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ABSTRACT

This study contrasted current job situations and existing vocational training program enrollments for males and females within clerical, data processing, and technical areas of industry. All vocational schools located in the eight northern parishes of Louisiana were surveyed concerning the numbers of males and females enrolled in clerical, data processing, and technical specialty programs of study. Likewise, a representative number of companies located in the same parishes were randomly selected and surveyed concerning the numbers of employees by sex currently functioning within the representative vocational areas. Data were analyzed and showed that vocational-technical schools continue to train higher percentages of females than males for traditionally female-dominated career positions and have increased only slightly the percentages of females being trained for traditionally male-dominated career positions. The two exceptions to these practices were in programming, where there was a significant increase in percentages of females being trained for this traditionally male-dominated position, and in quantity foods, where there was a significant increase in percentages of males being trained for this traditionally female-dominated position. The findings suggest a trend whereby greater numbers of females are being trained for many of the traditionally male-dominated positions, although these numbers have not significantly reduced the current discrepancies that exist among males and females currently employed in these positions. At the same time, males are not moving into traditionally female-dominated positions. (Author/KC)

STATE OF LOUISIANA

DEPARTMENT OF EDUCATION

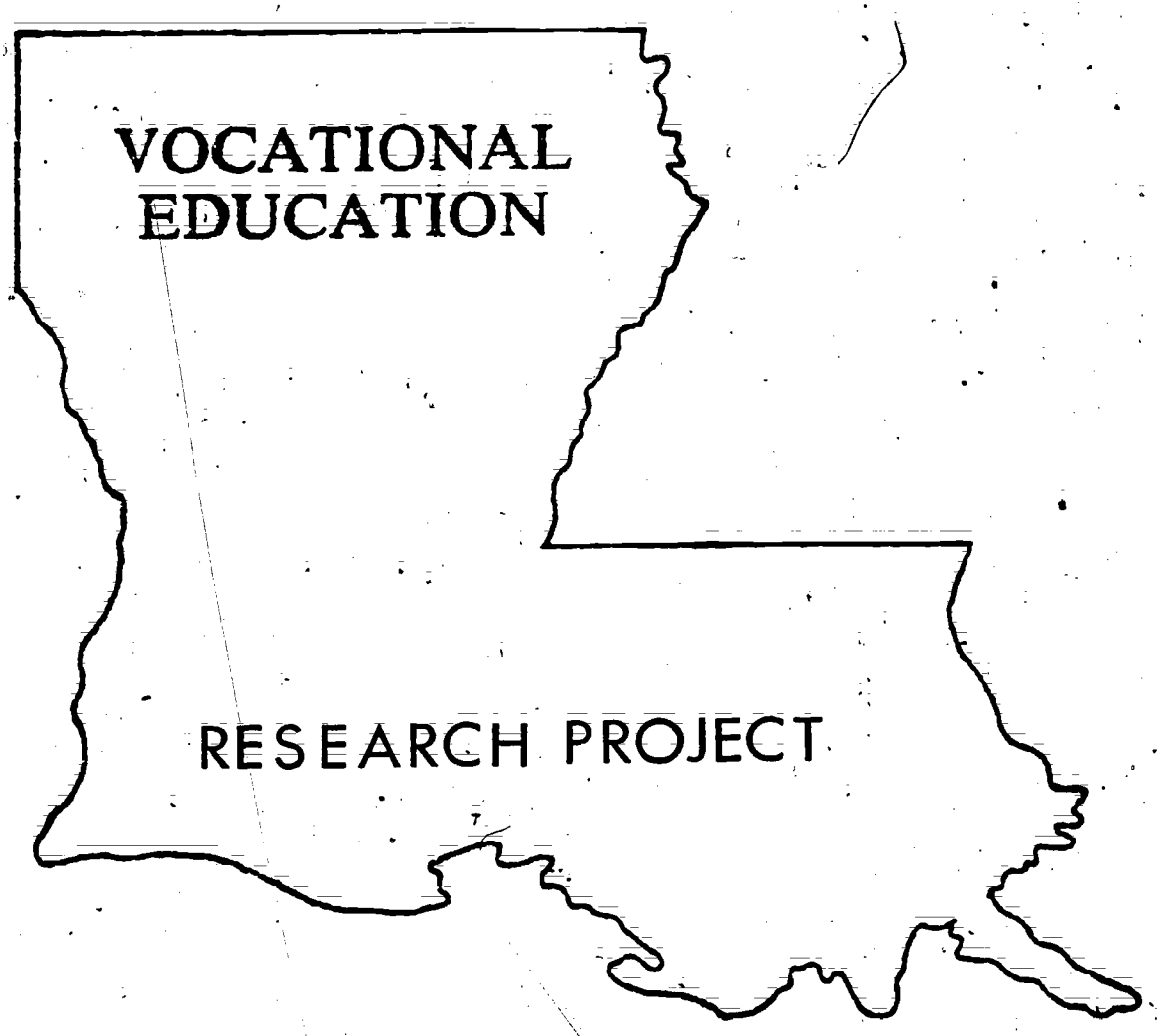
Relationship of Vocational Training to Occupational Opportunities by Sex of Person

