

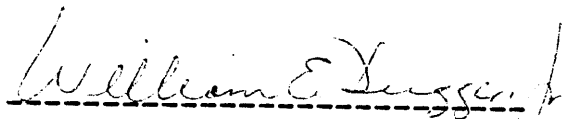
THE DESIGN OF A DATA BASED INFORMATION SYSTEM MODEL FOR  
INDUSTRIAL ARTS EDUCATION PROGRAMS IN THE UNITED STATES AND  
TERRITORIES

by

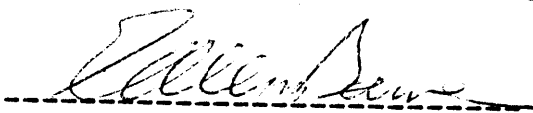
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Dissertation submitted to the Faculty of the  
Virginia Polytechnic Institute and State University  
in partial fulfillment of the requirements for the degree of  
DOCTOR OF EDUCATION  
in  
Vocational and Technical Education

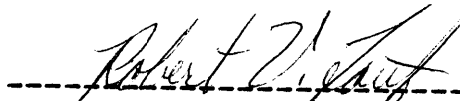
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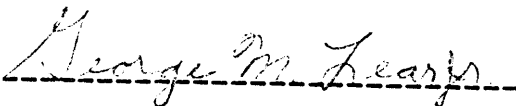
William E. Dugger, Jr., Chairman



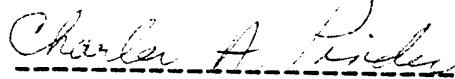
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## DEDICATION

This study is being dedicated to my loving parents, Wray and Sadie Herring for their constant faith and encouragement in my pursuit of this program; my brother, Wray Jr., for his untiring concern; my late sister, Joan, who planted the seed for the continuation of my education; and Trudy whose life long friendship and support will never be forgotten.

## ACKNOWLEDGEMENTS

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whose word processing skills the study would not have been completed.

Finally, but most important, the writer is indebted to Mr. and Mrs. Claude Carter and Dr. and Mrs. Turner Spencer, whose confidence, encouragement and support made it possible for the writer to complete this study.

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## CHAPTER I

### INTRODUCTION

A major problem for research and development in industrial arts education continues to be locating, storing and organizing basic data about the current status of industrial arts education programs. Industrial arts educators are constantly faced with the challenges of planning and modifying programs in the environment of a constantly changing and complex society. Supervisors, teachers, teacher educators, and curriculum specialists are but a few who must have access to information which will provide for the most realistic and logical educational decisions.

Data collected on industrial arts programs in the United States and territories have been found to be fragmented, inaccurate, and poorly organized. Although selected data have been collected on various aspects of education by agencies such as the United States Department of Education (U.S.D.E.), the National Center for Educational Statistics (N.C.E.S.), and the National Education Association (N.E.A.), there is currently no continuous national reporting system aimed specifically at collecting comprehensive data on all

industrial arts programs. Historically industrial arts courses have been classified as pre-vocational or as general education courses. Pre-vocational or exploratory courses which support the purposes of vocational education as defined by the Educational Amendments of 1976 (P.L. 94-482) are eligible for vocational funding. However, certain comprehensive general education courses in which students enroll for personal or avocational reasons, such as crafts, home mechanics, and woodworking, are not directly related to helping students make informed and meaningful education and occupational choices, and do not qualify for vocational funding (Steeb, 1979). Consequently, states are only required to report selected data at the federal level about courses that are managed by state agencies and are funded by federal appropriations through the U.S.D.E. A recent study conducted by the Standards for Industrial Arts Programs Project (Standards Project) at Virginia Polytechnic Institute and State University, Blacksburg, revealed that only thirty states were reported receiving federal vocational funds for certain industrial arts courses and supporting activities. Even this program is in jeopardy in the current series of recessions evolving from the Federal government.

A number of vocational and industrial arts educators (Miller, 1979; Regier, 1972; and Starr, 1977) have suggested

that there is a need for better planning and accountability through the availability of timely and targeted data-base information. The survey questions developed by the Standards Project were subjected to a stringent review process by the U.S.D.E. and nationally recognized experts in the field. According to Miller these questions were included because the data did not exist anywhere in the Federal data collection system (1979:124). Leaders in the field of industrial arts agree that these data can provide qualitative and quantitative bases for determining program strengths, weaknesses, trends, and funding. Also, the data can assist in the development of philosophies, program standards, preservice and inservice teacher training, facilities, and the determination of future alternatives for the industrial arts profession.

#### BACKGROUND OF THE PROBLEM SITUATION

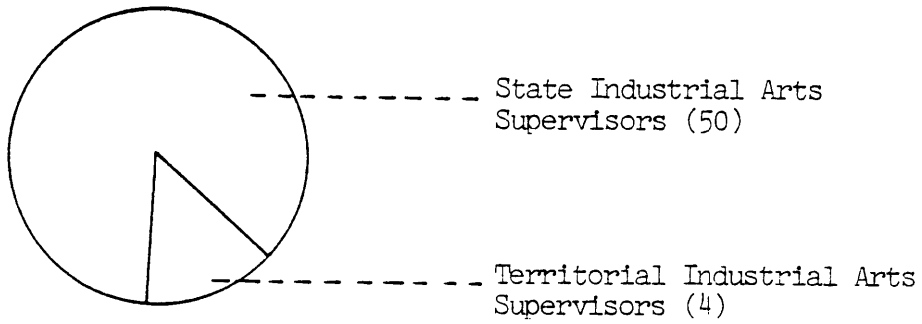
In the study conducted by the Standards Project, it was reported that "there is a need for a common national data base to aid in monitoring the continued development of industrial arts education programs" (Standards Project, 1980:1). The study further revealed that data collected on various aspects of industrial arts programs are often fragmented, misleading, and not collected on a consistent basis. The latest comprehensive information collected on industrial

arts programs, teachers, students, and facilities was collected in 1978-79 by the Standards Project under contract with the U.S.D.E. Prior to that, data had not been collected on a national basis since the 1962 study of Marshall Schmitt and Albert Pelley, also under contract with the U.S.O.E.

One of the objectives of the Standards Project as identified in the Request for Proposal (R.F.P. 79-129) was to develop a data base on industrial arts education programs (as defined in Title I, Part C, Section 195 (15) of the Education Amendments of 1976) and on industrial arts student organization activities as integral parts of industrial arts instructional programs (1980:3). With the aid of an 18 member national advisory committee representing experts in selected areas such as educational research, vocational education, industrial arts education, and other related fields, the Standards Project designed and validated four survey instruments to collect comprehensive data on industrial arts programs. Two categories of surveys were conducted: a national survey of three types of public secondary schools that had industrial arts education programs, and a survey of the 50 state and four territorial industrial arts supervisors. The three types of public secondary schools surveyed were: (a) a random sample, (b) all secondary schools with

American Industrial Arts Student Association (AIASA)-affiliated student clubs, and (c) schools identified by state supervisors as having exemplary industrial arts programs. A sample of 1,404 secondary schools was randomly selected, a sample of 342 public secondary schools with exemplary industrial arts programs was identified, and at the time of the request 572 schools with AIASA - affiliated student organizations were reported. The respondent universe from which the population was drawn is represented in Figure 1. Surveys were administered to the principal, guidance coordinator, and an industrial arts chairperson in each of the three types of public schools. The survey responses were analyzed and presented in a report to the now U.S.D.E. The data collected were reported in nine categories; philosophical views, instructional program, industrial arts students, industrial arts student organizations, teachers of industrial arts, industrial arts facilities, finance, and evaluation in industrial arts education.

The need for comprehensive data collection became evident when several of the "critical demographic" questions asked at the state and territorial level of industrial arts elicited very few responses (Dugger, 1980). For example, in the category of instructional programs for industrial arts education, state supervisors were asked to indicate the indus-



Universe of Industrial Arts Supervisors  
at State and Territorial Levels

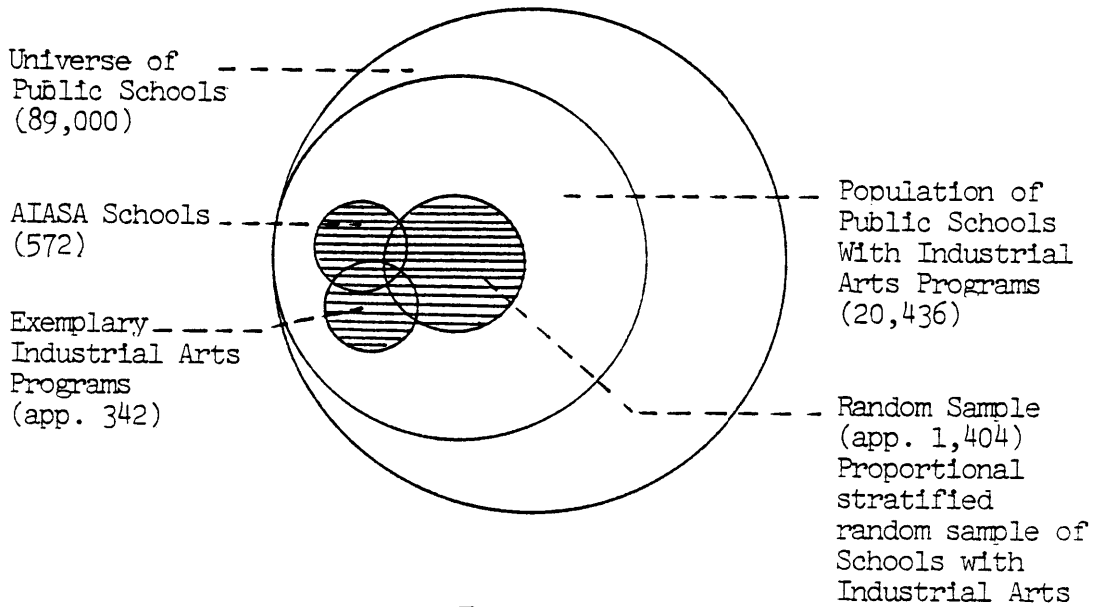


Figure 1

Universe, Population and Samples for  
Industrial Arts Standards Survey (1980)

trial arts courses that are planned for addition to the curriculum over the three-year period, 1978-81. Of the 50 respondents, 19 indicated that the data were not available. Also, when asked to report the number of courses planned for deletion between 1978-81, a large number (13) of the supervisors indicated the data requested were not available. In the category of industrial arts students, very little data were obtained on the number and characteristics of industrial arts students. As reported by the Standards Project:

Complete data on industrial arts enrollments were not obtained during this study because only a small number of state supervisors were able to provide data. Each state and territory was requested to report the numbers of male and female students who were enrolled in industrial arts courses by grade level for the period from 1975-76 through 1977-78 (1980:67).

Another section dealing with enrollments in federally funded and non-federally funded industrial arts courses also revealed that the data received were incomplete. However, the Standards Project contended that, "the fact that data could not be obtained may indicate that many of the existing instruments used for data collection have not made distinction between federally and non-federally supported industrial arts programs" (1980:67). Federal monies are disseminated in several different ways in states that receive federal funds for industrial arts. Additional information is needed by the profession for federal and state reporting



systems, but the present methods of data collection do not facilitate the retrieval of such information.

Two of the recommendations made by the Standards Project as a result of the data analysis further documented the need for this study. These are:

National studies of industrial arts programs should be initiated on a more regular basis in the future. Since the previous study was completed in 1962-63 by Schmitt and Pelley, too much time elapsed before another study was initiated in industrial arts education.

Each state or territory should establish a demographic data collection system for industrial arts education that can be used to regularly (annually or biannually) collect, tabulate, and synthesize these data (1980:169).

This study has established the rationale for a national comprehensive data base for industrial arts education programs in the United States and territories. Further efforts have been made by the profession to continue the collection of data on industrial arts education at the state level. Data collection instruments based on the Standards Project survey of state and territorial supervisors were disseminated in the spring of 1980 and 1981 by the industrial arts program area at Virginia Polytechnic Institute and State University in a joint effort with the American Industrial Arts Association (AIAA) and the Industrial Arts Division of the American Vocational Association (IAD/AVA). Concerted

efforts are needed to continue the process for collecting and reporting accurate and reliable data in order to maintain a continuous data base on industrial arts education.

#### STATEMENT OF THE PROBLEM

Industrial arts educators are in need of more current, accurate, and reliable data on the status of industrial arts programs in the United States. Furthermore, data are not collected on a consistent basis. It was the purpose of this research to design a continuous data-based information system model that would be an aid in responding to the current and future information needs of industrial arts education in the United States and territories.

Specifically, this study sought answers to the following basic questions:

1. What are the data collection needs of the industrial arts profession?
2. What are the components of a data-based information system that will serve the needs of the industrial arts profession?
3. Is the data-based information system designed by this study effective in collecting the needed data on industrial arts education programs?

SIGNIFICANCE OF THE STUDY

If industrial arts education is to effectively respond to the challenge of providing all students with a wide range of technological experiences relative to a complex and changing society, a viable data base is both a vital and essential component to the success of that objective. The data based information system is an important step toward maintaining a continuous national data base on industrial arts education programs. This data base will ease the concerns shared by many educators about the status and future directions of industrial arts education. Also, the system is timely because of several major trends being felt in industrial arts education. The impact of these trends, such as special services to special needs students, student organizations, female participation, program expansion, and the teacher shortage, will increase the amount of information and data which could be made available to decision makers. These complicating circumstances, coupled with student enrollments, resources to be allocated, and knowledge about the learning process, have placed additional stress and importance on the quality of decisions regarding programs. Although research data needs vary within states and localities, specific data regarding the characteristics of all industrial arts programs should be collected, analyzed, and made accessible to

all personnel involved in the planning, implementing, and maintenance of programs.

Specifically, this system was designed to provide a model for collecting, analyzing, and reporting the following types of data to local, state, and national industrial arts planners and administrators in the United States and territories:

1. Number of certified and non-certified industrial arts teachers.
2. Average starting salary for industrial arts teachers.
3. Number of bachelor degrees earned at industrial arts teacher education institutions.
4. Number of graduates employed as industrial arts teachers in the state.
5. Number of male and female students enrolled in secondary school industrial arts courses.
6. Number of male and female students enrolled in vocationally approved/funded secondary school industrial arts courses.
7. Number of handicapped and disadvantaged students enrolled in secondary school industrial arts courses.
8. Number of vacant industrial arts positions in the state.
9. Course titles and applicable grade levels of vocationally approved/funded secondary school industrial arts courses.
10. Industrial arts courses and activities which utilized vocational funds.

11. Number of full-time supervisory personnel for industrial arts programs at the state or territory level.
12. Number of state or territorial staff members assigned to supervise industrial arts student organizations.
13. Number of AIASA affiliated chapters and students in the state.
14. Number of teachers who participated in certain inservice workshops.
15. Funding provisions for industrial arts student organizations.

