THE IDENTIFICATION AND COMPARISON OF INFORMATION ELEMENTS APPROPRIATE FOR INCLUSION IN AN INTRODUCTORY PROFESSIONAL EDUCATION COURSE FOR TECHNICAL TEACHERS

By

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THE PROBLEM

Introduction

Only three decades ago, technical education, as we know it today was almost unknown. There were a few technical institutes located near the industrial centers of the nation, and the impact of technical education on our society was minimal. Today technical education is receiving increased attention from the educational, industrial, and governmental communities of our society. This rapid rise in popularity has resulted from several factors; some of these are: (1) change in emphasis from blue-collar to white-collar workers in the labor force, (2) projected trends in the labor force, (3) impact of automation upon society in terms of initial training and upgrading of displaced workers, (4) number of youth entering the labor market, (5) unemployment and underemployment of youth, minority groups and women in the labor force, and (6) the exponential increase in man's knowledge.[1]

One of the problems paramount to meeting the nation's technical manpower training needs is in the area of teacher education. Recent legislation has reflected the change in philosophy from simply teaching a skill to the preparation of the student for the world of work. The instructor, then, must be equipped with the skills of his particular field of technology and also with the knowledge necessary to adequately prepare the student for entry into the labor market.

Historically, the instructional staff needed in our technical programs have come from two main sources: (1) industry, and (2) other areas of education. An instructor recruited from industry generally is well prepared in his technical specialty but lacks the professional technical education that is so important for a successful technical education program.[2] The instructor who comes from other areas of education may have some professional education courses, but seldom does he have a desirable understanding of the philosophy, objectives, needs of technical education, technical programs, and the training of technicians for a world of work.

Today, more people are looking to the teacher educator in technical education to find the solutions to these problems. The professional teacher educator must provide a program that is pertinent to new inexperienced teachers, and, at the same time, meaningful to an experienced educator new to technical education.

The teacher educator is faced with the responsibility of effectively preparing the teacher for his role in our educational system. The knowledge the teacher gains in his professional education may well be the key to the continued growth and success of technician education.

Statement of the Problem

Development of more effective professional education courses for technical teachers has been hindered by a lack of information concerning topics which should be included in these courses. The problem is made difficult because professional education courses are offered to students with many varied backgrounds. Typically, these courses include students with specialties in data processing, drafting, electro-

nics, electro-mechanical, and various other technical areas.

These students may also be preparing to teach in different types of educational institutions. Some of these are: (1) high schools, (2) post-high school at the area vocational-technical schools, (3) technical institutes, (4) junior colleges, (5) senior colleges, and (6) universities.

Purpose of the Study

The purpose of this study is to identify specific information elements which are appropriate for inclusion in an introductory professional education course for technical teachers. The study will seek to determine which of these information elements are deemed important to technical educators in the senior colleges, junior colleges, and technical institutes.

Research Questions

The following research questions were investigated in this study.

1. What information elements should be included in an introductory professional education course for technical teachers?
2. What is the consensus between responses from experienced classroom teachers and new classroom teachers relative to the importance of specific information elements to be included in an introductory professional education course?
3. What is the consensus between responses from institutional technical education program administrators and classroom teachers relative to the importance of specific information elements to be included in an introductory professional

education course?

4. What is the consensus between responses from administrators in the State Department of Vocational-Technical Education and the classroom teachers relative to the importance of specific information elements to be included in an introductory professional education course?

Need for the Study

The need for this study was generated by the rapid expansion of technical education in the public educational system. This rapid expansion has created a demand for technical instructors that often exceeds the supply. School administrators sometimes find themselves in a position of utilizing people who have not been specifically prepared to teach in technical education programs. These persons often have little understanding of the purposes, goals, or programs in this area of education.

The introductory course forms the foundation upon which the professional education of technical teachers is constructed. Because this foundation is so important, careful consideration should be exercised in the selection of the topics to be included in the introductory course in the professional education sequence.

Delimitations

The purpose of this study is to identify appropriate content for inclusion in the introductory professional education courses for technical teachers.

The population of this study was limited to teachers and administrators of technical education in Oklahoma. Institutions selected for this study were:

1. The public junior colleges offering technical education.
2. The senior colleges offering technical education.
3. The Oklahoma State University technical institutes in Stillwater and Oklahoma City.
4. The vocational-technical area schools (administrators only).
5. The State Department for Vocational-Technical Education.
6. The Oklahoma State University School of Technical Training at Okmulgee.

Assumptions

For the purpose of this study, the following assumptions were made:

1. The opinionnaire was adequately designed to encompass the spectrum of the content of the introductory professional technical education course.
2. The educators selected would cooperate by accurately providing the information necessary to the study.

Definition of Terms

Information Elements - subject matter topics appropriate for inclusion in the introductory professional education courses for technical teachers.

Junior College - an institution of higher education which usually offers the first two years of college instruction and frequently grants

an associate degree.[3]

Professional Technical Education - that level of education designed to equip the student with the skills necessary to the professional educator in training technicians for a world of work.

Senior College - an institution of higher education which usually offers the first four years of college instruction. In addition to granting a bachelor's degree usually grants an associate degree in some areas.

Technical Education - a planned sequence of classroom and laboratory experiences designed to prepare persons for a cluster of job opportunities in a specialized field of technology. The program of instruction normally includes the study of the underlying sciences and supporting mathematics inherent in a technology. Technical education prepares for the occupational area between the skilled craftsman and the professional person.[4]

Technical Institute - an educational institution at the post secondary level which is distinct in character from a college or university. The curriculum is usually two years in length, and the main objective is to prepare technicians who lie between the skilled craftsman and the professional.[5]

Vocational-Technical School - an educational institution offering training programs at both the trade and technical level. Preparation for employment is the primary objective of this type of institution. While this institution serves some post-high school and adult students, it does not give college credit or award an associate degree.[6]

FOOTNOTES

[1]Grant Venn, Man, Education and Work. The American Council of Education, (Washington, 1968), Pp.18-28.

[2]Maurice W. Roney, "Professional Education for Technical School Administrators and Teachers". Paper prepared for the annual meeting of the American Technical Education Association, December, 1965. Unnumbered.

[3]Donald S. Phillips, "Personal and Social Background Characteristics of Entering Technician Education Students at Four Post-High School Institutions". (unpub. Ed.D. dissertation, Oklahoma State University, 1968), P.6.

[4]Ibid., P.7.

[5]U.S. Department of Health, Education, and Welfare, Standard Terminology for Instruction in Local and State School Systems, (Washington, 1967), Pp.92-93.

[6]Lynn A. Emerson, "Appendix 1, Technical Training in the United States", Education for a Changing World of Work, (Washington, 1963), Pp.59-60.

CHAPTER II

REVIEW OF LITERATURE

Curriculum development in technical education has been a subject of much concern to educators in recent years. The emphasis has been on the improvement of curriculums in the various technical specialties.

However, the literature reflects relatively little emphasis in research on technical teacher education and specifically in the area of professional education. Studies to identify course content have been done in many areas. Probably one of the most significant studies in vocational and technical education is near completion at Ohio State University.[1] In this study, Miller and Cotrell are attempting to determine the various skills and knowledges needed by all vocational-technical teachers. They also attempted to identify which of these skills and knowledges were common across several areas (agriculture, home economics, technical education, etc.) and which were truly unique to a particular service area.

The procedure used in this phase of the study followed three main steps. The first step was the analysis of the pedagogical elements of each of the seven vocational and technical education services. The analysis of pedagogical elements in vocational education involved the adaptation of task-analysis systems used in analyzing occupations. Instructional elements (237 performance elements and 181 knowledge units) were identified using this modified explicit occupational

analysis system. These instructional elements were representative of the psychomotor, cognitive and affective domains of teacher education objectives.

The second step involved a task force evaluation of the relative importance of each teaching element. The task force consisted of 21 persons including a state supervisor, a teacher educator, and a master teacher from each service area. From the results of the evaluation, it is apparent that the task force members believed that certain elements were essential to beginning teachers in all services and that others were not. Also equally obvious was that they believed some elements were uniquely essential to one or more services.

The third step was the refinement of the list of elements through a critical incident study of vocational teaching. The critical incident study was conducted to verify and validate the elements identified by the introspection and interview analysis techniques. Several other elements were identified as a result of the critical incidence study.

A study from the Texas Technological College involved the identification of common concepts and competencies which prospective teachers of English should attain in the English methods course.[2]

The final list of elements in rank order was obtained by the use of a questionnaire rating scale by three juries selected on a nationwide basis.

The first jury was composed of recognized authorities in the fields of English and professional education. The second jury consisted of the communication arts coordinators from the largest school system in each state. The composition of the third jury included outstanding English teachers on a nationwide basis. One representative from each

state was chosen.

The methodology included the utilization of the Eber Correlation Program to determine relationships significant at the .05 and .01 levels of confidence. Kendall's Coefficient of Concordance Wc was also applied to the rankings of the juries to focus the degree of relationship found among the three juries.

As a result of the study, 56 competencies and concepts were identified and ranked by order of importance. The conclusion was that these elements could not be taught effectively in one three-semester hour course.