January 1984

Office of Vocational Education

N. J. Stafford, Jr., Ed.D.
Assistant Superintendent

J. KELLY NIX
State Superintendent



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State Superintendent

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FINAL REPORT:

RELATIONSHIP OF VOCATIONAL TRAINING TO OCCUPATIONAL OPPORTUNITIES BY SEX OF PERSON

(State Contract # 660-3033)

ABSTRACT

This study contrasted current job situations and existing vocational training program enrollments for males and females within clerical, data processing, and technical areas of industry.

All vocational schools located in the eight northern parishes of Louisiana were surveyed concerning the numbers of males and females enrolled in clerical, data processing, and technical specialty programs of study. Likewise, a representative number of companies located in the same parishes were randomly selected and surveyed concerning the numbers of employees by sex currently functioning within the representative vocational areas.

Analyses of the survey responses provided the proportionate numbers of persons by sex training in each vocational area and the proportionate numbers of persons by sex currently employed in each representative area. Additionally, the findings offered insights into the vocational training-working relationships that contribute to continued sex discrimination hiring practices within these vocations.

Introduction

The purpose of sex equity is to guarantee all individuals a policy of non-discimination for employment on the basis of sex under Title IX of Federal legislation.

Presently the responsibility for implementing affirmative action policies in Louisiana to ensure sex equity during hiring rests with the employer. Often, employers are limited in their selections for vocational positions by the numbers of male and female applicants. This limitation may be directly related to the number of students of each sex graduating from vocational schools and may be contributing to the unequal numbers of employees by sex within industry.

Research comparing the proportions of males and females that are training for certain occupations with the proportions of males and females currently employed in the same occupations has been non-existent to date. Apparently, it has been assumed that sex equity will result by pressuring companies into hiring and promoting members of the non-traditional sex group. This progress has been slow.

One possible explanation for the slow progress might be that those who supply the trained laborers to the industries (i.e., the vocational-technical schools) continue to maintain sex-dominated training programs. This was supported by a recent study (Joseph, 1983) in which many of the vocational-technical school programs in Louisiana were clearly dominated by one sex group or the other. When industries desire to hire new employees to fill vacancies, the pools of available trained male and female applicants are often proportionate to the existing numbers of employees in those positions. Thus, companies are presented with a conflict between hiring more members from

the non-traditional sex groups for vacancies while maintaining a policy of equal opportunity where all applicants are treated equally.

The research described here investigated the existing number of males and females currently employed in certain occupational positions as well as those currently being trained for those same type positions. The occupational and training positions examined were in three major areas: clerical, data processing, and technical specialty. The original proposal indicated an intent to examine administrative positions as well. However, after initial investigations, it became apparent that there were no training programs in vocational-technical schools for administrators, and that most administrators received their educations from universities rather than from technical schools. The decision was made to drop administrative positions from the study and to add numerous technical specialty positions. This explains the slight deviation in the study from the original research proposal.