The above data, collected on a continuous national basis has implications and establishes trends and directions for future planning within the field. The following are some examples of the uses of this longitudinal data by potential user groups.

#### State and Local Industrial Arts Supervisors

1. National data concerning teacher vacancies and students graduating from teacher education institutions can be used to determine the supply of and demand for industrial arts teachers and as a recruiting source for hiring or filling vacancies where shortages exist.
2. Data concerning inservice activities can be used as a basis for determining future inservice needs within state and localities.
3. A national perspective of data on enrollments in current courses by title, by grade level and by sex can be useful in determining the kinds of courses that attract and serve more students. It can also be used to determine trends in course offerings for planning pre-service and inservice courses, developing curriculum guides and materials, and assessing programs.

4. Data concerning AIASA activities and special needs students could provide resources for states and localities that have not been aggressive or successful in accommodating these special groups.
5. Data dealing with average starting salaries for industrial arts teachers can be used to establish credibility and documentation of the need for salary adjustments based on the supply and demand of teachers.

#### Teacher Educators

1. The types of courses being offered in states will have implications for undergraduate program planning, curriculum developing and pre-service and inservice teacher needs.
2. Data concerning students graduating from teacher education institutions can be used as a basis for recruiting graduate students.
3. Student enrollment data and AIASA membership data can be used as a basis for recruiting undergraduate students in teacher education programs.
4. Data concerning AIASA activity and special needs students have implication for undergraduate curriculum planning and pre-service and inservice needs.
5. Data concerning salaries for industrial arts teachers and teacher vacancies could be used in career advising of undergraduates.
6. Data concerning female enrollments could be used as a basis for determining ways to recruit and retain females in industrial arts.

National Level/Professional Associations

1. Most of the data could provide geographic or regional analysis of the status and trends in industrial arts education.
2. The data could be used for documentation and accountability in terms of legislative issues and policy making.
3. The data could be used as a national tool in industrial arts for recruiting students and teachers.
4. The data could be used as a basis for providing services to association members or to the profession based on current and future needs.
5. The data could be used as a means of communicating to the profession the strengths, weaknesses, and priorities of industrial arts education by maximizing resources without duplicating services.

ASSUMPTIONS

The following assumptions were made concerning the study:

1. There is no nationwide system for collecting and reporting comprehensive data on industrial arts education programs.
2. The development of a reliable, national data-based information system model for industrial arts education will have positive impact on resolving the data collection problems of the profession.

3. The questions included in the state supervisors surveys were sufficient to provide a comprehensive overview of the current status of industrial arts programs in the United States and territories.

#### LIMITATIONS

It was beyond the scope of this study to identify specific data elements needed by all system user groups. Such data needs have been found to vary among users and within localities, states and the nation. The intent of the study was to design a data based information system model. Therefore, no attempt was made to implement and manage the system beyond the recommendations.

#### DEFINITION OF TERMS

American Industrial Arts Student Association (AIASA).

The American Industrial Arts Student Association, known as AIASA (pronounced I-A-Sa), is the only student organization devoted exclusively to the needs of industrial arts students who are presently enrolled in, or have completed industrial Arts courses. (AIASA Guide for Industrial Arts Programs, 1981:6)



Data. "Raw facts in isolation which, when placed in a meaningful context by a data processing operation(s), allows inferences to be drawn" (Burch and Strater, 1974:23).

Data Base. A collection of interrelated data stored together with controlled redundancy to serve one or more applications; the data are stored so that they are independent of programs which use the data; a common and controlled approach is used in adding new data and in modifying and retrieving existing data in a data base. A system is said to contain a collection of data bases if they are disjointed in structure (Martin, 1976:329).

Industrial Arts Education Programs. Those education programs (a) which pertain to the body of related courses, organized for the development of understanding about all aspects of industry and technology, including learning experiences involving activities such as experimenting, designing, constructing, evaluating and using tools, machines, materials, and processes and (b) which assist individuals in the making of informed and meaningful occupational choices or which prepare them for entry into advanced trade and industrial or technical education programs (Federal Register, 1977).

Information System. A systematic, formal assemblage of components that performs data processing operations to (a) meet legal and transactional data processing requirements, (b) provide information to management for support of planning, controlling and decision making activities, and (c) provide a variety of reports, as required, to external constituents (Burch and Strater, 1974:71).

Management Information System (MIS). "Any information system that provides a manager with information on the activities and pertinent interrelations about the current status of the production/operation system over which he has authority" (Alexander, 1974:60).

Model. A representation of the components of a process which describes relationships among components and illustrates a systematic approach to the process (Ellison, 1973:4).

Secondary School. A school comprising any span of grades beginning the next grade following an elementary or middle school and ending with or below grade 12. (National Center for Education Statistics)

Standards for Industrial Arts. Standards are descriptive statements established by key professionals ( authority) and

used as a model to evaluate the degree to which a program meets qualitative and quantitative characteristics of excellence (Standards Project, 1980).

Standards for Industrial Arts Education Programs Project (Standards Project). The Office of Education of the U.S. Department of Health, Education, and Welfare issued R.F.P. 78-129 for the development of standards for industrial arts education programs in August, 1978. On September 29, 1978, the Industrial Arts Program Area at Virginia Polytechnic Institute and State University was awarded Contract No. 300-78-0565 (Project No. 498AH80061) to develop these standards. The Standards for Industrial Arts Education Programs Project began operation under the direction of Dr. William E. Dugger, Jr. on October 1, 1978 (Standards Project, 1980:2).

State and Territorial Supervisor. The person designated as chief administrator, director, supervisor, consultant, or specialist responsible for the promotion, development, maintenance, and improvement of instruction for industrial arts education programs in each of the 50 states and four territories (Guam, Puerto Rico, Virgin Islands, Washington, D.C.).

System. A group of elements, either physical and non-physical in nature, that exhibit a set of interrelations among themselves and interact together toward one or more goals, objectives, or ends (Alexander, 1974:4).

Vocational-Technical Education. The broad range of educational experiences which are designed to prepare individuals for a career which usually requires less than a four year college degree for job entry. Synonymous with votec education and occupational education (Wiens, 1973:25).

#### SUMMARY

The growth of industrial arts education along with the many facets of its programs has increased the amount of information needed by educational planners and decision makers for planning, assessing, and improving the quality of programs. Historically, data collected on industrial arts programs have been fragmented, inaccurate, and poorly organized. It was anticipated that the study would be a major step toward the development of a continuous data base information system to aid in monitoring the development of industrial arts education programs in the United States and territories.

In this chapter the reasons why the data-based information system was needed and basic questions regarding the data collection needs of the industrial arts profession were presented. The limitations and assumptions in the study were cited and terms which assumed specific meanings in the study were included.

## CHAPTER II

### REVIEW OF RELATED LITERATURE AND RESEARCH

A review of relevant literature and related research to this study was undertaken in an attempt to examine information which supported the rationale and provided the basis for the design of the study. The materials reviewed are organized in the following sections:

1. Comprehensive Data Collection for Industrial Arts Education
2. Theories of Information System Design
3. Information Systems in Education
4. Educational System Planning as Applied to an Information System Design Model

#### Comprehensive Data Collection in Industrial Arts Education

The literature surveyed and used here was chosen to identify recent studies that lended support in the conceptualization of this study. There was little literature available dealing with the specific purpose of the study, however, a

few studies dealing with the lack of and need for comprehensive data collection in industrial arts education are discussed.

Historical Perspective. Traditionally, industrial arts education has had two primary emphases: that of general education and pre-vocational education. This situation has presented a confusing image to the general public, students, other educators and administrators as well as industrial arts educators. This has existed largely because of the dichotomy of definitions for industrial arts, such as, the definition given in P.L. 94-482:

Those education programs (a) which pertain to the body of related subject matter, or related courses, organized for the development of understanding about all aspects of industry and technology, including learning experiences involving activities such as experimenting, designing, constructing, evaluating, and using tools, machines, materials, and processes and (b) which assist individuals in the making of informed and meaningful occupational choices or which prepare them for entry into advanced trade and industrial or technical education programs. (Public Law 94-482).

National data collection agencies such as N.C.E.S. has followed a practice of grouping a listing of one category of industrial arts education with other areas of vocational and technical education. A study to determine the supply of and demand for industrial arts teachers revealed that vocational and technical education reports often cite only gross data

for a major field such as trade and industrial education, where industrial arts education is occasionally grouped (Miller, 1979). Miller indicated that specific data are often unavailable on the thirty-six different teaching areas of trade and industrial education, the eight areas of vocational agriculture, the ten areas of health occupations, and the ten areas of office occupations (1979:2). According to Miller, "the most critical factor, other than changes in policies, to contend with in making supply and demand projections for industrial arts is obtaining sufficient accurate data" (1979:15). The results of Miller's research revealed that state supervisors do not appear to agree on the notion that data collection and dissemination of information on industrial arts in their state is one of their roles. Many supervisors were able to produce all the information requested and others were unable to supply any information. Miller concluded his study with the following recommendations.

1. It is recommended that the role of the state supervisor be expanded in some instances, and strengthened in others, to include data collection activities. Specifically, each supervisor should be familiar with data collection procedures and instruments used in the state and be able to extract data when needed. Data collection procedures and instruments should be modified wherever necessary to insure that the state supervisor has basic information on industrial arts students, programs, and teachers.



2. It is recommended that data be collected on industrial arts from the state supervisors on an annual basis by some organization of foundation until such time as the American Industrial Arts Association can assume the responsibility.
3. It is recommended that state supervisors, the American Industrial Arts Association, and the Standards for Industrial Arts Education Project develop a survey which can be used at the state and national levels to collect data on industrial arts. This document should include standardized terminology which matches terminology used in the standards presently being developed through the Standards Project (1979:15).

Data that are collected on vocational education programs have been found to be an important source of information for use by the federal government for policy and program determination (Golladay and Wulfsberg, 1981). Prior to 1972, industrial arts education programs were not eligible to receive federal vocational education funds and were not included in reports on vocational education programs. Since then, reports on vocational education that have included industrial arts education have contained minimal data regarding the characteristics of industrial arts education. For example, reports from N.C.E.S. revealed that data collected through the newly instituted Vocational Education Data System (VEDS) are collected only on those industrial arts courses which meet the guidelines of P.L. 94-482 and receive federal vocational funds. Industrial arts courses which are not characterized as pre-vocational and are con-

sidered to be general in nature are not included in this reporting system. However, data reported on other areas of vocational education such as agriculture and business are collected on both general and vocational education courses. (Golladay and Wulfsberg, 1981).

The landmark Schmitt and Pelley study conducted in 1962 was the first attempt to collect nationwide data on industrial arts programs. This study commissioned by the U.S. Department of Health, Education, and Welfare (U.S.D.H.E.W) through the Office of Education, served as a benchmark for future studies to determine trends in industrial arts education (Schmitt and Pelley, 1966). For the first time, a comprehensive review of the industrial arts education program in the public secondary schools of the United States was provided. "Heretofore, little factual information was available for curriculum specialists to use to improve this area of general education" (1966:1). One of the unique features of the study was that several factors which influenced educational programs were examined together such as the teacher's background, ability of students, teaching problems, methods of teaching, course offerings, and instructional content. Two survey instruments, or questionnaires, were used to obtain data for the study. One was completed by principals, the other, by industrial arts teachers.

These data were reported in relation to the enrollment size and type of school. The study also revealed areas where improvements were needed in industrial arts education.

In 1971, Mannion and Spencer conducted a study to determine the growth of industrial arts enrollments, graduates, collegiate institutions, degrees, and professional faculty between 1900-1980. According to the authors:

Evidence as to the number of students enrolled in industrial arts, along with data denoting professional growth within the field of industrial arts, has been seriously lacking and may continue to be unless action is taken to research and make available these important statistics. For these reasons, the authors undertook the following study in an attempt to present essential data concerning industrial arts enrollment trends, professional growth trends and, more specifically, to indicate to professional organizations the need for cogent, statistical data for the field of industrial arts. (1971:22)

In collecting existing data, various publications, journals, and government publications were examined. Mannion and Spencer (1971) believed that much of the data presented was confusing. They further suggest that "there was little distinction between industrial arts and the allied fields of industrial education, vocational education, and trade and technical education" (1971:23). These were frequently combined, or figures were roughly estimated in reporting the data or findings. In concluding the report, the authors made a plea to professional organizations, such as the AIAA

and the IAD/AVA to aid in the collection and analysis of data relating to the field of industrial arts education.

Fifteen years after the commissioning of the Schmitt-Pelley Study, the U.S.D.E., issued a Request for Proposal (RFP) to develop standards for industrial arts education programs. The responses to this RFP resulted in the awarding of a contract to the Industrial Arts Program Area at Virginia Polytechnic Institute and State University on October 1, 1978. The project was organized into three one-year phases, beginning in 1978 and ending in 1981. One of the objectives of the project was to develop a national data base on industrial arts education programs (as defined in Title I, Part C, Section 195(15) of the Educational Amendments of 1976).

This new data base is more comprehensive than the Schmitt and Pelley study. Because of the rapid expansion of industrial arts some additional data were needed and collected on various aspects of the program. Specifically, data were collected on the enrollment and activities of student organizations in industrial arts education, enrollments of and accommodations for handicapped and disadvantaged students, and vocational funding of industrial arts education courses. Also, since the Schmitt and Pelley study course classification in industrial arts education increased from sixteen to

sixty-four U.S.O.E. course classifications. The Standards Project collected data on the sixty-four classifications by enrollment and by grade level.

In addition to collecting data from principals, guidance counselors, and industrial arts chairpersons, a fourth instrument was developed to collect statewide demographic data from the 54 state and territorial supervisors of industrial arts education.

A comprehensive review and synthesis of research conducted in industrial arts education from 1968-1979 established areas of primary concerns and specified elements within each of the areas. Based on their insights for the field of research Dyrenfurth and Householder (1979) synthesized existing research and suggested topics for further study. Specifically, in summarizing the "status studies" in the section on Education Programs, the authors stated it well:

Status studies presented a rather curious contradiction. A sizeable number have been conducted at the state levels. They typically have been done in a relatively traditional survey approach and have been concerned with rather limited descriptive statistics. What is strange, however, is that despite all their similarities, there is little in the form of an overall aggregation of these projects. It seems that individual building blocks exist, but no one as yet has put the wall together. Perhaps Schmitt and Pelley's research in 1966 (and, hence, outside the time scope of this review) is the only national perspective available. There is hope in that the U.S.O.E.

has recognized this need and has, in fact, commissioned a national study to develop a data base for our profession. It will be particularly interesting to compare the findings of this study to the projections for 1980 that were advanced by Mannion and Spencer (1971). What is almost inexcusable, however, is that the existing data-gathering mechanisms have apparently allowed industrial arts information to "fall between the cracks." More specifically, it seems unconscionable for state division of vocational education to collect detailed program information for the traditional service areas and then--although industrial arts is treated as a member of the vocational family--not collect equivalent data for industrial arts. It also appears that considerable practitioner resentment would be aroused if there were greater awareness of the fact that little of the abundant data that principals, superintendents, and teachers supply to state departments is retrievable (1979:36).