Several studies attempting to identify specific content were found in the literature. Herman Schuette completed a study to identify specific topics and instructional procedures with their recommended degrees of emphasis for inclusion in typewriting methods books.[3]

Donald Seager sought to determine recommendations for the content of a basic course in instructional media and also to compare the opinions of teachers, audio visual personnel, librarians, curriculum personnel, principals, and instructors of teacher education courses as to what content should be included in the course.[4]

The following facts were found:

1. The majority of the respondents in all groups endorses fifty-nine of the sixty topics, the one exception dealt with historical background (47.5 per cent).
2. A majority of the respondents gave the highest level of support to planning (52.7 per cent); individualizing instruction (50.1 per cent); and overhead projection (50.9 per cent).

3. Utilization in instruction was favored over theory, information, and principles by a margin of 87.7 to 77.7 per cent of the respondents.
4. Concept, philosophy, and operation of the instructional materials center as a topic was involved in the greatest number (46.7 per cent) of cases involving significant differences of opinion.
5. Principals were involved in the least number of cases (19.3 per cent) where significant differences appeared; teachers in the greatest (55.4 per cent).
6. The opinions did not differ significantly between librarians and audio visual personnel on any of the sixty topics.
7. When pitted against each other, librarians, audio visual personnel, and principals differed significantly in only 1.7 per cent of the pairings.

The final recommendation was that the findings of the study should be used as a general guide to determine the content of the new course.

FOOTNOTES

[1]C.J. Cotrell and A.J. Miller, "Design for Developing a Model Curriculum for Teacher Education", American Vocational Journal, September, 1969, Pp.25-27.

[2]Nancy Boze, "A Content Analysis of the Methods Course for the Teaching of English in Secondary Schools", (unpub. Ed.D. dissertation, Texas Technological University, 1967).

[3]Herman Schuette, "An Identification of Specific Topics and Instructional Procedures With Their Recommended Degree of Emphasis for Inclusion in Typewriting Methods Books", (unpub. Ed.D. dissertation, University of Denver, 1968).

[4]Donald Seager, "Determining Recommendations for the Content of a Basic Course in Instructional Media for Colorado State College", (unpub. Ed.D. dissertation, Brigham Young University, 1968).

CHAPTER III

PROCEDURES AND ANALYSIS OF DATA

Introduction

The major purpose of this study was to identify specific information elements which are appropriate for inclusion in introductory professional education courses for technical educators.

This chapter consists of the description of the research procedures utilized in this study.

Population

Subjects employed in this study were selected using the following criteria: (1) They must be employed as technical educators in the state, (2) Administrators selected for the study were chosen from area vocational-technical schools, technical institutes, junior colleges, and senior colleges, (3) Teachers selected for the study were chosen from post-high school institutions, (4) The teachers must be classroom teachers in a technical specialty, (5) New teachers in a technical specialty have less than two years experience.

Procedure

Since the subjects used in the study encompassed educational institutions on a statewide basis, a mailed opinionnaire was deemed to

be the most practical instrument for obtaining the relevant data.

The first step in this investigation was to establish a list of topics which might be appropriate for inclusion in an introductory course in the professional education of technical teachers. Some of these elements were identified in discussions with Dr. Donald S. Phillips who is familiar with the objectives and goals of the professional education of technical teachers.[1]

In addition to these discussions, a pilot study was conducted that surveyed technical education administrators and technical classroom teachers of selected institutions across the state and selected officials from the State Department of Vocational and Technical Education. Additional information elements were identified which they believed to be of importance in the professional development of technical teachers.

The second step in the investigation was the preparation of the final draft of the instrument. This was accomplished by submitting the list of elements to a panel of experts for appropriate structure and design of the instrument.[2] A copy of the instrument is included in Appendix A.

The mailing list of the subjects was obtained from the Technical Education Division of the Oklahoma State Department of Vocational and Technical Education.

A letter of transmittal was formulated and produced in quantity. The Technical Education Department's letterhead was used to promote maximum response by indicating legitimate authority. The letter, opinionnaire, and a stamped self-addressed envelope were mailed to persons for whom addresses were obtained. References were made in

the instructions to the stamped envelope to enhance the factors of convenience and commitment of the respondent. A copy of the transmittal letter is included in Appendix B. Appendix C contains a copy of the instructions which were attached to the opinionnaire.

The writer visited personally the representatives selected from the State Department of Vocational and Technical Education.

The follow-up procedures involved personal visits and telephone calls to gain maximum responses.

Statistical Procedures

Respondents were asked to rate each element according to the following criteria: (1) Should the item be included? (2) If the response to criteria one was yes, what relative emphasis should be placed on that item? The emphasis was reflected on a scale marked from one (little emphasis) to five (much emphasis).

The data was processed by tabulating the responses using the "consensus number" method.[3] This method provides the facility to weight each response on the scale (No=0, 1=1, 2=2, 3=3, 4=4, 5=5). The responses were then tabulated by element for each group (The State Department, program administrators, experienced teachers, new teachers). The value computed was then divided by the total number of responses to that particular element in developing the consensus index. The method is explained in Figure 1. The consensus method also allows the ranking of elements by the relative values of the computed index for comparison among groups and in total.

Information Element	Yes	No	1	2	3	4	5
25. Sources of Technicians	9	1	2	2	4	1	0

$$\frac{(1X0)+(2X1)+(2X2)+(4X3)+(1X4)+(0X5)}{10} = 2.20$$

Figure 1. Computation of the Consensus Index Value

Element number 25, shown in Table I, is used to demonstrate the computation of the consensus index value in Figure 1 above.

The Kendall Coefficient of Concordance method was used to measure the degree of agreement among the four groups.[4] The Coefficient of Concordance W was calculated, and, in addition, a chi-square statistic was computed in order to test the significance of the calculated W.

The Kendall Coefficient of Concordance was calculated by

$$W = \frac{S}{1/12\ [K^2(N^3-N)]-K\Sigma T}$$
$$T$$

Where

$$S = \frac{\Sigma}{N}\ (Rj- \frac{Rj}{N})^2$$

The term S was obtained by finding the mean of the sum-of-ranks for each individual (information element), finding the deviation of each individual's sum-of-ranks from this mean, and then summing the squares of these deviations.

K is the number of rankings (group).

N is the number of information elements ranked.

The term $1/12\ [K^2(N^3-N)]$ is the maximum possible sum of the squared deviations. Rj is the sum of the ranks assigned to the j^{th} individual.

The above formula for W was corrected for ties by the $K\sum_T T$ term. The tie correction factor is given by

$$T = \frac{(t^3-t)}{12}$$

Where t is the number of observations tied for a given rank, the Σ indicates a sum over all groups of ties within any one of the rankings. The term $\sum_T T$ then indicates a summation of the T's calculated for each ranking.

The significance of W was tested by calculating the chi-square and its associated degrees of freedom in conjunction with a table of Critical Values of Chi Square.[5]

The chi-square was calculated as

$$X^2 = K(N-1)W$$

Where K, N, and W are the same as above, the degrees of freedom (df) are given by

$$df = N-1$$

FOOTNOTES

[1]Donald S. Phillips, Associate Professor and Head, Technical Education Department, Associate Director, Electromechanical Technology Project, Director EPDA 553 Project.

[2]Panel of Experts, Donald S. Phillips, Associate Professor and Head, Technical Education Department, Associate Director, Electromechanical Technology Project, Director EPDA 553 Project. Lloyd L. Wiggins, Assistant Professor, Occupational and Adult Education, Director EPDA 552 Project. Cecil W. Dugger, Assistant Professor, Technical Education. Richard W. Tinnell, Assistant Professor, Technical Education, Project Coordinator Electromechanical Technology Project.

[3]Theodore H. Voth, "Occupational Curriculum for State Junior Colleges", Vocational Research Coordinating Unit, Oklahoma State University, Stillwater, 1967, Pp.4-5.

[4]Gary W. Folkers, Kendall Coefficient of Concordance, University Computer Center, Oklahoma State University, Stillwater, 1967, Pp.4-5.

[5]S. Siegel, Non-Parametric Statistics for the Behavioral Sciences, McGraw-Hill, New York, 1956, P.249.

CHAPTER IV

RESULTS

The purpose of this study was to identify specific information elements which are appropriate for inclusion in the introductory professional education courses for technical educators. Results of the data utilized in this investigation are presented in this chapter.

The data shown in Table I reflects the number of instruments submitted to each group and the total number of returns for each group. The group sizes used in the study are as follows: State Department, ten; Program Administrators, 20; Experienced Technical Teachers, 70; and New Technical Teachers, 28.

The instrument was submitted to 148 individuals and 128 responded for an 86.5 per cent return.

TABLE I

RESPONSES TO THE OPINIONAIRE

Groups	Number Submitted	Number Returned	Per Cent Returned
State Department Personnel	13	10	6.8
Program Administrators	21	20	13.6
Experienced Technical Teachers	78	70	47.6
New Technical Teachers	36	28	18.5
Totals	148	128	86.5

The data shown in Tables II through Table V is an item analysis of the responses to each information element identified on the research instrument. Table II reflects the responses of the State Department Personnel. Table III shows the responses of the program administrators. The results of experienced technical teachers are shown in Table IV, and the data shown in Table V reflects the results of the new technical teachers.