Procedure

This study was conducted during spring 1983 and included all 19 vocational-technical schools in the northern Louisiana area of which 15 schools, or 79%, participated. Additionally, industries in the area were selected to participate in the study. This procedure involved collecting and grouping company names by the occupational areas being examined from the Alexandria, Monroe, Ruston, and Shreveport telephone books' yellow pages sections, and then randomly selected 25% of the companies from each grouping were applicable. A total of 24 companies in the northern Louisiana area were selected of which 18 companies, or 75%, participated.

Each school and company selected were sent an introductory letter

(see Appendices A and B), a questionnaire, and a stamped return self-addressed envelope. Schools were asked to complete the questionnaire with current numbers of full-time male and female students enrolled in numerous training areas (see Appendix C). Companies were asked to complete an identically formatted questionnaire with numbers of full-time male and female persons employed in numerous occupations (see Appendix D).

Each participating school and company received a deadline by which time it was to have completed and returned the questionnaire. Telephone followups were used to encourage participation of those schools and companies that missed the deadline. This procedure maximized the number of returned questionnaires.

Returned questionnaires were coded and entered into a computer data file. Some were received with questionable entries that required clarification. For example, two companies indicated on the returned questionnaires that their employees functioned in more than one type position. When contacted by phone, both stated that such practices were due to the small sizes of their operation. Nevertheless, to avoid violating the mutually exclusive assumption for the chi-square test of independence, it was decided not to use these two questionnaires requiring clarification.

All participating companies and schools were provided the option to receive the results of this study. Those that were interested were mailed a copy of the final report.

The chi-square test of independence was used to make the statistical comparisons of the male-female frequencies in the school (i.e. training), and industry (i.e. working) samples. The Fisher Exact test of probability (2 tail) was applied when any expected cell frequency in a 2 x 2 contingency

table was less than 5. An alpha level of .01 was adopted in interpreting the statistical significance of test results.

Results

The data were first analyzed within the three major occupational areas of the questionnaire: the office area, the data processing area, and the technical specialty area. Table 1 contains the frequencies and percentages of males and females within the industrial and school categories of each type office occupation position as well as the statistical test(s) that applied. Analyses indicated that differences between industries and schools were small and not statistically significant.

Table 1

Frequencies and Percentages of Males and Females in Office Occupations of Surveyed Industries and Schools

Office Occupations	Industry f	Industry %	School f	School %	Statistical Test
Clerk Typist					
Females	162	100	227	99	χ^2 = Note 1
Males	0	0	3	1	Fisher's = $p < .001$
					Result = NSD
Secretarial					
Females	71	100	132	100	χ^2 = Note 1
Males	0	0	0	0	Fisher's = Note 2
					Result = NSD
Accountant					
Females	23	70	165	85	$\chi^2 = 4.673$, $p < .03$
Males	10	30	29	15	Fisher's = $p < .07$
					Result = NSD

Note 1 Chi-Square test of independence was not used to analyze these data due to at least 1 cell containing zero frequencies, which violates one of the assumptions for this statistical test.

Note 2 Fisher's Exact Test was not calculated due to the fact that 2 cells contained zero frequencies.

Table 2 contains the frequencies and percentages of males and females within the industrial and school categories of each type data processing position as well as the statistical test(s) that applied. Analyses indicated that there was a significant difference between males and females training to be, and employed as, programmers ($\chi^2 = 15.753$, $p < .01$). Proportionately, more females were training for the normally "male dominated" programming position than were males. The difference between industries and schools in the other type data processing positions were small and not statistically significant.

Table 2

Frequencies and Percentages of Males and Females in Data Processing Positions of Surveyed Industries and Schools

Data Processing Positions	Industry f	Industry %	School f	School %	Statistical Test
Computer Operator					
Females	7	35	2	100	χ^2 = Note 1
Males	13	65	0	0	Fisher's = $p < .31$
					Result = NSD
Data Entry					
Females	28	100	8	89	χ^2 = Note 1
Males	0	0	1	11	Fisher's = $p < .01$
					Result = NSD
Programmer					
Females	1	4	14	58	$\chi^2 = 15.753$, $p < .001$
Males	22	96	10	42	Fisher's = $p < .001$
					Result = SD

Note 1. Chi-square test of independence was not used to analyze these data due to at least 1 cell containing zero frequencies, which violates one of the assumptions for this statistical test.

