attend a post secondary graphic-arts program, 21.5 percent (20) stated they would attend. Forty-four (47.3 percent) stated they would attend if future advancement depended upon their attendance, while 21.5 percent (20) were undecided and 9.6 percent (9) stated No, they would not attend.

### III. INDUSTRIAL RESPONDENTS (CURRICULUM)

This section presents the data pertaining to question 12 on the questionnaire. Two tables for each proposed course will present the attitudes of the Owners, Managers and Others by "Position" and the "Annual Gross Sales" of their firms. In order to establish what was felt to be an accurate evaluation of the curriculum needs, 27 individual courses were presented to the industrial subjects. The respondents were asked to respond in such a way as to their feelings of value placed on the listed course and its impact upon the curriculum. The respondents were given four categories: A Must, Highly Recommend, Nice to Have, and of Little Value. In all tables an additional "Other" column is provided for omitted responses or a response other than those

called for on the questionnaire. In that event those "Other" responses were not considered in the reported totals.

Tables 24 and 25 present the value placed on a course in Basic Writing Skills. Forty-four (27.3 percent) felt this course was A Must, while 66 (41.0 percent) felt that it should be Highly Recommended. Approximately 27 percent felt that it was Nice to Have, and 7 (4.3 percent) felt the course had Little Value.

The value placed on a course in Patterns of Composition by the Respondents are found in Tables 26 and 27. Thirty-five (22.0 percent) of the respondents felt this course was A Must, while 66 (41.5 percent) Highly Recommended it. Fifty-two (32.7 percent) thought it was Nice to Have, and 6 (3.8 percent) felt this course was of Little Value.

Tables 28 and 29 refer to the value placed on a course in Oral Communication by the Respondents. Forty-eight (29.27 percent) felt the course was A Must, 43.3 percent (71) Highly Recommended the course and 27.4 percent expressed that it was Nice to Have and none felt a course of this type was of Little Value.

Facts concerning Tables 30 and 31 are based upon the value placed on a course in Mathematical Computation. Thirty-eight (23.5 percent) felt this course was A Must, 91 (56.2 percent) Highly Recommended this course, 29 (17.9 percent) felt a course of this type was Nice to Have, and only 4 (2.5 percent) stated that it had Little Value.

A review of Tables 32 and 33 isolate the value placed on a course in Introductory Physics. None of the respondents felt

Table 24. Value Placed on a Course in Basic Writing Skills  
by Industrial Respondents.

| Position       | Value of Course |                     |                 |                 |       | Total |
|----------------|-----------------|---------------------|-----------------|-----------------|-------|-------|
|                | A<br>Must       | Highly<br>Recommend | Nice<br>To Have | Little<br>Value | Other |       |
| <u>Owner</u>   |                 |                     |                 |                 |       |       |
| Frequency      | 31              | 36                  | 34              | 7               | 5     | 108   |
| Percent        | 19.2            | 22.3                | 21.1            | 4.3             | .     | 67.0  |
| <u>Manager</u> |                 |                     |                 |                 |       |       |
| Frequency      | 9               | 10                  | 7               | 0               | 0     | 26    |
| Percent        | 5.5             | 6.2                 | 4.3             | .               | .     | 16.1  |
| <u>Other</u>   |                 |                     |                 |                 |       |       |
| Frequency      | 4               | 20                  | 3               | 0               | 0     | 27    |
| Percent        | 2.4             | 12.4                | 1.8             | .               | .     | 16.7  |
| Total          | 44              | 66                  | 44              | 7               | .     | 161   |
|                | 27.3            | 40.9                | 27.3            | 4.3             | .     | 100.0 |

Table 25. Value Placed on a Course in Basic Writing Skills  
Related to Sales.

| Sales<br>(In Thousands<br>of Dollars) | Value of Course |                     |                 |                 |       | Total |
|---------------------------------------|-----------------|---------------------|-----------------|-----------------|-------|-------|
|                                       | A<br>Must       | Highly<br>Recommend | Nice<br>To Have | Little<br>Value | Other |       |
| <u>\$70 - \$100</u>                   |                 |                     |                 |                 |       |       |
| Frequency                             | 18              | 20                  | 13              | 0               | 0     | 51    |
| Percent                               | 35.2            | 39.2                | 25.4            | .               | .     |       |
| <u>\$101 - \$200</u>                  |                 |                     |                 |                 |       |       |
| Frequency                             | 15              | 21                  | 13              | 6               | 3     | 55    |
| Percent                               | 29.4            | 38.1                | 25.4            | 10.9            | .     |       |
| <u>\$201 - \$300</u>                  |                 |                     |                 |                 |       |       |
| Frequency                             | 2               | 6                   | 1               | 1               | 2     | 10    |
| Percent                               | 20.0            | 60.0                | 10.0            | 10.0            | .     |       |
| <u>\$301 - \$400</u>                  |                 |                     |                 |                 |       |       |
| Frequency                             | 3               | 0                   | 0               | 0               | 0     | 3     |
| Percent                               | 100.0           | .                   | .               | .               | .     |       |
| <u>\$401 - More</u>                   |                 |                     |                 |                 |       |       |
| Frequency                             | 4               | 19                  | 17              | 0               | 0     | 40    |
| Percent                               | 10.0            | 47.5                | 42.5            | .               | .     |       |
| <u>Other</u>                          |                 |                     |                 |                 |       |       |
| Frequency                             | 2               | 0                   | 0               | 0               | 0     | 2     |
| Percent                               | 100.0           | .                   | .               | .               | .     |       |
| Total                                 | 44              | 66                  | 44              | 7               | .     | 161   |
|                                       | 27.3            | 40.9                | 27.3            | 4.3             | .     | 100.0 |

Table 26. Value Placed on a Course in Patterns of Composition  
by Industrial Respondents.

| Position       | Value of Course |                     |                 |                 |       | Total |
|----------------|-----------------|---------------------|-----------------|-----------------|-------|-------|
|                | A<br>Must       | Highly<br>Recommend | Nice<br>To Have | Little<br>Value | Other |       |
| <u>Owner</u>   |                 |                     |                 |                 |       |       |
| Frequency      | 13              | 50                  | 37              | 6               | 7     | 106   |
| Percent        | 8.1             | 31.4                | 23.2            | 3.7             | .     | 66.6  |
| <u>Manager</u> |                 |                     |                 |                 |       |       |
| Frequency      | 14              | 5                   | 7               | 0               | 0     | 26    |
| Percent        | 8.8             | 3.1                 | 4.4             | .               | .     | 16.3  |
| <u>Other</u>   |                 |                     |                 |                 |       |       |
| Frequency      | 8               | 11                  | 8               | 0               | 0     | 27    |
| Percent        | 5.0             | 6.9                 | 5.0             | .               | .     | 16.9  |
| Total          | 35              | 66                  | 52              | 6               | .     | 159   |
|                | 22.0            | 41.5                | 32.7            | 3.7             | .     | 100.0 |

Table 27. Value Placed on a Course in Patterns of Composition Related to Sales.

| Sales<br>(In Thousands<br>of Dollars) | Value of Course |                     |                 |                 |       | Total |
|---------------------------------------|-----------------|---------------------|-----------------|-----------------|-------|-------|
|                                       | A<br>Must       | Highly<br>Recommend | Nice<br>To Have | Little<br>Value | Other |       |
| <u>\$70 - \$100</u>                   |                 |                     |                 |                 |       |       |
| Frequency                             | 16              | 16                  | 19              | 0               | 0     | 51    |
| Percent                               | 31.4            | 31.4                | 37.3            | .               | .     |       |
| <u>\$101 - \$200</u>                  |                 |                     |                 |                 |       |       |
| Frequency                             | 10              | 29                  | 11              | 3               | 5     | 53    |
| Percent                               | 18.9            | 54.7                | 20.8            | 5.6             | .     |       |
| <u>\$201 - \$300</u>                  |                 |                     |                 |                 |       |       |
| Frequency                             | 0               | 2                   | 5               | 3               | 2     | 10    |
| Percent                               | .               | 20.0                | 50.0            | 30.0            | .     |       |
| <u>\$301 - \$400</u>                  |                 |                     |                 |                 |       |       |
| Frequency                             | 0               | 0                   | 3               | 0               | 0     | 3     |
| Percent                               | .               | .                   | 100.0           | .               | .     |       |
| <u>\$401 - More</u>                   |                 |                     |                 |                 |       |       |
| Frequency                             | 7               | 19                  | 14              | 0               | 0     | 40    |
| Percent                               | 17.5            | 47.5                | 35.0            | .               | .     |       |
| <u>Other</u>                          |                 |                     |                 |                 |       |       |
| Frequency                             | 2               | 0                   | 0               | 0               | 0     | 2     |
| Percent                               | 100.00          | .                   | .               | .               | .     | 1.2   |
| Total                                 | 35              | 66                  | 52              | 6               | .     | 159   |
|                                       | 22.0            | 41.5                | 32.7            | 3.7             | .     | 100.0 |

Table 28. Value Placed on a Course in Oral Communication by Industrial Respondents.

| Position       | Value of Course |                     |                 |                 |       | Total |
|----------------|-----------------|---------------------|-----------------|-----------------|-------|-------|
|                | A<br>Must       | Highly<br>Recommend | Nice<br>To Have | Little<br>Value | Other |       |
| <u>Owner</u>   |                 |                     |                 |                 |       |       |
| Frequency      | 35              | 50                  | 26              | 0               | 2     | 111   |
| Percent        | 21.3            | 30.4                | 15.8            | .               | .     | 67.6  |
| <u>Manager</u> |                 |                     |                 |                 |       |       |
| Frequency      | 6               | 13                  | 7               | 0               | 0     | 26    |
| Percent        | 3.6             | 7.9                 | 4.2             | .               | .     | 15.8  |
| <u>Other</u>   |                 |                     |                 |                 |       |       |
| Frequency      | 7               | 8                   | 12              | 0               | 0     | 27    |
| Percent        | 4.2             | 4.8                 | 7.3             | .               | .     | 16.4  |
| Total          | 48              | 71                  | 45              | .               | .     | 164   |
|                | 29.2            | 43.2                | 27.4            | .               | .     | 100.0 |

Table 29. Value Placed on a Course in Oral Communication  
Related to Sales.

| Sales<br>(In Thousands<br>of Dollars) | Value of Course |                     |                 |                 |       | Total |
|---------------------------------------|-----------------|---------------------|-----------------|-----------------|-------|-------|
|                                       | A<br>Must       | Highly<br>Recommend | Nice<br>To Have | Little<br>Value | Other |       |
| <u>\$70 - \$100</u>                   |                 |                     |                 |                 |       |       |
| Frequency                             | 7               | 31                  | 13              | 0               | 0     | 51    |
| Percent                               | 13.7            | 60.8                | 25.5            | .               | .     |       |
| <u>\$101 - \$200</u>                  |                 |                     |                 |                 |       |       |
| Frequency                             | 20              | 26                  | 11              | 1               | 0     | 57    |
| Percent                               | 35.1            | 45.6                | 19.3            | .               | .     |       |
| <u>\$201 - \$300</u>                  |                 |                     |                 |                 |       |       |
| Frequency                             | 3               | 1                   | 7               | 1               | 0     | 11    |
| Percent                               | 27.3            | 9.0                 |                 | .               | .     |       |
| <u>\$301 - \$400</u>                  |                 |                     |                 |                 |       |       |
| Frequency                             | 3               | 0                   | 0               | 0               | 0     | 3     |
| Percent                               | 100.0           | .                   | .               | .               | .     |       |
| <u>\$401 - More</u>                   |                 |                     |                 |                 |       |       |
| Frequency                             | 13              | 13                  | 14              | 0               | 0     | 40    |
| Percent                               | 32.5            | 32.5                | 35.0            | .               | .     |       |
| <u>Other</u>                          |                 |                     |                 |                 |       |       |
| Frequency                             | 2               | 0                   | 0               | 0               | 0     | 2     |
| Percent                               | 100.0           | .                   | .               | .               | .     |       |
| Total                                 | 48              | 71                  | 45              | .               | .     | 164   |
|                                       | 29.2            | 43.3                | 27.4            | .               | .     | 100.0 |

Table 30. Value Placed on a Course in Mathematical  
Computation by Industrial Respondents.

| Position       | Value of Course |                     |                 |                 |       | Total |
|----------------|-----------------|---------------------|-----------------|-----------------|-------|-------|
|                | A<br>Must       | Highly<br>Recommend | Nice<br>To Have | Little<br>Value | Other |       |
| <u>Owner</u>   |                 |                     |                 |                 |       |       |
| Frequency      | 33              | 61                  | 14              | 1               | 4     | 109   |
| Percent        | 20.3            | 37.6                | 8.6             | 0.6             | .     | 67.2  |
| <u>Manager</u> |                 |                     |                 |                 |       |       |
| Frequency      | 1               | 14                  | 8               | 3               | 0     | 26    |
| Percent        | 0.6             | 8.6                 | 4.9             | 1.8             | .     | 16.0  |
| <u>Other</u>   |                 |                     |                 |                 |       |       |
| Frequency      | 4               | 16                  | 7               | 0               | 0     | 27    |
| Percent        | 2.4             | 9.8                 | 4.3             | .               | .     | 16.6  |
| Total          | 38              | 91                  | 29              | 4               | .     | 162   |
|                | 23.4            | 56.1                | 17.9            | 2.4             | .     | 100.0 |

Table 31. Value Placed on a Course in Mathematical Computation Related to Sales.

| Sales<br>(In Thousands<br>of Dollars) | Value of Course |                     |                 |                 |       | Total |
|---------------------------------------|-----------------|---------------------|-----------------|-----------------|-------|-------|
|                                       | A<br>Must       | Highly<br>Recommend | Nice<br>To Have | Little<br>Value | Other |       |
| <u>\$70 - \$100</u>                   |                 |                     |                 |                 |       |       |
| Frequency                             | 4               | 31                  | 16              | 0               | 0     | 51    |
| Percent                               | 7.8             | 60.8                | 31.4            | .               | .     |       |
| <u>\$101 - \$200</u>                  |                 |                     |                 |                 |       |       |
| Frequency                             | 23              | 29                  | 4               | 0               | 2     | 56    |
| Percent                               | 41.1            | 51.8                | 7.1             | .               | .     |       |
| <u>\$201 - \$300</u>                  |                 |                     |                 |                 |       |       |
| Frequency                             | 2               | 7                   | 0               | 1               | 2     | 10    |
| Percent                               | 20.0            | 70.0                | .               | 10.0            | .     |       |
| <u>\$301 - \$400</u>                  |                 |                     |                 |                 |       |       |
| Frequency                             | 3               | 0                   | 0               | 0               | 0     | 3     |
| Percent                               | 100.0           | .                   | .               | .               | .     |       |
| <u>\$401 - More</u>                   |                 |                     |                 |                 |       |       |
| Frequency                             | 4               | 24                  | 9               | 3               | 0     | 40    |
| Percent                               | 10.0            | 60.0                | 22.5            | 7.5             | .     |       |
| <u>Other</u>                          |                 |                     |                 |                 |       |       |
| Frequency                             | 2               | 0                   | 0               | 0               | 0     | 2     |
| Percent                               | 100.0           | .                   | .               | .               | .     |       |
| Total                                 | 38              | 91                  | 29              | 4               | .     | 162   |
|                                       | 23.4            | 56.1                | 17.9            | 2.4             | .     | 100.0 |

Table 32. Value Placed on a Course in Introductory Physics by Industrial Respondents.

| Position       | Value of Course |                     |                 |                 |       | Total |
|----------------|-----------------|---------------------|-----------------|-----------------|-------|-------|
|                | A<br>Must       | Highly<br>Recommend | Nice<br>To Have | Little<br>Value | Other |       |
| <u>Owner</u>   |                 |                     |                 |                 |       |       |
| Frequency      | 0               | 5                   | 34              | 70              | 4     | 109   |
| Percent        | .               | 3.0                 | 20.9            | 43.2            | .     | 67.2  |
| <u>Manager</u> |                 |                     |                 |                 |       |       |
| Frequency      | 0               | 0                   | 17              | 9               | 0     | 26    |
| Percent        | .               | .                   | 10.4            | 5.5             | .     | 16.0  |
| <u>Other</u>   |                 |                     |                 |                 |       |       |
| Frequency      | 0               | 1                   | 10              | 16              | 0     | 27    |
| Percent        | .               | 0.6                 | 6.1             | 9.8             | .     | 16.6  |
| Total          | 0               | 6                   | 61              | 95              | 0     | 162   |
|                | .               | 3.7                 | 37.6            | 58.6            | .     | 100.0 |

Table 33. Value Placed on a Course in Introductory Physics  
Related to Sales.

| Sales<br>(In Thousands<br>of Dollars) | Value of Course |                     |                 |                 |       | Total  |
|---------------------------------------|-----------------|---------------------|-----------------|-----------------|-------|--------|
|                                       | A<br>Must       | Highly<br>Recommend | Nice<br>To Have | Little<br>Value | Other |        |
| <u>\$70 - \$100</u>                   |                 |                     |                 |                 |       |        |
| Frequency                             | 0               | 3                   | 17              | 31              | 0     | 51     |
| Percent                               | .               | 5.9                 | 33.3            | 60.8            | .     |        |
| <u>\$101 - \$200</u>                  |                 |                     |                 |                 |       |        |
| Frequency                             | 0               | 1                   | 19              | 36              | 2     | 56     |
| Percent                               | .               | 1.8                 | 33.9            | 64.3            | .     |        |
| <u>\$201 - \$300</u>                  |                 |                     |                 |                 |       |        |
| Frequency                             | 0               | 1                   | 1               | 8               | 2     | 10     |
| Percent                               | .               | 10.0                | 10.0            | 80.0            | .     |        |
| <u>\$301 - \$400</u>                  |                 |                     |                 |                 |       |        |
| Frequency                             | 0               | 0                   | 0               | 3               | 0     | 3      |
| Percent                               | .               | .                   | .               | 100.0           | .     |        |
| <u>\$401 - More</u>                   |                 |                     |                 |                 |       |        |
| Frequency                             | 0               | 1                   | 22              | 17              | 0     | 40     |
| Percent                               | .               | 2.5                 | 55.0            | 42.5            | .     |        |
| <u>Other</u>                          |                 |                     |                 |                 |       |        |
| Frequency                             | 0               | 0                   | 2               | 0               | 0     | 2      |
| Percent                               | .               | .                   | 100.0           | .               | .     |        |
| Total                                 | .               | 6                   | 61              | 95              | .     | 162    |
|                                       | .               | 3.7                 | 37.6            | 58.6            | .     | 100.00 |

this course was A Must, although 6 (3.7 percent) felt it should be Highly Recommended. Sixty-one (37.7 percent) felt that it would be Nice to Have, and the majority, 95 (58.6 percent) felt this course was of Little Value to the program.

Inspection of Tables 34 and 35 yielded the same basic low enthusiasm toward a course in Introductory Chemistry. Again none of the respondents felt this course was A Must, while only 9.3 percent (15) Highly Recommended it. Seventy-one (43.8 percent) felt a course of this type would be Nice to Have. Seventy-six (46.9 percent) felt that the course had Little Value in the program.

Tables 36 and 37 show the value placed on a course in Industrial Safety by the Respondents. Twenty-two (13.5 percent) felt this course was A Must, 75 (45.4 percent) Highly Recommended the course, 63 (38.7 percent) felt a course of this nature was Nice to Have, while only 4 (2.5 percent) felt there was Little Value to the course.

The value placed on a course in Industrial First Aid by the Respondents are depicted in Tables 38 and 39. Fourteen (8.6 percent) felt this course was A Must, 41 (25.3 percent) Highly Recommended the course for the program, 99 (61.1 percent) felt a course of this nature was Nice to Have and 8 (4.9 percent) felt there would be Little Value in this course offering.