TABLE II

ITEM ANALYSIS BY THE STATE DEPARTMENT PERSONNEL

	Information Element	No	1	2	3	4	5
1.	Historical development of technical education in the United States.	0	2	3	2	2	1
2.	U.S.O.E. curriculum guidelines.	3	0	1	3	2	1
3.	The impact of technological changes on technical education.	0	0	0	2	4	4
4.	Student population to be served by technical education.	0	0	0	4	5	1
5.	Technical student characteristics.	1	2	0	2	3	2
6.	Industrial experience requirements for technical teachers.	1	1	1	1	2	4
7.	The relationship of technical education to other areas of occupational education.	0	1	1	3	4	1
8.	Job placement of technical students.	3	0	1	1	1	4
9.	The relationship of technical education to engineering and science education.	0	2	1	3	3	1
10.	Federal legislation that affects technical education.	1	1	0	1	5	2
11.	Institutions offering technical education.	2	0	3	4	1	0
12.	Historical changes in the composition of the labor force.	2	2	1	3	1	1
13.	Student selection.	5	0	0	2	1	2
14.	Required education courses for technical teachers.	1	1	1	2	2	3
15.	The relationship of technical education to non-engineering occupations.	1	1	0	3	4	1
16.	Current employment trends in the U.S.	0	0	1	5	4	0
17.	The role of the technician.	0	0	0	2	4	4
18.	Student follow-up.	3	0	1	1	2	3
19.	Employment forecasts for technicians.	1	0	1	3	4	1
20.	The cooperative programs in technical education.	1	0	3	2	1	3
21.	The relationship of industrial arts to technical education	4	2	2	0	2	0
22.	The role of the State Department for Vocational-Technical Education.	0	1	0	3	2	4
23.	Educational philosophies.	0	3	2	0	1	4
24.	Content and structure of programs.	0	1	2	1	2	4
25.	Sources of technicians.	1	2	2	4	1	0

TABLE III

ITEM ANALYSIS BY PROGRAM ADMINISTRATORS

	Information Element	No	1	2	3	4	5
1.	Historical development of technical education in the United States.	0	4	3	5	3	4
2.	U.S.O.E. curriculum guidelines.	3	5	2	7	3	0
3.	The impact of technological changes on technical education.	0	1	1	4	8	5
4.	Student population to be served by technical education.	1	1	1	5	8	4
5.	Technical student characteristics.	3	1	3	5	5	2
6.	Industrial experience requirements for technical teachers.	3	4	3	2	4	4
7.	The relationship of technical education to other areas of occupational education.	0	2	0	8	7	2
8.	Job placement of technical students.	1	1	3	3	6	6
9.	The relationship of technical education to engineering and science education.	1	1	4	9	4	1
10.	Federal legislation that affects technical education.	0	2	1	6	5	5
11.	Institutions offering technical education.	3	5	4	6	1	0
12.	Historical changes in the composition of the labor force.	1	1	3	5	6	2
13.	Student selection.	3	3	4	4	3	2
14.	Required education courses for technical teachers.	2	3	4	3	3	3
15.	The relationship of technical education to non-engineering occupations.	1	2	5	4	5	1
16.	Current employment trends in the U.S.	0	3	4	5	5	3
17.	The role of the technician.	0	2	2	2	4	9
18.	Student follow-up.	3	2	3	3	7	2
19.	Employment forecasts for technicians.	2	1	2	6	5	4
20.	The cooperative programs in technical education.	3	4	4	6	1	1
21.	The relationship of industrial arts to technical education.	1	3	8	3	3	1
22.	The role of the State Department for Vocational-Technical Education.	1	2	1	2	7	7
23.	Educational philosophies.	2	3	1	4	3	5
24.	Content and structure of programs.	3	0	2	1	6	8
25.	Sources of technicians.	2	2	1	8	5	0

TABLE IV

ITEM ANALYSIS BY EXPERIENCED TEACHERS

	Information Element	No	1	2	3	4	5
1.	Historical development of technical education in the United States.	5	19	10	25	6	4
2.	U.S.O.E. curriculum guidelines.	6	14	15	14	10	4
3.	The impact of technological changes on technical education.	2	5	12	15	20	16
4.	Student population to be served by technical education.	5	9	14	12	13	14
5.	Technical student characteristics.	6	6	9	20	16	11
6.	Industrial experience requirements for technical teachers.	10	8	14	19	10	8
7.	The relationship of technical education to other areas of occupational education.	6	6	14	18	12	12
8.	Job placement of technical students.	6	6	12	17	19	10
9.	The relationship of technical education to engineering and science education.	7	5	9	19	14	15
10.	Federal legislation that affects technical education.	7	7	13	15	13	14
11.	Institutions offering technical education.	9	16	19	12	10	2
12.	Historical changes in the composition of the labor force.	10	18	12	15	9	3
13.	Student selection.	16	6	14	15	11	5
14.	Required education courses for technical teachers.	13	14	13	10	11	8
15.	The relationship of technical education to non-engineering occupations.	15	7	19	14	8	6
16.	Current employment trends in the U.S.	1	7	12	26	16	8
17.	The role of the technician.	2	3	3	14	18	30
18.	Student follow-up.	11	10	9	16	11	9
19.	Employment forecasts for technicians.	3	5	12	18	16	15
20.	The cooperative programs in technical education.	8	5	22	19	8	5
21.	The relationship of industrial arts to technical education.	15	15	15	15	4	4
22.	The role of the State Department for Vocational-Technical Education.	5	8	16	18	9	13
23.	Educational philosophies.	10	7	7	18	12	15
24.	Content and structure of programs.	7	3	6	14	13	27
25.	Sources of technicians.	6	13	10	22	10	6

TABLE V

ITEM ANALYSIS BY NEW TEACHERS

	Information Element	No	1	2	3	4	5
1.	Historical development of technical education in the United States.	5	7	10	1	2	3
2.	U.S.O.E. curriculum guidelines.	4	3	1	11	5	2
3.	The impact of technological changes on technical education.	2	1	3	10	6	5
4.	Student population to be served by technical education.	2	4	6	5	6	4
5.	Technical student characteristics.	4	2	4	12	4	2
6.	Industrial experience requirements for technical teachers.	4	1	3	8	5	6
7.	The relationship of technical education to other areas of occupational education.	1	4	4	10	6	2
8.	Job placement of technical students.	2	3	5	5	5	8
9.	The relationship of technical education to engineering and science education.	1	3	6	7	5	5
10.	Federal legislation that affects technical education.	4	3	3	8	4	6
11.	Institutions offering technical education.	5	6	11	3	0	2
12.	Historical changes in the composition of the labor force.	8	5	6	6	2	1
13.	Student selection.	7	4	3	6	6	1
14.	Required education courses for technical teachers.	2	4	7	6	5	4
15.	The relationship of technical education to non-engineering occupations.	5	5	7	5	4	1
16.	Current employment trends in the U.S.	1	0	7	12	4	4
17.	The role of the technician.	2	0	2	5	9	9
18.	Student follow-up.	8	2	3	3	6	5
19.	Employment forecasts for technicians.	1	1	7	6	10	3
20.	The cooperative programs in technical education.	4	1	10	10	3	0
21.	The relationship of industrial arts to technical education.	5	4	7	6	3	1
22.	The role of the State Department for Vocational-Technical Education.	0	2	6	8	6	6
23.	Educational philosophies.	5	7	6	5	5	0
24.	Content and structure of programs.	2	3	3	5	8	7
25.	Sources of technicians.	4	4	4	9	6	1

The total responses by group to each element is reported in Table VI. Table VI also shows the percentage of responses by group for each element and each category of each element. It is worth noting that a 100 per cent response to all elements by the four groups was not attained. The responses ranged from a low of 90 per cent to a high of 100 per cent for each element. A detailed listing of the individual elements is shown in Appendix A.