Table 3 contains the frequencies and percentages of males and females within the industrial and school categories for several technical specialty positions, as well as the statistical test(s) that applied. There was a significant difference between males and females training to be, and employed as, quantity food professionals ($\chi^2 = 28.659$, $p < .01$). Proportionately, more males were training for the normally "female dominated" quantity food positions than were females. The differences between industries and schools in the other type technical specialty positions were small and not statistically significant.

Table 3

Frequencies and Percentages of Males and Females in Technical Specialty Positions of Surveyed Companies and Schools

Technical Specialty Positions	Industry f	Industry %	School f	School %	Statistical Test
Air Conditioning					
Females	0	0	2	1	χ^2 = Note 1
Males	13	100	138	99	Fisher's = $p < .33$
					Results = NSD
Auto Mechanics					
Females	0	0	6	2	χ^2 = Note 1
Males	24	100	336	98	Fisher's = $p < .67$
					Results = NSD
Dietetics					
Females	12	52	0	0	χ^2 = Note 1
Males	11	48	0	0	Note 2
Drafting					
Females	1	14	34	32	χ^2 = Note 1
Males	6	86	72	68	Fisher's = $p < .60$
					Result = NSD
Electronics					
Females	0	0	17	6	χ^2 = Note 1
Males	9	100	247	94	Fisher's = $p < .89$
					Result = NSD
Graphic Arts					
Females	1	25	7	54	χ^2 = Note 1
Males	3	75	6	46	Fisher's = $p < .67$
					Result = NSD

Table 3 (Con't)

Technical Specialty Positions	Industry f	Industry %	School f	School %	Statistical Test
Nursing					
Females	470	96	501	96	χ^2 = 0.008, p < .93 Fisher's = p < .81 Result = NSD
Males	21	4	23	4	
Quantity Foods					
Females	123	71	12	27	χ^2 = 28.659, p < .01 Fisher's = p < .01 Results = SD
Males	50	29	32	73	
Welding					
Females	0	0	8	2	χ^2 = Note 1 Fisher's = p < .13 Result = NSD
Males	152	100	371	98	

Note 1 Chi-square test of independence was not used to analyze these data data due to at least 1 cell containing zero frequencies, which violates one of the assumptions for this statistical test.

Note 2 Of the sampled schools in this study, none reported students enrolled in the dietetics program. It was verified that none of the schools offered a program in dietetics.

Lastly, the positions were grouped and analyzed as either traditionally male-dominated positions or as traditionally female-dominated positions. In this study, the male-dominated positions consisted of the computer operator, programmer, air-conditioning, auto-mechanic, drafting, electronics, graphic arts, and welding positions. There was no significant difference between males and females training for or employed in these positions (χ^2 = 3.331, p < .07), although there was a noticeable difference between the percentages of females working in, and training for, traditionally male dominated positions, from 4% to 7% respectively (See Table 4).

Table 4

Frequencies and Percentages of Males and Females in Traditionally All Male-Dominated Positions

Sex	Industry f	Industry %	School f	School %	Statistical Tests
Females	10	4	90	7	χ^2 = 3.331, p<.07 Fisher's = p<.08
Males	242	96	1180	93	Result = NSD

The female-dominated positions consisted of the clerk typist, secretary, accountant, data entry, nursing, and quantity food positions. There was no significant differences between males and females training for or employed in these positions (χ^2 = 0.331, p<.56). There appeared to be a consistency between percentages of males and females working in, and training for, the traditionally female dominated positions (see Table 5).