### Theories of Information System Designs

The system concept is rapidly becoming the nucleus of decision making in the highly complex world that is developing. The military services were the first to make wide use of systems analysis for logistic reasons, followed closely by big private businesses, such as IBM and General Motors in their daily handling of world trade. Rosenbloom (1971) assessed the potential benefits of a wider use of systematic methods in attacking urban management problems while also identifying important technical and institutional limitations in their effectiveness. Several studies were used to illustrate the application of operational analysis and sys-

tems analysis as tools for more efficient organization and management of urban affairs.

Churchman (1968) viewed systems in a social context including such entities as government and corporations. He took a philosophical look at systems and raised fundamental questions about science as an inquiry system and treated the difficult problems of how and by whom the products of science were to be evaluated. Churchman played down the quantitative side of systems analysis and approached systems from a philosophical position.

Bertalanffy (1968) presented a volume of ten essays dealing with systems from a theoretical point of view. He stressed systems role in the study of biological and social organisms and in the unification of science as a whole. He presented systems analysis as a scientific philosophy and failed to recognize the role of the technical side of the systems analysis theory.

Banghart (1969) struck a balance between two extremes, methodology and description, in his attempt to furnish educational administrators with an orientation to systems techniques and applications. For educators, he stressed the adaptation of the systems analysis approach which has proven helpful to management in general.

Kaufman (1972) summarized six main steps in system planning: (a) identifying the main problem for the needs assessment; (b) determining solution requirements and solution alternatives for solving the problem; (c) selecting solution strategies from the solution alternatives; (d) implementing the solution strategies; (e) determining program effectiveness; and (f) revising at any step in the process as needed. Each step involves various activities which can be adapted to meet the needs of a system.

Models are often used in systems analysis for simplicity and for understanding the big picture of the mission. Hill (1972) questioned the assumption that the only way of conducting systems work was through the use of the suggested model. He felt the main purpose of the model was to provide some readers with a general understanding of the systems concept and to provide others with a somewhat limited knowledge of the concept--good examples of its possible application in education.

All information systems, whether designed for military, education, or business applications, whether their form is manual or automated--share one objective: facilitation of the processes for acquiring, assembling, storing, processing, and distributing information.



### Information Systems in Education

Applied to education, the systems approach provides a logical, systematic set of procedures by which required and desired goals can be reached. Education is clearly a system as it is characterized by the elements of a system previously identified. The systems approach holds unique potential for the solution of complex educational problems. Banathy (1968) warned, however, against the simple adoption of systems approaches which have been used in business, industry, and government. A few studies addressed the importance of information systems in educational planning and decision making.

Abeson (1973) described an information system for state special education administration. The system developed was designed to provide persons engaged in special education administration problem solving access to administrative literature developed in all states for the implementation of special education laws to identify possible problem solutions. The study also sought to evaluate the effectiveness of a computer based information system utilizing one state's administrative literature. Significant to the study was the finding that the system with the single state data base was rated of value but was projected as being of greater value if operated identically with a nationwide data base.

In describing a data base information system for mathematics education in Pennsylvania, Caswell (1971) discusses the establishment of a comprehensive data base of analytical information about curriculum materials for elementary school mathematics which can be retrieved to meet the specifications of local school districts. This system is an information storage and retrieval system that uses the technologies of the computer and microfilming. According to Creswell, included in the data base is information about textbooks, achievement tests, curriculum practices, audio-visual materials, manipulative devices and research studies. Creswell's study revealed that applying the system to curriculum decision-making was successful in demonstrating that mathematical knowledge of teachers who received direct and indirect instructions increased.

Stefanu (1972) developed a Program Management Information System (PMIS) model to serve decision-making administrators involved with undergraduate medical education. The model was specifically designed to assist medical school administrators in the planning and budgeting process for a Combined Basic Medical Science (CBMS) training program in the University of Alabama School of Medicine. According to Stefanu:

Increasing enrollment, new plant facilities, and insufficient funds to operate medical school programs demand that administrators, often times without current and accurate information, make

decisions. Yet, these are the decisions that will determine the level of success of the teaching program. The PMIS was designed to assist the administrators by providing them with timely, concise and reliable information with which they could make better decisions (1972:27).

Hiland (1973) investigated the information needs and the use of information systems by Social Studies teachers. The author defined information needs as "those items of information sought by teachers from information channels, people and documents" (1973:12). The study also sought to identify the variety of information systems and channels teachers use to find information.

Martin (1972) designed an information storage and retrieval system model for the field of Therapeutic Recreation Services (TRS). The study revealed a need for the development of increased information services and systems by members of the field of TRS. Through the design, evaluation and operation of the system model, the study demonstrated the feasibility of such a system model and indicated alternative approaches for its extension to a fully operational information system for the field. The author points to the simplicity of design and standardization of procedures, and suggests that the system model could be utilized as a general model for information system development in other areas of the Recreation Field.

Lear (1980) described a management information system (MIS) for vocational industrial teacher certification in Virginia. The study was designed to provide certification status information to four groups of system users. The four groups included: vocational industrial teacher educators, state vocational industrial education service staff, local education agencies, and vocational industrial teachers throughout the state. The system was designed around the Criteria Acquisition Model (CAM) for educational product evaluation. The model prescribed that the evaluation address several criteria or attributes of the system; desirability, feasibility, and usability.

Patterson et al. (1977) conducted a study to design and implement a management information system that would provide Alabama vocational administrators with accurate, usable and timely data and information concerning input, output, and impact of vocational education. The general approach was to evaluate and consolidate existing components of data systems and to develop additional components to contribute to a comprehensive management information system. A comprehensive vocational management information system was developed incorporating automated data bases for student, personnel and fiscal accounting. Data elements are based on individual student, teacher, program, and school district. Inform-

ation from the system is used for program planning and evaluation, budgeting and financial distribution, and general program administration.

A major study (1977) designed to develop a management information system for vocational education (MISVE) was conducted by the Center for Vocational Education (CVE) at the Ohio State University. MISVE was designed to allow the acquisition, processing, and retrieval of information in a manner optimally useful for planning, reporting and accountability

uses. Specifically it was designed to deal with the needs of information system administrators who must periodically redefine existing data bases, access stored data in a form and at a time when they are needed. MISVE addressed itself directly to the national concern for better planning and accountability through the availability of timely and targeted data based information. The system designed was broad in scope and includes the most current information concerns of vocational education. It was specifically

igned for ease in making user-specified data base modifications to meet changing federal, state, and local information needs. The output from MISVE can take the form of either standard or ad hoc reports. According to Starr and Black, the whole system is input-output dependent: the output is severely limited by the format of the input and the

design of the programs to produce the output (1977:4). The system can work well for the specific tasks it was originally designed to do, but it has no flexibility.

In designing the system an organizational framework was developed through which data would flow. The framework conceptualized needs as existing at five levels, as shown in Figure 2. The framework for the MISVE functional needs levels contains six functional categories of data: (1) student data, (2) staff data, (3) program data, (4) equipment and materials data, (5) facilities data, and (6) financial data.

The system features of MISVE consists of six components (1977:8):

1. a prototype data base which is primarily state level oriented;
2. a prototype set of 20 data collection instruments;
3. a commercially available generalized data base management system (GDBMS) computer software package;
4. a prototype data base definition and accompanying data base structure which depicts the logical and hierachial relationships of data elements within the data base;

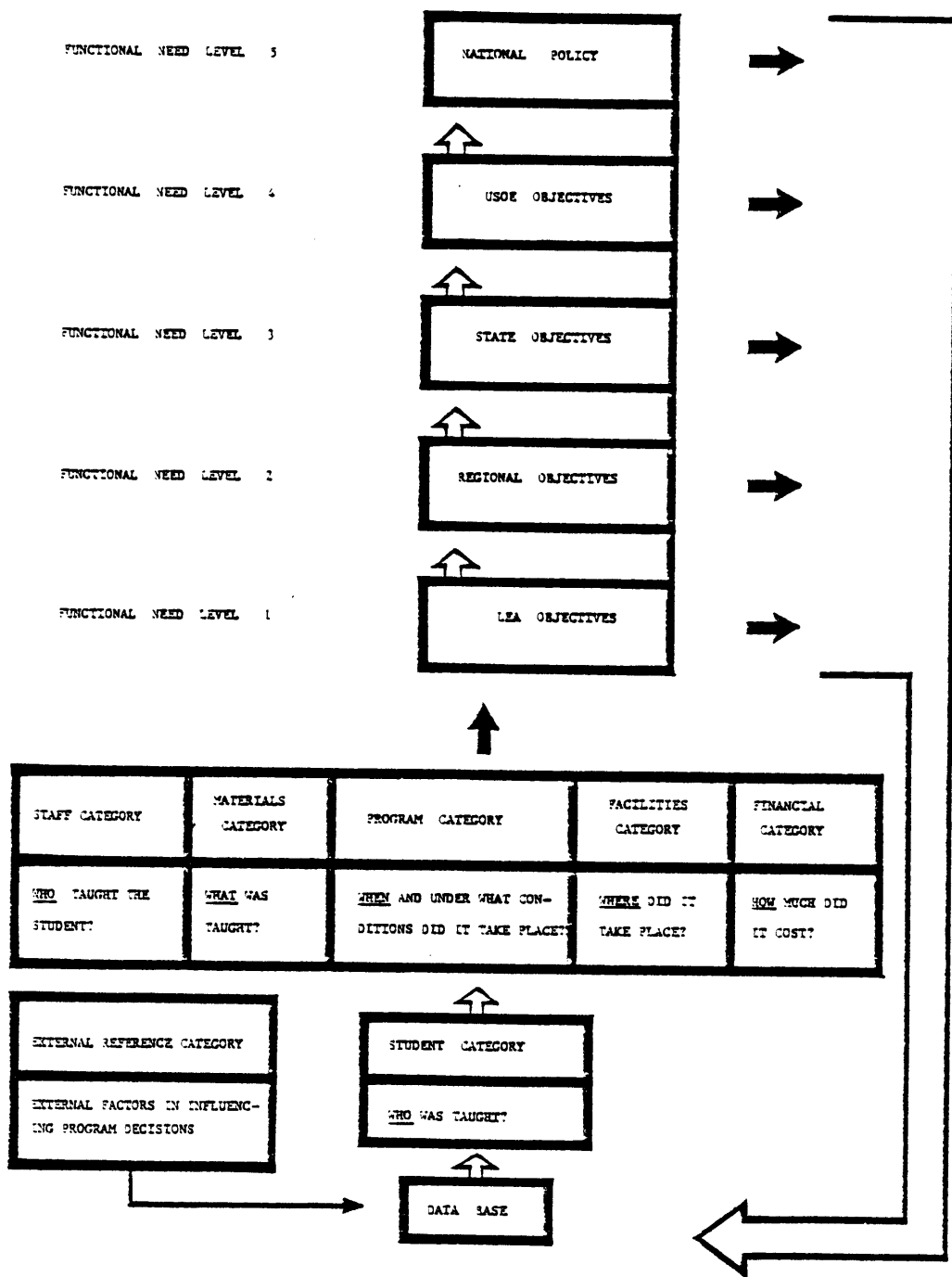


Figure 2  
MISVE Functional Needs Levels

5. applications programs for use with the GDBMS; and
6. system documentation.

The adaptability of the MISVE data base to the needs of potential users and the options available for acquiring and operating MISVE computer software will enhance the system's usefulness to vocational education agencies that already have heavy investments in MIS and those that have minimal or no MIS but want to initiate or upgrade their current capabilities.

Similar studies have been conducted in vocational education by the Center for Occupational Education at North Carolina State University (1976) and by the National Advisory Council on Vocational Education, Washington , D.C. (1971). The latter study was concerned with developing a directory of the major sources of statistics and information in the field of vocational education and to indicate methods for using these sources. The directory was developed in response to problems encountered by the National Advisory Council in its efforts to explain problems and trends in the field. According to the report of the study by the Council, the challenge for organizing and developing this body of information will require considerable attention before some of these sources are useful for vocational education (1971:3).



### Educational System Planning as Applied to Information System Design Models

The material reviewed in this section is intended to give an overview of the tools for planning and their relation to the process called a systems approach to education. The literature in this section can be characterized as problem or need oriented. The primary emphasis of the authors was to explain the system methodologies which have evolved relative to these problems. Although these methodologies were distinct in the emphasis placed on each step by the designer, they were also similar in procedural format.

The skeletal framework upon which most methodologies were based is one commonly associated with the problem solving or scientific method (Scheel, Westerman, and Wimmert, 1969).

These procedures are as follows:

1. Recognition of need
2. Collect information and identify the problem
3. State goals and objectives
4. Search for ideas
5. Evaluate alternatives
6. Creative, synthesis and design
7. Prepare a model
8. Experimentation
9. Presentation of the solution

These steps will provide the organization for reporting the major methodologies presently available for use in educational systems planning.

Recognition of need -- Kaufman (1972) presents the most complete assessment of the techniques and requirements for analyzing needs. According to the author, "the identification of needs is a discrepancy analysis that identifies the two polar positions of: Where are we now?; Where are we to be? and thus specifies the measurable distance between these two poles." He also identifies three possible dimensions for needs assessment: (1) the nature of knowledge, (2) the nature of the learner, and (3) the nature of society (1982: 13-14).

Kaufman also describes three strategies that can be used to analyze needs and evolve objectives: Type C, Type D and Type I. Type C, conventional, begins with general goals and directly evolves programs to accomplish these goals. Kaufman does not recommend this technique since it is too unstructured. Type D, deductive, begins with existing goals and objectives, develops criterion measures for them in the form of behaviors, determines the actual behaviors, evaluates the discrepancies between actual and ideal, then evolves objectives for those educational programs which will meet the ideal and finally develop those programs.

The last model is Type I, inductive. The procedures for this model are to first determine the existing behaviors, classify these behaviors into program areas, simultaneously obtain a set of ideal goals and desired behaviors, and then prepare detailed objectives for educational programs that would shift existing behaviors toward the ideal. Finally, the procedure culminates in the preparation of plans for the implementation of programs.

Collect information/identify problem -- The differentiation between the recognition of a need and the subsequent collection of information and definition is not always possible. Kaufman (1972) combines the determination of need, the gathering of information and the identification of the problem within this step 1: identify problems from documented needs--problem identification. Most authors do not specifically distinguish between the needs and problem identification.

State goals and objectives -- Most authors included this in the step of problem solving. Some like Kaufman called it step 2: determine solution requirements and solution alternatives. Williams (1974) described it as the statement of "product specification objectives (PSO)." This phase essentially describes the projected outcomes of the procedure.

The statement of objectives and outcomes was primary to the administrative control models presented by Immegart and Pilecki (1973). Hartley (1968) in discussions of the Planning Programming Budgeting System (PPBS) techniques placed great emphasis on the development and specification of outputs, program outcomes and long-range objectives.