TABLE VI

INSTRUMENT RESPONSE ANALYSIS

Information Element Number	State Department Personnel										Program Administrators										Experienced Teachers										New Teachers									
	Total Response	Per Cent Response	Yes	No	1	2	3	4	5	(Percentages)	Total Response	Per Cent Response	Yes	No	1	2	3	4	5	(Percentages)	Total Response	Per Cent Response	Yes	No	1	2	3	4	5	(Percentages)	Total Response	Per Cent Response	Yes	No	1	2	3	4	5	(Percentages)
1	10	100	100	0	20	30	20	20	10		19	95	95	0	20	15	25	15	20		69	98	91	7	27	14	36	8	6		28	100	82	18	25	36	3	7	11	
2	10	100	70	30	0	10	30	20	10		20	100	85	15	25	10	35	15	0		63	90	81	9	20	21	20	14	6		26	92	79	14	11	4	39	18	7	
3	10	100	100	0	0	0	20	40	40		19	95	95	0	5	5	20	40	25		70	100	97	3	7	17	21	29	23		27	96	89	7	4	11	35	21	18	
4	10	100	100	0	0	0	40	50	10		20	100	95	5	5	5	25	40	20		67	96	89	7	13	20	17	18	20		27	96	89	7	14	21	18	21	15	
5	10	100	90	10	20	0	20	30	20		19	95	80	15	5	15	25	25	10		68	97	88	9	8	13	29	22	16		28	100	86	14	7	14	44	14	7	
6	10	100	90	10	10	10	10	20	40		20	100	85	15	20	15	10	20	20		69	98	84	14	11	20	27	15	11		27	96	82	14	4	12	25	19	22	
7	10	100	100	0	10	10	30	40	10		19	95	95	0	10	0	40	35	10		68	97	88	9	8	20	26	17	17		27	96	92	4	14	14	35	22	7	
8	10	100	70	30	0	10	10	10	40		20	100	95	5	5	15	15	30	30		70	100	92	8	8	17	25	28	14		28	100	93	7	11	18	18	18	28	
9	10	100	100	0	20	10	30	30	10		20	100	95	5	5	20	45	20	5		69	98	88	10	7	13	27	20	21		27	96	92	4	11	22	25	17	17	
10	10	100	90	10	10	0	10	50	20		19	95	95	0	10	5	30	25	25		69	98	88	10	10	18	22	18	20		28	100	86	14	11	11	29	14	21	
11	10	100	80	20	0	30	40	10	0		19	95	80	15	25	20	30	5	0		68	97	88	9	23	28	18	15	4		27	96	78	18	21	39	11	0	7	
12	10	100	80	20	20	10	30	10	10		18	90	85	5	5	15	25	30	10		67	96	81	15	26	17	21	13	4		28	100	71	29	18	21	21	7	3	
13	10	100	50	50	0	0	20	10	20		19	100	85	15	15	20	20	15	10		67	96	72	24	8	20	21	17	8		27	96	70	26	14	11	27	21	3	
14	10	100	90	10	10	10	20	20	30		18	90	80	10	15	20	15	15	15		69	98	80	18	20	18	14	17	11		28	100	93	7	14	25	22	18	14	
15	10	100	90	10	10	0	30	40	10		18	90	85	5	10	25	20	25	5		69	98	77	21	10	27	21	11	8		27	96	78	18	18	25	18	14	3	
16	10	100	100	0	0	10	50	40	0		20	100	100	0	15	20	25	25	15		70	100	99	1	10	17	28	23	11		28	100	96	4	0	25	43	14	14	
17	10	100	100	0	0	0	20	40	40		19	95	95	0	10	10	10	20	45		70	100	97	3	4	4	20	26	43		27	96	89	7	0	7	18	32	32	
18	10	100	70	30	0	10	10	20	30		20	100	85	15	10	15	15	35	10		66	94	78	16	14	13	23	15	13		27	96	67	29	7	10	10	22	18	
19	10	100	90	10	0	10	30	40	10		20	100	90	10	5	10	30	25	20		69	98	94	4	7	17	26	23	21		28	100	96	4	4	25	21	36	10	
20	10	100	90	10	0	30	20	10	30		19	95	80	15	20	20	30	5	5		67	96	84	12	7	32	27	11	7		28	100	86	14	4	36	36	10	0	
21	10	100	60	40	20	20	0	20	0		19	95	90	5	15	40	15	15	5		68	97	75	22	21	21	21	6	6		27	96	78	18	14	25	22	11	4	
22	10	100	100	0	10	0	30	20	40		20	100	95	5	10	5	10	35	35		69	98	91	7	11	23	26	13	18		28	100	100	0	6	22	28	22	22	
23	10	100	100	0	30	20	0	10	40		18	90	80	10	15	5	20	15	25		69	98	84	14	10	10	26	17	21		28	100	82	17	25	22	18	18	0	
24	10	100	100	0	10	20	10	20	40		20	100	85	15	0	10	5	30	40		70	100	90	10	4	8	20	18	40		28	100	93	7	11	11	18	28	25	
25	10	100	90	10	20	20	40	10	0		18	90	80	10	10	5	40	25	0		70	96	87	9	18	14	33	14	8		28	100	86	14	14	14	32	22	4	

Table VII reflects the consensus index values computed for each element. The table indicates the element indexes ranged from a low of 1.40 to a high of 4.20.

TABLE VII

CONSENSUS INDEX VALUES BY ELEMENTS AND GROUPS

Information Element Number	State Department Personnel	Program Administrators	Experienced Teachers	New Teachers
1	2.70	3.16	2.11	1.89
2	2.40	2.10	2.31	2.61
3	4.20	3.78	3.34	3.18
4	3.70	3.50	2.91	2.70
5	3.00	2.73	2.98	2.57
6	3.40	2.60	2.50	3.00
7	3.30	3.20	2.88	2.81
8	2.90	3.50	2.95	3.14
9	3.00	2.85	3.05	3.00
10	3.40	3.52	2.89	2.82
11	2.20	1.78	2.05	1.74
12	2.20	3.11	2.05	1.71
13	2.00	2.36	2.20	2.11
14	3.20	2.61	2.23	2.71
15	3.10	2.72	2.15	2.03
16	3.30	3.05	3.04	3.07
17	4.20	3.84	3.90	3.70
18	2.80	2.75	2.50	2.44
19	3.20	3.15	3.21	3.14
20	3.10	2.16	2.43	2.25
21	1.40	2.31	1.80	2.03
22	3.80	3.65	2.82	3.28
23	3.10	3.00	2.86	1.92
24	3.60	3.55	3.48	3.25
25	2.20	2.73	2.52	2.42

The data shown in Figures 2 through 7 indicates how each group compared to all other groups in response to each information element.

Figure 2 compares the consensus index values of the State Department as compared to program administrators.

Figure 3 compares the consensus index values computed for the State Department to those of the experienced technical teachers.

Figure 4 indicates the comparison of the State Department Personnel consensus index values to those of the new technical teachers.

Figure 5 indicates the comparison of the consensus index values for each element for the program administrators and the experienced technical teachers.

Figure 6 is a comparison of the program administrators to the consensus index values as computed for the new technical teachers.

Figure 7 reflects the comparison of the experienced technical teachers to the new technical teachers.

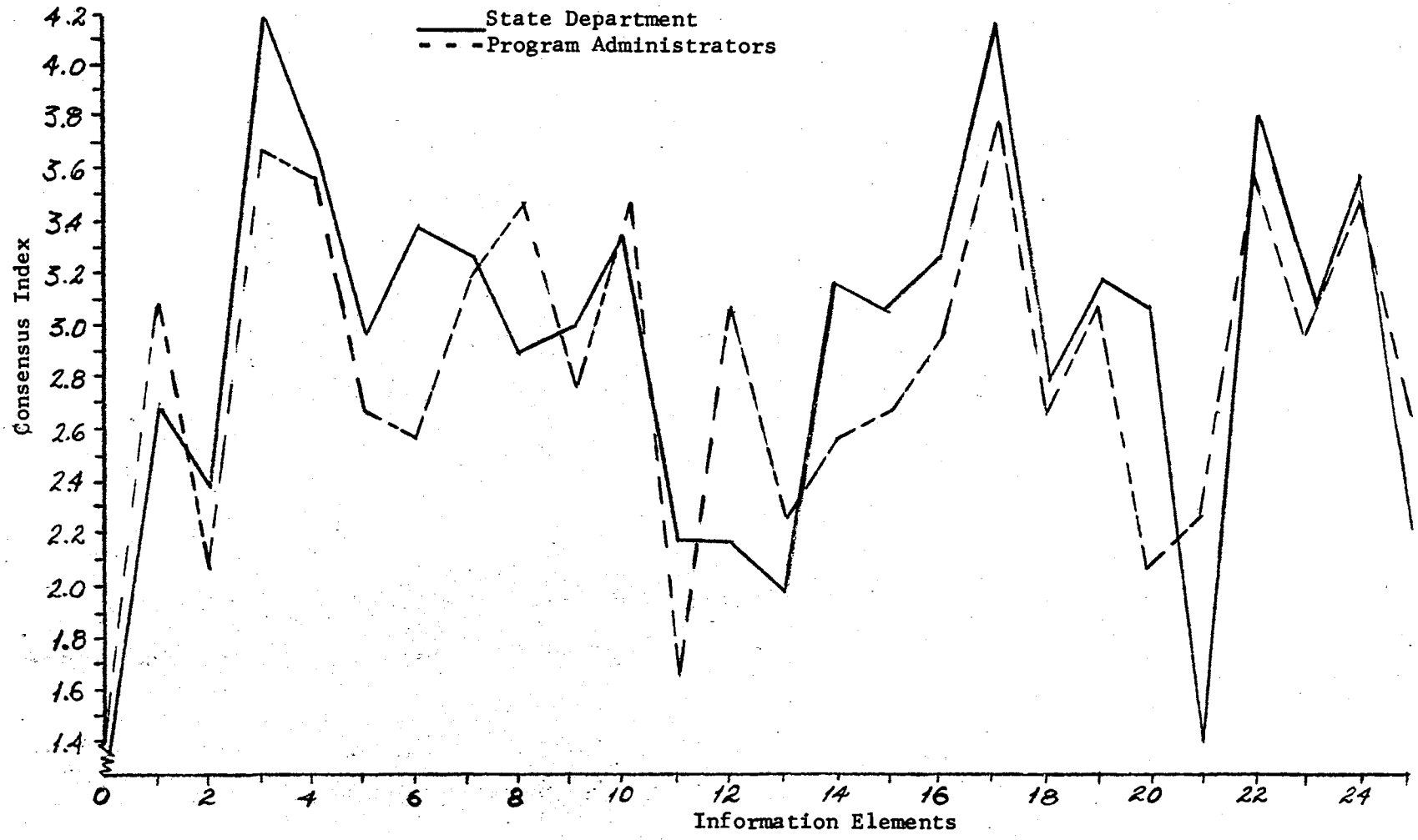

Figure 2. State Department Consensus Index Values Compared to Program Administrators