Tables 40 and 41 describe the value placed on a course in Human Relations by the Respondents. Twenty-seven (16.5 percent) stated the course was A Must, 96 (58.5 percent) Highly Recommended a course of this nature, while 40 (24.4 percent) felt this course

Table 34. Value Placed on a Course in Introductory Chemistry  
by Industrial Respondents.

| Position       | Value of Course |                     |                 |                 |       | Total  |
|----------------|-----------------|---------------------|-----------------|-----------------|-------|--------|
|                | A<br>Must       | Highly<br>Recommend | Nice<br>To Have | Little<br>Value | Other |        |
| <u>Owner</u>   |                 |                     |                 |                 |       |        |
| Frequency      | 0               | 6                   | 46              | 57              | 4     | 109    |
| Percent        | .               | 3.70                | 28.40           | 35.19           | .     | 67.28  |
| <u>Manager</u> |                 |                     |                 |                 |       |        |
| Frequency      | 0               | 8                   | 15              | 3               | 0     | 26     |
| Percent        | .               | 4.94                | 9.26            | 1.85            | .     | 16.05  |
| <u>Other</u>   |                 |                     |                 |                 |       |        |
| Frequency      | 0               | 1                   | 10              | 16              | 0     | 27     |
| Percent        | .               | 0.62                | 6.17            | 9.88            | .     | 16.67  |
| Total          | 0               | 15                  | 71              | 76              | 0     | 162    |
|                | .               | 9.26                | 43.83           | 46.91           |       | 100.00 |

Table 35. Value Placed on a Course in Introductory Chemistry Related to Sales.

| Sales<br>(In Thousands<br>of Dollars) | Value of Course |                     |                 |                 |       | Total |
|---------------------------------------|-----------------|---------------------|-----------------|-----------------|-------|-------|
|                                       | A<br>Must       | Highly<br>Recommend | Nice<br>To Have | Little<br>Value | Other |       |
| <u>\$70 - \$100</u>                   |                 |                     |                 |                 |       |       |
| Frequency                             | 9               | 14                  | 28              | 0               | 0     | 51    |
| Percent                               | 17.6            | 27.5                | 54.9            | .               | .     |       |
| <u>\$101 - \$200</u>                  |                 |                     |                 |                 |       |       |
| Frequency                             | 4               | 24                  | 28              | 2               | 0     | 56    |
| Percent                               | 7.1             | 42.9                | 50.0            | .               | .     |       |
| <u>\$201 - \$300</u>                  |                 |                     |                 |                 |       |       |
| Frequency                             | 1               | 3                   | 6               | 2               | 0     | 10    |
| Percent                               | 10.0            | 30.0                | 60.0            | .               | .     |       |
| <u>\$301 - \$400</u>                  |                 |                     |                 |                 |       |       |
| Frequency                             | 0               | 0                   | 3               | 0               | 0     | 3     |
| Percent                               | .               | .                   | 100.0           | .               | .     |       |
| <u>\$401 - More</u>                   |                 |                     |                 |                 |       |       |
| Frequency                             | 1               | 28                  | 11              | 0               | 0     | 40    |
| Percent                               | 2.5             | 70.0                | 27.5            | .               | .     |       |
| <u>Other</u>                          |                 |                     |                 |                 |       |       |
| Frequency                             | 0               | 2                   | 0               | 0               | 0     | 2     |
| Percent                               | .               | 100.0               | .               | .               | .     |       |
| Total                                 | 15              | 71                  | 76              | 0               | 0     | 162   |
|                                       |                 |                     |                 | .               | .     | 100.0 |

Table 36. Value Placed on a Course in Industrial Safety by Industrial Respondents.

| Position       | Value of Course |                     |                 |                 |       | Total |
|----------------|-----------------|---------------------|-----------------|-----------------|-------|-------|
|                | A<br>Must       | Highly<br>Recommend | Nice<br>To Have | Little<br>Value | Other |       |
| <u>Owner</u>   |                 |                     |                 |                 |       |       |
| Frequency      | 12              | 49                  | 45              | 4               | 3     | 110   |
| Percent        | 7.3             | 30.0                | 27.6            | 2.4             | .     | 67.4  |
| <u>Manager</u> |                 |                     |                 |                 |       |       |
| Frequency      | 3               | 12                  | 11              | 0               | 0     | 26    |
| Percent        | 1.8             | 7.3                 | 6.7             | .               | .     | 15.9  |
| <u>Other</u>   |                 |                     |                 |                 |       |       |
| Frequency      | 7               | 13                  | 7               | 0               | 0     | 27    |
| Percent        | 4.2             | 7.9                 | 4.2             | .               | .     | 16.5  |
| Total          | 22              | 74                  | 63              | 4               | .     | 163   |
|                | 13.5            | 45.4                | 38.6            | 2.4             | .     | 100.0 |

Table 37. Value Placed on a Course in Industrial Safety  
Related to Sales.

| Sales<br>(In Thousands<br>of Dollars) | Value of Course |                     |                 |                 |       | Total        |
|---------------------------------------|-----------------|---------------------|-----------------|-----------------|-------|--------------|
|                                       | A<br>Must       | Highly<br>Recommend | Nice<br>To Have | Little<br>Value | Other |              |
| <u>\$70 - \$100</u>                   |                 |                     |                 |                 |       |              |
| Frequency                             | 4               | 11                  | 36              | 0               | 0     | 51           |
| Percent                               | 7.8             | 21.6                | 70.6            | .               | .     |              |
| <u>\$101 - \$200</u>                  |                 |                     |                 |                 |       |              |
| Frequency                             | 15              | 27                  | 12              | 3               | 1     | 57           |
| Percent                               | 26.3            | 38.6                | 21.1            | 5.3             | .     |              |
| <u>\$201 - \$300</u>                  |                 |                     |                 |                 |       |              |
| Frequency                             | 0               | 7                   | 2               | 1               | 2     | 10           |
| Percent                               | .               | 70.0                | 20.0            | 10.0            | .     |              |
| <u>\$301 - \$400</u>                  |                 |                     |                 |                 |       |              |
| Frequency                             | 0               | 0                   | 3               | 0               | 0     | 3            |
| Percent                               | .               | .                   | 100.0           | .               | .     |              |
| <u>\$401 - More</u>                   |                 |                     |                 |                 |       |              |
| Frequency                             | 3               | 27                  | 10              | 0               | 0     | 40           |
| Percent                               | 7.5             | 67.5                | 25.0            | .               | .     |              |
| <u>Other</u>                          |                 |                     |                 |                 |       |              |
| Frequency                             | 0               | 2                   | 0               | 0               | 0     | 2            |
| Percent                               | .               | 100.0               | .               | .               | .     |              |
| Total                                 | 22              | 74                  | 63              | 4               | .     | 163<br>100.0 |

Table 38. Value Placed on a Course in Industrial First Aid  
by Industrial Respondents.

| Position       | Value of Course |                     |                 |                 |       | Total |
|----------------|-----------------|---------------------|-----------------|-----------------|-------|-------|
|                | A<br>Must       | Highly<br>Recommend | Nice<br>To Have | Little<br>Value | Other |       |
| <u>Owner</u>   |                 |                     |                 |                 |       |       |
| Frequency      | 7               | 26                  | 68              | 8               | 4     | 109   |
| Percent        | 4.3             | 16.0                | 41.9            | 4.9             | .     | 67.2  |
| <u>Manager</u> |                 |                     |                 |                 |       |       |
| Frequency      | 0               | 4                   | 22              | 0               | 0     | 26    |
| Percent        | .               | 2.4                 | 13.5            | .               | .     | 16.0  |
| <u>Other</u>   |                 |                     |                 |                 |       |       |
| Frequency      | 7               | 11                  | 9               | 0               | 0     | 27    |
| Percent        | 4.3             | 6.7                 | 5.5             | .               | .     | 100.0 |
| Total          | 14              | 41                  | 99              | 8               | 0     | 162   |
|                | 8.6             | 25.3                | 61.1            | 4.9             | .     | 100.0 |

Table 39. Value Placed on a Course in Industrial First Aid  
Related to Sales.

| Sales<br>(In Thousands<br>of Dollars) | Value of Course |                     |                 |                 |       | Total |
|---------------------------------------|-----------------|---------------------|-----------------|-----------------|-------|-------|
|                                       | A<br>Must       | Highly<br>Recommend | Nice<br>To Have | Little<br>Value | Other |       |
| <u>\$70 - \$100</u>                   |                 |                     |                 |                 |       |       |
| Frequency                             | 4               | 3                   | 44              | 0               | 0     | 51    |
| Percent                               | 7.8             | 5.9                 | 86.3            | .               | .     |       |
| <u>\$101 - \$200</u>                  |                 |                     |                 |                 |       |       |
| Frequency                             | 7               | 17                  | 25              | 7               | 2     | 56    |
| Percent                               | 12.5            | 30.4                | 44.6            | 12.5            | .     |       |
| <u>\$201 - \$300</u>                  |                 |                     |                 |                 |       |       |
| Frequency                             | 0               | 3                   | 6               | 1               | 2     | 10    |
| Percent                               | .               | 30.0                | 60.0            | 10.0            | .     |       |
| <u>\$301 - \$400</u>                  |                 |                     |                 |                 |       |       |
| Frequency                             | 0               | 0                   | 3               | 0               | 0     | 3     |
| Percent                               | .               | .                   | 100.0           | .               | .     |       |
| <u>\$401 - More</u>                   |                 |                     |                 |                 |       |       |
| Frequency                             | 3               | 16                  | 21              | 0               | 0     | 40    |
| Percent                               | 7.5             | 40.0                | 52.5            | .               | .     |       |
| <u>Other</u>                          |                 |                     |                 |                 |       |       |
| Frequency                             | 0               | 2                   | 0               | 0               | 0     | 2     |
| Percent                               | .               | 100.0               | .               | .               | .     | 1.2   |
| Total                                 | 14              | 41                  | 99              | 8               | .     | 162   |
|                                       |                 |                     |                 |                 | .     | 100.0 |

Table 40. Value Placed on a Course in Human Relations by Industrial Respondents.

| Position       | Value of Course |                     |                 |                 |       | Total |
|----------------|-----------------|---------------------|-----------------|-----------------|-------|-------|
|                | A<br>Must       | Highly<br>Recommend | Nice<br>To Have | Little<br>Value | Other |       |
| <u>Owner</u>   |                 |                     |                 |                 |       |       |
| Frequency      | 19              | 72                  | 19              | 1               | 2     | 111   |
| Percent        | 11.5            | 43.9                | 11.5            | 0.6             | .     | 67.6  |
| <u>Manager</u> |                 |                     |                 |                 |       |       |
| Frequency      | 5               | 12                  | 9               | 0               | 0     | 26    |
| Percent        | 3.0             | 7.3                 | 5.4             | .               | .     | 15.8  |
| <u>Other</u>   |                 |                     |                 |                 |       |       |
| Frequency      | 3               | 12                  | 12              | 0               | 0     | 27    |
| Percent        | 1.8             | 7.3                 | 7.3             | .               | .     | 16.4  |
| Total          | 27              | 96                  | 40              | 1               | .     | 164   |
|                | 16.4            | 58.5                | 24.3            | 0.6             | .     | 100.0 |

Table 41. Value Placed on a Course in Human Relations Related to Sales.

| Sales<br>(In Thousands<br>of Dollars) | Value of Course |                     |                 |                 |       | Total |
|---------------------------------------|-----------------|---------------------|-----------------|-----------------|-------|-------|
|                                       | A<br>Must       | Highly<br>Recommend | Nice<br>To Have | Little<br>Value | Other |       |
| <u>\$70 - \$100</u>                   |                 |                     |                 |                 |       |       |
| Frequency                             | 8               | 36                  | 7               | 0               | 0     | 51    |
| Percent                               | 15.7            | 70.6                | 13.7            | .               | .     |       |
| <u>\$101 - \$200</u>                  |                 |                     |                 |                 |       |       |
| Frequency                             | 4               | 33                  | 19              | 1               | .     |       |
| Percent                               | 7.0             | 47.1                | 33.3            | 1.8             | .     |       |
| <u>\$201 - \$300</u>                  |                 |                     |                 |                 |       |       |
| Frequency                             | 3               | 8                   | 0               | 0               | 1     | 11    |
| Percent                               | 27.3            | 72.7                | .               | .               | .     |       |
| <u>\$301 - \$400</u>                  |                 |                     |                 |                 |       |       |
| Frequency                             | 3               | 0                   | 0               | 0               | 0     | 3     |
| Percent                               | 100.00          | .                   | .               | .               | .     |       |
| <u>\$401 - More</u>                   |                 |                     |                 |                 |       |       |
| Frequency                             | 9               | 17                  | 14              | 0               | 0     | 40    |
| Percent                               | 22.5            | 42.5                | 35.0            | .               | .     |       |
| <u>Other</u>                          |                 |                     |                 |                 |       |       |
| Frequency                             | 0               | 2                   | 0               | 0               | 0     | 2     |
| Percent                               | .               | 100.00              | .               | .               | .     |       |
| Total                                 | 27              | 96                  | 40              | 1               | .     | 164   |
|                                       |                 |                     |                 |                 | .     | 100.0 |

would be Nice to Have. Only 1 (.6 percent) felt there was Little Value to this course in the curriculum.

Inspection of Tables 42 and 43 reflect the value of a course in Introduction to Labor Relations by Respondents. Eleven (6.8 percent) felt this course was A Must, while 48 (29.8 percent) Highly Recommended the course. Seventy-three (45.3 percent) felt this course would be Nice to Have, and 29 (18.0 percent) felt this course was of Little Value.

A study of Tables 44 and 45 identifies the value placed on a course in Small Business Management by the Respondents. Twenty (14.2 percent) felt the course was A Must, while 31.5 percent (51) Highly Recommended a course of this nature. Approximately 43 percent stated the course would be Nice to Have, and 18 (11.1 percent) felt there would be Little Value to the course in this program.

An examination of Tables 46 and 47 shows the value placed on a course in Facility Organization and Management by the Respondents. It was found that 10 (6.2 percent) felt this course was A Must, while 65 (40.4 percent) Highly Recommended it. Sixty-six (41.0 percent) stated this course would be Nice to Have, and 20 (12.4 percent) felt a course of this nature would be of Little Value.

Facts concerning the value placed on a course in Introduction to Technical Drawing are found in Tables 48 and 49. It was discovered that 11 (6.7 percent) felt this course was A Must for the program. Seventy-seven (47.5 percent) Highly Recommended this course, while 60 (37.0 percent) felt this course would be Nice

Table 42. Value Placed on a Course in Introduction to Labor Relations by Industrial Respondents.

| Position       | Value of Course |                     |                 |                 |       | Total |
|----------------|-----------------|---------------------|-----------------|-----------------|-------|-------|
|                | A<br>Must       | Highly<br>Recommend | Nice<br>To Have | Little<br>Value | Other |       |
| <u>Owner</u>   |                 |                     |                 |                 |       |       |
| Frequency      | 3               | 24                  | 55              | 26              | 5     | 108   |
| Percent        | 1.8             | 14.9                | 34.1            | 16.1            | .     | 67.0  |
| <u>Manager</u> |                 |                     |                 |                 |       |       |
| Frequency      | 5               | 1                   | 10              | 0               | 0     | 26    |
| Percent        | 3.1             | 6.8                 | 6.2             | .               | .     | 16.1  |
| <u>Other</u>   |                 |                     |                 |                 |       |       |
| Frequency      | 3               | 13                  | 8               | 3               | 0     | 27    |
| Percent        | 1.8             | 8.0                 | 4.9             | 1.8             | .     | 16.7  |
| Total          | 11              | 48                  | 73              | 29              | .     | 161   |
|                | 6.8             | 29.8                | 45.3            | 18.0            | .     | 100.0 |

Table 43. Value Placed on a Course in Introduction to Labor Relations Related to Sales.

| Sales<br>(In Thousands<br>of Dollars) | Value of Course |                     |                 |                 |       | Total |
|---------------------------------------|-----------------|---------------------|-----------------|-----------------|-------|-------|
|                                       | A<br>Must       | Highly<br>Recommend | Nice<br>To Have | Little<br>Value | Other |       |
| <u>\$70 - \$100</u>                   |                 |                     |                 |                 |       |       |
| Frequency                             | 0               | 18                  | 25              | 8               | 0     | 51    |
| Percent                               | .               | 35.3                | 49.0            | 15.7            | .     |       |
| <u>\$101 - \$200</u>                  |                 |                     |                 |                 |       |       |
| Frequency                             | 0               | 17                  | 22              | 17              | 2     | 56    |
| Percent                               | .               | 30.4                | 39.2            | 30.4            | .     |       |
| <u>\$201 - \$300</u>                  |                 |                     |                 |                 |       |       |
| Frequency                             | 0               | 6                   | 3               | 1               | 2     | 10    |
| Percent                               | .               | 60.0                | 30.0            | 10.0            | .     |       |
| <u>\$301 - \$400</u>                  |                 |                     |                 |                 |       |       |
| Frequency                             | 0               | 0                   | 3               | 0               | 0     | 3     |
| Percent                               | .               | .                   | 100.0           | .               | .     |       |
| <u>\$401 - More</u>                   |                 |                     |                 |                 |       |       |
| Frequency                             | 11              | 77                  | 20              | 1               | 1     | 39    |
| Percent                               | 28.2            | 17.9                | 51.3            | 2.6             | .     |       |
| <u>Other</u>                          |                 |                     |                 |                 |       |       |
| Frequency                             | 0               | 0                   | 0               | 2               | 0     | 2     |
| Percent                               | .               | .                   | .               | 100.0           | .     |       |
| Total                                 | 11              | 48                  | 73              | 29              | .     | 161   |
|                                       |                 |                     |                 |                 | .     | 100.0 |

Table 44. Value Placed on a Course in Small Business Management by Industrial Respondents.

| Position       | Value of Course |                     |                 |                 |       | Total |
|----------------|-----------------|---------------------|-----------------|-----------------|-------|-------|
|                | A<br>Must       | Highly<br>Recommend | Nice<br>To Have | Little<br>Value | Other |       |
| <u>Owner</u>   |                 |                     |                 |                 |       |       |
| Frequency      | 14              | 36                  | 44              | 15              | 4     | 109   |
| Percent        | 8.6             | 22.2                | 27.1            | 9.2             | .     | 67.2  |
| <u>Manager</u> |                 |                     |                 |                 |       |       |
| Frequency      | 5               | 7                   | 11              | 3               | 0     | 26    |
| Percent        | 3.0             | 4.3                 | 6.7             | 1.8             | .     | 16.0  |
| <u>Other</u>   |                 |                     |                 |                 |       |       |
| Frequency      | 4               | 8                   | 15              | 0               | 0     | 27    |
| Percent        | 2.4             | 4.9                 | 9.2             | .               | .     | 16.6  |
| Total          | 23              | 51                  | 70              | 18              | .     | 162   |
|                | 14.2            | 31.4                | 43.2            | 11.1            | .     | 100.0 |

Table 45. Value Placed on a Course in Small Business Management Related to Sales.

| Sales<br>(In Thousands<br>of Dollars) | Value of Course |                     |                 |                 |       | Total |
|---------------------------------------|-----------------|---------------------|-----------------|-----------------|-------|-------|
|                                       | A<br>Must       | Highly<br>Recommend | Nice<br>To Have | Little<br>Value | Other |       |
| <u>\$70 - \$100</u>                   |                 |                     |                 |                 |       |       |
| Frequency                             | 8               | 18                  | 21              | 4               | 0     | 51    |
| Percent                               | 15.7            | 35.3                | 41.2            | 7.8             | .     |       |
| <u>\$101 - \$200</u>                  |                 |                     |                 |                 |       |       |
| Frequency                             | 7               | 20                  | 21              | 8               | 2     | 56    |
| Percent                               | 12.5            | 35.7                | 37.5            | 14.3            | .     |       |
| <u>\$201 - \$300</u>                  |                 |                     |                 |                 |       |       |
| Frequency                             | 0               | 0                   | 9               | 1               | 2     | 10    |
| Percent                               | .               | .                   | 90.0            | 10.0            | .     |       |
| <u>\$301 - \$400</u>                  |                 |                     |                 |                 |       |       |
| Frequency                             | 0               | 3                   | 0               | 0               | 0     | 3     |
| Percent                               | .               | 100.0               | .               | .               | .     |       |
| <u>\$401 - More</u>                   |                 |                     |                 |                 |       |       |
| Frequency                             | 8               | 8                   | 19              | 5               | 0     | 40    |
| Percent                               | 20.0            | 20.0                | 47.5            | 12.5            | .     |       |
| <u>Other</u>                          |                 |                     |                 |                 |       |       |
| Frequency                             | 0               | 2                   | 0               | 0               | 0     | 2     |
| Percent                               | .               | 100.0               | .               | .               | .     | 1.2   |
| Total                                 | 23              | 51                  | 70              | 18              | 0     | 162   |
|                                       |                 |                     |                 |                 | .     | 100.0 |