Table 5

Frequencies and Percentages of Males and Females in Traditionally All Female-Dominated Positions

Sex	Industry f	Industry %	School f	School %	Statistical Tests
Females	877	92	1045	92	χ^2 = 0.331, p<.57 Fisher's = p<.62
Males	81	8	88	8	Result = NSD

Discussion

Generally it appeared that vocational-technical schools continue to train higher percentages of females than males for traditionally female-dominated career positions and have increased only slightly the percentages of females being trained for traditionally male-dominated career positions. The two exceptions to these practices were in programming, where there was a significant increase in percentage of females being trained for the traditionally male-dominated position, and in quantity foods, where there was a significant increase in percentages of males being trained for the traditionally female-dominated position. These findings were generally supported by a recent status report (Joseph, 1983).

The findings suggest a trend where greater numbers of females are being trained for many of the traditionally male-dominated positions, although these numbers have not significantly reduced the current discrepancies that exist among males and females currently employed in these positions. Also, there is a consistency in the percentages of males training for and working in traditionally female-dominated positions, suggesting that more males are not being attracted to these positions.

The implications of these findings are worth noting. First, industries have been expected to follow specified hiring practices designed to eliminate sexual discrimination, and often have been pressured to fill vacancies with qualified members from the non-traditional sex group. If the vocational-technical schools, which are the primary sources of trained labor for these industries, do not provide increased percentages of trained members from the non-traditional sex groups in these positions, the industries will continue to be unable to afford equal opportunity to its employment applicants. Also,

these discrepancies in numbers of male and female applicants perpetuate the idea that preferential considerations are given to members from one sex group over the other. Only when the percentages of trained male and female applicants available for such positions become more equitable will industries be able to offer equal opportunities regardless of the sex of the person.

Second, it is important to understand why male-dominated positions are more attractive to females, while female-dominated positions generally are not as attractive to males in northern Louisiana. Ironically, the national trend suggests that males are entering non-traditional programs at a more rapid pace than are females. However, the trend in northern Louisiana appears to be different. Does this regional trend suggest (1) that women are striving for equality, recognition, and respect by entering traditionally male-dominated career positions and "proving" themselves; (2) that women enter these positions for economic reasons because such positions are more profitable; (3) that women are attracted to traditionally male-dominated positions for other reasons such as career opportunities, advancement, etc.; or (4) that males experience identity problems by entering into traditionally female-dominated positions. These issues are important to address but are obviously beyond the scope of this study.

Third, vocational-technical schools may be inadvertently contributing to sexual discrimination by continuing to maintain sex dominated training programs. It is important that these schools examine their recruitment and vocational counseling procedures to determine whether sexual biasing exists which may be influencing members of one sex group to train only for certain positions. Are the recruiting materials for the auto mechanic training program oriented toward attracting males while the materials for the nursing program designed to entice the females? Such subtle inferences may be having noticeable

and perhaps longlasting effects on efforts to reduce sexual discrimination in working situations.

It is important to remember when interpreting the results of this study that the data were collected from companies and vocational-technical schools in the northern parishes of Louisiana. The ability to generalize findings may be limited to companies and schools of similar geographic location. To support the generalization of these findings, it is recommended that a similar study be conducted throughout the State of Louisiana. Such a study would indicate whether the findings are representative of the region from which these data were collected or of a statewide trend.

Since a random selection procedure was used to determine which companies were afforded the opportunity to participate in the study, no systematic biasing resulted during the selection process. Such a procedure also reduces the probabilities that all of the larger companies in the region would be surveyed. This explains why the companies that participated ranged in size from 2 employees to 724 employees, and why there were low frequencies of males and females in some positions. It is recommended that in future studies, the procedure be altered to randomly select 50% of the available companies instead of the 25% as used in this study. This would increase the probabilities that more of the larger companies would be included among those companies surveyed and provide larger frequencies of males and females working in the positions being examined.

In summary, the findings of this study are consistent with a recent status report (Joseph, 1983) and went one step further by exposing the relationship between training and employment trends for males and females in northern Louisiana.

References

Joseph, J. D. Status Report on Female and Male Participation in Secondary-Postsecondary Vocational Education Programs in Louisiana, 1980-82. Baton Rouge: Louisiana State Department of Education, 1983.