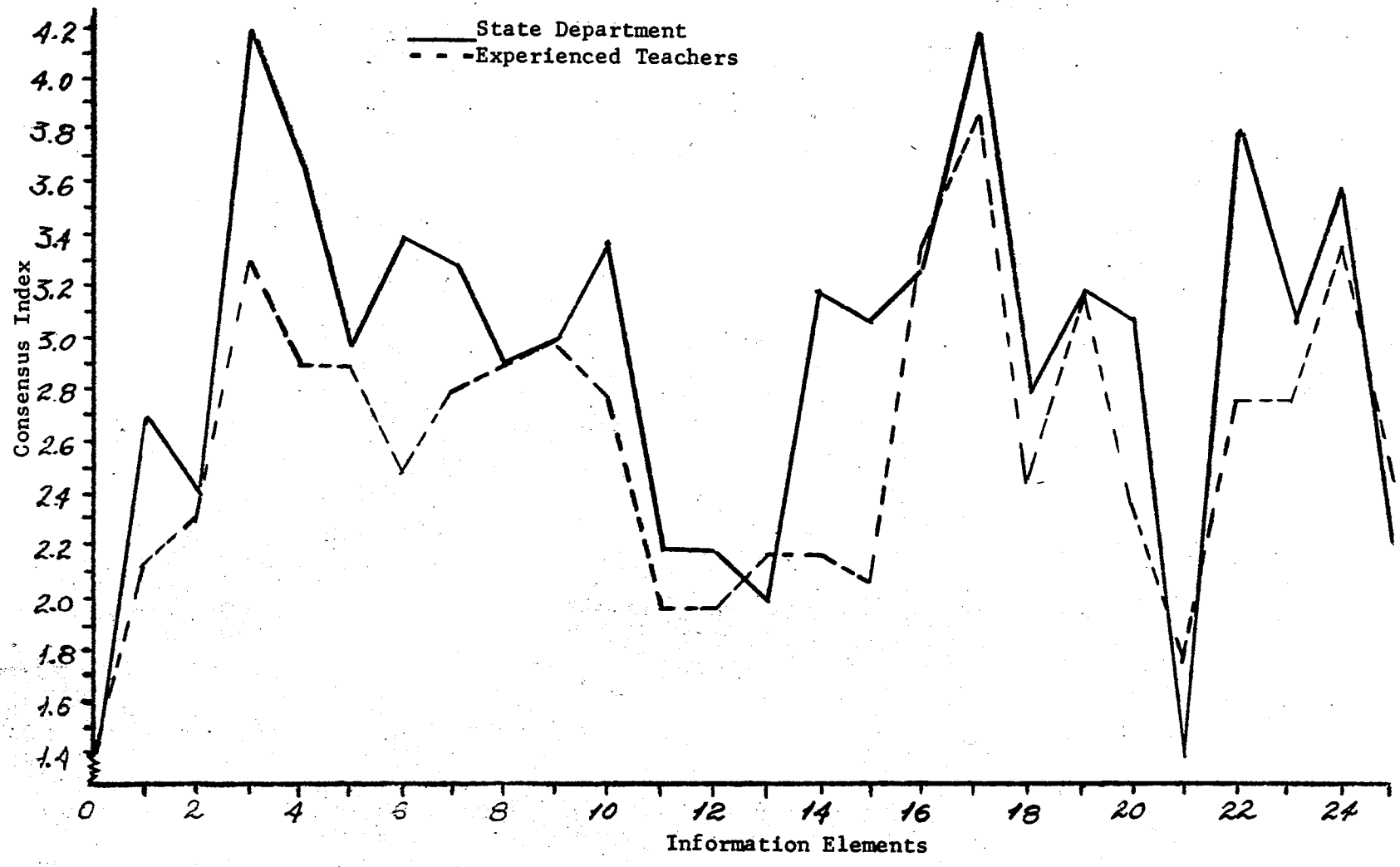

Figure 3. State Department Consensus Index Values Compared to Experienced Technical Teachers

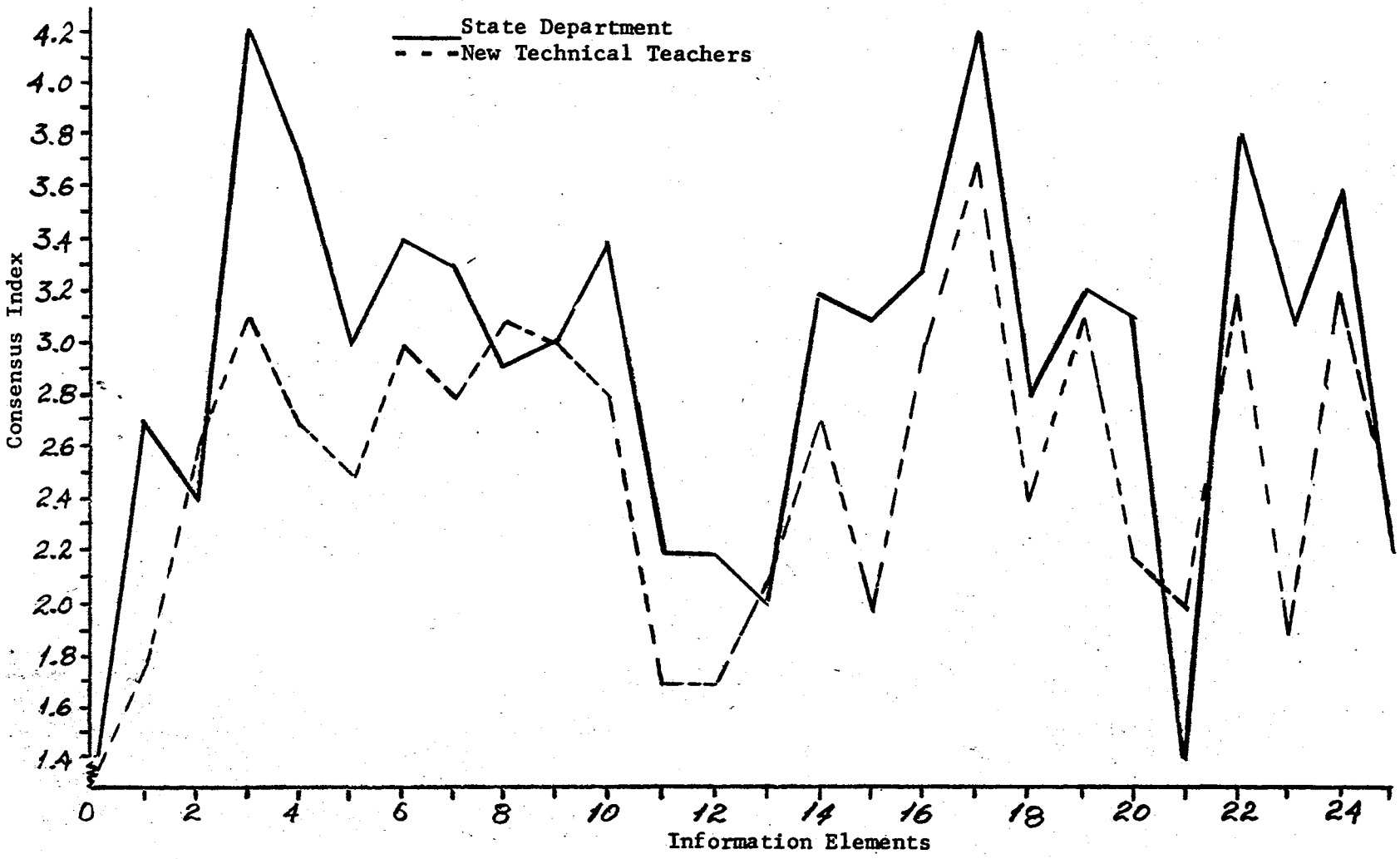

Figure 4. State Department Consensus Index Values Compared to New Technical Teachers