Table 46. Value Placed on a Course in Facility Organization and Management by Industrial Respondents.

| Position       | Value of Course |                     |                 |                 |       | Total |
|----------------|-----------------|---------------------|-----------------|-----------------|-------|-------|
|                | A<br>Must       | Highly<br>Recommend | Nice<br>To Have | Little<br>Value | Other |       |
| <u>Owner</u>   |                 |                     |                 |                 |       |       |
| Frequency      | 3               | 46                  | 49              | 10              | 5     | 108   |
| Percent        | 1.8             | 28.5                | 30.4            | 6.2             | .     | 67.0  |
| <u>Manager</u> |                 |                     |                 |                 |       |       |
| Frequency      | 3               | 6                   | 10              | 7               | 0     | 26    |
| Percent        | 1.8             | 3.7                 | 6.2             | 4.3             | .     | 16.1  |
| <u>Other</u>   |                 |                     |                 |                 |       |       |
| Frequency      | 4               | 13                  | 7               | 3               | 0     | 27    |
| Percent        | 2.4             | 8.0                 | 4.3             | 1.8             | .     | 16.7  |
| Total          | 10              | 65                  | 66              | 20              | .     | 161   |
|                | 6.2             | 40.3                | 40.9            | 12.4            | .     | 100.0 |

Table 47. Value Placed on a Course in Facility Organization and Management Related to Sales.

| Sales<br>(In Thousands<br>of Dollars) | Value of Course |                     |                 |                 |       | Total |
|---------------------------------------|-----------------|---------------------|-----------------|-----------------|-------|-------|
|                                       | A<br>Must       | Highly<br>Recommend | Nice<br>To Have | Little<br>Value | Other |       |
| <u>\$70 - \$100</u>                   |                 |                     |                 |                 |       |       |
| Frequency                             | 0               | 23                  | 25              | 3               | 0     | 51    |
| Percent                               | .               | 45.1                | 49.0            | 5.9             | .     |       |
| <u>\$101 - \$200</u>                  |                 |                     |                 |                 |       |       |
| Frequency                             | 7               | 19                  | 22              | 7               | 3     | 55    |
| Percent                               | 12.7            | 34.5                | 40.0            | 12.7            | .     |       |
| <u>\$201 - \$300</u>                  |                 |                     |                 |                 |       |       |
| Frequency                             | 0               | 6                   | 1               | 3               | 2     | 10    |
| Percent                               | .               | 60.0                | 10.0            | 30.0            | .     |       |
| <u>\$301 - \$400</u>                  |                 |                     |                 |                 |       |       |
| Frequency                             | 0               | 3                   | 0               | 0               | 0     | 3     |
| Percent                               | .               | 100.0               | .               | .               | .     |       |
| <u>\$401 - More</u>                   |                 |                     |                 |                 |       |       |
| Frequency                             | 3               | 12                  | 18              | 7               | 0     | 40    |
| Percent                               | 7.5             | 30.0                | 45.0            | 17.5            | .     |       |
| <u>Other</u>                          |                 |                     |                 |                 |       |       |
| Frequency                             | 0               | 2                   | 0               | 0               | 0     | 2     |
| Percent                               | .               | 100.0               | .               | .               | .     |       |
| Total                                 | 10              | 65                  | 66              | 20              | .     | 161   |
|                                       |                 |                     |                 |                 | .     | 100.0 |

Table 48. Value Placed on a Course in Introduction to Technical Drawing by Industrial Respondents.

| Position       | Value of Course |                     |                 |                 |       | Total |
|----------------|-----------------|---------------------|-----------------|-----------------|-------|-------|
|                | A<br>Must       | Highly<br>Recommend | Nice<br>To Have | Little<br>Value | Other |       |
| <u>Owner</u>   |                 |                     |                 |                 |       |       |
| Frequency      | 4               | 63                  | 32              | 10              | 4     | 109   |
| Percent        | 2.4             | 38.8                | 19.7            | 6.1             | .     | 67.2  |
| <u>Manager</u> |                 |                     |                 |                 |       |       |
| Frequency      | 0               | 3                   | 23              | 0               | 0     | 26    |
| Percent        | .               | 1.8                 | 14.2            | .               | .     | 16.0  |
| <u>Other</u>   |                 |                     |                 |                 |       |       |
| Frequency      | 7               | 11                  | 5               | 4               | 0     | 27    |
| Percent        | 4.3             | 6.7                 | 3.0             | 2.4             | .     | 16.6  |
| Total          | 11              | 77                  | 60              | 14              | .     | 162   |
|                | 6.7             | 47.5                | 37.0            | 8.6             | .     | 100.0 |

Table 49. Value Placed on a Course in Introduction to Technical Drawing Related to Sales.

| Sales<br>(In Thousands<br>of Dollars) | Value of Course |                     |                 |                 |       | Total |
|---------------------------------------|-----------------|---------------------|-----------------|-----------------|-------|-------|
|                                       | A<br>Must       | Highly<br>Recommend | Nice<br>To Have | Little<br>Value | Other |       |
| <u>\$70 - \$100</u>                   |                 |                     |                 |                 |       |       |
| Frequency                             | 0               | 25                  | 22              | 4               | 0     | 51    |
| Percent                               | .               | 49.0                | 43.1            | 7.8             | .     |       |
| <u>\$101 - \$200</u>                  |                 |                     |                 |                 |       |       |
| Frequency                             | 11              | 26                  | 12              | 7               | 2     | 56    |
| Percent                               | 19.6            | 46.4                | 21.4            | 12.5            | .     |       |
| <u>\$201 - \$300</u>                  |                 |                     |                 |                 |       |       |
| Frequency                             | 0               | 8                   | 1               | 1               | 2     | 10    |
| Percent                               | .               | 80.0                | 10.0            | 10.0            | .     |       |
| <u>\$301 - \$400</u>                  |                 |                     |                 |                 |       |       |
| Frequency                             | 0               | 1                   | 0               | 2               | 0     | 3     |
| Percent                               | .               | 33.3                | .               | 66.7            | .     |       |
| <u>\$401 - More</u>                   |                 |                     |                 |                 |       |       |
| Frequency                             | 0               | 15                  | 25              | 0               | 0     | 40    |
| Percent                               | .               | 37.5                | 62.5            | .               | .     |       |
| <u>Other</u>                          |                 |                     |                 |                 |       |       |
| Frequency                             | 0               | 2                   | 0               | 0               | 0     | 2     |
| Percent                               | .               | 100.0               | .               | .               | .     |       |
| Total                                 | 11              | 77                  | 60              | 14              | .     | 162   |
|                                       |                 |                     |                 |                 | .     | 100.0 |

to Have in the curriculum. Fourteen (8.6 percent) stated there would be Little Value in a course of this type.

According to Tables 50 and 51 the value placed on a course in Technical Drawing I by the Respondents were that 9.3 percent (15) felt this course was A Must, while 43.5 percent Highly Recommended it. Fifty-five (34.2 percent) felt that it would be Nice to Have and 13.0 percent (21) felt there would be Little Value to a course of this nature.

Tables 52 and 53 point out the value placed on a course in Micro-Computers by Respondents. Thirteen (8.0 percent) felt the course was A Must, while 65 (40.1 percent) Highly Recommended it. Fifty-two (32.1 percent) felt the course would be Nice to Have, and 32 (19.8 percent) felt it would be of Little Value to the program.

An inspection of Tables 54 and 55 reveals the value placed on a course in Still Photography I by the Respondents. Forty-one (25.8 percent) of the respondents felt the course was A Must. Forty (25.2 percent) of the respondents stated they would Highly Recommend the course, and 35.2 percent (56) felt the course would be Nice to Have, while 13.8 percent (22) felt a course of this type would be of Little Value to the program.

The value of a course in Darkroom Technique by the Respondents is reflected in Tables 56 and 57. Seventy-four (45.7 percent) felt the course was A Must for the program, while 55 (34.0 percent) Highly Recommended the course. Nineteen (11.7 percent) stated

Table 50. Value Placed on a Course in Technical Drawing 1 by Industrial Respondents.

| Position       | Value of Course |                     |                 |                 |       | Total |
|----------------|-----------------|---------------------|-----------------|-----------------|-------|-------|
|                | A<br>Must       | Highly<br>Recommend | Nice<br>To Have | Little<br>Value | Other |       |
| <u>Owner</u>   |                 |                     |                 |                 |       |       |
| Frequency      | 5               | 55                  | 31              | 17              | 5     | 108   |
| Percent        | 3.1             | 34.1                | 19.2            | 10.5            | .     | 67.0  |
| <u>Manager</u> |                 |                     |                 |                 |       |       |
| Frequency      | 3               | 3                   | 20              | 0               | 0     | 26    |
| Percent        | 1.8             | 1.8                 | 12.4            | .               | .     | 16.1  |
| <u>Other</u>   |                 |                     |                 |                 |       |       |
| Frequency      | 7               | 12                  | 4               | 4               | 0     | 27    |
| Percent        | 4.3             | 7.4                 | 2.4             | 2.4             | .     | 16.7  |
| Total          | 15              | 70                  | 55              | 21              | .     | 161   |
|                | 9.3             | 43.4                | 34.1            | 13.0            | .     | 100.0 |

Table 51. Value Placed on a Course in Technical Drawing 1  
Related to Sales.

| Sales<br>(In Thousands<br>of Dollars) | Value of Course |                     |                 |                 |       | Total |
|---------------------------------------|-----------------|---------------------|-----------------|-----------------|-------|-------|
|                                       | A<br>Must       | Highly<br>Recommend | Nice<br>To Have | Little<br>Value | Other |       |
| <u>\$70 - \$100</u>                   |                 |                     |                 |                 |       |       |
| Frequency                             | 4               | 18                  | 21              | 7               | 1     | 50    |
| Percent                               | 8.0             | 36.0                | 42.0            | 14.0            | .     |       |
| <u>\$101 - \$200</u>                  |                 |                     |                 |                 |       |       |
| Frequency                             | 11              | 27                  | 7               | 11              | 2     | 56    |
| Percent                               | 19.6            | 48.2                | 12.5            | 19.6            | .     |       |
| <u>\$201 - \$300</u>                  |                 |                     |                 |                 |       |       |
| Frequency                             | 0               | 9                   | 0               | 1               | 2     | 10    |
| Percent                               | .               | 90.0                | .               | 10.0            | .     |       |
| <u>\$301 - \$400</u>                  |                 |                     |                 |                 |       |       |
| Frequency                             | 0               | 1                   | 0               | 2               | 0     | 3     |
| Percent                               | .               | 33.3                | .               | 66.7            | .     |       |
| <u>\$401 - More</u>                   |                 |                     |                 |                 |       |       |
| Frequency                             | 0               | 13                  | 27              | 0               | 0     | 40    |
| Percent                               | .               | 32.5                | 67.5            | .               | .     |       |
| <u>Other</u>                          |                 |                     |                 |                 |       |       |
| Frequency                             | 0               | 2                   | 0               | 0               | 0     | 2     |
| Percent                               | .               | 100.0               | .               | .               | .     |       |
| Total                                 | 15              | 70                  | 55              | 21              | .     | 161   |
|                                       |                 |                     |                 |                 | .     | 100.0 |

Table 52. Value Placed on a Course in Introduction to Micro-computers by Industrial Respondents.

| Position       | Value of Course |                     |                 |                 |       | Total |
|----------------|-----------------|---------------------|-----------------|-----------------|-------|-------|
|                | A<br>Must       | Highly<br>Recommend | Nice<br>To Have | Little<br>Value | Other |       |
| <u>Owner</u>   |                 |                     |                 |                 |       |       |
| Frequency      | 6               | 34                  | 37              | 32              | 4     | 109   |
| Percent        | 3.7             | 20.9                | 22.8            | 19.7            | .     | 67.2  |
| <u>Manager</u> |                 |                     |                 |                 |       |       |
| Frequency      | 4               | 8                   | 14              | 0               | 0     | 26    |
| Percent        | 2.4             | 4.9                 | 8.6             | .               | .     | 16.0  |
| <u>Other</u>   |                 |                     |                 |                 |       |       |
| Frequency      | 3               | 23                  | 1               | 0               | 0     | 27    |
| Percent        | 1.8             | 14.2                | 0.6             | .               | .     | 16.6  |
| Total          | 13              | 65                  | 52              | 32              | .     | 162   |
|                | 8.0             | 40.1                | 32.1            | 19.7            | .     | 100.0 |

Table 53. Value Placed on a Course in Introduction to Micro-computers Related to Sales.

| Sales<br>(In Thousands<br>of Dollars) | Value of Course |                     |                 |                 |       | Total |
|---------------------------------------|-----------------|---------------------|-----------------|-----------------|-------|-------|
|                                       | A<br>Must       | Highly<br>Recommend | Nice<br>To Have | Little<br>Value | Other |       |
| <u>\$70 - \$100</u>                   |                 |                     |                 |                 |       |       |
| Frequency                             | 6               | 25                  | 14              | 6               | 0     | 51    |
| Percent                               | 11.8            | 49.0                | 27.5            | 11.8            | .     |       |
| <u>\$101 - \$200</u>                  |                 |                     |                 |                 |       |       |
| Frequency                             | 4               | 15                  | 19              | 18              | 2     | 56    |
| Percent                               | 7.1             | 26.8                | 33.9            | 32.1            | .     |       |
| <u>\$201 - \$300</u>                  |                 |                     |                 |                 |       |       |
| Frequency                             | 0               | 6                   | 3               | 1               | 2     | 10    |
| Percent                               | .               | 60.0                | 30.0            | 10.0            | .     |       |
| <u>\$301 - \$400</u>                  |                 |                     |                 |                 |       |       |
| Frequency                             | 0               | 1                   | 0               | 2               | 0     | 3     |
| Percent                               | .               | 33.3                | .               | 66.7            | .     |       |
| <u>\$401 - More</u>                   |                 |                     |                 |                 |       |       |
| Frequency                             | 3               | 16                  | 16              | 5               | 0     | 40    |
| Percent                               | 7.5             | 40.0                | 40.0            | 12.5            | .     |       |
| <u>Other</u>                          |                 |                     |                 |                 |       |       |
| Frequency                             | 0               | 2                   | 0               | 0               | 0     | 2     |
| Percent                               | .               | 100.0               | .               | .               | .     |       |
| Total                                 | 13              | 65                  | 52              | 32              | .     | 162   |
|                                       |                 |                     |                 |                 | .     | 100.0 |

Table 54. Value Placed on a Course in Still Photography 1  
by Industrial Respondents.

| Position       | Value of Course |                     |                 |                 |       | Total |
|----------------|-----------------|---------------------|-----------------|-----------------|-------|-------|
|                | A<br>Must       | Highly<br>Recommend | Nice<br>To Have | Little<br>Value | Other |       |
| <u>Owner</u>   |                 |                     |                 |                 |       |       |
| Frequency      | 23              | 22                  | 39              | 22              | 7     | 106   |
| Percent        | 14.4            | 13.8                | 24.5            | 13.8            | .     | 66.6  |
| <u>Manager</u> |                 |                     |                 |                 |       |       |
| Frequency      | 11              | 2                   | 13              | 0               | 0     | 26    |
| Percent        | 6.9             | 1.26                | 8.1             | .               | .     | 16.3  |
| <u>Other</u>   |                 |                     |                 |                 |       |       |
| Frequency      | 7               | 16                  | 4               | 0               | 0     | 27    |
| Percent        | 4.4             | 10.0                | 2.5             | .               | .     | 16.9  |
| <u>Total</u>   |                 |                     |                 |                 |       |       |
|                | 41              | 40                  | 56              | 22              | .     | 159   |
|                | 25.7            | 25.1                | 35.2            | 13.8            | .     | 100.0 |

Table 55. Value Placed on a Course in Still Photography 1  
Related to Sales.

| Sales<br>(In Thousands<br>of Dollars) | Value of Course |                     |                 |                 |       | Total |
|---------------------------------------|-----------------|---------------------|-----------------|-----------------|-------|-------|
|                                       | A<br>Must       | Highly<br>Recommend | Nice<br>To Have | Little<br>Value | Other |       |
| <u>\$70 - \$100</u>                   |                 |                     |                 |                 |       |       |
| Frequency                             | 25              | 6                   | 19              | 1               | 0     | 51    |
| Percent                               | 49.0            | 11.7                | 37.3            | 2.0             | .     |       |
| <u>\$101 - \$200</u>                  |                 |                     |                 |                 |       |       |
| Frequency                             | 8               | 14                  | 20              | 11              | 5     | 53    |
| Percent                               | 15.1            | 26.4                | 37.7            | 20.8            | .     |       |
| <u>\$201 - \$300</u>                  |                 |                     |                 |                 |       |       |
| Frequency                             | 0               | 6                   | 1               | 3               | 2     | 10    |
| Percent                               | .               | 60.0                | 10.0            | 30.0            | .     |       |
| <u>\$301 - \$400</u>                  |                 |                     |                 |                 |       |       |
| Frequency                             | 0               | 1                   | 0               | 2               | 0     | 3     |
| Percent                               | .               | 33.3                | .               | 66.7            | .     |       |
| <u>\$401 - More</u>                   |                 |                     |                 |                 |       |       |
| Frequency                             | 8               | 13                  | 14              | 5               | 0     | 40    |
| Percent                               | 20.0            | 32.5                | 35.0            | 12.5            | .     |       |
| <u>Other</u>                          |                 |                     |                 |                 |       |       |
| Frequency                             | 0               | 0                   | 2               | 0               | 0     | 2     |
| Percent                               | .               | .                   | 100.0           | .               | .     |       |
| Total                                 | 41              | 40                  | 56              | 22              | .     | 159   |
|                                       |                 |                     |                 |                 | .     | 100.0 |

Table 56. Value Placed on a Course in Darkroom Technique  
by Industrial Respondents.

| Position       | Value of Course |                     |                 |                 |       | Total |
|----------------|-----------------|---------------------|-----------------|-----------------|-------|-------|
|                | A<br>Must       | Highly<br>Recommend | Nice<br>To Have | Little<br>Value | Other |       |
| <u>Owner</u>   |                 |                     |                 |                 |       |       |
| Frequency      | 44              | 37                  | 14              | 14              | 4     | 109   |
| Percent        | 27.1            | 22.8                | 8.6             | 8.6             | .     |       |
| <u>Manager</u> |                 |                     |                 |                 |       |       |
| Frequency      | 14              | 8                   | 4               | 0               | 0     | 26    |
| Percent        | 8.6             | 4.9                 | 2.4             | .               | .     | 16.0  |
| <u>Other</u>   |                 |                     |                 |                 |       |       |
| Frequency      | 16              | 10                  | 1               | 0               | 0     | 27    |
| Percent        | 9.8             | 6.1                 | 0.6             | .               | .     | 16.6  |
| Total          | 74              | 55                  | 19              | 14              | .     | 162   |
|                | 45.6            | 33.9                | 11.7            | 8.6             | .     | 100.0 |

Table 57. Value Placed on a Course in Darkroom Technique  
Related to Sales.

| Sales<br>(In Thousands<br>of Dollars) | Value of Course |                     |                 |                 |       | Total |
|---------------------------------------|-----------------|---------------------|-----------------|-----------------|-------|-------|
|                                       | A<br>Must       | Highly<br>Recommend | Nice<br>To Have | Little<br>Value | Other |       |
| <u>\$70 - \$100</u>                   |                 |                     |                 |                 |       |       |
| Frequency                             | 31              | 13                  | 7               | 0               | 0     | 51    |
| Percent                               | 60.8            | 25.5                | 13.7            | .               | .     |       |
| <u>\$101 - \$200</u>                  |                 |                     |                 |                 |       |       |
| Frequency                             | 27              | 16                  | 7               | 6               | 2     | 56    |
| Percent                               | 48.2            | 28.6                | 12.5            |                 | .     |       |
| <u>\$201 - \$300</u>                  |                 |                     |                 |                 |       |       |
| Frequency                             | 2               | 5                   | 0               | 3               | 2     | 10    |
| Percent                               | 20.0            | 50.0                | .               | 30.0            | .     |       |
| <u>\$301 - \$400</u>                  |                 |                     |                 |                 |       |       |
| Frequency                             | 3               | 0                   | 0               | 0               | 0     | 3     |
| Percent                               | 100.0           | .                   | .               | .               | .     |       |
| <u>\$401 - More</u>                   |                 |                     |                 |                 |       |       |
| Frequency                             | 9               | 21                  | 5               | 5               | 0     | 40    |
| Percent                               | 22.5            | 52.5                | 12.5            | 12.5            | .     |       |
| <u>Other</u>                          |                 |                     |                 |                 |       |       |
| Frequency                             | 2               | 0                   | 0               | 0               | 0     | 2     |
| Percent                               | 100.0           | .                   | .               | .               | .     |       |
| Total                                 | 74              | 55                  | 19              | 14              | .     | 162   |
|                                       |                 |                     |                 |                 | .     | 100.0 |

the course would be Nice to Have and 14 (8.6 percent) felt this course would be of Little Value to the program.