Kaufman (1972) has written the most detailed prescription for organizing this step. He details four distinct hierarchical stages in developing objectives and subsequent solutions including (1) mission analysis, (2) function analysis, (3) task analysis, and (4) method-means analysis.

A brief discussion of these steps follows. A mission according to Kaufman is a job, product, service or change in the condition of something that is to be realized by the project to be undertaken. Thus a mission analysis is a concise statement in measurable terms of what constitutes the outcome or completion of the project. A function as defined by Kaufman is one specific outcome or objective that contributes to the total mission outcome. Thus a function analysis would involve the hierarchical or level breakdown of each mission outcomes into functions.

A task defined by Kaufman (1972) is a discrete unit of performance which when combined with other tasks would con-

stitute a function. Task analysis is then the breakdown of identified functions into discrete tasks. The final step, method-means analysis, is not involved with objective analysis but is rather included in the step of the "search for ideas."

Search for ideas -- Primarily this stage is characterized by creative generation of solutions which will eventually be evaluated with respect to relevancy to the previously established objectives. Kaufman calls the "search for ideas" step, method-means analysis, defining a "method" as a strategy for achieving an objective and a "means" as the vehicle for implementing the strategy. A method means analysis involved determining the number of ways a function can be achieved.

The PPBS technique, as explained by Hartley, is a procedure used by system analyst to detail the alternatives to the stated objectives. Hartley (1968) summarizes the search for ideas stage using this procedure as follows:

1. State General System Goals
2. State Objectives
3. Outline General Program Areas
4. List Possible Programs
5. List Possible Subprograms
6. List Possible Program Elements

## 7. List Possible Program Components

## 8. List Possible Tasks

Evaluate alternatives -- This stage is normally the comparison of the generated alternative solutions with the objectives and applying some criterion of measurement to effect a choice. Hartley (1968), Immegart and Pilecki (1973), and other authors who have incorporated outcome analysis techniques like PPBS in their methodologies suggest several criterion measurement techniques usually referenced to cost. These include Cost Effective Analysis, Benefit-Cost Analysis and so forth. Emshoff (1971) provides another evaluation perspective which explains and measures his input oriented model on the criterion of the ability to measure inputs. He writes:

I concluded that an input-oriented research focus must be used to achieve behavior explanation because the characteristics of explanation are defined by analyzing the properties of the inputs to the model" (1971:3).

Creative synthesis and design -- This phase includes processes of planning the activities of design, conceptualizing an overview of the solution and designing the elements. Many authors typified by Montello and Wimberly (1965) detail various management techniques available for planning including Program Evaluation and Review Techni-

Precedence Diagramming

Method (PDM), flow charting, Gantt charting, linear programming and so forth. These techniques break down the program into elements and prepare in one fashion or another a sequential illustration that will facilitate the processing and allocation of resources.

The process of conceptualizing an overview of the solution is described by Williams (1974) as "Conceptual Layout - the principles of the design are formulated." Banathy (1968) writes:

You should first make a tentative design at the whole level, which becomes the framework for evolving an optimum configuration of components, then work out the detailed design of components. . . (1968:29).

The process of design is the operationalizing of a plan and conceptual layout. Banathy states,

Design is basically a detailed elaboration of this plan. It involves the design of the first working form of the product, system or solution. The design is the bridge between the conceptual model and the "real thing" (1968:30).

He also lists several strategies of design including (1) accumulate required information, (2) formulate design alternatives, (3) evaluate, (4) prepare a design description, and (5) prepare instruction for development of the prototype. Most authors include this process of design with the following preparation of a model step.

Prepare a Model -- This stage entails the construction of a model which will subsequently be tested. Many writers have included the previous phase of design with this stage and label the combination implementation. Kaufman (1972) typifies these other authors when he writes "implementation is the actual doing what was planned, using the selected tools and strategies."

Experimentation -- This step implies that the design as prepared and implemented is evaluated, normally against the objectives which were originally proposed. Doughty and Stokesas (1973) state,

Although evaluative data are being used at many levels of higher education decision making, comprehensive cost and effectiveness data are generally not available. Moreover, procedures for analyzing costs and effectiveness of conventional or individualized instruction are neither well defined nor well understood. In the absence of such data or procedures, planning and decision making tends to be done on the basis of limited factors which are often considered in isolation from each other. Magnitude of initial cost becomes a major criterion. At other times the superficial criterion of innovativeness or prestige value of the program is given the greatest weight. Then there are those sobering moments when a decision is based on a rationale which says "that's the way we've always done it (1973:165).

Presentation of a Solution -- This last phase is usually not detailed by most authors and is replaced by a revision and feedback phase. As Kaufman (1972) states,

"Revision not only happens last, it is also continuous and on-going. It relates to the concept



of formative evaluation, whereby any time the interim or in-process objectives are not being met, necessary revisions may be made" (1972:28).

Agreeing with the majority of those authors who include revision within their methodology, Immegart and Pilecki (1973) states:

Following implementation and use of the procedure, the system design group would reconvene to evaluate the system in terms of actual use relative to the objectives set for the system. Modifications or adjustments would be made to refine the system as needed.

#### An Information System Model Appropriate for Industrial Arts Education

Appropriate to the design of this study are the works of Kaufman (1967 and 1972), who was instrumental in the development of a basic process model for a system approach to achieve required outcomes based on needs. In this section the writer has interwoven Kaufman's model with the system design in order to provide a background for the design of the study.

Kaufman (1972) attempted to define a system approach in terms of a generic problem-solving process. A six step process model was described which was a self-correcting process for identifying and solving problems. Kaufman believed that successful management of education is possible with the use of such a system approach. It requires that

interacting variables be formally considered in design and that outcomes be evaluated and necessary revisions made on the basis of performance (1972:6). The six steps are grouped into two units: problem identification and resolution.

### Problem Identification

Step 1- identify problems from documented needs: A statement of need provides a tangible, quantified starting referent for the design of a responsive system. The importance of starting system design from documented needs prevents the selection of solutions before the identification and specification of problems.

Step 2- determine solution requirements and solution alternatives: This step determines what is to be done and what alternative strategies and tools are available to accomplish each requirement.

### Problem Resolution

Step 3- select solution strategies from alternatives: This step begins the "how-to-get-it-done" portion of the system approach process. The appropriate tools and strategies for achieving the various requirements are selected. Frequently a choice criterion of cost-benefit is used, that is, the selection from among alternatives which will at least achieve the minimal requirements at the lowest cost.

Step 4- implement solution strategy (ies): It is at the fourth system approach step that the products of planning and selection are actually accomplished. The methods and means are obtained, designed, adapted, or adopted. The system is put into operation, including all utilization and acquisition of people, equipment, facilities, budgets, and many other factors necessary for a properly functioning system.

Step 5- determine performance effectiveness: Data are collected concerning both the process and the products of the system during and after the system's performance. Discrepancies are noted between actual system performance and the performance requirements. This provides data on what is to be revised and thus gives diagnostic information that will permit valid system revision.

Step 6- revise system as required: Based on the performance of the system as indicated by the performance data, any or all previous system steps may be modified and a system redesign job accomplished if necessary (Kaufman, 1972:13-23).

The flow chart in Figure 3 provides a tool for displaying or describing a system and its components in a simple, "at-a-glance" format. This paradigm of a system approved for education is a design process that is intended to be logical, orderly, systematic and self-correcting. It requires that the planner be open and objective and that only valid data be used in planning, implementing and evaluating.

#### SUMMARY

The literature and research reviewed in the chapter were addressed under the following major headings:

1. Comprehensive Data Collection for Industrial Arts Education
2. Theories of Information System Design
3. Information Systems in Education

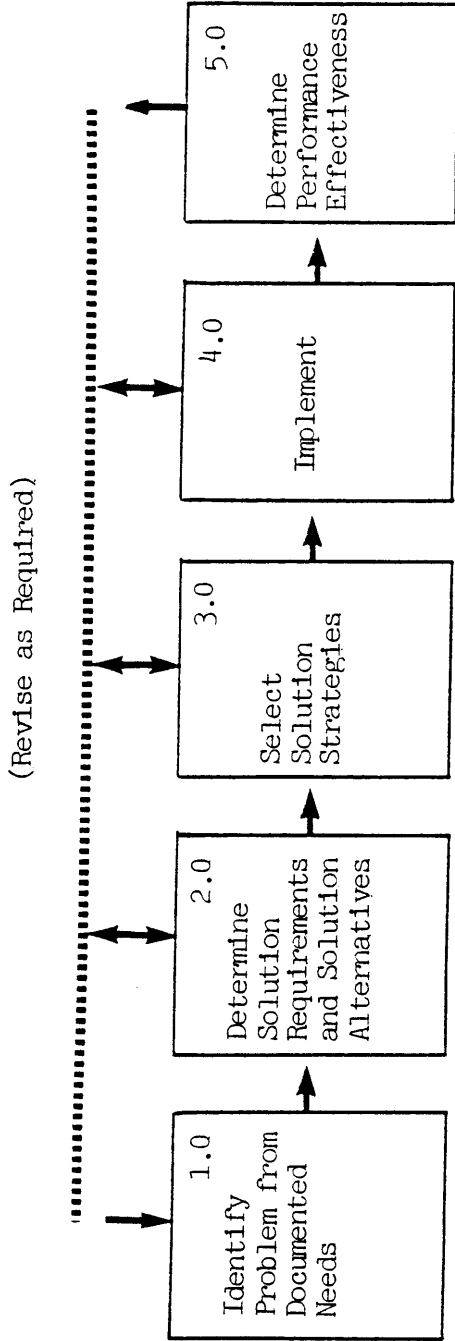


Figure 3  
A general problem-solving process. Five of the six steps are identified and numbered; the last (revise as required) is indicated by the broken lines. Based on Kaufman (1972).

#### 4. Educational System Planning as Applied to Information System Design Models

A review of the literature showed the historical trends of data collection for industrial arts, as well as established a need for a comprehensive data based information system for the field. Also discussed were theories and approaches to information systems which could be applied to educational system planning and were appropriate for the design of the study system model.

## CHAPTER III

### THE DESIGN OF THE STUDY

The purpose of the study was to design a continuous data-based information system model for use in responding to the current and future information needs of the industrial arts profession. This chapter contains the methods and procedures used to accomplish this purpose. The research design consisted of four related but separate procedures which, when integrated resulted in the development of a data-based information system model. The first procedure was a review of the literature from which a preliminary system model was developed. The second procedure involved the preliminary development of the data collection instrument by a panel of practicing experts to obtain data which could be used to refine and improve the system. The third procedure involved a pilot test of the revised data collection instrument, and the fourth procedure involved a field test to determine if individuals unfamiliar with the study could successfully complete the revised data collection instrument.

### Development of the Preliminary System Model

Review and analysis of the literature in the areas of industrial arts informational needs, systems theory and planning resulted in identification of components that should be included in the data-based information system model designed. Each component was analyzed and organized in terms of a purpose and a set of procedures for planning the components. Synthesis of the components and their relationship resulted in a preliminary systems planning model represented schematically and as a set of written procedures. (Appendix A).

### Preliminary Development of the Data Collection Instrument

This section of the chapter deals with background information on the development of the initial data collection instrument by the Standards Project and the instrumentation process for the system designed.

### State and Territorial Supervisors Survey Instrument 1978-79.

In April of 1979 the Standards Project disseminated survey instruments to the universe of 50 state and 4 territorial industrial arts supervisors. In some states that did not have state supervisors other supervisors of vocational education and teacher educators were asked to respond to the

survey. The instrument used a variety of forced choice, open-ended, and fill-in-the-blank questions to obtain demographic data and the supervisors' opinion (Standards Project, 1980). The questions that were asked are listed in Appendix B. The questions selected for the instrument were based on the needs of the profession as perceived by the Standards Project's 18 member national advisory committee, the project staff, and the U.S.D.E. Each question underwent rigorous review and revision before the instrument was cleared with the federal government (FEDAC approval). The data received from the surveys were transferred to a standard optical-scan form and read on to magnetic tape. The Statistical Package for Social Sciences (SPSS) (Nie & Hull, 1978), and Statistical Analysis System (SAS, 1979) sub programs were used to compute the necessary statistics.

After examining these data, the analysis revealed that several questions elicited very few responses. The national advisory committee, which included three state supervisors, recommended a presentation be made to industrial arts state-supervisors who were meeting in Memphis, Tennessee in October, 1979 at the National Staff Development Workshop for State Supervisors, for the purpose of improving the data collection process. New surveys with only those questions that elicited few responses were prepared and personally



presented to supervisors at the Memphis meeting. Surveys were also mailed to supervisors who did not attend the conference. Some additional data were collected through this effort.

Revision of State and Territorial Supervisors Survey Instrument 1979-81.

As a result of the previous data collection efforts, the Standards Project's five member sub-advisory committee, consisting of recognized leaders in industrial arts recommended at its January 20, 1980 meeting that an attempt be made to re-collect data from the state and territory supervisors for the 1978-79 school year and again for the 1979-80 school year. An ad-hoc committee appointed by AIAA was given the responsibility of revising the existing instrument, collecting the data and analyzing and reporting the results. Under the leadership of Dr. Ralph Steeb, 22 state supervisors were asked to help review the survey instrument. These supervisors were selected on the basis of their responses to the Standards Project's original instrument, including respondents with little input, average input, and those who responded with complete information. Based on the comments and recommendations of these supervisors, a new instrument, Form II, was designed by the Virginia Polytechnic Institute and State University staff and mailed again in April, 1980 and April, 1981. (See Appendix C)

Panel of Consultants. The instrument selected for the system model is based on revisions of the Standards Projects State and Territorial Supervisors Survey instrument, Form II. A copy of this instrument is located in Appendix C. A major phase of the study was the identification of the problem based on documented needs. A panel of twenty recognized leaders in industrial arts education were solicited to evaluate the initial state supervisor's survey instrument, and to determine specific data needs and other components necessary for the system design. The members of this panel are listed in Appendix D. These members were selected based on their representation as potential system users. Included were state and local industrial arts supervisors, teacher educators, classroom teachers, and national professional association officers.

Evaluation Forms. The evaluation form used by the panel was designed to solicit specific responses and feedback on each of the data elements requested and on other components of the system. The instrument used was adapted from an evaluation instrument used by Lear (1980) to design an MIS for vocational teacher certification. The instrument was appropriate for this study and contained provisions to rate the features of the system design on a 1 (low) to 5 (high) scale. An initial overall rating of 3.0 or greater was con-

sidered to represent positive feelings toward the system (1980:61).