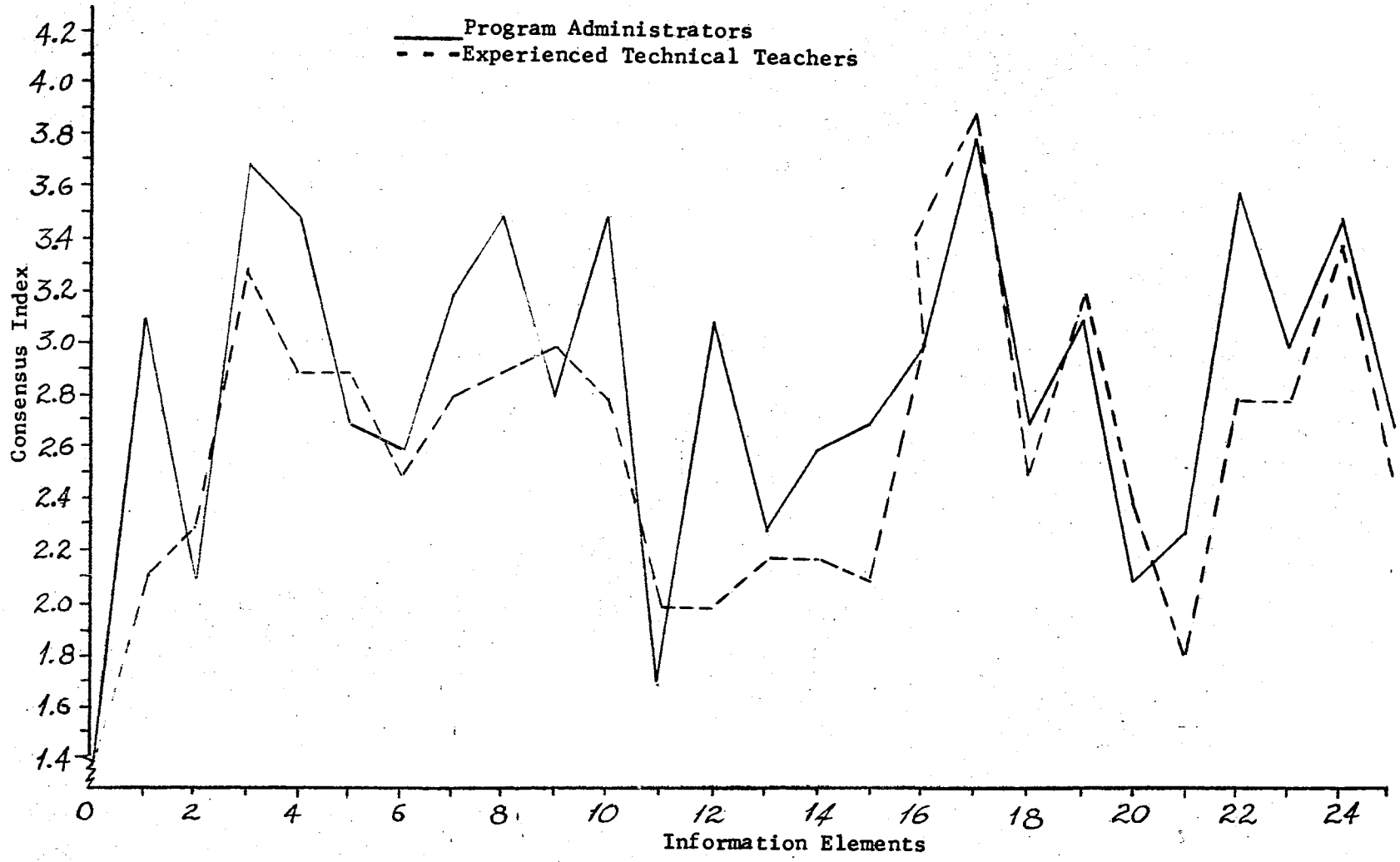

Figure 5. Program Administrators Consensus Index Values Compared to Experienced Technical Teachers

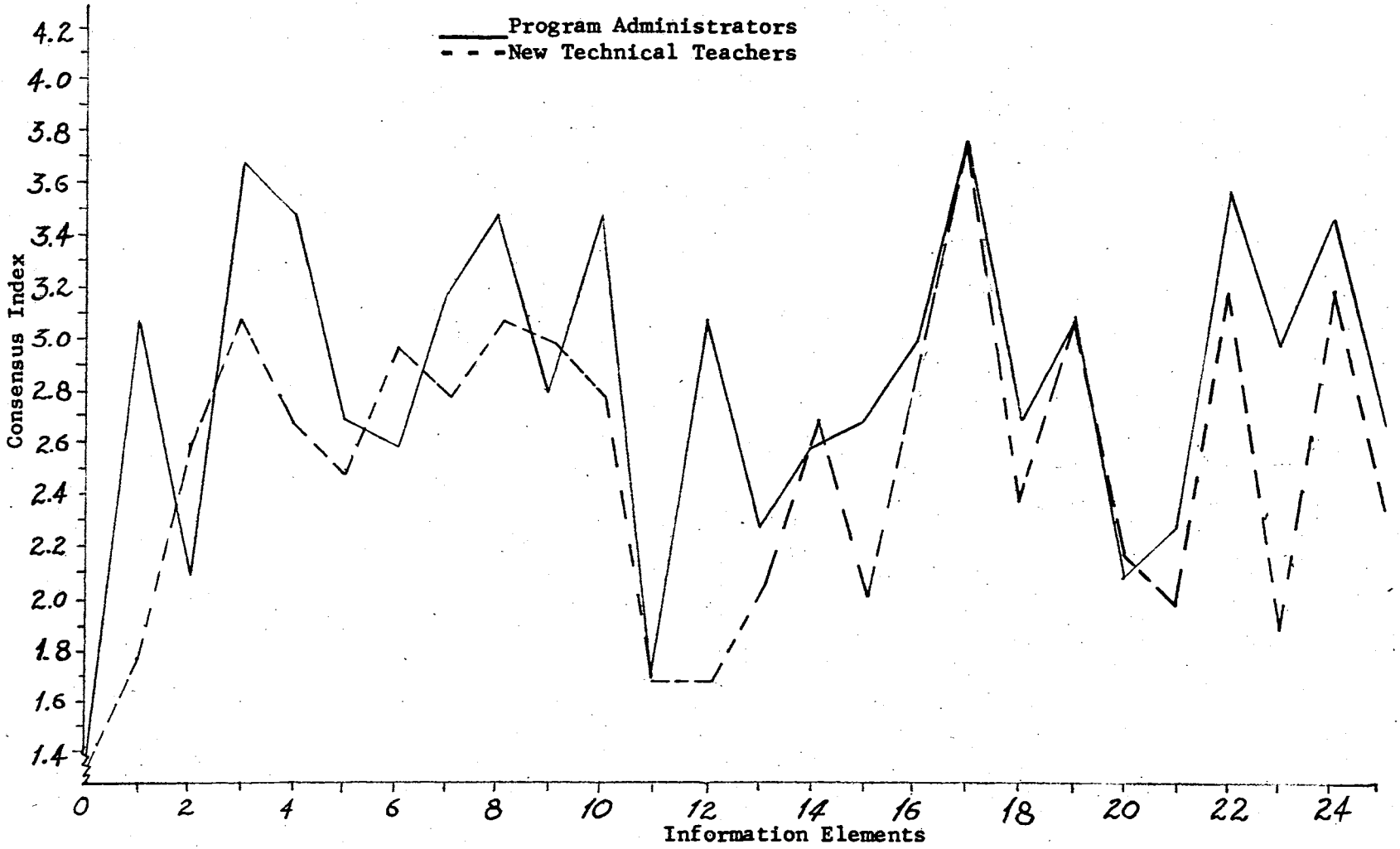

Figure 6. Program Administrators Consensus Index Values Compared to New Technical Teachers

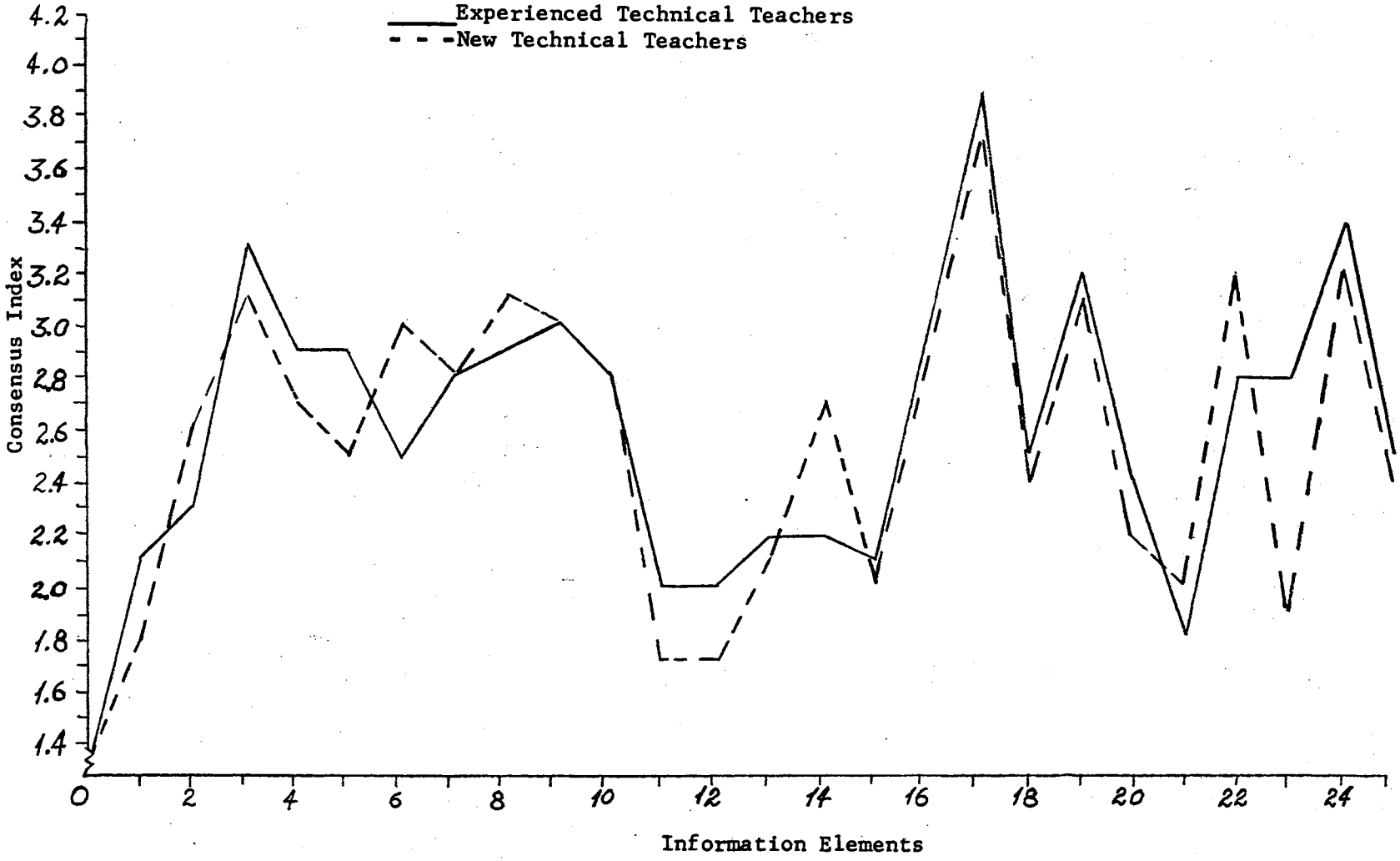

Figure 7. Experienced Technical Teachers Consensus Index Values Compared to New Technical Teachers

Figure 8 reflects the consensus index averages on each information element for the four groups. The groups, as a whole, rated element number 17 the highest with an average rating of 3.86. Element number three was rated second highest with a composite score of 3.63. Element number 24 was rated 3.47 and element number 22 was rated 3.39. The remaining information elements were rated below 3.30 to a low of 1.89 for element number 21.