Tables 58 and 59 begins the section of the proposed courses that are not currently being offered by the State Technical Institute as a part of the overall curriculum. The tables depicting the following ten courses will serve as the core courses of the proposed Graphic-Arts Program. Additionally, Tables 58 and 59 refer to the value placed on a course in Introductory Typesetting by the Respondents. Ninety-three (57.8 percent) felt a course of this nature was A Must for the program. Forty-eight (29.8 percent) Highly Recommended the course, while 18 (11.2 percent) felt that it would be Nice to Have, and only 2 (1.2 percent) felt this course would be of Little Value to the curriculum.

An analysis of Tables 60 and 61 identifies the value placed on a course in Advanced Typesetting by the Respondents. It was found that 46.6 percent (75) felt the course was A Must. Fifty (31.1 percent) Highly Recommended the course, while 21.7 percent (35) felt the course would be Nice to Have, and only 1 (.6 percent) felt this course would have Little Value in the curriculum.

Tables 62 and 63 reflect the value placed on a course in the Introduction to Graphic-Arts by the Respondents. The majority, 95 (59.0 percent), felt a course of this nature was A Must. Fifty-one (31.7 percent) Highly Recommended the course, while 14 (8.7 percent) of the respondents felt the course would be Nice to Have and once again only 1 (.6 percent) felt a course of this type would be of Little Value to the program.

Table 58. Value Placed on a Course in Introductory Typesetting  
by Industrial Respondents.

| Position       | Value of Course |                     |                 |                 |       | Total |
|----------------|-----------------|---------------------|-----------------|-----------------|-------|-------|
|                | A<br>Must       | Highly<br>Recommend | Nice<br>To Have | Little<br>Value | Other |       |
| <u>Owner</u>   |                 |                     |                 |                 |       |       |
| Frequency      | 54              | 39                  | 13              | 2               | 5     | 108   |
| Percent        | 33.5            | 24.2                | 8.0             | 1.2             | .     | 67.0  |
| <u>Manager</u> |                 |                     |                 |                 |       |       |
| Frequency      | 20              | 2                   | 4               | 0               | 0     | 26    |
| Percent        | 12.4            | 1.2                 | 2.4             | .               | .     | 16.1  |
| <u>Other</u>   |                 |                     |                 |                 |       |       |
| Frequency      | 19              | 7                   | 1               | 0               | 0     | 27    |
| Percent        | 11.8            | 4.3                 | 0.6             | .               | .     | 16.7  |
| Total          | 93              | 48                  | 18              | 2               | .     | 161   |
|                | 57.7            | 29.8                | 11.1            | 1.2             | .     | 100.0 |

Table 59. Value Placed on a Course in Introduction to Typesetting Related to Sales.

| Sales<br>(In Thousands<br>of Dollars) | Value of Course |                     |                 |                 |       | Total |
|---------------------------------------|-----------------|---------------------|-----------------|-----------------|-------|-------|
|                                       | A<br>Must       | Highly<br>Recommend | Nice<br>To Have | Little<br>Value | Other |       |
| <u>\$70 - \$100</u>                   |                 |                     |                 |                 |       |       |
| Frequency                             | 33              | 10                  | 8               | 0               | 0     | 51    |
| Percent                               | 64.7            | 19.6                | 15.7            | .               | .     |       |
| <u>\$101 - \$200</u>                  |                 |                     |                 |                 |       |       |
| Frequency                             | 32              | 20                  | 3               | 1               | 2     | 56    |
| Percent                               | 57.1            | 35.7                | 5.4             | 1.8             | .     |       |
| <u>\$201 - \$300</u>                  |                 |                     |                 |                 |       |       |
| Frequency                             | 8               | 1                   | 0               | 1               | 2     | 10    |
| Percent                               | 80.0            | 10.0                | .               | 10.0            | .     |       |
| <u>\$301 - \$400</u>                  |                 |                     |                 |                 |       |       |
| Frequency                             | 1               | 0                   | 1               | 0               | 1     | 2     |
| Percent                               | 50.0            | .                   | 50.0            | .               | .     |       |
| <u>\$401 - More</u>                   |                 |                     |                 |                 |       |       |
| Frequency                             | 17              | 17                  | 6               | 0               | 0     | 40    |
| Percent                               | 42.5            | 42.5                | 15.0            | .               | .     |       |
| <u>Other</u>                          |                 |                     |                 |                 |       |       |
| Frequency                             | 2               | 0                   | 0               | 0               | 0     | 2     |
| Percent                               | 100.0           | .                   | .               | .               | .     |       |
| Total                                 | 93              | 48                  | 18              | 2               | .     | 161   |
|                                       |                 |                     |                 |                 | .     | 100.0 |

Table 60. Value Placed on a Course in Advanced Typesetting by Industrial Respondents.

| Position       | Value of Course |                     |                 |                 |       | Total |
|----------------|-----------------|---------------------|-----------------|-----------------|-------|-------|
|                | A<br>Must       | Highly<br>Recommend | Nice<br>To Have | Little<br>Value | Other |       |
| <u>Owner</u>   |                 |                     |                 |                 |       |       |
| Frequency      | 46              | 32                  | 29              | 1               | 5     | 108   |
| Percent        | 28.5            | 19.8                | 18.0            | 0.6             | .     | 67.0  |
| <u>Manager</u> |                 |                     |                 |                 |       |       |
| Frequency      | 14              | 7                   | 5               | 0               | 0     | 26    |
| Percent        | 8.7             | 4.3                 | 3.1             | .               | .     | 16.1  |
| <u>Other</u>   |                 |                     |                 |                 |       |       |
| Frequency      | 15              | 11                  | 1               | 0               | 0     | 27    |
| Percent        | 9.3             | 6.8                 | 0.6             | .               | .     | 16.7  |
| Total          | 75              | 50                  | 35              | 1               | .     | 161   |
|                | 46.5            | 31.0                | 21.7            | 0.6             | .     | 100.0 |

Table 61. Value Placed on a Course in Advanced Typesetting  
Related to Sales.

| Sales<br>(In Thousands<br>of Dollars) | Value of Course |                     |                 |                 |       | Total |
|---------------------------------------|-----------------|---------------------|-----------------|-----------------|-------|-------|
|                                       | A<br>Must       | Highly<br>Recommend | Nice<br>To Have | Little<br>Value | Other |       |
| <u>\$70 - \$100</u>                   |                 |                     |                 |                 |       |       |
| Frequency                             | 29              | 10                  | 12              | 0               | 0     | 51    |
| Percent                               | 56.8            | 10.6                | 23.5            | .               | .     |       |
| <u>\$101 - \$200</u>                  |                 |                     |                 |                 |       |       |
| Frequency                             | 27              | 17                  | 12              | 0               | 2     | 56    |
| Percent                               | 48.2            | 30.4                | 21.4            | .               | .     |       |
| <u>\$201 - \$300</u>                  |                 |                     |                 |                 |       |       |
| Frequency                             | 7               | 1                   | 1               | 1               | 2     | 10    |
| Percent                               | 70.0            | 10.0                | 10.0            | 10.0            | .     |       |
| <u>\$301 - \$400</u>                  |                 |                     |                 |                 |       |       |
| Frequency                             | 1               | 0                   | 1               | 0               | 1     | 2     |
| Percent                               | 50.0            | .                   | 50.0            | .               | .     |       |
| <u>\$401 - More</u>                   |                 |                     |                 |                 |       |       |
| Frequency                             | 9               | 22                  | 9               | 0               | 0     | 40    |
| Percent                               | 22.5            | 55.0                | 22.5            | .               | .     |       |
| <u>Other</u>                          |                 |                     |                 |                 |       |       |
| Frequency                             | 2               | 0                   | 0               | 0               | 0     | 2     |
| Percent                               | 100.0           | .                   | .               | .               | .     |       |
| Total                                 | 75              | 50                  | 35              | 1               | .     | 161   |
|                                       |                 |                     |                 |                 | .     | 100.0 |

Table 62. Value Placed on a Course in Introduction to Graphic-Arts by Industrial Respondents.

| Position       | Value of Course |                     |                 |                 |       | Total |
|----------------|-----------------|---------------------|-----------------|-----------------|-------|-------|
|                | A<br>Must       | Highly<br>Recommend | Nice<br>To Have | Little<br>Value | Other |       |
| <u>Owner</u>   |                 |                     |                 |                 |       |       |
| Frequency      | 66              | 28                  | 13              | 1               | 5     | 108   |
| Percent        | 40.9            | 17.3                | 8.0             | 0.6             | .     | 67.0  |
| <u>Manager</u> |                 |                     |                 |                 |       |       |
| Frequency      | 14              | 12                  | 0               | 0               | 0     | 26    |
| Percent        | 8.7             | 7.4                 | .               | .               | .     | 16.1  |
| <u>Other</u>   |                 |                     |                 |                 |       |       |
| Frequency      | 15              | 11                  | 1               | 0               | 0     | 27    |
| Percent        | 9.3             | 6.8                 | 0.6             | .               | .     | 16.7  |
| Total          | 95              | 51                  | 14              | 1               | .     | 161   |
|                | 59.0            | 31.6                | 8.7             | 0.6             | .     | 100.0 |

Table 63. Value Placed on a Course in Introduction to Graphic-Arts Related to Sales.

| Sales<br>(In Thousands<br>of Dollars) | Value of Course |                     |                 |                 |       | Total |
|---------------------------------------|-----------------|---------------------|-----------------|-----------------|-------|-------|
|                                       | A<br>Must       | Highly<br>Recommend | Nice<br>To Have | Little<br>Value | Other |       |
| <u>\$70 - \$100</u>                   |                 |                     |                 |                 |       |       |
| Frequency                             | 34              | 16                  | 1               | 0               | 0     | 51    |
| Percent                               | 66.7            | 31.4                | 1.9             | .               | .     |       |
| <u>\$101 - \$200</u>                  |                 |                     |                 |                 |       |       |
| Frequency                             | 39              | 7                   | 10              | 0               | 2     | 56    |
| Percent                               | 69.6            | 12.5                | 17.9            | .               | .     |       |
| <u>\$201 - \$300</u>                  |                 |                     |                 |                 |       |       |
| Frequency                             | 8               | 0                   | 1               | 1               | 2     | 10    |
| Percent                               | 80.0            | .                   | 10.0            | 10.0            | .     |       |
| <u>\$301 - \$400</u>                  |                 |                     |                 |                 |       |       |
| Frequency                             | 1               | 0                   | 1               | 0               | 1     | 2     |
| Percent                               | 50.0            | .                   | 50.0            | .               | .     |       |
| <u>\$401 - More</u>                   |                 |                     |                 |                 |       |       |
| Frequency                             | 11              | 28                  | 1               | 0               | 0     | 40    |
| Percent                               | 27.5            | 70.0                | 2.5             | .               | .     |       |
| <u>Other</u>                          |                 |                     |                 |                 |       |       |
| Frequency                             | 2               | 0                   | 0               | 0               | 0     | 2     |
| Percent                               | 100.0           | .                   | .               | .               | .     |       |
| Total                                 | 95              | 51                  | 14              | 1               | .     | 161   |
|                                       |                 |                     |                 |                 | .     | 100.0 |

It is apparent from Tables 64 and 65 the value placed on a course in Basic Layout and Design includes a majority of the Respondents. One hundred and eight (67.1 percent) felt this course was A Must for the program. Forty-four (27.3 percent) Highly Recommended a course of this type. Eight (5.0 percent) felt this course would be Nice to Have and only 1 (.6 percent) found Little Value in a course offering of this nature.

A summary of Tables 66 and 67 indicates that a majority of the Respondents placed a high value on a course in Introduction to Printing Processes. One hundred thirty-three (82.6 percent) felt a course of this type was A Must for the curriculum. Twenty-four (14.9 percent) felt this course would be Highly Recommended, 1.9 percent (3) felt the course would be Nice to Have and only 1 (.6 percent) felt there would be Little Value to the course.

An examination of Tables 68 and 69 reveals the value of a course in Advanced Printing Techniques by the Respondents. Once again the majority of the respondents, 104 (64.6 percent) felt this course was A Must for the program. Forty-nine (30.4 percent) felt that it would be Highly Recommended, while 7 (4.4 percent) felt that it would be Nice to Have for the program. Only 1 (.6 percent) felt this course would be of Little Value to the curriculum.

A summary of the data in Tables 70 and 71 reports the value placed on a course in Graphic-Arts Production by the Respondents. It was found that 66.5 percent (107) of the respondents felt this course was A Must. Forty-seven (29.3 percent) felt the course

Table 64. Value Placed on a Course in Basic Layout and Design  
by Industrial Respondents.

| Position       | Value of Course |                     |                 |                 |       | Total |
|----------------|-----------------|---------------------|-----------------|-----------------|-------|-------|
|                | A<br>Must       | Highly<br>Recommend | Nice<br>To Have | Little<br>Value | Other |       |
| <u>Owner</u>   |                 |                     |                 |                 |       |       |
| Frequency      | 68              | 31                  | 8               | 1               | 5     | 108   |
| Percent        | 42.2            | 19.2                | 4.9             | 0.6             | .     | 67.0  |
| <u>Manager</u> |                 |                     |                 |                 |       |       |
| Frequency      | 16              | 10                  | 0               | 0               | 0     | 26    |
| Percent        | 9.9             | 6.2                 | .               | .               | .     | 16.1  |
| <u>Other</u>   |                 |                     |                 |                 |       |       |
| Frequency      | 24              | 3                   | 0               | 0               | 0     | 27    |
| Percent        | 14.9            | 1.8                 | .               | .               | .     | 16.7  |
| Total          | 108             | 44                  | 8               | 1               | .     | 161   |
|                | 67.0            | 27.3                | 4.9             | 0.6             | .     | 100.0 |

Table 65. Value Placed on a Course in Basic Layout and Design  
Related to Sales.

| Sales<br>(In Thousands<br>of Dollars) | Value of Course |                     |                 |                 |       | Total |
|---------------------------------------|-----------------|---------------------|-----------------|-----------------|-------|-------|
|                                       | A<br>Must       | Highly<br>Recommend | Nice<br>To Have | Little<br>Value | Other |       |
| <u>\$70 - \$100</u>                   |                 |                     |                 |                 |       |       |
| Frequency                             | 34              | 15                  | 2               | 0               | 0     | 51    |
| Percent                               | 66.7            | 29.4                | 3.9             | .               | .     |       |
| <u>\$101 - \$200</u>                  |                 |                     |                 |                 |       |       |
| Frequency                             | 42              | 8                   | 6               | 0               | 2     | 56    |
| Percent                               | 75.0            | 14.3                | 10.7            | .               | .     |       |
| <u>\$201 - \$300</u>                  |                 |                     |                 |                 |       |       |
| Frequency                             | 9               | 0                   | 0               | 1               | 2     | 10    |
| Percent                               | 90.0            | .                   | .               | 10.0            | .     |       |
| <u>\$301 - \$400</u>                  |                 |                     |                 |                 |       |       |
| Frequency                             | 2               | 0                   | 0               | 0               | 1     | 2     |
| Percent                               | 100.0           | .                   | .               | .               | .     |       |
| <u>\$401 - More</u>                   |                 |                     |                 |                 |       |       |
| Frequency                             | 19              | 21                  | 0               | 0               | 0     | 40    |
| Percent                               | 47.5            | 52.5                | .               | .               | .     |       |
| <u>Other</u>                          |                 |                     |                 |                 |       |       |
| Frequency                             | 2               | 0                   | 0               | 0               | 0     | 2     |
| Percent                               | 100.0           | .                   | .               | .               | .     |       |
| Total                                 | 108             | 44                  | 8               | 1               | .     | 161   |
|                                       |                 |                     |                 |                 | .     | 100.0 |

Table 66. Value Placed on a Course in Introduction to Printing Processes by Industrial Respondents.

| Position       | Value of Course |                     |                 |                 |       | Total |
|----------------|-----------------|---------------------|-----------------|-----------------|-------|-------|
|                | A<br>Must       | Highly<br>Recommend | Nice<br>To Have | Little<br>Value | Other |       |
| <u>Owner</u>   |                 |                     |                 |                 |       |       |
| Frequency      | 84              | 20                  | 3               | 1               | 5     | 108   |
| Percent        | 52.1            | 12.4                | 1.8             | 0.6             | .     | 67.0  |
| <u>Manager</u> |                 |                     |                 |                 |       |       |
| Frequency      | 22              | 4                   | 0               | 0               | 0     | 26    |
| Percent        | 13.6            | 2.4                 | .               | .               | .     | 16.1  |
| <u>Other</u>   |                 |                     |                 |                 |       |       |
| Frequency      | 27              | 0                   | 0               | 0               | 0     | 27    |
| Percent        | 16.7            | .                   | .               | .               | .     | 16.7  |
| Total          | 133             | 24                  | 3               | 1               | .     | 161   |
|                | 82.6            | 14.9                | 1.8             | 0.6             | .     | 100.0 |

Table 67. Value Placed on a Course in Introduction to Printing Processes Related to Sales.

| Sales<br>(In Thousands<br>of Dollars) | Value of Course |                     |                 |                 |       | Total |
|---------------------------------------|-----------------|---------------------|-----------------|-----------------|-------|-------|
|                                       | A<br>Must       | Highly<br>Recommend | Nice<br>To Have | Little<br>Value | Other |       |
| <u>\$70 - \$100</u>                   |                 |                     |                 |                 |       |       |
| Frequency                             | 43              | 5                   | 3               | 0               | 0     | 51    |
| Percent                               | 84.3            | 9.8                 | 5.9             | .               | .     |       |
| <u>\$101 - \$200</u>                  |                 |                     |                 |                 |       |       |
| Frequency                             | 45              | 11                  | 0               | 0               | 2     | 56    |
| Percent                               | 80.4            | 19.6                | .               | .               | .     |       |
| <u>\$201 - \$300</u>                  |                 |                     |                 |                 |       |       |
| Frequency                             | 8               | 1                   | 0               | 1               | 0     | 10    |
| Percent                               | 80.0            | 10.0                | .               | 10.0            | .     |       |
| <u>\$301 - \$400</u>                  |                 |                     |                 |                 |       |       |
| Frequency                             | 2               | 0                   | 0               | 0               | 1     | 2     |
| Percent                               | 100.0           | .                   | .               | .               | .     |       |
| <u>\$401 - More</u>                   |                 |                     |                 |                 |       |       |
| Frequency                             | 33              | 7                   | 0               | 0               | 0     | 40    |
| Percent                               | 82.5            | 17.5                | .               | .               | .     |       |
| <u>Other</u>                          |                 |                     |                 |                 |       |       |
| Frequency                             | 2               | 0                   | 0               | 0               | 0     | 2     |
| Percent                               | 100.0           | .                   | .               | .               | .     |       |
| Total                                 | 133             | 24                  | 3               | 1               | .     | 161   |
|                                       |                 |                     |                 |                 | .     | 100.0 |

Table 68. Value Placed on a Course in Advanced Printing Techniques by Industrial Respondents.