#### Data Collection Process.

The members of the panel were contacted and asked to participate in the study. Each member received a letter explaining the purpose of the study and a return response form. (Appendix E). Approximately two weeks later the panel was given an evaluation package which contained an overview of the study, the initial state and territory supervisors instrument, and an evaluation form. The evaluation package is located in Appendix F. The panel was asked to rate each item included in the data collection instrument in terms of its usefulness, and readability in an information system for industrial arts education. Part three of the evaluation instrument asked the panel to determine whether the data collection instrument was feasible for gathering comprehensive data on industrial arts education. Part four of the evaluation form asked the panel to list other data needs of the profession, and their opinion regarding the frequency of data collection for a national industrial arts data based information system. Based on the comments and suggestions of the panel, items in the instrument were revised or eliminated.

### Pilot Test Phase

After a revision of the instrument by the panel of consultants, a pilot test was conducted in four states. The participants in the pilot testing of the instrument included the state supervisors of:

1. California
2. New Jersey
3. Tennessee
4. Utah

Each state supervisor was contacted by letter and asked to participate in the study. A list of these participants is located in Appendix G. The letter included a return response form in order to indicate whether or not they were able to participate in the study. A copy of the letter is located in Appendix H. The states represented were also included in the universe of states for the field test phase of the study.

### Evaluation Form.

The evaluation form used in the pilot test phase was similar in design to that used by the panel of consultants. The respondents were asked to rate each data element requested in the data collection instrument in terms of readability, and accessibility of the data. A copy of the

evaluation form is found in Appendix I. Respondents were also encouraged to make additional comments or suggestions regarding the proposed system model.

#### Data Collection Process.

Upon agreeing to participate in the pilot test phase, respondents were mailed an evaluation package which included a cover letter, (Appendix J) the revised data collection instrument (Appendix K), and an evaluation form which included directions for completing and returning the form in the required time. The evaluation package contained a pre-paid, self-addressed return envelope. Two weeks after mailing the original forms, a telephone follow-up was made to non-respondents to encourage them to return the instruments.

#### Analysis of Results.

The results of the pilot test were analyzed and reported in Chapter 4 of the study in summary format. The results of the pilot test revealed that no further modifications to the data collection instrument were needed for the next phase of the design.

### Field Test Phase

The participants in the field testing of the system included the universe of fifty state and four territorial industrial arts supervisors, or the state level supervisors responsible for industrial arts education in states that had no supervisor. A current list of state supervisors was obtained from the American Council Industrial Arts Supervisors Directory, 1981. A list of these supervisors is located in Appendix L.

The purpose of the field test was to determine if the designated industrial arts supervisor for the state or territory could successfully complete the revised data collection instrument in the allotted time period. The field test to be successful if at least 95 percent of the information requested was returned in the proper format. This percentage includes the number of errors as well as omissions and is discussed in terms of the "format error rate".

### Data Collection Process.

The data collection instrument, cover letter, directions and definitions of terms were mailed to each participant, along with a pre-addressed, stamped envelope for the return of the forms. The instruments were coded for follow-up purposes only. Two weeks later a telephone follow-up was used as the last stage of the follow-up process.

### Analysis of Results.

The analysis of the results are discussed in Chapter 4 of the study. The data collected from the instrument were tabulated by states and presented in the form of a report of Industrial Arts Data Collection for 1981-82. The report is located in Appendix M.

### OUTLINE OF THE STUDY

The following activities represent a step-by-step plan to achieve the purpose of the study which was to design an information system model for industrial arts education nationally. Each of the steps identified were interwoven with Kaufman's model for educational systems planning and were used for evaluation through out the system design process. The procedures identified were as follows:

- 1.0 Identify Problem from Needs
  - 1.1. Review the literature
  - 1.2. Review previous data collection efforts
  - 1.3. Synthesize and state the problem
- 2.0. Determine Solution Requirements
  - 2.1. Design Preliminary Systems Model
  - 2.2. Set System Objectives and Specifications
    - 2.2.1. Select panel of experts
    - 2.2.2. Design evaluation form
    - 2.2.3. Disseminate instrument and evaluation form

- 2.2.4. Analyze data
- 3.0. Select Solution Strategies
  - 3.1. Redesign Standards Project's data collection instrument
  - 3.2. Design pilot test package
  - 3.3. Select pilot test participants
  - 3.4. Pilot test
  - 3.5. Follow-up
  - 3.6. Analyze results
  - 3.7. Refine instrument and system components as needed
- 4.0. Implement
  - 4.1. Field test
  - 4.2. Follow-up
- 5.0. Determine Performance Effectiveness
  - 5.1. Analyze Data
  - 5.2. Report Results
  - 5.3. Finalize system components
- 6.0. Revise at Necessary Steps

#### SUMMARY

This study concerned the design of a data base information system for responding to current and future needs of industrial arts education. Four major procedures were employed for the development of the system model which was the product of this study: development of the preliminary



system model, preliminary development of the data collection instrument, pilot testing and field testing.

The preliminary system components were based on the literature reviewed, the Standards Project's data collection process, and the opinions of a panel of 20 recognized leaders in the field. The data needs were designed in the form of a questionnaire which allowed them to be rated according on a five point scale to determine the usability, readability, and completeness of the information sought.

Four states with industrial arts education programs participated in the pilot testing of the instrument and to evaluate the effectiveness of the system. The field test participants included the universe of 50 state and four territorial industrial arts supervisors. These participants were given a data collection instrument and asked to supply actual data if available. The analysis of the results of the pilot and field test provided a basis for the revision of the instrument and further refinement of the system design model.

## CHAPTER IV

### RESULTS OF THE STUDY

The purpose of the study was to design a continuous data-based information system model for responding to the current and future information needs of industrial arts education nationally. Specifically, the study sought answers to the following questions:

1. What are the information needs of the industrial arts profession?
2. What are the components of a data-based information system model that will serve the needs of the industrial arts profession?
3. Is the system model designed by this study effective on collecting comprehensive data in industrial arts programs nationally?

This chapter presents the results obtained in achieving the goals and purposes of the study. The data collected and analyzed during the course of this study are organized into phases that correspond with the developmental stages of the

design of the data-based information system. These phases are:

1. Development of the Preliminary System Model
2. Preliminary Development of the Data Collection Instrument
3. Pilot Test Phase
4. Field Test Phase

#### DEVELOPMENT OF THE PRELIMINARY SYSTEM MODEL

The review of the literature resulted in the construction of a preliminary system model which comprised the main body of the findings (Appendix A). This model consisted of planning procedures with seven major components, identified from the literature and organized in a logical sequence. These components were: start-up, data collection, data input, data analysis, reporting, performance evaluation, and revision.

#### PRELIMINARY DEVELOPMENT OF THE DATA COLLECTION INSTRUMENT

The first process in this phase was to revise the existing data collection instrument designed by the Standards Project in order to determine the specific data elements needed by the profession for the system. A panel of 20

recognized industrial arts consultants were solicited to evaluate the initial instrument and give input on the overall system components. The evaluation instrument was designed to gather responses from the panel on; (1) the usefulness and readability of the data requested, (2) the feasibility of the form in collecting the needed data, (3) other needed data not included in the instrument, and (4) the frequency of the data collection process.

The members of the panel were asked to rate each data item in the instrument in terms of its usefulness and readability according to the criteria given below:

Usefulness: Does it appear that knowing the data collected will be useful to your mission in industrial arts education? Please evaluate each question in the attached data collection instrument in terms of its usefulness in an information system according to the criteria given below:

1. Totally useless.
2. Very little useful data collected.
3. Only moderately usable data collected.
4. Generally useful data collected.
5. Totally useful.

Readability: Readability refers to the ease of understanding the data being requested in the data collection form. It refers to the choice of vocabulary, layout, type size, and other editorial factors. Please evaluate each question in the attached data collection instrument in terms of its readability according to the criteria given below:

1. Totally unreadable.
2. Practically unreadable. Little of the information is presented effectively.
3. Moderately readable. Some of the information is hard to understand or is hidden in the report.
4. Good readability. Most information stands out quite well.
5. Excellent readability. All information is easily read and understandable.

An overall rating of 3.0 or greater was considered to represent positive feelings toward the data being collected. The responses to these categories are located in Table 1. The results pointed to an overall favorable response for each data element rated by the panel. Even though the panel showed a favorable response toward the usefulness and readability of the data requested several members provided additional comments which were helpful in restructuring of the questions. Some members suggested that the form was too loaded with questions concerning AIASA activities and that maybe these data could be obtained from the AIASA national office. Another comment shared by panel members addressed the clarification and distinction of categories of funding, i.e., the term vocational funds versus state or federal funding. Based on the written responses of the panel and the advisory committee for this study, some questions were revised or deleted from the pilot test data collection

instrument. The written responses of the panel are located in Appendix M.

Part two of the evaluation instrument asked the panel to rate the feasibility of the instrument in collecting the needed data in its present format according to the criteria given below:

Part II

Feasibility: Will the form collect the needed data in its present format? To what extent is the form feasible for gathering comprehensive data on industrial arts programs in the United States and territories? (Please circle numeral)

1. Totally unfeasible. This will never work.
2. Barely feasible. This will not work well. It will cause more trouble than it's worth.
3. Moderately feasible. It may or may not work.
4. Feasible. Only a few problems anticipated.
5. Totally feasible. No problems will be encountered getting the data.

An overall mean response of 3.95 was rated by the panel and represented a positive response in this category. There were many constructive suggestions aimed at making the system instrument more feasible. These suggestions are located in Appendix N and were used to modify the data collection instrument for the pilot test phase. Overall the panel expressed a high degree of satisfaction with the present format.

TABLE 1

Panel of Consultants Evaluation of Data Collection Form

STANDARDS PROJECT SURVEY QUESTIONS	CRITERIA	
	USEFULNESS	READABILITY
1. VACANT IA POSITIONS	4.65	4.73
2. CERTIFIED TEACHERS	4.25	4.68
2B. NON-CERT. TEACHERS	4.40	4.52
2C. TOTAL IA TEACHERS	4.75	4.42
3. BACHELOR DEGREES EARNED	4.35	4.63
4. ENROLLMENT BY SEX/GRADE	4.00	4.63
5. ENROLLMT. IN VOC. COURSES	4.25	4.63
6. TOTAL HANDICAP. STUDENTS	3.95	4.57
7. TOTAL DISADVTG. STUDENTS	3.80	4.57
8A. COURSE TITLES BY GRADE	3.90	4.26
8B. VOC. APPROVED COURSES	3.80	4.57
9. VOC. FUNDS USED FOR IA	4.05	4.42
10. MASTER PLAN FOR IA	4.00	4.47
11. PROVISIONS IN STATE PLAN	4.10	4.36
12. F.T.E. STATE SUPERVISORS	4.45	4.63
13. SUPERV. FOR STUDENT ORG.	4.30	4.47
14. FUNDS FOR STUDENT ORG.	4.31	4.52
15. NUMBER AIASA CHAPTERS	4.35	4.78
16. AIASA IN-SERVICE WRKSHPS.	3.65	4.42
17. ADV. COMM. FOR STUD. ORG.	3.73	4.63
18. EVALUATION FOR IA	4.20	4.86
19. IA CERTIFICATION REQUIRMTS.	4.40	4.89

Part III of the evaluation instrument asked the panel to list other data (not included in the state and territorial survey) that should be included in a data base information system for industrial arts education. These responses are also located in Appendix N and were considered in the revision of the instrument for the next phase of the study. Based on these responses some new questions were added, such as, average salaries for industrial arts teachers in the state, number of industrial arts bachelor degree graduates who were employed as teachers, and the adoption or adaptation of the Standards for Industrial Arts Programs.

The panel was also asked "How often do you feel the data should be collected"? The categories given for their selection were:

- Every year
- Every other year
- Every 2-3 years
- Every 5 years
- Other (please specify)

The frequency of responses are shown in Table 2

The category that received the majority of responses (50 percent) by the panel was "every year". These data were important in determining the procedures and time-line for the proposed system process.



TABLE 2

Frequency of Data Collection by Panel of Consultants

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Category	Responses	Freq. Percent
1. Every year	10	50
2. Every other year	4	20
3. Every 2-3 years	4	20
4. Every five years	2	10
5. Other (please specify)	0	0
Total	20	100

---

PILOT TEST PHASE

The next major phase of the system design involved a pilot test of the revised data collection instrument by four industrial arts state supervisors. These supervisors were mailed the revised data collection instrument and an evaluation form. Each supervisor was asked to evaluate each item in the instrument in terms of readability, availability, and collectability of the data being requested according to the criteria given below:

Readability: The criteria for readability was the same as identified for the panel of consultants evaluation of data collection form previously mentioned.

Availability: Availability refers to whether or not the data being requested is on hand or obtainable. Please respond to each item by circling "YES" or "NO". If you respond by circling "YES" please provide the data. If you respond by circling "NO" in this category for any item, please respond to the next category, "Collectability".

COLLECTABILITY: Collectability refers to whether the data being requested can be gathered within a reasonable specified period of time in order to complete this instrument. Please respond to this category by circling "YES" or "NO".

Part II of the evaluation form asked the participants to make any additional comments or suggestions pertaining to the instrument. Only two of the supervisors who agreed to participate returned the data collection instrument and evaluation form. The responses revealed an overall mean of

5.0 in terms of the readability of the data. In the category of "Availability", the respondents who returned the forms indicated that the majority of the data were available and the data that were not available were collectable within a reasonable period of time. One respondent indicated that "the data that is not available but collectable is such that it exists but it is in several different forms from several different sources and takes time to pull it all together--because of this I cannot meet the ten day deadline". There were no other additional comments or concerns regarding the instrument or the system. Therefore, the data collection instrument was not revised for the field test phase.

#### FIELD TEST PHASE

The field test was conducted in early April to determine if the fifty four state and territorial industrial arts supervisors could provide the data requested in the format presented, so that the information could be used to establish the data base. Of the fifty four field test packages sent out, 27 (50 percent) were returned. Three of the returned instruments had very little usable data. However, a cover letter from each of the supervisors of industrial arts in the state was attached, giving an explanation for the missing data. A copy of the letters are located in

Appendix O. The findings are reported in terms of format error which is the number of entry errors and omissions found in the data and expressed as a percentage of the total data submitted (Lear, 1980:84). As shown in Table 3, the majority of the field test participants who responded had little difficulty overall in completing the forms. Only one entry error was detected in the completion of the instrument by those who responded. This error resulted in the totaling of males and females for question 3a in the instrument. In the category of omissions, the majority of omissions occurred in question 9a, handicapped students enrolled in special industrial arts courses, question 10, handicapped students enrolled in regular industrial arts courses, and question 11, course titles and grade level of all industrial arts courses. Question 11 is also the same question that received the least response during the Standards Project survey. A few of the supervisors could provide data for course titles but not by grade level or by sex as requested. Some of the other respondents could provide general course areas such as, woods, metals, and drawing, but not by specific titles. Among the 27 data collection instruments returned, a total of 594 data items were requested. The field test participants correctly formatted and reported 80 percent of the data requested. The format error rate for the field test

was computed at 20 percent for the total errors and omissions.