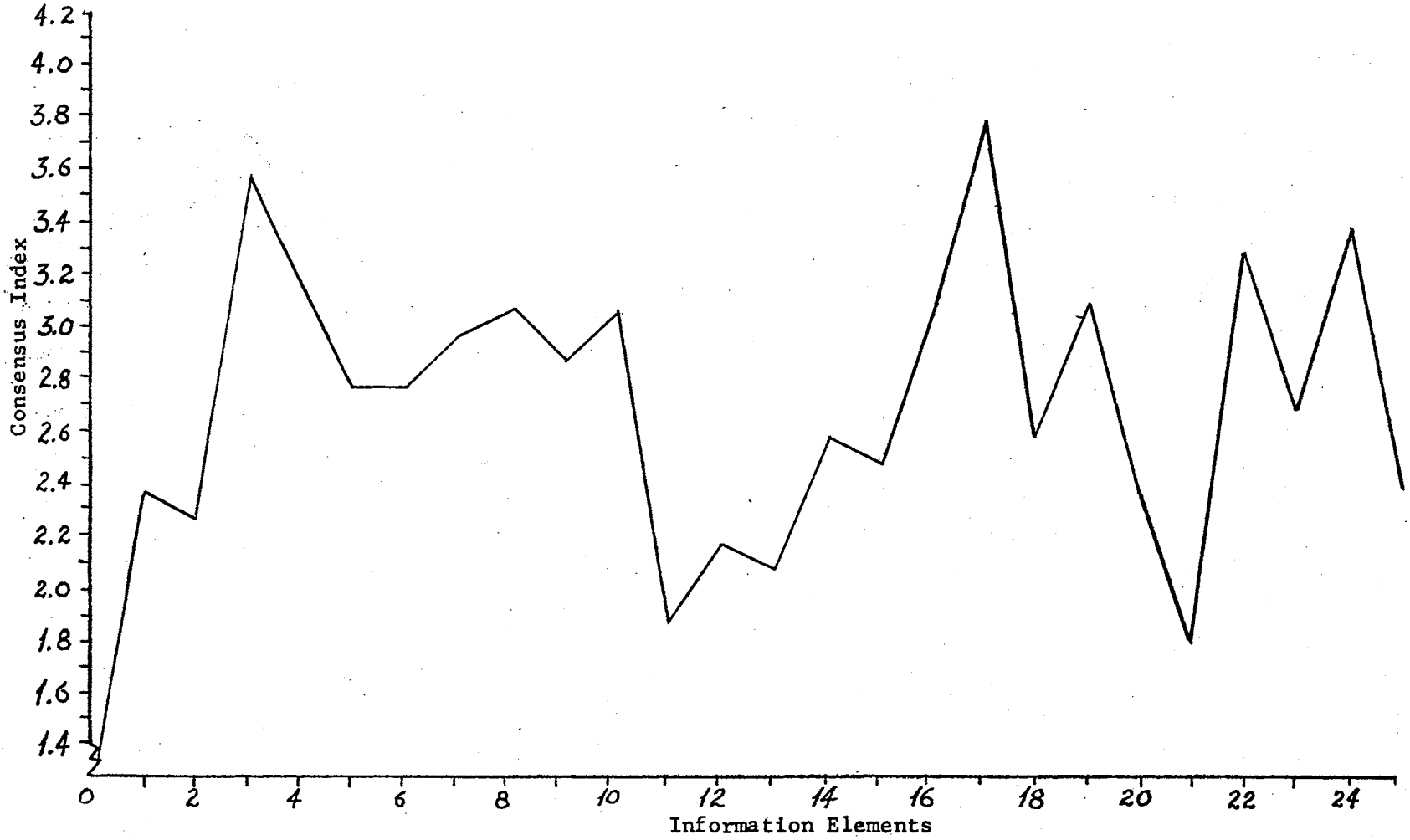

Figure 8. Consensus Index Averages Computed For All Groups

The output generated by the computation of the Kendall Coefficient of Concordance Method indicates a positive agreement between the groups used in this study.[1] The results of the calculation was 0.782394 for W. The significance of this relation was determined with the calculation of chi square which was 75.10982. Table VIII shows the critical values of chi square for 24 degrees of freedom with the probabilities ranging from 0.99 to 0.001.

TABLE VIII

TABLE OF CRITICAL VALUES OF CHI SQUARE[2]

	Probability Under H_o That $X^2 \geq$ Chi Square													
df	0.99	0.98	0.95	0.90	0.80	0.70	0.50	0.30	0.20	0.10	0.05	0.02	0.01	0.001
24	10.86	11.99	13.85	15.66	18.06	19.94	23.34	27.10	29.55	33.20	36.42	40.27	42.98	51.18

The null hypothesis of the chi square statistic states that the groups' ratings are unrelated to each other. Table VIII indicates that with an X^2 of 75.10982 and with 24 degrees-of-freedom X^2 has probability of occurrence under H_o of $p < 0.001$. The very low probability under H_o associated with the observed value of W enables us to reject the null hypothesis.

The significance of W may be interpreted as meaning that the groups applied essentially the same standards in ranking the information elements. It was deemed feasible to use their pooled ordering as a standard for ranking the information elements in this study. The results of the ordering along with the calculated consensus indexes are shown in Table IX.

TABLE IX

ORDERING OF INFORMATION ELEMENTS BY GROUP

	State Department Personnel		Program Administrators		Experienced Teachers		New Teachers	
Order	Element	Index	Element	Index	Element	Index	Element	Index
1	3	4.20	17	3.84	17	3.90	17	3.70
2	17	4.20	3	3.78	24	3.48	22	3.28
3	22	3.80	22	3.65	3	3.34	24	3.25
4	4	3.70	24	3.55	19	3.21	3	3.18
5	24	3.60	10	3.52	9	3.05	8	3.14
6	6	3.40	4	3.50	16	3.04	19	3.14
7	10	3.40	8	3.50	5	2.98	16	3.07
8	7	3.30	7	3.20	8	2.95	6	3.00
9	16	3.30	1	3.16	4	2.91	9	3.00
10	14	3.20	19	3.15	10	2.89	10	2.82
11	19	3.20	12	3.11	7	2.88	7	2.81
12	15	3.10	16	3.05	23	2.86	14	2.71
13	20	3.10	23	3.00	22	2.82	4	2.70
14	23	3.10	9	2.85	25	2.52	2	2.61
15	5	3.00	18	2.75	6	2.50	5	2.57
16	9	3.00	5	2.73	18	2.50	18	2.44
17	8	2.90	25	2.73	20	2.43	25	2.42
18	18	2.80	15	2.72	2	2.31	20	2.25
19	1	2.70	14	2.61	14	2.23	13	2.11
20	2	2.40	6	2.60	13	2.20	15	2.03
21	11	2.20	13	2.36	15	2.15	21	2.03
22	12	2.20	21	2.31	1	2.11	23	1.92
23	25	2.20	20	2.16	11	2.05	1	1.89
24	13	2.00	2	2.10	12	2.05	11	1.74
25	21	1.40	11	1.78	21	1.80	12	1.71

The data in Table X reflects a detailed listing of each information element. The elements are ordered from one, most important, to twenty-five, least important. The number in parenthesis represents a particular element's position on the instrument. The results indicate the combined group opinions.

TABLE X

RANK ORDER OF IMPORTANCE OF INFORMATION ELEMENTS BY ALL GROUPS

1.	(17)	The role of the technician.
2.	(3)	The impact of technological changes on technical education.
3.	(24)	Content and structure of programs.
4.	(22)	The role of the State Department of Vocational-Technical Education.
5.	(4)	Student population to be served by technical education.
6.	(19)	Employment forecasts for technicians.
7.	(10)	Federal legislation that affects technical education.
8.	(8)	Job placement of technical students.
9.	(16)	Current employment trends in the United States.
10.	(7)	The relationship of technical education to other areas of occupational education.
11.	(9)	The relationship of technical education to engineering and science education.
12.	(6)	Industrial experience requirements for technical teachers.
13.	(5)	Technical student characteristics.
14.	(23)	Educational philosophies.
15.	(14)	Required education courses for technical teachers.
16.	(18)	Student follow-up.
17.	(15)	The relationship of technical education to non-engineering occupations.
18.	(20)	The cooperative programs in technical education.
19.	(1)	Historical development of technical education in the U.S.
20.	(25)	Sources of technicians.
21.	(2)	U.S.O.E. curriculum guidelines.
22.	(12)	Historical changes in the composition of the labor force.
23.	(13)	Student selection.
24.	(11)	Institutions offering technical education.
25.	(21)	The relationship of industrial arts to technical education.