| Position       | Value of Course |                     |                 |                 |       | Total |
|----------------|-----------------|---------------------|-----------------|-----------------|-------|-------|
|                | A<br>Must       | Highly<br>Recommend | Nice<br>To Have | Little<br>Value | Other |       |
| <u>Owner</u>   |                 |                     |                 |                 |       |       |
| Frequency      | 70              | 30                  | 7               | 1               | 5     | 108   |
| Percent        | 43.4            | 18.6                | 4.3             | 0.6             | .     | 67.0  |
| <u>Manager</u> |                 |                     |                 |                 |       |       |
| Frequency      | 11              | 15                  | 0               | 0               | 0     | 26    |
| Percent        | 6.8             | 9.3                 | .               | .               | .     | 16.1  |
| <u>Other</u>   |                 |                     |                 |                 |       |       |
| Frequency      | 23              | 4                   | 0               | 0               | 0     | 27    |
| Percent        | 14.2            | 2.4                 | .               | .               | .     | 16.7  |
| Total          | 104             | 49                  | 7               | 1               | .     | 161   |
|                | 64.6            | 30.4                | 4.3             | 0.6             | .     | 100.0 |

Table 69. Value Placed on a Course in Advanced Printing Techniques Related to Sales.

| Sales<br>(In Thousands<br>of Dollars) | Value of Course |                     |                 |                 |       | Total |
|---------------------------------------|-----------------|---------------------|-----------------|-----------------|-------|-------|
|                                       | A<br>Must       | Highly<br>Recommend | Nice<br>To Have | Little<br>Value | Other |       |
| <u>\$70 - \$100</u>                   |                 |                     |                 |                 |       |       |
| Frequency                             | 41              | 6                   | 4               | 0               | 0     | 51    |
| Percent                               | 80.4            | 11.8                | 7.8             | .               | .     |       |
| <u>\$101 - \$200</u>                  |                 |                     |                 |                 |       |       |
| Frequency                             | 37              | 16                  | 3               | 0               | 2     | 56    |
| Percent                               | 66.1            | 28.6                | 5.3             | .               | .     |       |
| <u>\$201 - \$300</u>                  |                 |                     |                 |                 |       |       |
| Frequency                             | 9               | 0                   | 0               | 1               | 2     | 10    |
| Percent                               | 90.0            | .                   | .               | 10.0            | .     |       |
| <u>\$301 - \$400</u>                  |                 |                     |                 |                 |       |       |
| Frequency                             | 2               | 0                   | 0               | 0               | 1     | 2     |
| Percent                               | 100.0           | .                   | .               | .               | .     |       |
| <u>\$401 - More</u>                   |                 |                     |                 |                 |       |       |
| Frequency                             | 13              | 27                  | 0               | 0               | 0     | 40    |
| Percent                               | 32.5            | 67.5                | .               | .               | .     |       |
| <u>Other</u>                          |                 |                     |                 |                 |       |       |
| Frequency                             | 2               | 0                   | 0               | 0               | 0     | 2     |
| Percent                               | 100.0           | .                   | .               | .               | .     |       |
| Total                                 | 104             | 49                  | 7               | 1               | .     | 161   |
|                                       |                 |                     |                 |                 | .     | 100.0 |

Table 70. Value Placed on a Course in Graphic-Arts Production  
by Industrial Respondents.

| Position       | Value of Course |                     |                 |                 |       | Total  |
|----------------|-----------------|---------------------|-----------------|-----------------|-------|--------|
|                | A<br>Must       | Highly<br>Recommend | Nice<br>To Have | Little<br>Value | Other |        |
| <u>Owner</u>   |                 |                     |                 |                 |       |        |
| Frequency      | 66              | 35                  | 5               | 2               | 5     | 108    |
| Percent        | 40.9            | 21.7                | 3.1             | 1.2             | .     | 67.0   |
| <u>Manager</u> |                 |                     |                 |                 |       |        |
| Frequency      | 17              | 9                   | 0               | 0               | 0     | 26     |
| Percent        | 10.5            | 5.5                 | .               | .               | .     | 16.1   |
| <u>Other</u>   |                 |                     |                 |                 |       |        |
| Frequency      | 24              | 3                   | 0               | 0               | 0     | 27     |
| Percent        | 14.9            | 1.8                 | .               | .               | .     | 16.7   |
| Total          | 107             | 47                  | 5               | 2               | .     | 161    |
|                | 66.4            | 29.2                | 3.1             | 1.2             | .     | 100.00 |

Table 71. Value Placed on a Course in Graphic-Arts Production Related to Sales.

| Sales<br>(In Thousands<br>of Dollars) | Value of Course |                     |                 |                 |       | Total |
|---------------------------------------|-----------------|---------------------|-----------------|-----------------|-------|-------|
|                                       | A<br>Must       | Highly<br>Recommend | Nice<br>To Have | Little<br>Value | Other |       |
| <u>\$70 - \$100</u>                   |                 |                     |                 |                 |       |       |
| Frequency                             | 39              | 9                   | 2               | 1               | 0     | 51    |
| Percent                               | 76.5            | 17.6                | 3.9             | 2.0             | .     |       |
| <u>\$101 - \$200</u>                  |                 |                     |                 |                 |       |       |
| Frequency                             | 36              | 17                  | 3               | 0               | 2     | 56    |
| Percent                               | 64.3            | 30.4                | 5.4             | .               | .     |       |
| <u>\$201 - \$300</u>                  |                 |                     |                 |                 |       |       |
| Frequency                             | 9               | 0                   | 0               | 1               | 2     | 10    |
| Percent                               | 90.0            | .                   | .               | 10.0            | .     |       |
| <u>\$301 - \$400</u>                  |                 |                     |                 |                 |       |       |
| Frequency                             | 2               | 0                   | 0               | 0               | 1     | 2     |
| Percent                               | 100.0           | .                   | .               | .               | .     |       |
| <u>\$401 - More</u>                   |                 |                     |                 |                 |       |       |
| Frequency                             | 19              | 21                  | 0               | 0               | 0     | 40    |
| Percent                               | 47.5            | 52.5                | .               | .               | .     |       |
| <u>Other</u>                          |                 |                     |                 |                 |       |       |
| Frequency                             | 2               | 0                   | 0               | 0               | 0     | 2     |
| Percent                               | 100.0           | .                   | .               | .               | .     |       |
| Total                                 | 107             | 47                  | 5               | 2               | .     | 161   |
|                                       |                 |                     |                 |                 | .     | 100.0 |

should be Highly Recommended, while 3.1 percent (5) thought it would be Nice to Have for the curriculum and only 2 (1.2 percent) felt the course would add Little Value to the program.

Tables 72 and 73 depict the value placed on a course in Special Problems In Graphic-Arts by the Respondents. Ninety-five (59.0 percent) of the respondents felt this course would be A Must for the program, while 47 (29.2 percent) felt that it would be Highly Recommended. Fifteen (9.3 percent) felt that it would be Nice to Have in the program and 4 (2.5 percent) felt a program of this type would have Little Value in the program.

Tables 74 and 75 indicate the value placed on a course in Related Research in Graphic-Arts by the Respondents. Sixty-five (40.4 percent) expressed this course as A Must for the program, while 25.5 percent (41) Highly Recommended it for the program. Forty-eight (29.8 percent) of the Respondents felt that a course of this nature would be Nice to Have and 7 (4.4 percent) said that it would be of Little Value to the curriculum.

The values placed on a course in Technical Internship are presented in Tables 76 and 77. Sixty-two (38.5 percent) felt the course was A Must, 42 (26.1 percent) felt that the course should be Highly Recommended. Forty-five (28.0 percent) felt that it would be Nice to Have and 12 (7.5 percent) placed Little Value on a course of this type in the program.

Tables 78 and 79 summarize the values of all 27 courses rank ordered by the industrial respondents, position and annual

Table 72. Value Placed on a Course in Special Problems in Graphic-Arts by Industrial Respondents.

| Position       | Value of Course |                     |                 |                 |       | Total |
|----------------|-----------------|---------------------|-----------------|-----------------|-------|-------|
|                | A<br>Must       | Highly<br>Recommend | Nice<br>To Have | Little<br>Value | Other |       |
| <u>Owner</u>   |                 |                     |                 |                 |       |       |
| Frequency      | 52              | 44                  | 8               | 4               | 5     | 108   |
| Percent        | 32.3            | 27.3                | 4.9             | 2.4             | .     | 67.0  |
| <u>Manager</u> |                 |                     |                 |                 |       |       |
| Frequency      | 19              | 3                   | 4               | 0               | 0     | 26    |
| Percent        | 11.8            | 1.8                 | 2.4             | .               | .     | 16.1  |
| <u>Other</u>   |                 |                     |                 |                 |       |       |
| Frequency      | 24              | 0                   | 3               | 0               | 0     | 27    |
| Percent        | 14.9            | .                   | 1.8             | .               | .     | 16.7  |
| Total          | 95              | 47                  | 15              | 4               | .     | 161   |
|                | 59.0            | 29.1                | 9.3             | 2.4             | .     | 100.0 |

Table 73. Value Placed on a Course in Special Problems in Graphic-Arts Related to Sales.

| Sales<br>(In Thousands<br>of Dollars) | Value of Course |                     |                 |                 |       | Total |
|---------------------------------------|-----------------|---------------------|-----------------|-----------------|-------|-------|
|                                       | A<br>Must       | Highly<br>Recommend | Nice<br>To Have | Little<br>Value | Other |       |
| <u>\$70 - \$100</u>                   |                 |                     |                 |                 |       |       |
| Frequency                             | 28              | 15                  | 5               | 3               | 0     | 51    |
| Percent                               | 54.9            | 29.4                | 9.8             | 5.9             | .     |       |
| <u>\$101 - \$200</u>                  |                 |                     |                 |                 |       |       |
| Frequency                             | 33              | 20                  | 3               | 0               | 2     | 56    |
| Percent                               | 58.9            | 35.7                | 5.4             | .               | .     |       |
| <u>\$201 - \$300</u>                  |                 |                     |                 |                 |       |       |
| Frequency                             | 9               | 0                   | 0               | 1               | 2     | 10    |
| Percent                               | 90.0            | .                   | .               | 10.0            | .     |       |
| <u>\$301 - \$400</u>                  |                 |                     |                 |                 |       |       |
| Frequency                             | 1               | 1                   | 0               | 0               | 1     | 2     |
| Percent                               | 50.0            | 50.0                | .               | .               | .     |       |
| <u>\$401 - More</u>                   |                 |                     |                 |                 |       |       |
| Frequency                             | 22              | 11                  | 7               | 0               | 0     | 40    |
| Percent                               | 55.0            | 27.5                | 17.5            | .               | .     |       |
| <u>Other</u>                          |                 |                     |                 |                 |       |       |
| Frequency                             | 2               | 0                   | 0               | 0               | 0     | 2     |
| Percent                               | 100.0           | .                   | .               | .               | .     |       |
| Total                                 | 95              | 47                  | 15              | 4               | .     | 161   |
|                                       |                 |                     |                 |                 | .     | 100.0 |

Table 74. Value Placed on a Course in Related Research in Graphic-Arts by Industrial Respondents.

| Position       | Value of Course |                     |                 |                 |       | Total |
|----------------|-----------------|---------------------|-----------------|-----------------|-------|-------|
|                | A<br>Must       | Highly<br>Recommend | Nice<br>To Have | Little<br>Value | Other |       |
| <u>Owner</u>   |                 |                     |                 |                 |       |       |
| Frequency      | 33              | 29                  | 39              | 7               | 5     | 108   |
| Percent        | 20.5            | 18.0                | 24.2            | 4.3             | .     | 67.0  |
| <u>Manager</u> |                 |                     |                 |                 |       |       |
| Frequency      | 8               | 12                  | 6               | 0               | 0     | 26    |
| Percent        | 4.9             | 7.4                 | 3.7             | .               | .     | 16.1  |
| <u>Other</u>   |                 |                     |                 |                 |       |       |
| Frequency      | 24              | 0                   | 3               | 0               | 0     | 27    |
| Percent        | 14.9            | .                   | 1.8             | .               | .     | 16.7  |
| Total          | 65              | 41                  | 48              | 7               | .     | 161   |
|                | 40.3            | 25.4                | 29.8            | 4.3             | .     | 100.0 |

Table 75. Value Placed on a Course in Related Research in  
Graphic-Arts Related to Sales.

| Sales<br>(In Thousands<br>of Dollars) | Value of Course |                     |                 |                 |       | Total |
|---------------------------------------|-----------------|---------------------|-----------------|-----------------|-------|-------|
|                                       | A<br>Must       | Highly<br>Recommend | Nice<br>To Have | Little<br>Value | Other |       |
| <u>\$70 - \$100</u>                   |                 |                     |                 |                 |       |       |
| Frequency                             | 13              | 15                  | 21              | 2               | 0     | 51    |
| Percent                               | 25.5            | 29.4                | 41.1            | 3.9             | .     |       |
| <u>\$101 - \$200</u>                  |                 |                     |                 |                 |       |       |
| Frequency                             | 31              | 11                  | 10              | 4               | 2     | 56    |
| Percent                               | 55.4            | 19.6                | 17.9            | 7.1             | .     |       |
| <u>\$201 - \$300</u>                  |                 |                     |                 |                 |       |       |
| Frequency                             | 7               | 0                   | 2               | 1               | 2     | 10    |
| Percent                               | 70.0            | .                   | 20.0            | 10.0            | .     |       |
| <u>\$301 - \$400</u>                  |                 |                     |                 |                 |       |       |
| Frequency                             | 1               | 1                   | 0               | 0               | 1     | 2     |
| Percent                               | 50.0            | 50.0                | .               | .               | .     |       |
| <u>\$401 - More</u>                   |                 |                     |                 |                 |       |       |
| Frequency                             | 13              | 14                  | 13              | 0               | 0     | 40    |
| Percent                               | 32.5            | 35.0                | 32.5            | .               | .     |       |
| <u>Other</u>                          |                 |                     |                 |                 |       |       |
| Frequency                             | 0               | 0                   | 2               | 0               | 0     | 2     |
| Percent                               | .               | .                   | 100.0           | .               | .     |       |
| Total                                 | 65              | 41                  | 48              | 7               | .     | 161   |
|                                       |                 |                     |                 |                 | .     | 100.0 |

Table 76. Value Placed on a Course in Technical Internship  
by Industrial Respondents.

| Position       | Value of Course |                     |                 |                 |       | Total |
|----------------|-----------------|---------------------|-----------------|-----------------|-------|-------|
|                | A<br>Must       | Highly<br>Recommend | Nice<br>To Have | Little<br>Value | Other |       |
| <u>Owner</u>   |                 |                     |                 |                 |       |       |
| Frequency      | 37              | 30                  | 29              | 12              | 5     | 108   |
| Percent        | 22.9            | 18.6                | 18.0            | 7.4             | .     | 67.0  |
| <u>Manager</u> |                 |                     |                 |                 |       |       |
| Frequency      | 5               | 8                   | 13              | 0               | 0     | 26    |
| Percent        | 3.1             | 4.9                 | 8.0             | .               | .     | 16.1  |
| <u>Other</u>   |                 |                     |                 |                 |       |       |
| Frequency      | 20              | 4                   | 3               | 0               | 0     | 27    |
| Percent        | 12.4            | 2.4                 | 1.8             | .               | .     | 16.7  |
| Total          | 62              | 42                  | 45              | 12              | .     | 161   |
|                | 38.5            | 26.0                | 27.9            | 7.4             | .     | 100.0 |

Table 77. Value Placed on a Course in Technical Internship  
Related to Sales.

| Sales<br>(In Thousands<br>of Dollars) | Value of Course |                     |                 |                 |       | Total |
|---------------------------------------|-----------------|---------------------|-----------------|-----------------|-------|-------|
|                                       | A<br>Must       | Highly<br>Recommend | Nice<br>To Have | Little<br>Value | Other |       |
| <u>\$70 - \$100</u>                   |                 |                     |                 |                 |       |       |
| Frequency                             | 20              | 11                  | 17              | 3               | 0     | 51    |
| Percent                               | 39.2            | 21.6                | 33.3            | 5.9             | .     |       |
| <u>\$101 - \$200</u>                  |                 |                     |                 |                 |       |       |
| Frequency                             | 26              | 13                  | 9               | 8               | 2     | 56    |
| Percent                               | 46.4            | 23.2                | 16.1            | 14.3            | .     |       |
| <u>\$201 - \$300</u>                  |                 |                     |                 |                 |       |       |
| Frequency                             | 9               | 0                   | 0               | 1               | 2     | 10    |
| Percent                               | 90.0            | .                   | .               | 10.0            | .     |       |
| <u>\$301 - \$400</u>                  |                 |                     |                 |                 |       |       |
| Frequency                             | 1               | 1                   | 0               | 0               | 1     | 2     |
| Percent                               | 50.0            | 50.0                | .               | .               | .     |       |
| <u>\$401 - More</u>                   |                 |                     |                 |                 |       |       |
| Frequency                             | 6               | 15                  | 19              | 0               | 0     | 40    |
| Percent                               | 15.0            | 37.5                | 47.5            | .               | .     |       |
| <u>Other</u>                          |                 |                     |                 |                 |       |       |
| Frequency                             | 0               | 2                   | 0               | 0               | 0     | 2     |
| Percent                               | .               | 100.0               | .               | .               | .     |       |
| Total                                 | 62              | 42                  | 45              | 12              | .     | 161   |
|                                       |                 |                     |                 |                 | .     | 100.0 |

Table 78. Summary of Values Placed on Courses Rank Ordered by Industrial Respondents.

| Position                             | Value of Course in Percent |                     |       |
|--------------------------------------|----------------------------|---------------------|-------|
|                                      | High Value                 |                     | Total |
|                                      | A<br>Must                  | Highly<br>Recommend |       |
| Introduction to Printing Processes   | 82.6                       | 14.9                | 97.5  |
| Graphic-Arts Production              | 66.4                       | 29.2                | 95.6  |
| Advanced Printing Techniques         | 64.6                       | 30.4                | 95.0  |
| Basic Layout & Design                | 67.0                       | 27.3                | 94.3  |
| Introduction to Graphic-Arts         | 59.0                       | 31.6                | 90.6  |
| Special Problems in Graphic-Arts     | 59.0                       | 29.1                | 88.1  |
| Introductory Typesetting             | 57.7                       | 29.8                | 87.5  |
| Darkroom Techniques                  | 45.6                       | 33.9                | 79.5  |
| Mathematical Computation             | 23.4                       | 56.1                | 79.5  |
| Advanced Typesetting                 | 46.5                       | 31.0                | 77.0  |
| Human Relations                      | 16.4                       | 58.5                | 74.9  |
| Oral Communication                   | 29.2                       | 43.2                | 72.4  |
| Basic Writing Skills                 | 27.3                       | 40.9                | 68.2  |
| Related Research in Graphic-Arts     | 40.3                       | 25.4                | 65.7  |
| Technical Internship in Graphic-Arts | 38.5                       | 26.0                | 64.5  |
| Patterns of Composition              | 22.0                       | 41.5                | 63.5  |
| Industrial Safety                    | 13.5                       | 45.4                | 58.9  |
| Introduction to Technical Drawing    | 6.7                        | 47.5                | 54.2  |
| Technical Drawing I                  | 9.3                        | 43.4                | 52.7  |
| Still Photography I                  | 25.7                       | 25.1                | 50.8  |
| Introduction to Microcomputers       | 8.0                        | 40.1                | 48.1  |
| Facility Organization & Management   | 6.2                        | 40.3                | 46.5  |
| Small Business Management            | 14.2                       | 31.4                | 45.6  |
| Labor Relations                      | 6.8                        | 29.8                | 36.6  |
| Industrial First Aid                 | 8.6                        | 25.3                | 33.9  |
| Introduction to Chemistry            | .                          | 9.3                 | 9.3   |
| Introduction to Physics              | .                          | 3.7                 | 3.7   |

Table 79. Summary of Values Placed on Courses Rank Ordered by Annual Sales.

| Annual Sales                         | Value of Course in Percent |                     |       |
|--------------------------------------|----------------------------|---------------------|-------|
|                                      | High Value                 |                     | Total |
|                                      | A<br>Must                  | Highly<br>Recommend |       |
| Introduction to Printing Processes   | 85.4                       | 11.4                | 96.8  |
| Graphic-Arts Production              | 75.6                       | 20.1                | 95.7  |
| Advanced Printing Techniques         | 73.8                       | 21.6                | 95.4  |
| Basic Layout & Design                | 75.8                       | 19.2                | 95.0  |
| Special Problems in Graphic-Arts     | 61.7                       | 28.5                | 90.2  |
| Mathematical Computation             | 35.8                       | 48.5                | 84.3  |
| Darkroom Techniques                  | 50.3                       | 31.3                | 81.6  |
| Introduction to Graphic-Arts         | 58.8                       | 22.7                | 81.5  |
| Human Relations                      | 34.5                       | 46.6                | 81.1  |
| Introduction to Typesetting          | 58.9                       | 21.5                | 80.4  |
| Basic Writing Skills                 | 40.1                       | 37.2                | 77.3  |
| Technical Internship in Graphic-Arts | 48.1                       | 26.5                | 74.6  |
| Related Research in Graphic-Arts     | 46.7                       | 26.8                | 73.5  |
| Advanced Typesetting                 | 49.5                       | 23.0                | 72.5  |
| Oral Communication                   | 41.7                       | 29.6                | 71.3  |
| Facility Organization & Management   | 4.0                        | 53.8                | 57.8  |
| Technical Drawing I                  | 5.5                        | 48.0                | 53.5  |
| Introduction to Technical Drawing    | 3.9                        | 49.2                | 53.1  |
| Still Photography I                  | 16.8                       | 32.8                | 49.6  |
| Small Business Management            | 9.6                        | 38.2                | 47.8  |
| Industrial Safety                    | 8.3                        | 39.5                | 47.8  |
| Introduction to Microcomputers       | 5.3                        | 41.8                | 47.1  |
| Patterns of Composition              | 13.6                       | 30.7                | 44.3  |
| Introduction to Chemistry            | 7.4                        | 43.1                | 41.5  |
| Labor Relations                      | 5.6                        | 28.7                | 34.3  |
| Industrial First Aid                 | 5.5                        | 21.3                | 26.8  |
| Introduction to Physics              | 0.4                        | 10.5                | 10.9  |

gross sales. For analysis purposes only those responses which reflected the categories A Must and Highly Recommend were considered High Values for ranking and recommendation. The courses were rank ordered and divided into three increments to assign courses to a "high," "middle," and "low" standing in the ranking. It should be noted that all 27 courses showed very little variation within their ranked groups when compared by position and gross sales. Further, it was found that there was very little variation among groups ranked by gross sales of less than 100 thousand dollars and those of more than 400 thousand dollars. The only indicated differences were that the greater the annual gross sales, the more specialization appeared within the trade areas.