### Summary of the Data Collection Report

The last step of the field test phase involved the preparation of a report of the data collection, 1981-82. A copy of the report format is located in Appendix M. The report contains an overview of the data collection, analysis process, and a presentation of the state and territorial data in table format. All of the data from the questions in the instrument were analyzed and reported except for question 11, which contained very little useful data.

The following discussion is a summary of the data reported by the field test participants. The results of the data are discussed in terms of its usefulness and collectability for the system designed. The data collected and reported in Appendix M, have particular implications for the effectiveness of the system and has provided the basis for further refinement of the system components and subcomponents.

Table 1a represents the participants' responses to question one, concerning the number of vacant industrial arts positions in the state or territory as of the 1981-82 school

TABLE 3  
Field Test Format Error Rate

QUESTION NO.	TOTAL ERRORS AND OMISSIONS (N=27)	OMISSIONS (N=27)	ENTRY ERRORS (N=27)
1	3	3	0
2a	5	4	0
2b	5	4	1
3	4	3	0
4a	4	4	0
4b	6	6	0
5	4	4	0
6	3	3	0
7	7	7	0
8	3	3	0
9a	11	11	0
9b	12	12	0
10	12	12	0
11	13	13	0
12a	3	3	0
13	3	3	0
14	3	3	0
15	3	3	0
16a	3	3	0
16b	3	3	0
16c	3	3	0
17	3	3	0
TOTAL	22	115	1

year. These data were also collected by the Standards Project for the 1976-1981 school years. The panel of consultants rated this item high in the "usefulness" category (4.75 mean). Of the participants who responded, 88 percent could provide the data. The data reported for the previous years by the Standards Project revealed that at least 80 percent of the respondents could provide the data.

An analysis of the data for question 2a and 2b, as reported in Table 2a, concerning the total number of industrial arts teachers employed by certification level, revealed that more of the respondents could report totals for both categories, "Total Employed" and "Temporary/Non-Certified", than numbers by male/female breakdowns. This was also true for the same data reported in Forms I and II (Appendix C), by the Standards Project. As suggested by the panel, the question was revised to limit the number of entries needed to respond to the question (see Appendix K). Only one entry error was detected in the data reported. This error occurred in the totaling of males and females in question 2b.

Table 3a reported data concerning the average starting salaries for industrial arts teachers in the state. This question was recommended by several of the panel of consult-

ants and was not included in the Standards Projects survey. Seventy percent of the field test participants who responded could provide the data.

Another question included in the data collection instrument concerned the number of students who earned bachelors degrees with teaching certification in industrial arts. A new question recommended by the panel, in addition to the above question, asked how many of those graduates were employed as industrial arts teachers in the state. Fourteen of the supervisors provided these data. These two questions are reported in Table 4a of the report.

Table 5a of the report dealt with state staff assigned to supervise industrial arts education. Supervisors were asked to indicate the number of F.T.E. (Full Time Equivalent) supervisors at the state level, whether or not staff was assigned to supervise student organization activities, and the percent of time devoted. The data revealed that 50.55 F.T.E. supervisors were employed in 23 states. On the average 2.20 F.T.E. supervisors were employed in each state responding. Comments written on several instruments indicated that some states were not familiar with F.T.E. reporting.



Tables 6a and 7a concerned total enrollment in non-vocationally and vocationally funded courses by grade level and by sex. These data were requested by the Standards Project in previous years as well as in this study. In either case, there has not been sufficient data collected on enrollments by male/female and by grade level. Supervisors were instructed however, to report totals if breakdown was not possible.

Table 8a presents the data reported concerning the enrollment of handicapped and disadvantaged students in industrial arts courses. The panel suggested that the "Handicapped" category be further separated to distinguish between students enrolled in specially designed courses for the handicapped and those handicapped students enrolled in regular industrial arts courses. Surprisingly, more supervisors (14) could provide data on students enrolled in special programs for the handicapped than for the other two categories (11, 11) listed. The usefulness of these data, as perceived by the panel, was rated among the lowest mean responses reported; total handicapped students (3.95), total disadvantaged (3.80).

Several questions were asked concerning the membership and activities of AIASA. Even though these data were rated

as being useful, several panel members felt that in examining the Standards Project's instrument that perhaps "too" much information was being requested concerning AIASA. One comment made by a panelist and state supervisor suggested that these data should be available at the AIASA national office. Some of the questions concerning AIASA were revised and a new question concerning total student enrollment in AIASA in the state was added. One question which was revised dealt with the use of a state level advisory committee for AIASA. This question was deleted and a new question written concerning the establishment of a state-level advisory committee for promoting the total industrial arts program (Table 11a).

Two other questions asked and reported in Table 11a concerned the evaluation of industrial arts education programs and teacher certification requirements. A new addition to the evaluation question concerned the use of the Standards for Industrial Arts Programs. An analysis of the data in Table 13a of the report revealed that among the few who responded a considerable number (16) of supervisors had adopted/adapted the standards or had plans to do so within the next two years (1982-83).

Question 13 which asked the supervisors to indicate how vocational funds were utilized in industrial arts is reported in Table 10a. There were no revisions made in this question during the study and it appears that supervisors who utilized vocational funds had no trouble reporting the data.

In addition to the Standards Project's question 16, concerning AIASA inservice workshops, the panel recommended that data be collected on other inservice activities in the state. Specifically, a new question was designed to collect data on the number of teachers who participated in special needs and sex equity workshops conducted in the state as well as AIASA. These data are reported in Tables 12a and 12b of the report.

#### SUMMARY

This chapter presented the results obtained in achieving the goals and purposes of this study. The data collected and analyzed during the course of the study were organized into the following categories:

1. What are the information needs of the industrial arts profession?

2. What are the components of a data-based information system model that will serve the needs of the industrial arts profession?
3. Is the system model designed by this study effective in collecting comprehensive data on industrial arts programs nationally?

The results obtained in achieving the goals and purposes of the study are organized into categories that correspond with the developmental stages of the design of the data-based information system. These categories are:

1. Development of the Preliminary System Model
2. Preliminary Development of the Data Collection Instrument
3. Pilot Test Phase
4. Field Test Phase

The results of the panel of consultants evaluation revealed an overall positive feeling toward the system designed and the need for the data requested. The major concerns of the panel dealt with the classification of the terminology used in specifying non vocationally funded/approved courses, and state versus federal vocational

funds. Other comments concerned whether a need existed to collect all of the data requested on AIASA. Another concern of the panel was the need for additional data such as, the average salary for industrial arts teachers in the state, the number of graduates employed as teachers in the state and the adoption or adaption of the Standards for Industrial Arts Programs. The panel also felt the data should be collected annually. The pilot test demonstrated that the data collection instrument was readable and that the participants who responded had little difficulty in collecting and providing most of the data. Therefore no further revisions were made to the instrument prior to the field test.

The field test revealed that 50 percent of the supervisors did not respond within the time period provided for the data collection phase. Those who responded correctly formatted 478 of a possible 594 items. This result computed to a format error rate of 20 percent, which was considerably more than the study anticipated. These findings serve as the basis for the conclusions and recommendations in the following chapter.

## CHAPTER V

### SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS

A major problem for research and development in industrial arts education continues to be locating, storing and organizing basic data about the current status of industrial arts education programs. Industrial arts educators are continually faced with the challenges of planning and modifying programs in the environment of a continually changing and complex society. Supervisors, teachers, teacher educators, and curriculum specialists are but a few who must have access to information which will provide for the most realistic and logical educational decisions.

Data collected on industrial arts programs in the United States and territories have been found to be fragmented, inaccurate, and poorly organized. Although selected data have been collected on various aspects of education by agencies such as the United States Department of Education (U.S.D.E.), the National Center for Educational Statistics (N.C.E.S.), and the National Education Association (N.E.A.), there is currently no continuous national reporting system aimed specifically at collecting comprehensive data on all industrial arts programs.

## SUMMARY OF THE STUDY

### Problem

Industrial arts educators are in need of more current, accurate, and reliable data on the status of industrial arts programs in the United States and territories. Furthermore, data are not collected on a consistent basis.

### Purpose of the Study

It was the purpose of this research to design a continuous data-based information system model that will aid in responding to the current and future information needs of industrial arts education. Specifically, this study sought answers to the following basic questions:

1. What are the data collection needs of the industrial arts profession?
2. What are the components of a data-based information system that will serve the needs of the industrial arts profession?
3. Is the data-based information system designed by the study effective in collecting the needed data on industrial arts education nationally?

### The Design of the Study

The research design consisted of four related but separate procedures which, when integrated, resulted in the development of a data-based information system model. The first procedure was a review of the literature from which a

preliminary system model was developed. The second procedure involved the preliminary development of the data collection instrument by a panel of practicing experts to obtain data which could be used to refine and improve the system. The panel was given the opportunity to evaluate whether or not the initial data collection instrument designated met the criteria of usefulness, readability, and feasibility for the proposed system. Additionally, the evaluation provided for feedback from each participant on specific system components. These suggestions were incorporated into the developmental stages of the system. This allowed for the system design to reflect the user group's needs. The third procedure involved a pilot test of the revised data collection instrument by a group of state industrial arts supervisors, and the fourth procedure, involved a field test of all the state and territorial industrial arts supervisors, to determine if individuals unfamiliar with the study could successfully complete the revised data collection instrument.

### Participants

The participants for the second phase of the study, "Preliminary Development of the Data Collection Instrument", included a panel of 20 recognized leaders in industrial arts



education. These members were selected based on their representation as potential system users. Included were state and local industrial arts supervisors, teacher educators, classroom teachers, and national professional association officers.

For the next phase of the study, "Pilot Test Phase", four industrial arts supervisors were solicited to provide feedback on the revised data collection instrument and make suggestions to be incorporated into the system design. The selection of these supervisors was based on their geographic location. These supervisors were also included in the field test phase. The final phase, "Field Test Phase", included the 54 state and territorial industrial arts supervisors.

### Instrumentation

Two instrumentation packages were completed by the participants in the study. The initial packages contained the Standards Project's State and Territorial Supervisors Survey Instrument and an evaluation form designed to solicit feedback from a panel of consultants on the data elements included in the instrument. The evaluation served as the basis for identifying the information needs of the user groups. The pilot test package contained a revised copy of the data collection instrument to be used in the system

along with an evaluation form. The evaluation was used as a means for assessing the data collection form for determining whether the data requested could be provided, and for making suggestions to be incorporated into the system design. The same data collection instrument was used in the field test phase of the study.

### CONCLUSIONS

On the basis of the data presented the conclusions shown below were drawn:

1. The results of the panel of consultants' responses to the evaluation instrument indicated a positive feeling toward the usefulness of the data and the system designed. However, several written comments were made concerning the revision, deletion and addition of several questions.

2. Based on the results of the pilot test, it was concluded that the data collection instrument was readable, and the data collectable in the format presented.

3. The results of the field test revealed that the state or territorial industrial arts supervisors could provide most of the data in the format presented. It is believed that a larger percent of returns would be expected if the respondents were given sufficient time and preparation to complete the instrument.

4. Based on the results of the study, it was concluded that the data-based information system designed by the study was not effective in establishing a complete data base on industrial arts education for the 1981-82 school year. Because of the low response rate, it was concluded that adjustments in the timeline for the operation of the system components should be made to allow adequate time for states to collect and report the data.

5. The study revealed that there are several states that do not have the designated staff to oversee industrial arts education programs at the state level and provide the data requested.

6. The study revealed that many states do not have the mechanism for collecting and reporting the data in the format requested by the system.

7. The study revealed that the questions concerning the identification of courses taught in the state by grade level should be re-designed to increase the response rate. It was concluded that supervisors did not want to take the time to list all the courses offered. The open ended listing of courses made it difficult to transfer the data to a usable format.

RECOMMENDATIONS

The following recommendations were made based on the findings of the study:

1. It is recommended that the data collection instrument be further refined to alleviate the problem of having the respondents to list all of the courses offered in their states, as requested in question 11 of the data collection instrument.

2. It is recommended that further research be conducted to determine the feasibility for the implementation of the system.

3. It is recommended that organizations such as the National Education Association and the National Center for Education Statistics consider the incorporation of the needed data items into their systems of data collection on industrial arts education.

4. It is recommended that industrial arts education data collection be a continuous process and that the information requested be relevant to the current needs of the profession.

5. It is recommended that states that do not have an industrial arts supervisor establish a means for providing a supervisors' position.

6. It is recommended that the American Industrial Arts Association and state associations provide assistance to those states that are unable to provide the data.

7. It is recommended that further research be conducted to determine methods for states to collect the data at the local level.

8. It is recommended that the American Industrial Arts Association establish a plan to assume the responsibility of annual data collection for industrial arts education.

9. It is recommended that the data reported be further analyzed to determine the relationships, if any, among certain variables which may have implications for the future directions of industrial arts education.

#### SUMMARY

Industrial arts educators and administrators jointly share the responsibility for collection, reporting and organizing basic comprehensive data on industrial arts education programs in the United States and territories. The

industrial arts profession is in need of current, accurate and reliable data upon which to base sound decisions about the status and future directions of industrial arts education.

The results indicated that the system designed could provide the profession with the basis for establishing a continuous data base, for use in responding to the informational needs of the industrial arts profession. The study revealed that further refinement of the data collection instrument was needed to enhance the response rate of some of the data requested. The overall response rate of the state supervisors indicated that the time line for the operation of the system components needed adjustments to allow the respondents adequate time to collect and report the data. Nine specific recommendations are made which would enable the profession to further research the feasibility of implementing the system as designed, as well as to assist in solving data collection problems.