APPENDICES

APPENDIX A

Louisiana Tech University

Behavioral Sciences Box 10048 Ruston, LA 71272

PROGRAMS IN:
COUNSELING
HUMAN RELATIONS
PSYCHOLOGY
SPECIAL EDUCATION

May 13, 1983

We are currently examining the numbers of full time male and female students who are enrolled in technical training programs and the probabilities for careers in the northern Louisiana industries. Your institution has been randomly selected in our study and we hope that you will participate in the project.

Your participation will consist of completing the attached questionnaire which was designed to minimize the work required to complete. A stamped-addressed envelope has been included to return the completed questionnaire. You are asked to return the questionnaire by May 20, 1983.

All data collected will be confidential. Information from participating schools will be grouped and analyzed together so that no single institution will be identified. Therefore, you are asked to report your data as accurately as possible.

The results of this study will be made available to all participating institutions upon request. To receive the results when available, enter your address on the bottom of the completed questionnaire.

Thank you for your cooperation in this study.

Sincerely,

Margaret Colvin
Project Director

Daniel W. Prior, Ph.D.
Research Analyst

APPENDIX B

Louisiana Tech University

Behavioral Sciences Box 10048 Ruston, LA 71272

PROGRAMS IN:
COUNSELING
HUMAN RELATIONS
PSYCHOLOGY
SPECIAL EDUCATION

May 3, 1983

Dear Personnel Manager:

We are currently examining the numbers of full time male and female students who are enrolled in technical training programs and the probabilities for careers in the northern Louisiana industries. Your company has been randomly selected in our study and we hope that you will participate in the project.

Your participation will consist of completing the attached questionnaire, which was designed to minimize the work required to complete. A stamped, addressed envelope has been included to return the completed questionnaire. You are asked to return the questionnaire by May 20, 1983.

All data collected will be confidential. Information from participating industries will be grouped and analyzed together so that no single institution will be identified. Therefore, you are asked to report your data as accurately as possible.

The results of this study will be made available to all participating institutions upon request. To receive the results when available, enter your address on the bottom of the completed questionnaire.

Thank you for your participation in this study.

Sincerely,

Margaret Colvin
Project Director

Daniel W. Prior, Ph.D.
Research Analyst

APPENDIX C

CAREER-TRAINING QUESTIONNAIRE

LOUISIANA TECH UNIVERSITY

Please enter the numbers of full time male and female students that your school currently has enrolled in the training programs listed below. If you do not have some of these type training programs in your school, leave the corresponding spaces blank.

OFFICE OCCUPATIONS TRAINING

	Females	Males
Clerk Typist Training		
Secretarial Training		
Accountant Training		
Other(specify)_____		

DATA PROCESSING TRAINING

Computer and Console Operator Training		
Data Entry Equipment Operator Training		
Programmer Training		
Other(specify)_____		

TECHNICAL SPECIALTY TRAINING

Air Conditioning		
Auto Mechanics		
Dietetics		
Drafting		
Electronics		
Graphic Arts		
Nursing		
Quantity Food Occupations		
Welding		
TOTAL STUDENT ENROLLMENT(all programs)		

If you desire a copy of the results of this study, enter your mailing address below. Thank you for your cooperation in completing this questionnaire.

Mailing address:_____

CAREER-OCCUPATION QUESTIONNAIRE

LOUISIANA TECH UNIVERSITY

Please enter the numbers of full time male and female persons that your company currently has employed in the occupations listed below. If you do not have some of these type occupations in your company, leave the corresponding spaces blank.

OFFICE OCCUPATIONS

	Females	Males
Clerk Typist		
Secretarial		
Accountant		
Other(specify)_____		

DATA PROCESSING OCCUPATIONS

Computer and Console Operator		
Data Entry Equipment Operator		
Programmer		
Other(specify)_____		

TECHNICAL SPECIALTY OCCUPATIONS

Air Conditioning		
Auto Mechanics		
Dietetics		
Drafting		
Electronics		
Graphic Arts		
Nursing		
Quantity Food Occupations		
Welding		
TOTAL NUMBER OF EMPLOYEES(all occupations)		

If you desire a copy of the results of this study, enter your mailing address below. Thank you for your cooperation in completing this questionnaire.

Mailing address_____

_____

_____