## CHAPTER V

### SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS

In this chapter the study is summarized, and conclusions were drawn from the analysis of data. Recommendations concerning the proposed program and the curriculum also are made in the last section of this chapter.

#### I. SUMMARY

The purposes of the study were (a) to determine by a survey of the Knoxville Labor Market Area the present and future needs of a post secondary graphic-arts program, (b) to determine the interest in a post secondary program by means of a follow-up study of the graduates within the Knoxville Labor Market Area, and (c) to determine a feasible curriculum, applicable to local industry and the State Technical Institute at Knoxville.

Two questionnaires were used to collect the data (see appendices)--one for the printing industry and one for the former students of the secondary graphic-arts programs in the Knoxville-Knox County area. The population consisted of 225 businesses in the Knoxville Labor Market Area directly involved in printing and/or graphic-arts industry, and 149 former graphic-arts students who had completed at least two years in the vocational graphic-arts programs within the Knoxville-Knox County area.

The summary of the findings drawn from the data analysis and presentation of Chapters III and IV is presented in the following order: (1) printing industry characteristics, (2) former student characteristics, and (3) printing industry perceptions of the proposed program.

Answers to the following questions were also sought:

1. Does the printing industry in the Knoxville Labor Market Area recognize the need for continued training in a post secondary graphic-arts program? It was found that 86.7 percent of the respondents from industry felt that a post secondary program of this nature was needed in this area. In addition, 49.3 percent indicated they would utilize the program for new employee training, while 45.1 percent would use it for retraining. The majority of the respondents, 57.8 percent, stated the program would be used to update present employee skills.

2. Do the graduates of secondary education vocational graphic-arts programs recognize a need for continued training in a post secondary graphic-arts program? All of the secondary vocational education graphic-arts graduates responding indicated that a program of this type was needed in the Knoxville area. Sixty-seven percent of them stated that some additional training would be needed, beyond their current level, in order to gain employment in the graphic-arts or a related field. Of the graduates responding 62.8 percent stated that they would attend such a program if offered at the State Technical Institute, and 83.0 percent felt that an

Associate of Arts Degree would enhance their employment opportunities.

3. Can the printing industry representatives of the Knoxville Labor Market Area identify curriculum areas needed for a post secondary graphic-arts program? It is apparent from the responses recorded in Tables 24 through 79 that the local graphic-arts industry can tailor a program curriculum to fit localized needs. Of the 27 courses presented in these tables, only two, Introductory Physics and Introductory Chemistry, were perceived as not being A Must for the program. Most of the remaining courses were given favorable consideration.

4. Does the size of the industry and its annual gross sales affect the stated need for the curriculum of a post secondary graphic-arts program in the Knoxville Labor Market Area? As depicted in Tables 78 and 79, when all 27 courses were rank ordered and compared "Position" to "Annual Gross Sales," there was very little variation in course ranking. Additionally, when the same courses were compared by annual gross sales, the variation between the top 20 percent of the industry with sales of more than 400 thousand dollars and the bottom 20 percent, companies with less than 100 thousand dollars, there was very little variation in the rank ordering, which indicates that the size of the industry, whether large or small share common interests in training. However, it should be pointed out that the larger the industry companies offered more specialization within the trade, whereas, the smaller companies employees tended to be involved in all processes of the trade.

### Printing Industry Characteristics

1. Of the 225 businesses surveyed, 166 responded. From those 166, 68.7 percent were Job Shops, 4.8 percent were In-Plant Shops, 4.2 percent were Specialty Shops, and 22.3 percent were classified as "Other," not fitting into the above categories.

2. Three groups, Owners, Managers, and Others delegated the duty, responded to the questionnaire. Owners made up approximately 68 percent of the respondents. Managers made up approximately 16 percent of the respondents, and Others made up approximately 16 percent of the remaining respondents.

3. Approximately 76 percent of the businesses pay their entry level employees between \$3.35 and \$4.00 per hour.

4. Over 40 businesses in the area reported annual gross sales of more than 400 thousand dollars. This combined with the other respondents gives an estimated gross sales figure of more than 20 million dollars.

5. Approximately 74 percent of the respondents felt the employment outlook for graduates of the proposed technical course was good.

6. The majority of the respondents felt the technical school graduate would enter the job market above the average entry level salary.

7. Over one half of the respondents stated they would use the proposed program for updating of skills for their employees.

8. Approximately 87 percent of the industry respondents felt that there should be a post secondary graphic-arts program established at the State Technical Institute at Knoxville.

#### Former Student Characteristics

1. Of the 149 former students surveyed, 94 (63 percent) responded to the questionnaire. Of those 94 respondents, all felt there should be a post secondary graphic-arts program established at the State Technical Institute.

2. Over 37 percent of the graduates were employed full time, 12.8 percent were employed part time, over 28 percent were employed part time and going to school, and only 9.6 percent reported being unemployed at this time.

3. A majority of the former students felt some additional training would be needed on their part for successful employment in the graphic-arts or related fields.

4. Of the 94 respondents, only 14 were currently using skills gained through the secondary graphic-arts program.

5. The majority of the former students, approximately 63 percent, indicated that they were interested in attending the proposed course at the State Technical Institute.

6. Approximately 83 percent of the graduates felt that an Associate of Arts Degree in Graphic-Arts would enhance their employment opportunities.

7. Approximately 73 percent of the former students felt the starting salary for technical school graduates would be above average.

### Printing Industry Perceptions

1. The majority of the graphic-arts associated businesses within the Knoxville Labor Market Area perceived the ever changing state of the art within the industry.

2. As a group the industry leaders recognized the need for training, retraining, and updating of skills in order to remain effective in this ever growing market.

3. The printing businesses agreed with the fact that in order to get better trained technicians, support must be given to localized programs in post secondary instruction.

4. As a group the Owners, Managers and Others realized that in order to attract well trained employees, they must be willing to pay a better than average starting salary for technical school graduates.

5. Generally, the industry representatives perceived their future impact upon the community and the logistic support they must give and receive in order to grow with the Art and community.

6. The majority of the groups surveyed were able to idealize a curriculum for the proposed program.

### II. CONCLUSIONS

The major conclusions drawn from the reported data, regarding the proposed Graphic-Arts Program for the State Technical Institute at Knoxville, are as follows:

1. As a group, members of the local printing industry recognized the need for a post secondary graphic-arts training facility for this geographical area. Most respondents felt that graduates of the proposed program would have a better opportunity for employment and at a higher rate of pay than other non-trained, entry level personnel. This is further confirmed by the fact that the Printing and/or Graphic-Arts is a multi-million dollar progressive business in this area, and these employers are willing to utilize local facilities for training, retraining and updating of skills, rather than looking elsewhere for skilled employees.

2. As a group, former students recognized the need for a post secondary training program and were willing to attend such a program if it would mean a better and higher paying job upon completion.

3. The industry as a group does recognize the curriculum needs of the local market and is spread throughout the total economic assessment. Although the larger businesses tend to offer more specialization in craft areas, the overall perception is focused on the basics of the industry and the world around it.

### III. GENERAL RECOMMENDATIONS

The following recommendations were based upon the review of literature, finding of the study, and the conclusions drawn from this investigation. It is felt that these appeared to be the most pertinent for the Graphic-Arts Program at the State Technical Institute at Knoxville.

1. It is recommended that a committee be appointed by the State Technical Institute to present the findings of this study to the Tennessee Higher Education Commission for adoption.

2. It is recommended that additional research of the Knoxville Labor Market Area be done to determine the actual types of equipment being utilized in the field, so that courses and lessons may be tailored around the working environment.

3. It is recommended that an advisory committee be formed in the early stages of program implementation so that industry guidance will articulate throughout the industry's entire development.

4. It is recommended that a public relations program be developed to promote the Graphic-Arts Curriculum at the State Technical Institute.

5. It is recommended that an additional study be done to determine the feasibility of a commercial Arts Program being included in the Graphic-Arts Curriculum, possibly leading to an Associate of Arts Degree with emphasis in Commercial Art.

#### IV. COURSE RECOMMENDATIONS

It is recommended that the following curriculum be implemented, in whole or in part by the State Technical Institute, and that the program should consist of a minimum of six quarters and not less than 85 quarter hours:

Basic Writing Skills, a course designed to improve the individual student's basic writing skills, particularly in the

areas of sentence structure and logical development of ideas.

Grammar is studied as necessary to promote clarity and logic.

Mathematical Computation, a study of the basic topics of arithmetic with emphasis on their practical uses.

Introductory Technical Drawing, a course designed to introduce proper use of drafting equipment, lettering, sketching and line quality, surface identification and orthographic projection.

Human Relations, an experimental study of human interaction in the business and industrial complex. Emphasis being placed on the necessity of cooperative environments to satisfy individual needs and to increase productivity.

Oral Communication, a course that affords the student an opportunity to develop speaking and listening skills.

Technical Drawing 1, an introduction to lettering, sketching, instrument drawing, orthographic projection slanted toward the technology of Graphic-Arts.

Introduction to Labor Relations, a course which gives an overview of all aspects of labor. Covers the dimensions of our labor force, the laws and regulations governing its improvement and protection, and labor management.

Industrial Safety, a course which covers the area of job related safety, OSHA compliance, industrial safety philosophies, and factors placed on the best modern methods for a good safety program.

An Elective to be selected by the student and approved by the Department Head.

Patterns of Composition, a course focusing on the basic patterns of writing of use to the technician, with emphasis upon accuracy, clarity, and conciseness.

Small Business Management, a course in the operation of small business concerns, including a partial knowledge of accepted accounting procedures, overbilling, credits and collection, costs, payroll and tax procedures and information about standard business and office machines.

Still Photography, a course which covers the study of the camera, film, lighting, composition, black and white film processing, contact printing and enlarging.

An Elective to be selected by the student and approved by the Department Head.

Photographic Darkroom Technique, a course that covers the study of developers for film and paper, developing techniques and how they relate to contrasts and grain.

Introduction to Graphic-Arts, a course that deals with the history and development of the various graphic-arts.

Basic Layout and Design, a course that covers the fundamentals of thumbnail sketching, working copy and camera ready materials for reproduction.

Introduction to Typesetting, a course that explores the origins and history of typesetting. Topics covered should include wood block printing, moveable type, hot metal type, and photo-typesetting.

An Elective to be selected by the student and approved by the Department Head.

Graphic-Arts Photography, a course that covers the various techniques of screening for line and half tone exposures. Also covered should be four color separation and fitting techniques. (Prerequisite, Still Photography and Darkroom Technique).

Advanced Typesetting, a course that focuses on production skills, speed development and accuracy in typesetting. (Introduction to Typesetting should be a prerequisite).

Printing Processes I, a course that introduces the basic fundamentals of offset, gravure, flexography, letterpress and xerography to the student.

First Aid for Industry, a course that is designed to provide instruction in first aid practices for industry. Should also satisfy OSHA and TOSHA requirements.

Printing Industry Production, a course that allows the student to become involved in the hands-on projects generated by other than classroom sources.

An Elective to be selected by the student and approved by the Department Head.

Printing Processes II, a course that involves the student further in the exploration of the various printing processes of the Prerequisite course Printing Processes I, and allows the student to enter a field of specialization.

Printing Industry Production II, which is a continuation of the initial course.

Facility Organization and Management, a course which introduces the student to plant operation, layout, equipment placement and environment to promote a feasible and cost effective production operation.

Graphic-Arts Elective, which may consist of Special Problems Related to the Printing Industry, Related Research in Graphic-Arts, or a Technical Internship. All of which must have the permission of the Department Head prior to the sixth quarter. Courses taken as special problems or related research must be submitted as a written proposal for approval prior to the commencement of the project. It is suggested that the Graphic-Arts Electives may be repeated for up to 9 hours of credit.

## BIBLIOGRAPHY

## BIBLIOGRAPHY

- Adams, J. M. Research Strategies: A Design for Conducting a Literature Search in the Graphic Arts. Visual Communications Journal, Pittsburgh, PA, 1980, p. 24.
- Alessandrini, C. A. Why Internal Controls Are So Crucial. Printing Impressions, Volume 24, No. 1, June 1981, p. 30.
- Allen, T. R., Jr. Business Views Education to Meet the Needs of Tomorrow. Vital Speeches, Volume 39, December 15, 1972, pp. 209-12.
- Annis, W. H. et al. A Pilot Study to Determine the Need for Curriculum Modification in Vocational Technical Education in New Hampshire. Concord: New Hampshire Research Coordinating Unit for Vocational Education, 1968.
- Bailey, F. A. The In-Plant Printer. The New Jersey State Department of Education, New Brunswick, New Jersey, February, 1977, p. 123.
- Barlow, M. L. Epilogue, Philosophy for Quality Vocational Education Programs. Washington, D.C.: The American Vocational Association, Inc., 1974.
- Bergland, E. G. Printing Markets Survey: Mapping a Survival Plan. American Printer and Lithographer, Volume 188, No. 2, December, 1981, pp. 40-47.
- Bierly, F. L. Assessment of Data Processing Employees and Employers Relating to an Adult Vocational Education Program in Information Processing at Bloomsberg State College. An unpublished Doctoral Dissertation, Pennsylvania State University, University Park, PA, 1979, pp. 118.
- Bowling, R. L. Development of a Follow-up and Program Evaluation Involving a Comparison of the One and Two Year Graphic Arts Programs of the Knox County School System. An unpublished Master's Thesis, The University of Tennessee, Knoxville, TN, 1980, pp. 86.
- Broekhuizen, R. J. Graphic Communication. McKnight Publishing Co., Bloomington, IL, 2nd Edition, 1979.
- Bruno, M. H. Pocket Pal. International Paper Co., New York, NY, 12th Edition, 1979, p. 204.

- Bruno, M. H. Trends in the Printing and Information Industry. American Printer and Lithographer, Volume 187, No. 3, June 1981, p. 45.
- Burkett, L. A. The Advisory Committee and Vocational Education. Washington, D. C.: American Vocational Association, 1969, p. 9.
- Burt, S. M. Industry and Vocational-Technical Educations. New York: McGraw-Hill Book Co., 1967.
- Canning, R. G. The Challenge of Increased Productivity. Computer-world, Volume 5, No. 35, September 1981, p. 5.
- Carlson, E. Education and Industry: Troubled Partnership. Saturday Review, August 15, 1970, pp. 45-47, 58-60.
- Cary, W. F. Useful Education for Tomorrow. A speech to Southern California Industry-Education Council. Los Angeles, CA: United States Chamber of Commerce, 1964.
- Chapman, B. Color Scanners: A New Generation of Incredible Machines. Graphic Arts Monthly, Volume 53, No. 6, June 1981, p. 31.
- Cochran, L. N., et al. Advisory Committees in Action. Boston: Allyn and Bacon, Inc., 1980.
- Cogoli, J. E. Photo-offset Fundamentals. McKnight Publishing Co., Bloomington, IL, 4th Edition, 1980.
- Communication Satellites in the Printing Industry. Book and Magazine Production, May 1981, p. 69.
- Cook, D. R., et al. A Guide to Educational Research. Allyn and Bacon Co., Boston, MS, 2nd Edition, 1975, p. 198.
- Crawford, H. Reading Printing's Future Through the 80's and 90's. Printing Impressions, Volume 22, No. 4, October 1979, pp. 6-62.
- Crouch, J. P., Dailey, D. W., and Gunter, S. Graphic Arts Industry and Technology in the South Carolina Labor Market Region with Implications for Curriculum Development. U.S. Department of Health, Education and Welfare, Clemson University, Project No. 1-D-027, Washington, D. C., April 1972.

- Crowder, B. N. Perceptions of Selected Employers of the Acceptability and Accessibility of Entry Level Employees Who Graduated from High School Vocational Education Programs in Southern Ohio. University of Cincinnati, Cincinnati, OH, 1980, p. 172.
- Cummings, J. S. Tennessee Employment Outlook: Industries and Occupations Statewide 1974-1985. Department of Employment Security, Nashville, TN, February 1977, p. 44.
- Day, H. A Call for Total Commitment. American Vocational Association Journal, Volume 45, No. 7, October 1970, pp. 20-21.
- Dennis, E. A., et al. Comprehensive Graphic Arts. Bobbs-Merrill Co., Inc., Indianapolis, IN, 7th Edition, 1979.
- Dennis, E. A. Lithographic Technology. Bobbs-Merrill Co., Inc., Indianapolis, IN, 1980.
- Dickenson, R. V. Want Pressroom Magic? It's in People Trained to Apply Black Box Data. Printing Impressions, Volume 23, No. 11, April 1981, p. 8.
- Dooley, B. J. Safe Printing. In-Plant Reproductions, Volume 31, No. 5, May 1981, p. 24.
- Dunbar, J. O. Occupational Education and Training for Tomorrow's World of Work. Number 3 Area Vocational Schools, Columbus: Ohio State University Press, 1972.
- Dune, T. Lasers in Graphics--A State-of-the-Art Report. Printing Impressions, Volume 24, No. 1, June 1981, p. 16K.
- Edwards, T. H. A "Marriage" Whose Impact May Stagger Graphic Arts. Printing Impressions, Volume 24, No. 2, August 1981, p. 8H.
- Eldred, N. R. How Graphic Arts Processes Will Fare in the 80's. Printing Impressions, Volume 24, No. 2, September 1981, p. 34.
- Eldred, N. R. Improving Productivity in the Printing Plant. Printing Impressions, Volume 23, No. 11, April 1981, p. 10.
- Evans, R. N., et al. Education for Employment. Ann Arbor: University of Michigan, 1969.
- Feinberg, M. Periodically You Need to Appraise Your Employee Appraisal System. Printing Impressions, Volume 23, No. 10, March 1981, p. 16.