FOOTNOTES

[1]G. Folkers, "Kendall Coefficient of Concordance", University Computer Center, Oklahoma State University, Stillwater, 1967.

[2]S. Siegel, Non-Parametric Statistics for the Behavioral Sciences, McGraw-Hill, New York, 1956, P.249.

CHAPTER V

SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS

The problem with which this study was concerned was the lack of information concerning topics which should be included in the introductory professional education courses for technical teachers. This chapter includes a summary of the study, conclusions, and recommendations.

Summary

The purpose of this study was to identify specific information elements which are appropriate for inclusion in the introductory professional education courses for technical teachers.

Four research questions were considered in the study and are stated as follows: (1) What information elements should be included in an introductory professional education course for technical teachers? (2) What is the consensus between responses from experienced classroom teachers and new classroom teachers relative to the importance of specific information elements to be included in an introductory professional education course? (3) What is the consensus between responses from institutional technical education program administrators and classroom teachers relative to the importance of specific information elements to be included in an introductory professional education course? (4) What is the consensus between responses

from administrators in the State Department of Vocational-Technical Education and the classroom teachers relative to the importance of specific information elements to be included in an introductory professional education course?

Data used in considering the research questions were collected from 128 educators from institutions which included state senior colleges, junior colleges, technical institutes, and area vocational-technical schools. Subjects utilized in the study were selected from the educational institutions mentioned above using the following criteria: (1) They were involved in administration of technical education programs. (2) They were teaching in a technical specialty. (3) They were associated with technical education on an institutional or state department level. These subjects and institutions were selected primarily because of their relationship with the teacher education program used in the study.

The data for the study was obtained through the use of one instrument. The instrument most appropriate for this study was deemed to be an opinionnaire. The opinionnaire was designed through the use of personal consultations, a pilot study, and through the use of a panel of experts.

Data collection was completed during the 1970 fall semester. The data was collected by mailing the instrument and including a self-addressed stamped envelope to the respondents. Data from the opinionnaire was punched into cards for machine analysis. The analysis of data was completed during the fall semester.

Findings Related to the Research Questions

Answers to four research questions were sought in this study. In an attempt to provide at least a partial answer to the four questions, data was collected and analyzed from 128 educators from public educational institutions offering technical education programs.

Research Question 1

What information elements should be included in an introductory professional education course for technical teachers? Based on the findings of this study, it is concluded that the information elements identified in this study should be included in an introductory professional education course for technical teachers. The results shown in Table X indicates the relative order of importance of the information elements for inclusion in an introductory professional education course as perceived by the subjects in the investigation. However, the study did not attempt to specify the class time which should be allocated to each element.

Research Question 2

What is the consensus between responses from experienced classroom teachers and new classroom teachers relative to the importance of specific information elements to be included in an introductory professional education course? It is concluded from the results of the study, shown in Figure 7, that the overall consensus of the identified information elements is similar for experienced technical teachers and new technical teachers.

Research Question 3

What is the consensus between responses from institutional technical education program administrators and classroom teachers relative to the importance of specific information elements to be included in an introductory professional education course? The results of this study, shown in Figure 5 and Figure 6, tend to indicate relatively high agreement between the responses of the program administrators and the responses of the classroom teachers.

Research Question 4

What is the consensus between responses from administrators in the State Department of Vocational-Technical Education and the classroom teachers relative to the importance of specific information elements to be included in an introductory professional education course? The data used in the study, shown in Figure 3 and Figure 4, indicates the administrators in the State Department consistently rate the identified information elements as more important than do classroom teachers.

Conclusions

1. Respondents to the opinionnaire considered the information elements that were identified as a result of this study important in the professional preparation of technical teachers.

2. The administrators from the State Department of Vocational-Technical Education tend to rate the identified information elements generally as more important in the preparation of technical teachers than did the program administrators, experienced classroom teachers, and the new technical teachers.

3. The information elements identified in this study, shown in Table X, are ordered from most important to least important for purposes of inclusion and emphasis in an introductory professional education course as rated by respondents to the opinionnaire.

Recommendations

1. The information elements that were identified as a result of this study should be considered for inclusion in an introductory course in the professional education of technical teachers in Oklahoma.

2. Consideration should be given for priorities to be established relative to the inclusion of information elements in an introductory course in the professional education of technical teachers.

3. A more comprehensive study should be conducted which would be inclusive of all of the professional education courses for technical teachers.

4. A study should be conducted to identify appropriate class time allocations for each information element.

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APPENDIX A

THE OPINIONNAIRE

Name_____ School_____

	Rating Scale: Should this Item be Included in the Course?		Rating Scale: If the Item Should Be Included, How Much Emphasis Should be Given To It? (LITTLE EMPHASIS 1 2 3 4 5 MAJOR EMPHASIS)
1. Historical development of technical education in the United States.	YES	NO	1 2 3 4 5
2. U.S.O.E. curriculum guidelines.			
3. The impact of technological changes on technical education.			
4. Student population to be served by technical education.			
5. Technical student characteristics.	YES	NO	1 2 3 4 5
6. Industrial experience requirements for technical teachers.			
7. The relationship of technical education to other areas of occupational education.			
8. Job placement of technical students.			
9. The relationship of technical education to engineering and science education.			
10. Federal legislation that affects technical education.	YES	NO	1 2 3 4 5
11. Institutions offering technical education.			
12. Historical changes in the composition of the labor force.			
13. Student selection.			
14. Required education courses for technical teachers.			
15. The relationship of technical education to non-engineering occupations.	YES	NO	1 2 3 4 5
16. Current employment trends in the United States.			
17. The role of the technician.			
18. Student follow-up.			
19. Employment forecasts for technicians.			
20. The cooperative programs in technical education.	YES	NO	1 2 3 4 5
21. The relationship of industrial arts to technical education.			
22. The role of the State Department for Vocational-Technical Education.			
23. Educational philosophies.			
24. Content and structure of programs.			
25. Sources of technicians.	YES	NO	1 2 3 4 5

APPENDIX B

THE TRANSMITTAL LETTER

OKLAHOMA STATE UNIVERSITY • STILLWATER

Department of Technical Education 74074
Classroom Building 406
372-6211, Ext. 6287

September 23, 1970

Mr. Gail Jones
Technical Education Department
Cameron State College
Lawton, Oklahoma 73501

Dear Gail:

The Department of Technical Education is attempting to improve the professional education courses in our program. At this time we are making a concerted effort to identify important content for inclusion in the introductory course (Introduction to Technical Education). We are asking you to assist in this endeavor by completing the enclosed form.

If you have questions or comments about this study, please let us know.

Sincerely,

Donald S. Phillips, Head
Technical Education

DSP:mll

Enclosure

APPENDIX C

THE INSTRUCTIONS

COURSE CONTENT IDENTIFICATION INSTRUMENT

This instrument is designed to identify content that is deemed to be appropriate for an introductory course for technical education instructors. Several groups of persons (new instructors, experienced instructors, department heads, administrators, etc.) are being asked to assist in this project.

INSTRUCTIONS

On the following page several content items that may be appropriate for an introductory technical education course are listed. Please complete the form by:

1. Reading each item and indicating whether or not you think it should be included in the course by checking the appropriate block.
2. For those items that you think should be included in the course, mark the scale, indicating the relative emphasis which should be given to the item.

In filling out the form, keep in mind that the course is for three semester hours credit (approximately forty-eight class hours).

After you have completed the form, please return it (in the self-addressed envelope) to:

Technical Education Department
Rm 406 Classroom Bldg.
Oklahoma State University
Stillwater, Oklahoma 74074

Please complete and return by October 15, 1970.

VITA

Joe Mitchell Kinzer, Jr.

Candidate for the Degree of

Master of Science

Thesis: THE IDENTIFICATION AND COMPARISON OF INFORMATION ELEMENTS APPROPRIATE FOR INCLUSION IN AN INTRODUCTORY PROFESSIONAL EDUCATION COURSE FOR TECHNICAL TEACHERS

Major Field: Technical Education

Biographical:

Personal Data: Born in Frederick, Oklahoma, March 6, 1940, the son of Mr. and Mrs. Joe M. Kinzer, Sr.

Education: Graduated from Lawton High School, Lawton, Oklahoma, in 1958; received an Associate Degree from Cameron State College with a major in Business Administration in 1960; received the Bachelor of Science Degree from Oklahoma State University with a major in Business in 1962; completed additional courses at Oklahoma State University from 1964 through 1967; completed requirements for the Master of Science Degree in Technical Education at Oklahoma State University in May, 1971.

Professional Organizations: Phi Delta Kappa, American Vocational Association, Oklahoma Technical Society, Oklahoma Education Association, Red Red Rose, Oklahoma Educational Data Processing Association.

Professional Experience: Marketing Representative for Southwestern Stationery and Bank Supply in Lawton, Oklahoma, 1962-1964; Administrative Assistant, Comptroller's Office, Oklahoma State University, Stillwater, Oklahoma, 1964-1966; and Data Processing Instructor, Cameron State College, Lawton, Oklahoma, 1966-1970.