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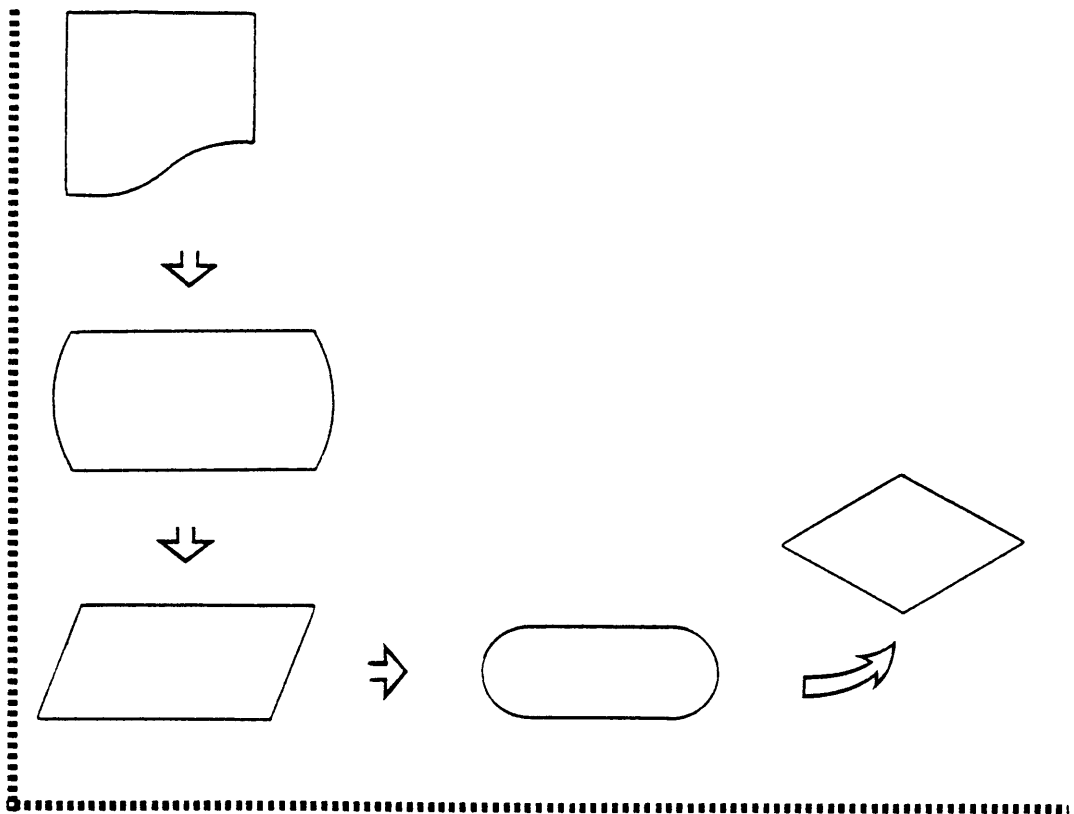
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APPENDICES

Appendix A

PRELIMINARY SYSTEMS PLANNING MODEL

**A**  
**DATA-BASED**  
**INFORMATION SYSTEM MODEL**  
**FOR INDUSTRIAL ARTS EDUCATION**



## OVERVIEW

A major problem for planning and development in industrial arts education continues to be locating, storing, and organizing basic data about the current status of industrial arts education programs. Data collected on various aspects of industrial arts education are often fragmented, misleading and not collected on a consistent basis. If industrial arts education is to effectively respond to the challenge of providing all students with a wide range of technological experiences relative to a complex and changing society, a viable data base is both a vital and essential component to the success of that objective. The data-based information system is an important step toward maintaining a continuous national data base and will increase the amount of information which could be made available to decision makers. Specifically the system collects, analyzes, stores and reports state data about teachers, students, courses, funding and supervision of industrial arts education.

## INTRODUCTION

The following procedures have been developed as a model for use in implementing a data-based information system for industrial arts education nationally. The model is the product of synthesization of the components of seven separate processes: start-up, data collection, data analysis, reporting, evaluation, and revision or modification: relationships between and among components and processes were analyzed and then synthesized into a model. Each component is organized in terms of a purpose and set of procedures represented schematically in figure 1A as a set of written procedures.

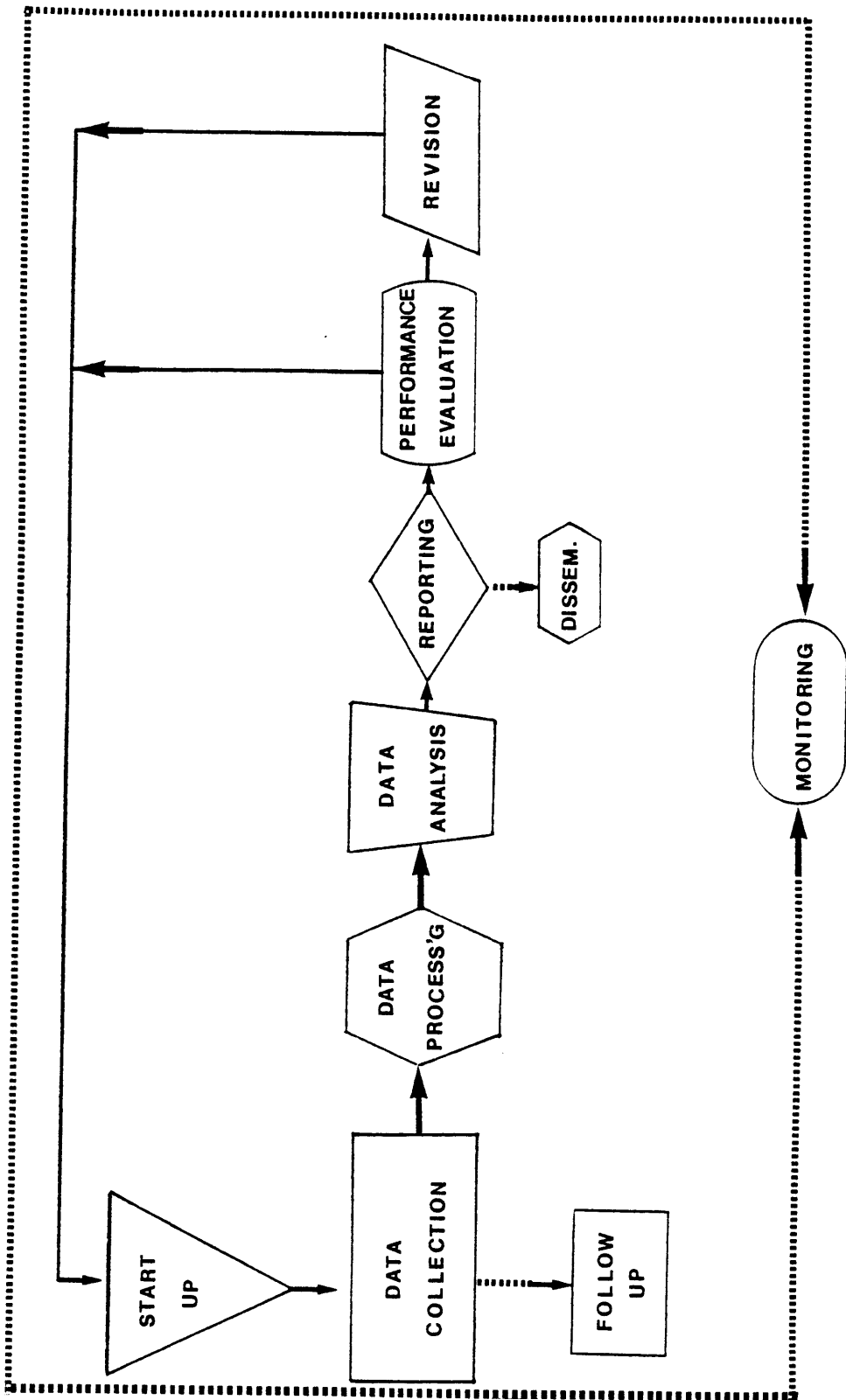
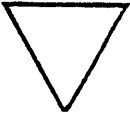


Figure 1a

Preliminary System Planning Model





## START-UP

Start-up deals with the initial preparation of the system components to perform the required objectives. It involves a detail description of the procedures and time line used throughout the operation of the system. The following sub-components should be addressed in this phase of the system:

- (a) prepare a flow chart (PERT/CPM/Gnatt) to lay out the basic ideas of the system, in a carefully ordered sequence
- (b) develop a time line for completing all system operations
- (c) determine what information is needed and document
- (d) determine user groups
- (e) design data collection instrument
- (f) determine process for collecting data
- (g) encourage administrative and professional support
- (h) send participants sample package of instrument and other necessary forms
- (i) determine report format
- (j) prepare necessary mailing list
- (k) consider resource or resource personnel needed
- (l) determine how information will be analyzed, stored and retrieved
- (m) determine necessary equipment, tools, materials and supplies needed throughout system operation

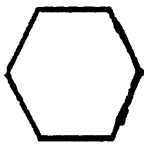


## DATA COLLECTION

The data collection procedures involve the process of disseminating the data collection instrument and monitoring the returns. Much of the preparation for this phase is done during the start-up phase of the system. However at this

point all previous plans for data collection should be re-fined and ready for implementation. The following should be noted during this phase:

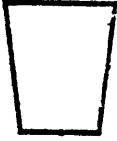
- (a) disseminate data collection instrument to participants
- (b) follow-up if necessary
- (c) prepare for data processing phase



## **DATA PROCESSING**

This phase of the system involves the input of the data in a format that is suitable for the required analysis. The system model design does not specify manual or mechanical processing. However either is applicable to the information system designed. the following operations should be considered for the planning of this phase:

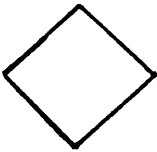
- (a) review previous plans for input/output procedures
- (b) check responses for format errors
- (c) record data responses



## DATA ANALYSIS

The analysis of the data involves the statistical manipulation of the data in order to report the desired outcomes. In analyzing the data reported, the following should be considered:

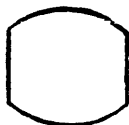
- (a) determine the needed statistics for analysis
- (b) determine categories of data
- (c) design tables/charts/graphs for report of data
- (d) summarize findings
- (e) check for errors



## REPORTING

Reporting involves the dissemination of the information sought in a format that is clearly understood by the user groups. The list below should serve as guidelines for planning the report:

- (a) consider the information to be presented--in what format and to whom
- (b) outline report contents
- (c) design and lay-out
- (d) determine duplicating source
- (e) set up distribution procedures
- (f) distribute report
- (g) determine the need for other presentations or reports of the information or system



## PERFORMANCE EVALUATION

It is important to note that evaluation of the system components is an on-going process. The system is never considered to be complete and must be constantly evaluated in terms of its ability to meet the needs and requirements it set out to respond to, and the continued appropriateness of its original needs and requirements. Data are collected concerning both the process and the product of the system during and after the systems performance. Against the requirements established in the needs assessment and the detailed determination of requirements obtained from the systems analysis, performance and performance requirements, this provides data on what is to be revised and gives diagnostic information that will permit valid system revision. Two questions to be considered during this phase are: (1) were the objectives achieved effectively and efficiently, and (2) are the users satisfied with it? The literature has suggested several evaluation measures which could be used to determine systems performance. In selecting the best measures for the system, care should be taken to insure that they are valid-- that is, they should measure the "real" objectives of the system. Upon determining the evaluation model to be used, there are other procedures listed below which should also be included in the process:

- (a) determine who/whom will evaluate the system
- (b) determine what (or all) components of the system will be evaluated
- (c) determine how and to whom the evaluation report

- (d) make recommendations based on evaluation outcome
- (e) consider alternative approaches
- (f) determine solution strategies for next phase
- (g) follow-through recommendations and alternatives



## REVISION

Based on the performance of the system as indicated by the evaluation data, any or all previous system steps may be modified and a system redesign job accomplished if necessary. This self-correctional feature of a system approach assures constant relevance and practicality.



## MONITORING

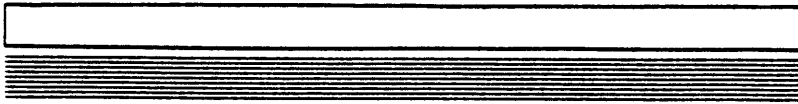
One of the most valuable functions of the system is the continuous monitoring of the overall operation of the system in order to check on the effectiveness and efficiency of the system. The objective of this continuous monitoring is to detect less than optimal functions of the system and make improvements upon the new system. It affords the administrator an opportunity to constantly analyze the system, make new tentative designs for improvements of the system, and operate and maintain the system.

Appendix B

STATE AND TERRITORIAL SUPERVISORS SURVEY 78-79 (FORM I)

FEDAC No. S4					
Approval Expires 4-80					

STANDARDS FOR INDUSTRIAL ARTS EDUCATION PROJECT



VIRGINIA POLYTECHNIC INSTITUTE AND STATE UNIVERSITY

# STATE AND TERRITORIAL SUPERVISOR'S SURVEY

## GENERAL INFORMATION

**PURPOSE:** The purpose of this survey is to obtain a data base for the development of qualitative standards for improving industrial arts education programs that support vocational education as legislated under Public Law 94-482 and to establish industrial arts student organization activities as an effective and integral part of the instructional program.

## DIRECTIONS

The state or territorial supervisor for industrial arts is asked to complete the attached form and return it within five (5) days in the self-addressed stamped envelope. Please provide actual data if available. If this is not possible, supply us with your BEST ESTIMATE based on the latest information accessible to you. Print all comments. Right justify the answers in the response box. Example: 352 Female Industrial Arts teachers in the state.

0	3	5	2
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DEFINITIONS

**STANDARDS FOR INDUSTRIAL ARTS:** Measures of quality against which all existing industrial arts programs and activities can be evaluated and which serve as a guide for new or expanding programs. Example: Standards consist of those qualitative elements which affect the total program, such as facilities, content, methodologies, staffing, enrollment and resources.

**INDUSTRIAL ARTS EDUCATION PROGRAMS:** Those education programs (A) which pertain to the body of related subject matter, or related courses, organized for the development of understanding about all aspects of industry and technology, including learning experiences involving activities such as experimenting, designing, constructing, evaluating, and using tools, machines, materials, and processes and (B) which assist individuals in the making of informed and meaningful occupational choices or which prepare them for entry into advanced trade and industrial or technical education programs. (Public Law 94-482).

**GRADES COVERED:** Report data for grades 6-12 in Middle Schools and Secondary Schools.

**AIASA:** American Industrial Arts Student Association, the industrial arts student organization for secondary school students. AIASA helps assure the quality and relevance of instruction, develop student leadership, enhance citizenship responsibilities, overcome sex and race discrimination and sex stereotyping, and serve students with special needs.

**DISADVANTAGED PERSONS (VOCATIONAL EDUCATION):** Persons (other than handicapped persons) who have academic or economic handicaps and who require special services and assistance in order to enable them to succeed in vocational education programs under criteria developed by the Commissioner based on objective standards and the most recent available data. (Vocational Education Act of 1963).

**FULL-TIME EQUIVALENCY (F.T.E.):** The amount of time spent or required in a less than full-time activity divided by the amount of time normally spent or required in a corresponding full-time activity during the regular school term. Full-time equivalency usually is expressed as a decimal fraction to the nearest tenth. (National Center for Education Statistics)

**GIFTED AND TALENTED:** The mentally gifted include individuals whose level of mental development is so far advanced that they have been identified by professionally qualified personnel as needing additional educational opportunities beyond what is provided by the usual school program if they are to be educated to the level of their ability. The "talented" include individuals identified by professionally qualified personnel as being capable of high performance in one or more areas of special competency. Among these areas of special competence are intellectual ability, creativity, leadership ability and social adeptness, and facility in the productive and performing arts. (National Center for Education Statistics)

**HANDICAPPED PERSONS:** Persons who are mentally retarded, hard of hearing, deaf, speech impaired, visually handicapped, seriously emotionally disturbed, orthopedically impaired or other health impaired person or persons with specific learning disabilities who by reasons thereof require special education and related services, and who, because of their handicapping condition, cannot succeed in the regular vocational education program without special education assistance or who require a modified vocational education program. (Vocational Education Act of 1963).