Forecast 82: A Blueprint for Survival in the 80's. American Printer and Lithographer, Volume 188, No. 3, December 1981, p. 35.

Fuller, R. Computers Impact Prepress. American Printer and Lithographer, Volume 188, No. 3, December 1981, p. 48.

Gallanda, P. Quick Printing Part 1: Previewing an In-Depth Look at a Multi-Billion Dollar Market. Printing Impressions, Volume 23, No. 10, March 1981, pp. 28-30.

Gallanda, P. Quick Printing Part 3: Franchises--Ten Times as Many as a Decade Ago. Printing Impressions, Volume 23, No. 12, May 1981, p. 8.

Gallanda, P. Quick Printing Part 4: Independents--An 80% Share of the Market. Printing Impressions, Volume 24, No. 1, June 1981, p. 22.

Gay, L. R. Competencies for Analysis and Application in Educational Research. Charles E. Merrill Co., Columbus, OH, 1976, p. 350.

Gilford, J. P. et al. Fundamental Statistics in Psychology and Education. McGraw-Hill Co., New York, NY, 6th Edition, 1978.

GNP: What It Means to the Printer. The Printing Manager, May 1981, p. 3.

Godine, D. R. The Small Fine Press as a Business. Fine Print, Volume 7, No. 4, October 1981, p. 118.

Goodstein, D. H. Typesetting Moves from a Master Craft to a Computer Application in Today's World. Graphic Arts Monthly, Volume 53, No. 6, June 1981, p. 36.

Grey, B. E. Electronic Technology Opens Doors for Future of In-Plant. In-Plant Reproductions, Volume 31, No. 6, June 1981, p. 22.

Griffin, G. Transactional Analysis: A Marketing Psychology. Screen Printing, Volume 71, No. 5, May 1981, p. 92.

Hall, H. R. Business Views Education to Meet the Needs of Tomorrow. Vital Speeches, Vol. 39, December 15, 1972, pp. 209-12.

- Hampen, J. M. Advertising Production Art: Past, Present, Future. Visual Communications Journal, Pittsburgh, PA, 1980, p. 10.
- Hartley, N. K. et al. Design and Implementation of an Assessment Model for Students Entering Vocational Education Programs in the State of Colorado. Graphic Arts, The University of Northern Colorado, Greeley, CO, July 1979, p. 42.
- Hayes, J. L. How to Keep Young Talented Employees. In-Plant Reproductions, Volume 31, No. 5, May 1981, p. 57.
- Hird, K. F. Paste-up for Graphic Arts Production. Prentice-Hall, Inc., Englewood Cliffs, NJ, 1982, p. 403.
- Hoel, P. G. Elementary Statistics. John Wiley & Sons, Inc., New York, NY, 4th Edition, 1976, p. 359.
- Holmes, H. K. The Future of the Print People. Professional Printer, Volume 24, No. 5/6, September/December 1980, p. 2.
- Horne, C. F. Industrial-Education-One Community. Man/Society/Technology, Volume 32, No. 1, September/October, 1972, pp. 68-72.
- Huck, C. Management Is Recognizing the Importance of the Worker in Increasing Productivity. Boxboard Containers, Volume 88, No. 11, June 1981, p. 24.
- Huck, S. W. et al. Reading Statistics and Research. Harper and Row, New York, NY, 1974.
- Kagy, F. D. Graphic Arts. Goodheart-Wilcox Co., Inc., South Holland, IL, 1978.
- Keller, F. J. Principles of Vocational Education. Boston: D. C. Heath and Company, 1948.
- Kesman, C. E. Missouri Industrial and Educational Graphic Arts Survey, Final Report. Central Missouri State University, Warrensburg, MO, September 1976.
- Klasnic, J. Here Are Some Management Techniques Formulated Especially for Small Printers. American Printer and Lithographer, Volume 187, No. 1, April 1981, p. 76.
- Klasnic, J. Inplant Printing Handbook. GAMA Communications, Salem, NH, 1981, p. 398.

- Klasnic, J. Sales Hiring Essentials: How Much to Pay, By What Method and From What Type of Background. American Printer, Volume 188, No. 5, February 1982, p. 66.
- Kodak Graphic Arts Industry Manpower Study: Final Report. Eastman Kodak Company, Rochester, NY, March 1973, p. 307.
- Lamar, C. F. Implications for Meeting the Needs of People. American Vocational Journal, Volume 46, No. 4, April 1971, pp. 31-35.
- Lamparter, W. C. Mid-Year Report: Focus on Current Business Trends. American Printer and Lithographer, Volume 187, No. 4, July 1981, p. 40.
- Lawson, A. S. Machines Need Not Cause Poor Craftsmanship in Typography. Printing Impressions, Volume 24, No. 2, July 1981, p. 32D.
- Ledford, B. J. The Role and Scope of Advisory Committees in the Tennessee Area Vocational Technical Schools. An unpublished dissertation, The University of Tennessee, Knoxville, Tennessee, 1981, pp. 18-35.
- Lee, I., Jr. Industrial Education--One Community. Man/Society/Technology, Volume 32, No. 1, September/October 1972, pp. 73-79.
- Lehtonen, T. and Riihela, E. A Page-Film Scanner for Presetting Systems. Graphic Arts in Finland, Volume 9, No. 2, December 1980, p. 9.
- LeMonnier, E. Will the Microchip Lead to the End of the Printed Word? The Typographer, Volume 7, No. 3, June/July 1981, p. 7.
- Lofquist, W. S. Comparative Trends in U.S. Exports and Imports of Printed Products. Printing and Publishing, Volume 22, No. 2, Spring/Summer 1981, p. 3.
- Mingovits, T. and Lyman, R. Needed Are Bright Craftspeople Working on Automated Tools. American Printer and Lithographer, Volume 187, No. 4, July 1981, p. 60.
- Minnesota, State of. A Summary Report of the Study of the Effect of Area Vocational-Technical Schools in the State of Minnesota. Minneapolis: The University of Minnesota Press, 1968, pp. 10-17.

- Mintz, P. B. A Dictionary of Graphic Arts Terms: A Communication Tool for People Who Buy Type and Printing. Van Nostrand Reinhold Co., New York, NY, 1981, p. 318.
- Mintz, P. B. History of Typography and Printing Part II: Printing with Metal and Stone. New England Printer and Publisher, Volume 44, No. 11, November 1981, p. 42.
- Morrisohn, J. P. Instructional Programming: Development and Validation of Instructional Modules for Graphic Production Programs. A Research and Development Report. Santa Barbara City College, Santa Barbara, CA, March 1978, p. 178.
- Morse, W. Education for Jobs in a Technical Society. United States: ERIC Document 031 587, December 1968.
- McMillian, T. L. Determination of Competencies Required of Future Graphic Arts Personnel for Entry Level Positions in the Mid-South Area: Implications for Curriculum Development in Vocational-Technical Education. An unpublished Master's Thesis, The University of Tennessee, Knoxville, Tennessee, December 1980.
- Newark, Chamber of Commerce. Career Education in Newark. Newark, NJ: Greater Newark Chamber of Commerce, June 1973.
- Nie, N. H. et al. Statistical Package for Social Sciences Manual. McGraw-Hill Book Company, New York, NY, 1975, pp. 4-7.
- Peetz-Larsen, H. Progress and Perspective. American Printer and Lithographer, Volume 188, No. 3, December 1981, p. 49.
- Prepress Productivity Increases 41% after Implementing Employees' Suggestions. Graphic Arts Monthly, Volume 53, No. 12, December 1981, p. 45.
- Printers' Quality Circles Help Hold the Line on Price Increase. Folio, Volume 10, No. 12, December 1981, p. 18.
- Prust, Z. A. Photo-offset Lithography. Goodheart-Wilcox Co., Inc., South Holland, IL, 1977.
- Quality Circle Concept Gains Interest and Support of Both Workers and Management. Graphic Arts Monthly, Volume 54, No. 1, January 1982, p. 123.
- Rayford, E. W. Employment Opportunities, Training Needs and Vocational Education for the Graphic Arts in Missouri. Unpublished Doctoral Dissertation, the University of Missouri, 1967, p. 252.

- Riendeau, A. J. Advisory Committees for Occupational Education. New York: McGraw-Hill, Inc., 1977, p. 2.
- Robertson, S. Salary and Profession Survey of the U.S. TAPPI Members. Tappi, Volume 64, No. 8, August 1981, p. 15.
- Robertson, V. H. Graphic Communication Industry Survey, Final Report. Utah Research Coordinating Unit for Vocational-Technical Education, Salt Lake City, UT, March 1969, p. 4.
- Rochester Institute of Technology. Official Bulletin 1981-1982. Rochester Institute of Technology, Rochester, NY, Volume LXXX, No. 5, August 1981, p. 99.
- Rodriguez, J. J. Demand for Skilled Workers in the Commercial Printing Industry as Perceived by the Commercial Printers, Printing Educators and Printing Trade Suppliers. Pittsburgh State University, Kansas, June 1980, p. 27.
- Rutherford, B. The Printing Industry's Training Crisis--Part 2. The Printing Manager, Graph Expo '81 Issue, p. 11.
- Salerno, L. A. Computers in Graphics Meet the Challenge of Survival in the Economic Squeeze. Graphic Arts Monthly, Volume 53, No. 4, April 1981, p. 124.
- Sales of the U.S. Graphic Arts Industry Pegged at \$75 Billion in 1981. Printing and Publishing, Volume 22, No. 1, Winter 1980/81, p. 3.
- Sautter, A. H. Six "A" of Success--Why Some People Get Better Jobs. Tappi, Volume 64, No. 8, August 1981, p. 39.
- Schell, E. H. \$100 Million Worth of '82 Printing Plans. Printing Impressions, Volume 24, No. 9, February 1982, p. 27.
- Schumann, S. and Schoneberger, E. Microelectronics in Printing Press Engineering. M.A.N. Research, Engineering and Manufacturing, No. 12, March 1981, p. 47.
- Schapiro, C. (ed.). The Lithographers' Manual. Graphic Arts Technical Foundation, Pittsburgh, PA, 1968.
- Simich, J. Computers Transform an Industry. Journal of the American Vocational Association, Arlington, VA, Volume 57, No. 3, April 1982, p. 33.
- Singer, L. M. People: The Forgotten Resource. Computerworld, Volume 15, No. 2, January 12, 1981, p. 25.

- Smelling, H. V., Jr. \$78.5 Billion for Printing/Publishing? \$23.6 Billion for Commercial Printing? Printing Impressions, Volume 24, No. 9, February 1982, p. 25.
- Smith, L. C. Involvement--Key to a Safety Training Program. National Safety News, Volume 125, No. 1, January 1982, p. 48.
- Southwell, W. How In-Plant Communications Managers Communicate. In-Plant Reproductions, Volume 31, No. 4, April 1981, p. 26.
- Spence, W. B. Assessing New Technology for More Profitable Growth. Printing Impressions, Volume 23, No. 10, March 1981, p. 38.
- State Technical Institute. Course Offerings Catalog 1980-1981. State Technical Institute at Knoxville, Knoxville, TN, 1980.
- Steimel, L. C. Development of a System to Assess Curriculum Needs in the Occupational Cluster of Agriculture: Final Report. Kentucky State Department of Education, Frankfort, KY, August 1979, p. 68.
- Stevens, C. Type and Technology. Print Magazine, Volume 35, No. 2, March/April 1981, p. 29.
- Striner, H. E. Training in the Perspective of Technological Change. Washington: Office of Manpower, Automation and Training, 1966.
- Strub, L. People Will Deliver More if You Can Fine Tune Them. In-Plant Printer, Volume 22, No. 2, April 1982, p. 23.
- Struck, T. F. Vocational Education for a Changing World. New York: John Wiley and Sons, Inc., 1947.
- Sundeen, E. Graphic Communication: A Look at the Future. Visual Communications Journal, Pittsburgh, PA, 1980, p. 15.
- Tennessee Higher Education Commission, Policies and Procedures for New Academic Programs. Nashville, TN, August 1978, p. 26.
- Tennessee, State of. Local Advisory Committees. Nashville: State Department of Education, 1976.
- Tennessee, State of. And Your Voice Was Heard, 1974-75 Public Hearings. State Department of Education, 1975.
- Tennessee, State of. Better Schools Program, Tennessee Master Teacher Program. Nashville: State Department of Education, January 1983.

Tennessee, State of. Governor's Task Force Executive Summary.  
Nashville: State Department of Education, June 1982.

Trade and Industrial Education Directory. State of Tennessee  
Department of Education, Division of Vocational-Technical  
Education, Nashville, TN, 1981.

Upton, B. and Upton, J. Photography. Little and Brown Co., Boston,  
MA, 9th Edition, 1976.

U.S. Office of Education. Career Education. OHEW Publication No.  
(OE) 72-39. Washington: U.S. Government Printing Office,  
1971.

Voss, L. E. Graduates Perception of the Values of Science for  
Printers at Ferris State College, Big Rapids Michigan.  
Visual Communications Journal, Pittsburgh, PA, 1980, p. 11.

Walker, J. R. Graphic Arts Fundamentals. Goodheart-Wilcox Co.,  
Inc., South Holland, IL, 1980.

Watkinson, L. J. The Way Ahead--Aspects of New Technology.  
American Printer and Lithographer, Volume 187, No. 5,  
August 1981, p. 109.

Williamson, R. The Composite Labor Scene. The American Printer  
and Lithographer, Volume 188, No. 3, December 1981, p. 50.

Willis, B. C. Changes in American Education in the Next Decade,  
Innovations in Education. Matthew B. Miles (ed.). New  
York, Bureau of Publications, Teachers College, Columbia  
University, 1964.

Winter, E. L. A Partnership Between Business and the Schools.  
Vital Speeches, Volume 40, May 9, 1973, pp. 530-33.

Wisconsin, State of. Man-Education-Work Conferences. United  
States: ERIC Document ED 047-098, February 1970.

## APPENDICES

## APPENDIX A

### REQUEST TO CONDUCT STUDY

Richard L. Bowling  
2122 Island Home Boulevard  
Knoxville, Tennessee 37920  
Telephone 615-573-2483

July 19, 1982

Mr J.L.Goins  
President of The State Technical Institute  
Lonas Hall Campus  
5908 Lyons View Drive  
Knoxville, Tennessee 37919

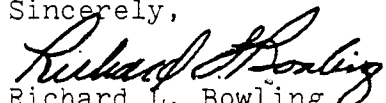
Dear Mr. Goins:

This letter is to request an appointment to further discuss the possibility of a post-secondary Graphic-Arts training program for the State Technical Institute at Knoxville.

It is proposed that data be collected from the local printing industry and from former students of the various secondary graphic-arts programs within the Knoxville Labor Market Area to determine the feasibility of such a program at your facility. Further that curriculum needs be developed should in fact there is a need.

I am looking forward to meeting with you.

Sincerely,

  
Richard L. Bowling  
Graduate Student  
The University of Tennessee

APPENDIX B

LETTER OF AUTHORIZATION TO CONDUCT PROJECT FROM  
THE STATE TECHNICAL INSTITUTE



## State Technical Institute at Knoxville

P.O. BOX 19802 KNOXVILLE, TENNESSEE 37919-1982 615-584-6103

August 4, 1982

Mr. Rick Bowling  
Knox County Printing Office  
City/County Building, Room L-150  
400 Main Avenue  
Knoxville, TN 37902

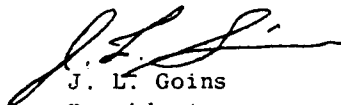
Dear Rick:

This letter is to confirm our recent conversation regarding the need for a study in Graphic Arts for the Knoxville metropolitan area. I appreciate very much your interest in this area and I endorse whole-heartedly your proposed study. As you know, the State Technical Institute at Knoxville has a small graphics arts program in existence at this time and a thorough study would provide us additional data for future planning and operation. As we are in the process of planning a comprehensive new campus for the State Technical Institute at Knoxville, your study should be valuable to us as we begin to look at facilities and programs. If your study is conducted, tabulated, and available by the end of the year 1982, it would be extremely helpful to State Tech-Knoxville.

Again, thanks for your interest in State Tech and for undertaking a study that will benefit you on a personal and professional basis, while, hopefully, benefiting individuals interested in technical training in the East Tennessee area.

Please do not hesitate to contact me or my staff at any time that we can be of assistance to you.

Sincerely,

  
J. L. Goins  
President

JLG:nc

cc: George Wiegers  
Jan Sonner  
David Job

APPENDIX C

LETTER OF CONFIRMATION FROM THE  
STATE TECHNICAL INSTITUTE



## State Technical Institute at Knoxville

3435 DIVISION STREET KNOXVILLE, TENNESSEE 37919 615-637-4262

August 14, 1981

Mr. Rick Boling  
c/o The Department of Vocational Education  
Room 110  
Henson Hall  
University of Tennessee  
Knoxville, TN 37916

Dear Rick:

I apologize for the long delay in writing to you. I think a Graphic Arts program at State Tech would be a valuable asset. Initially I was concerned about the possibility of duplication in courses or interference between Engineering Graphics and Graphic Arts. However, after we met a couple of weeks ago, I no longer feel any potential conflict exists. Rather, these two programs would be mutually supportive.

Good luck with your program development. I hope you find the industrial support you need.

Best Wishes,

David F. Job  
Department Head  
Engineering Graphics Department

DFJ/sl

cc: Dean Sonner

APPENDIX D

LETTERS FROM PANEL OF EXPERTS



August 31, 1981

Mr. Richard L. Bowling  
2122 Island Home Boulevard  
Knoxville, Tennessee 37920

Dear Mr. Bowling:

Your letter to Jim Wilkens concerning your needs assessment survey has been forwarded to me.

To help you in your survey, I am sending you a copy of the Complete Report: Kodak Graphic Arts Manpower Study. This report is now out of print, but it may still be helpful to you.

In October, the first edition of an annual entitled Graphic Communications Education will be published. This edition deals with the GATF survey of work-force needs in the eighties. I'll send you a copy of that, too, as soon as it is available.

Let me know whenever I may be of assistance.

Sincerely,

A handwritten signature in cursive script that reads 'Frances J. Sullivan'.

Frances J. Sullivan  
Education Editor  
Graphics Markets Division

FJS

6410 Papermill Road

Knoxville, TN 37919

(615) 584 0221

**A/// Multigraphics**

July 22, 1982

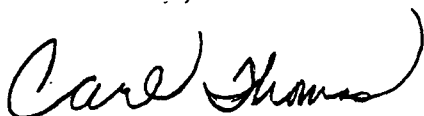
Mr. Rick Bowling  
Knox County Printing  
City/County Building  
Room L150, 400 Main Avenue  
Knoxville, TN 37902

Dear Rick:

Reference is made to our several discussions concerning the need for updating the skills of the graphics arts industry within the Knoxville area. After reviewing your plan for conducting a survey of our community and its outlying areas, a reasonable approach to this problem may be reached. Since there is no existing training programs beyond the high school vocation level, this area would do well to consider a post high school or vocations program to those individuals interested in updating or acquiring new skills.

As you know, here at AM International, on going research in press development has caused a dramatic shift from the "manual operation" concept to new computer assisted, digital electronic and laser presses. In order for "operators" in the field to become "technicians" a training program dealing with these new operational techniques seem to be a step in the right direction. With all the media attention focusing on the new Technology Corridor between Knoxville and Oak Ridge it only seems appropriate that a graphic arts program with advanced technology concepts become a part of this.

Sincerely,



Carl R. Thomas  
Account Executive

CRT/njc



# Taylor Impression, Inc.

CUMBERLAND ESTATES SHOPPING CENTER

5751 OAK RIDGE HWY • SALES: 588-7483 • SERVICE: 588-7484 • KNOXVILLE, TENNESSEE 37921

July 26, 1982

Mr. Rick Bowling  
Knox County Central Printing  
City County Bldg.  
Knoxville, TN. 37902

Subject: Post Secondary Graphic Arts Program for Knoxville  
and surrounding area.

Mr. Bowling,

The graphic arts industry is one of the most rapidly changing markets in the US today. Modern technology has increased the demand for more skilled personnel in this field. The programs in the high school levels, with the time allotted per person, just will not keep up with the rapid need for highly skilled people.

I believe Knoxville would benefit tremendously with a post secondary program in this industry. This market has changed drastically in the past ten years, and with laser technology in the making, the entire field may completely change. You can consume alot of information from text, but "hands on" will never be replaceable.

Sincerely,

Thomas Peek  
Branch Manager



July 30, 1982

Mr. Richard Bowling  
Knox County Print Shop  
City-County Building  
Knoxville, Tennessee 37901

Dear Rick:

I am pleased that you are investigating the need for a Graphic Arts School in our area.

The need for a good quality program is there. If we take the Commercial Printer, Newspapers, In-House Print Shops, Publishers, Book Manufacturers, Silk Screen Shops and others, they represent a large work force in East Tennessee.

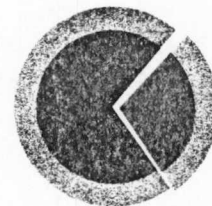
No doubt, a training and educational program would be beneficial to the trade.

Sincerely,

A handwritten signature in dark ink, appearing to read 'Harold Vaughn', is written over a horizontal line.

Harold Vaughn

HV:ji



August 19, 1982

Dear Rick

In regards to my thoughts on Vocational Graphic Arts on the secondary and post secondary levels.

I taught Vocational Graphic Arts for 4 years at Byington-Solway Vocational Center in Knox County. This was a high school program that consisted of 3 hours per day for 2 years. Although this was a very comprehensive course in a modern, well equipped shop, I was not happy with the results of the program due to the immaturity of the students. A few students did apply themselves and take advantage of the program and are still working in the trade but most were not ready to make the committment that was necessary for success.

I personally believe that the money spent on secondary programs would be better utilized in a post secondary program. The obvious advantage to a post secondary program is the maturity level of the students. Another advantage of this type program is that many of the students have been working for sometime in unskilled jobs and now realize the value of the training they are receiving.

I feel there is a need for vocational training in the Graphic Arts field but it is more effective if taught on the post secondary level.

Sincerely,

*Jim Stevens*  
Jim Stevens  
Specification Sales

**ULLRICH PRINTING**

4505 Kingston Pike  
Knoxville, TN 37919  
(615) 584-4619

September 30, 1982

Mr. Richard Bowling  
Knox County Central Printing  
Room L150  
City County Building  
400 Main St.  
Knoxville, TN 37902

Dear Mr. Bowling:

In regards to our discussion the other week concerning a post high school graphics education, I wish to encourage you to pursue your idea of obtaining an education facility in the Knox County area.

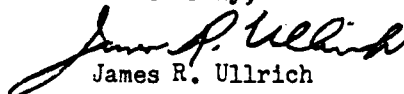
As you are well aware there is a tremendous change taking place in the printing and graphics industry. These changes include technology, marketing, and management. Most companies involved in this industry are very small and can not afford the training necessary unless an education facility is provided. Just the other week another local printer called to see if I knew of a place that their pressman could receive additional training.

Local training is needed for press operators, design and prepress operations, supervisory training, repair technicians, and sales personnel. I would suggest a hands-on type of training as much as possible. Courses can be supplemented by seminars from leaders in the industry concerning specific problem areas or interests.

I will support such a local education facility by providing students and any recommendations for courses.

Please feel free to call on me at any time for help in this endeavor.

Yours truly,



James R. Ullrich

APPENDIX E

FORM B, APPLICATION FOR REVIEW OF RESEARCH  
INVOLVING HUMAN SUBJECTS

CRP # \_\_\_\_\_

Date Received : \_\_\_\_\_

THE UNIVERSITY OF TENNESSEE, KNOXVILLE

Application for Review of Research Involving Human Subjects (in accordance with general institutional assurance, dated July 15, 1975, as amended November 25, 1975).

FORM B

I. Identification of Project:

A Dissertation for the Doctor of Education Degree in Vocational-Technical Education, College of Education.

Date: May 19, 1982

Project Director and Codirector:

Richard L. Bowling, Researcher  
2122 Island Home Boulevard  
Knoxville, Tennessee 37920  
Telephone: 615-573-2483 (home)  
615-521-2527 (work)

Dr. George W. Wieggers Jr., Chairman  
The University of Tennessee  
College of Education, Department of Vocational-Technical Education  
Knoxville, Tennessee 37916  
Telephone: 615-974-7371  
615-974-2574 (department)

Title of Project:

A Needs Assessment To Determine A Post Secondary Graphic Arts  
Program For The State Technical Institute At Knoxville, Tennessee.

Estimated Starting Date: June 1982

Estimated Completion Date: September 1983

II. Objective of Project:

The purpose of this project will be to:

1. Survey the Knoxville Labor Market Area, to determine the present and future needs of a post secondary graphic arts program.

2. Do a follow-up study of the recent graduates of the secondary level graphic arts programs within the Knoxville Labor Market Area, to determine their interest in a post-secondary training program.
3. To determine a feasible curriculum applicable to local industry and The State Technical Institute.

### III. Description of Subjects:

The subjects involved in this project will be:

1. The recent graduates of the two year graphic arts programs within the Knoxville Labor Market .
2. The owner, personnel director, foreman, or supervisor in a graphic arts business.

### IV. Methods and Procedures:

The data for this project will be obtained from the subjects residing or operating a business within the Knoxville Labor Market Area, defined as the thirteen counties surrounding Knox County, Tennessee (Map Attached).

Two questionnaires, one designed specifically for business and industry and the other for individuals who recently graduated from the various secondary programs.

The researcher will mail the instrument, cover letter, informed consent card, and self addressed, stamped envelope to the subjects and request a response within two weeks.

Data will be of a descriptive and frequency nature.

### V. Protection Measures:

- A. The names of the participants will not be used in any way.
- B. There is no provision on the questionnaire for any of the participants to identify themselves or their company without voluntarily doing so. Data collected will be reported only by groups and in a descriptive form.

### VI. Method of Obtaining "Informed Consent" From Subjects:

An enclosed card in the packet will state that the participant has agreed to participate in this study of his/her own free will and is free to withdraw his/her consent and/or of his/her organization at any time without prejudice. This card will be kept on file for the duration of the study.

### VII. Responsibility of The Project Director:

By compliance with the policies established by the University Committee on Research Participation, the Project Director subscribes to the principles

stated in "The Declaration of Helsinki" and standards of professional ethics in all research, development and related activities involving human subjects under the auspices of the University of Tennessee, Knoxville.

- A. When appropriate, Form 596 will be completed and returned to the the Office of the Vice Chancellor for Graduate Studies and Research, 404 Andy Holt Tower. (Form DHEW 596)
- B. Approval will be obtained from the University Committee prior to instituting any change in project protocol.
- C. Signed consent forms will be kept for the duration of the project and for at least three years thereafter.
- D. A status report (Form D) will be submitted at 12 month intervals, or as requested, attesting to the current status of the project.

Project Director: Richard L. Bowling  
Date: May 19, 1982

APPENDIX F

COVER LETTER TO FORMER  
GRAPHIC ARTS STUDENTS



VOCATIONAL  
TECHNICAL  
EDUCATION

## THE UNIVERSITY OF TENNESSEE

Dear Former Student:

In conjunction with The University of Tennessee and The State Technical Institute at Knoxville, a follow-up study of recent graduates within the Knoxville work force area, who included graphic arts courses in their high school curriculum is being conducted. This study is to inform us of the training you received while enrolled in the graphic arts program and to learn if you have been able to use that training effectively. In addition, to determine interest in a two year Graphic Arts Associate Degree program proposed for The State Technical Institute.

In order to make the initial determination for the proposed program, your input would be of great value to this study. Please complete the enclosed questionnaire and return it in the self addressed, stamped envelope. It will take about ten minutes of your time, but many future decisions may be made based on your opinions. All information received will be kept confidential, and you will not be identified in the report of the study. Your return of the completed questionnaire will serve as an informed consent and desire to participate in this study.

I will appreciate your help. May we hear from you within the next two weeks?

Sincerely,

Richard L. Bowling  
Project Coordinator

Enclosures: Envelope  
Questionnaire

APPENDIX G

COVER LETTER TO INDUSTRY



VOCATIONAL  
TECHNICAL  
EDUCATION

## THE UNIVERSITY OF TENNESSEE

Dear Sir:

In conjunction with The University of Tennessee and The State Technical Institute at Knoxville, an industry survey to determine the feasibility of establishing a two year, post-secondary graphic arts program at the The State Technical Institute is being conducted. Your feelings and input toward such a program would aid greatly in the progression of this study. Bear in mind, the printing industry in our area is what we make it. Enclosed please find a questionnaire to which I hope you will respond. Should the program be implemented, your input and ideas will aid in determining a curriculum design. You will note for confidentiality a geographical location number has been assigned to this questionnaire and data reflected in this study will consist of group responses. Complete the questionnaire with in the next week and return in the envelope provided. Your return of the completed questionnaire will indicate your informed consent and desire to participate in this study.

Sincerely,

Richard L. Bowling  
Project Coordinator

Enclosure: Envelope  
Questionnaire

APPENDIX H

INFORMED CONSENT LETTER

INFORMED CONSENT FORM

Research Project: A Needs Assessment To Determine A Post Secondary Graphic Arts Program For The State Technical Institute At Knoxville.

Researcher: Richard L. Bowling  
Department of Vocational-Technical Education  
The University of Tennessee, Knoxville  
Telephone: 521-2527 or 974-2574

You are invited to participate in a research study being conducted in conjunction with the University of Tennessee and the State Technical Institute at Knoxville. The purpose of this study will be: 1. To survey the Knoxville Labor Market Area, to determine the present and future needs of a post secondary graphic arts program; 2. To do a follow-up of the graduates of secondary level graphic arts programs within this area to determine their interests; 3. To determine a feasible curriculum, applicable to local industry and the State Technical Institute at Knoxville.

You are asked to provide the data requested on the enclosed questionnaire.

The information collected will be reported as group responses to assure confidentiality of the individual participants. No personal identification of any sort will appear in the written reports of this project.

I will be happy to answer any questions or inquiries you have concerning the project.

This certifies that the person signing this form has agreed to participate in this study of his/her own free will and is free to withdraw his/her consent and/or of his/her organization at anytime without prejudice.

Signed: \_\_\_\_\_

Date: \_\_\_\_\_

## APPENDIX I

### QUESTIONNAIRE TO FORMER STUDENTS

## Graphic Arts Student Follow-up Questionnaire

PLEASE RESPOND TO ALL QUESTIONS

1. Please indicate the year in which you graduated from high school
  - a. 1978
  - b. 1979
  - c. 1980
  - d. 1981
2. Are you currently employed?
  - a. Yes, full time
  - b. Yes, part time
  - c. Yes, part time and going to school
  - d. No, unemployed
3. Are you presently attending (full or part time) a post secondary school?  
Yes \_\_\_\_\_ No \_\_\_\_\_
4. Have you been able to use the vocational graphic arts training that you received while in high school?
  - a. Yes, definitely
  - b. Yes, to some degree
  - c. Not at this point, but maybe in the future
  - d. No
5. Do you feel the training that you received while in high school was adequate to enable you to be employed in the graphic arts field?
  - a. Yes, definitely
  - b. Yes, with additional training needed
  - c. Possibly with extensive retraining
  - d. No
6. Do you feel there is a need for a post secondary graphic arts program at the State Technical Institute?  
Yes \_\_\_\_\_ No \_\_\_\_\_
7. Would you attend the State Technical Institute for additional graphic arts training if it were to offered as an Associate of Arts program?  
Yes \_\_\_\_\_ No \_\_\_\_\_
8. Do you feel more job opportunities in the graphic arts field would be made available to you if you had an Associate of Arts degree in graphic arts?
  - a. Yes, definitely
  - b. Possibly, but not much
  - c. Not at this time
  - d. No, the job market will not support more personnel

9. If employment in a graphic arts or related field were to be offered to you with the stipulation that you attend a post secondary program, at your own expense, would you take that job and further your education?
- a. Yes, definitely
  - b. Yes, if advancement consideration in the future depended upon it
  - c. Undecided
  - d. No, I prefer to stay out of the graphic arts industry
10. Within the Knoxville Labor Force Area, individuals graduating from technical graphic arts program could expect a starting salary
- a. Above average
  - b. Average
  - c. Below average
  - d. No chance for employment

PLEASE ALLOW ME TO THANK YOU FOR YOUR TIME AND COOPERATION IN COMPLETING THIS QUESTIONNAIRE.

APPENDIX J

QUESTIONNAIRE TO INDUSTRY

## *Graphic Arts Program Questionnaire*

PLEASE RESPOND TO ALL QUESTIONS.

1. Type of Business
  - a. Job Shop
  - b. In-Plant
  - c. Speciality
  - d. Other \_\_\_\_\_
2. Your Position
  - a. Owner
  - b. Manager
  - c. Foreman
  - d. Ohter \_\_\_\_\_
3. The major printing process for your firm is
  - a. Offset
  - b. Letterpress
  - c. Gravure
  - d. Other \_\_\_\_\_
4. The existing format for this firm is
  - a. 10 X 15
  - b. 11 X 17
  - c. Larger than 11 X 17
  - d. A combination of the above
5. The total number of employees with your firm is
  - a. 1 - 5
  - b. 6 - 10
  - c. 11- 25
  - d. 25 or more
6. Your main source for entry level personnel is
  - a. Walk-in
  - b. Employment agencies
  - c. Other shops
  - d. High school vocational programs
7. The average beginning salary for non-trained production employees is
  - a. \$3.35 to \$4.00
  - b. \$4.01 to \$5.25
  - c. \$5.26 to \$6.00
  - d. \$6.01 or more
8. Your firms Gross sales for last year was
  - a. \$75,000. to \$100,000
  - b. \$100,001 to \$200,000
  - c. \$200,001 to \$500,000
  - d. \$500,001 or more
9. In general, individuals who acquire entry level printing skills through a technical program expect to be employed in the printing industry and should have
  - a. a very good opportunity for employment
  - b. a good opportunity for employment
  - c. not a very good opportunity for employment
  - d. no opportunity for employment

10. With in the Knoxville Labor Force Area, individuals graduating from a technical graphics course could expect a starting salary
- above average
  - average
  - below average
  - no chance for employemnt
11. Do you feel there is a need for a post-secondary graphic arts program at the State Technical Institute at Knoxville?
- Yes \_\_\_\_\_ No \_\_\_\_\_
12. In the following question a listing of courses, with the exception of the graphic arts courses denoted (\*), are presently being taught by the State Technical Institute. In order that a well rounded curriculum might be suggested, please indicate your feelings by ranking the following...
- 4 = A must for this program  
 3 = Highly recommended  
 2 = A nice to have experience  
 1 = Of little or no value to this program

| COURSE LISTING                         | 4 | 3 | 2 | 1 |
|----------------------------------------|---|---|---|---|
| Basic Writing Skills                   |   |   |   |   |
| Patterns of Composition                |   |   |   |   |
| Oral Communication                     |   |   |   |   |
| Mathematical Computation               |   |   |   |   |
| Introduction to Physics                |   |   |   |   |
| Introduction to Chemistry              |   |   |   |   |
| Industrial Safety                      |   |   |   |   |
| First Aid for Industry                 |   |   |   |   |
| Human Relations                        |   |   |   |   |
| Introduction to Labor Relations        |   |   |   |   |
| Small Business Management              |   |   |   |   |
| Facility Organization and Management   |   |   |   |   |
| Introduction to Technical Drawing      |   |   |   |   |
| Technical Drawing I                    |   |   |   |   |
| Introducation to Typesetting           |   |   |   |   |
| Advanced Typesetting                   |   |   |   |   |
| Introduction to Microprocess computers |   |   |   |   |
| Still Photography I                    |   |   |   |   |
| Darkroom Technique                     |   |   |   |   |
| * Introduction to Graphic Arts         |   |   |   |   |
| * Basic Layout and Design              |   |   |   |   |
| * Introduction to Printing Processes   |   |   |   |   |
| * Advanced Printing Techniques         |   |   |   |   |
| * Graphic Arts Production              |   |   |   |   |
| * Special Problems in Graphic Arts     |   |   |   |   |
| * Related Research in Graphic Arts     |   |   |   |   |
| * Technical Field Internship           |   |   |   |   |

#### OTHER SUGGESTED COURSES

---



---



---



---



---

13. IF A PROGRAM OF THIS TYPE IS DEVELOPED WOULD  
YOU OR YOUR EMPLOYEES UTILIZE THIS PROGRAM  
FOR TRAINING ?

YES

NO

14. IF A PROGRAM OF THIS TYPE IS DEVELOPED, WOULD  
YOU OR YOUR EMPLOYEES UTILIZE THIS PROGRAM  
FOR RETRAINING ?

YES

NO

15. IF A PROGRAM OF THIS TYPE IS DEVELOPED WOULD  
YOU OR YOUR EMPLOYEES UTILIZE THIS PROGRAM  
FOR UPDATING SKILLS ?

YES

NO

16. WOULD YOU OR A MEMBER OF YOUR STAFF BE WILLING  
TO SERVE IN AN ADVISORY CAPACITY TO THIS PROGRAM ?

YES

NO

IF YES, PLEASE LIST YOUR NAME AND COMPANY IN  
THE SPACE PROVIDED BELOW.

---

NAME

---

COMPANY and ADDRESS

---

CITY

STATE

ZIP

---

TELEPHONE

THANK YOU FOR YOUR COOPERATION IN COMPLETING THIS QUESTIONNAIRE

APPENDIX K

FOLLOW-UP POST CARD

Several weeks ago a questionnaire concerning the placement of a post secondary graphic arts program at the State Technical Institute at Knoxville was mailed to you from The University of Tennessee, Department of Vocational-Technical Education. Since we did not hear from you within the allotted time, would you please take just a few minutes and complete it. A great deal can be gained on our part from your knowledge, experience and suggestions.

Thank You,

Richard L. Bowling  
Project Coordinator

## VITA

Richard L. Bowling, son of Ralph R. and Francis O. (Chandler) Bowling, was born in Knoxville, Tennessee on May 19, 1948. He attended elementary and high school in the Knoxville City School System. In June of 1966, he was graduated from South High School at Knoxville, Tennessee. Upon graduation he attended The University of Tennessee, Knoxville, for a short while and then enlisted in the United States Army where he served four years as a member of the United States Army Criminal Investigation Division (CID). After being honorably discharged in 1971, he again attended The University of Tennessee, Knoxville for a short while.

In the Fall of 1971, he began working in retail sales as a diamond and jewelry salesman. By 1973, he had worked his way to the position of vice president and general manager of a large retail jewelry corporation. Being disillusioned with retail management, he began a career in graphic-arts with Knox County Government.

In the Summer of 1977, he re-entered The University of Tennessee, Knoxville, and in March of 1979, received a Bachelor of Science degree in Industrial Education. In March of 1980, he completed requirements for and received a Master of Science degree in Industrial Education. In June of 1984, he completed the requirements for and received a Doctor of Education degree in Vocational-Technical Education from The University of Tennessee, Knoxville.

His Professional Activities include: President of the Knox County Employees League, member of the Graphic Arts Technical Foundation, member of the International Graphic Arts Education Association, member of the National Association of Industrial Arts Teachers, member of Phi Delta Kappa, Professional Education Fraternity, member of Omicron Tau Theta, Professional Vocational-Technical Society, member Iota Lambda Sigma, Professional Industrial Education Fraternity, and member of the National Alumni Association of The University of Tennessee.

His other activities include: Secretary of the Deacon Board and Chairman of the Music and Administration Committee of Island Home Baptist Church, President of the Island Home Community Program, Chairman of the Knox County Government United Way Appeal, member of the Allocations Committee United Way, member of the Board of Directors of United Way, member of the Publications Committee, March of Dimes Gourmet Gala, licensed pilot and Major in the Tennessee Wing Civil Air Patrol, awarded the Gill Rob Wilson Academic Award, 1976, Past Master of Woodward Lodge F&AM, and member of the Beaumont-Northwest Lions Club, given the Distinguished Service Award 1980.

He is married to the former Ellen (Ellie) Elizabeth Sanders of Knoxville, Tennessee. They have one son . . . Richard Tinsley (Dusty).