**SECONDARY SCHOOL:** A school comprising any span of grades beginning with the next grade following an elementary or middle school and ending with or below grade 12. (National Center for Education Statistics)



1. How many industrial arts positions were vacant (not filled by anyone) in your state or territory (at the beginning of each school year) for the past three years?

Year	Vacant I.A. Positions
1976-77	<input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/>
1977-78	<input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/>
1978-79	<input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/>

2. Please indicate the actual number of fully certified, emergency or temporary certified, and non-certified male and female industrial arts teachers employed in your state or territory for the past three years.

Year	Certified	
	Male	Female
1975-76	<input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/>	<input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/>
1976-77	<input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/>	<input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/>
1977-78	<input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/>	<input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/>

Year	Emergency or Temporary	
	Male	Female
1975-76	<input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/>	<input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/>
1976-77	<input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/>	<input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/>
1977-78	<input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/>	<input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/>

Year	Non-Certified	
	Male	Female
1975-76	<input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/>	<input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/>
1976-77	<input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/>	<input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/>
1977-78	<input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/>	<input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/>

3. Indicate by sex how many persons - - - - - Year Male Female  
 earned bachelor degrees with teaching certification in industrial arts in your state or territory during the past three years.

Year	Male	Female
1975-76	<input type="text"/>	<input type="text"/>
1976-77	<input type="text"/>	<input type="text"/>
1977-78	<input type="text"/>	<input type="text"/>

4. In your opinion, should in-service industrial arts training be required of all: (Please respond to each item)

	YES	NO
- - - First year industrial arts teachers?	<input type="radio"/>	<input type="radio"/>
Teachers with provisional certification in industrial arts?	<input type="radio"/>	<input type="radio"/>
Teachers with other certification?	<input type="radio"/>	<input type="radio"/>
Teachers without certification?	<input type="radio"/>	<input type="radio"/>

5.a. Please indicate the total number - - - - - of male and female students enrolled in each of the grade levels in your state or territory for the past three years.

1977-78

Grade	Male	Female
<u>K-5</u>	<input type="text"/>	<input type="text"/>
<u>6</u>	<input type="text"/>	<input type="text"/>
<u>7</u>	<input type="text"/>	<input type="text"/>
<u>8</u>	<input type="text"/>	<input type="text"/>
<u>9</u>	<input type="text"/>	<input type="text"/>
<u>10</u>	<input type="text"/>	<input type="text"/>
<u>11</u>	<input type="text"/>	<input type="text"/>
<u>12</u>	<input type="text"/>	<input type="text"/>

(5.a. continued on next page)

5.a. (Contd.)

1976-77

<u>Grade</u>	Male	Female
K-5	<input type="text"/>	<input type="text"/>
<u>6</u>	<input type="text"/>	<input type="text"/>
<u>7</u>	<input type="text"/>	<input type="text"/>
<u>8</u>	<input type="text"/>	<input type="text"/>
<u>9</u>	<input type="text"/>	<input type="text"/>
<u>10</u>	<input type="text"/>	<input type="text"/>
<u>11</u>	<input type="text"/>	<input type="text"/>
<u>12</u>	<input type="text"/>	<input type="text"/>

1975-76

<u>Grade</u>	Male	Female
K-5	<input type="text"/>	<input type="text"/>
<u>6</u>	<input type="text"/>	<input type="text"/>
<u>7</u>	<input type="text"/>	<input type="text"/>
<u>8</u>	<input type="text"/>	<input type="text"/>
<u>9</u>	<input type="text"/>	<input type="text"/>
<u>10</u>	<input type="text"/>	<input type="text"/>
<u>11</u>	<input type="text"/>	<input type="text"/>
<u>12</u>	<input type="text"/>	<input type="text"/>

5.b. Are these figures estimate or actual? - - - Estimated  Actual

6. Please indicate the 1977-78 total - - - - - enrollments in federally funded (either full or partially) and non-federally supported industrial arts courses for each of the following grade levels in your state or territory.

Grades	Enrollments in Federally Funded Industrial Arts Courses	Enrollments in Non-Federally Funded Industrial Arts Courses
6	<input type="text"/>	<input type="text"/>
7	<input type="text"/>	<input type="text"/>
8	<input type="text"/>	<input type="text"/>
9	<input type="text"/>	<input type="text"/>
10	<input type="text"/>	<input type="text"/>
11	<input type="text"/>	<input type="text"/>
12	<input type="text"/>	<input type="text"/>

7. Please list below the course titles - - - Course Titles and grade levels of federally funded industrial arts courses in your state or territory.

<u>Course Titles</u>	Grade Levels
_____	<input type="text"/>
_____	<input type="text"/>
_____	<input type="text"/>
_____	<input type="text"/>
_____	<input type="text"/>
_____	<input type="text"/>
_____	<input type="text"/>
_____	<input type="text"/>
_____	<input type="text"/>
_____	<input type="text"/>

8. Please list (by title) all industrial - - \_\_\_\_\_  
arts courses that are planned to be \_\_\_\_\_  
deleted in your state or territory \_\_\_\_\_  
within the next three years. (1979-81) \_\_\_\_\_  
\_\_\_\_\_

9. List (by title) all new industrial - - - \_\_\_\_\_  
arts courses that are planned for \_\_\_\_\_  
implementation by your state or \_\_\_\_\_  
territorial agency within the \_\_\_\_\_  
next three years. (1979-81) \_\_\_\_\_  
\_\_\_\_\_

10.a. How many secondary schools are - - - - -   
there in your state or territory?

10.b. How many secondary schools offer - - - - -   
industrial arts courses in your  
state or territory?

10.c. How many schools in your state or - - - - -   
territory are receiving federal  
funds for industrial arts?

11.a. How many elementary and middle - - - - - Elementary   
schools are there in your state  
or territory? Middle

11.b. How many elementary and middle - - - - - Elementary   
schools offer industrial arts  
courses in your state or territory? Middle

12. Are all courses in industrial arts, which meet the criteria for federal funding, receiving funds? - - - - - YES  NO

COMMENTS:

\_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

13. Should all industrial arts courses in public schools, regardless of philosophical orientation, be federally funded? - - - - - YES  NO

COMMENTS:

\_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

14. Please estimate the number of students with the following handicapping conditions served by industrial arts courses approved for federal funding. (Each student should be reported only once.)

<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	Hard of hearing
<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	Deaf
<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	Visually handicapped
<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	Deaf - Blind
<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	Speech impaired
<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	Orthopedically impaired
<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	Specific learning disability
<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	Other health impaired
<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	Mentally gifted and talented
<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	Mentally retarded
<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	Seriously emotionally disturbed
<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	Disadvantaged
8	<input type="radio"/>	Information not available		

15. Has your state or territory developed - - - YES  NO   
a master plan for the scope and  
sequence of industrial arts courses?      If yes, does this plan or any other existing plan identify and/or include student club activities?      If no, are there plans to develop one in the next three years? (1979-81)
- YES  NO       YES  NO

16. List the state or territory - - - - -  
curriculum guides in industrial  
arts planned for development  
within the next three years.  
(1979-81)
- 
- 
- 
- 
- 
- 
- 
- 
- 
- 

17. Do provisions in the state or - - - - - YES  NO   
territory plan for vocational  
education cover industrial arts  
courses?
- If no, are there plans for inclusion - - - - - YES  NO   
of industrial arts in the state or  
territory plan for vocational education  
within the next three years? (1979-81)

18. Please indicate the type and number of industrial arts laboratories planned for construction during the next five years in your state or territory. (1979-84)

Type	Number Planned
_____	<input type="text"/> <input type="text"/> <input type="text"/>
_____	<input type="text"/> <input type="text"/> <input type="text"/>
_____	<input type="text"/> <input type="text"/> <input type="text"/>
_____	<input type="text"/> <input type="text"/> <input type="text"/>
_____	<input type="text"/> <input type="text"/> <input type="text"/>
_____	<input type="text"/> <input type="text"/> <input type="text"/>
_____	<input type="text"/> <input type="text"/> <input type="text"/>

COMMENTS:  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

19. Does the state or territorial industrial arts supervisory staff approve new industrial arts facility plans and major renovations?

YES  NO

COMMENTS:  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

20. How many Full Time Equivalent (F.T.E.) supervisory personnel for industrial arts programs are employed at the state or territory level?  
 (use decimal equivalent for fraction)

\_\_\_\_\_   .

21. How many Full Time Equivalent (F.T.E) supervisory personnel for industrial arts programs should be employed in your state or territory level?

\_\_\_\_\_



22. Is there a state or territorial staff member assigned to supervise industrial arts student organizations? - - - - - YES  NO
- If yes, what percentage of time?
- %
- If no, are there plans to make such an assignment within the next two years? (1979-81)
- YES  NO

23. How does the state or territory provide funding for student clubs? (Mark as many as apply) - - - - -
- Supplement to teacher salary
  - Extended employment for teachers
  - Travel
  - Others
  - None is provided

COMMENTS:

---



---



---

24. Please indicate the number of industrial arts clubs in your state or territory. - - - - -
- NOTE: If the actual numbers are not known, please estimate.

25. Have any AIASA in-service work shops been conducted in your state or territory for teachers during the past three years? (1977-79) - - - - - YES  NO
- If YES, what is the total number of teachers who participated?
- 
- If NO, are there any plans within the next three years? (1979-81)
- YES  NO

26. Do you have an Advisory Committee to assist in the promotion and establishment of industrial arts student clubs in your state or territory? - - - - - YES  NO

27. In your opinion, what are the major incentives for the promotion and establishment of industrial arts student clubs in your state or territory? - - - - -
- 
- 
- 
-

28. In your opinion, what are the constraints or "roadblocks" to promoting the establishment of industrial arts clubs in your state or territory? \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

29. What do you think should be the maximum student/teacher ratio for industrial arts laboratory courses? \_\_\_\_\_ to 

1
---

 teacher

30. Are industrial arts items included on minimum competency tests used in your state or territory? YES  NO  MINIMUM COMPETENCY TESTING IS NOT USED

31. In your opinion, should industrial arts items be included on minimum competency tests? YES  NO

32. Does the state or territory have regular and systematic evaluations of industrial arts programs? YES  NO

COMMENTS: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

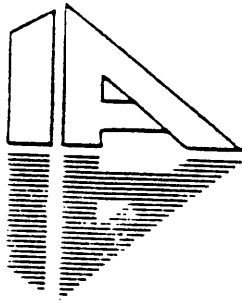
33. In your opinion, what are the major characteristics of an exemplary program in industrial arts? \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

34. In your opinion, what should be the basic elements of standards for industrial arts in secondary schools in the United States. \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Thank you for your valuable input into this research. NOTE: PLEASE MAIL THIS FORM BACK WITHIN FIVE (5) DAYS USING THE SELF-ADDRESSED ENVELOPE.

Appendix C

STATE AND TERRITORIAL SUPERVISORS SURVEY 79-81 (FORM II)



# STATE AND TERRITORIAL SUPERVISOR'S SURVEY

INDUSTRIAL ARTS EDUCATION  
PROGRAM



**PURPOSE:** The purpose of this survey is to collect demographic data on industrial arts programs in the nation. This research is a joint effort of the American Industrial Arts Association, the American Council of Industrial Arts Supervisors, the Industrial Arts Division of the American Vocational Association and the Industrial Arts Education Program at Virginia Tech.

**DIRECTIONS:** The state and territorial supervisor for industrial arts is asked to complete the attached form and return it within ten (10) days in the self-addressed stamped envelope. Please provide actual data if available. If this is not possible, supply us with your BEST ESTIMATE based on the latest information available to you. Supply totals only if breakdowns by sex and/or grade level are not available. Print all comments.

Right justify the answers in the response box. Example: 352 female industrial arts teachers in the state should be shown as:

0	3	5	2
---	---	---	---

## DEFINITIONS

**INDUSTRIAL ARTS EDUCATION PROGRAMS:** Those programs (A) which pertain to the body of related subject matter, or related courses, organized for the development of understanding about all aspects of industry and technology, including learning experiences involving activities such as experimenting, designing, constructing, evaluating, and using tools, machines, materials, and processes and (B) which assist individuals in the making of informed and meaningful occupational choices or which prepare them for entry into advanced trade and industrial or technical education programs. (P.L. 94-482).

DEFINITIONS CONT'D

AIASA: American Industrial Arts Student Association, the industrial arts student organization for secondary school students. AIASA helps assure the quality and relevance of instruction, develop student leadership, enhance citizenship responsibilities, overcome sex and race discrimination and sex stereotyping, and serve students with special needs.

DISADVANTAGED PERSON (VOCATIONAL EDUCATION): Persons (other than handicapped persons) who have academic or economic handicaps and who require special services and assistance in order to enable them to succeed in vocational education programs under criteria developed by the Commissioner based on objective standards and the most recent available data. (Vocational Education Act of 1963)

FULL-TIME EQUIVALENCY (F.T.E.): The amount of time spent or required in a less than full-time activity during the regular school term. Full-time equivalency usually is expressed as a decimal fraction to the nearest tenth. (National Center for Education Statistics)

HANDICAPPED PERSONS: Persons who are mentally retarded, hard of hearing, deaf, speech impaired, visually handicapped, seriously emotionally disturbed, orthopedically impaired or other health impaired person or persons with specific learning disabilities who by reason thereof require special education and related services, and who, because of their handicapping condition, cannot succeed in the regular vocational education program without special education assistance or who require a modified vocational education program. (Vocational Education Act of 1963)

SECONDARY SCHOOL: A school comprising any span of grades beginning the next grade following an elementary or middle school and ending with or below grade 12. (National Center for Education Statistics)

TERRITORY: The territories included are; Puerto Rico, Guam, Virgin Islands, and Washington D.C.

1. How many industrial arts positions were vacant (not filled by anyone) in your state or territory at the beginning of the 1980-81 school year?

Vacant I.A. Positions 1980-81

--	--	--	--

- 2.a. Indicate the number of fully certified male and female industrial arts teachers employed in your state or territory in 1979-80.

Certified I.A. Teachers 1979-80

Male 

--	--	--	--

Female 

--	--	--	--

Total 

--	--	--	--

IN QUESTIONS 2-3, IF YOU DO NOT HAVE THE DATA ON THE NUMBER OF MALES OR FEMALES, THEN FILL IN TOTAL DATA ONLY.

- 2.b. Indicate the number of emergency/temporary or non-certified male and female industrial arts teachers employed in your state or territory in 1979-80.

Non-Certified I.A. Teachers 1979-80

Male 

--	--	--	--

Female 

--	--	--	--

Total 

--	--	--	--

- 2.c. If breakdown by certification is not available (2.a. and 2.b.) give the total number of male and female industrial arts teachers in your state or territory in 1979-80.

Total Number I.A. Teachers 1979-80

Male 

--	--	--	--

Female 

--	--	--	--

Total 

--	--	--	--

3. Indicate (by sex) how many persons earned bachelor degrees with teaching certification in industrial arts in your state or territory during the 1979-80 school year.

Bachelor Degrees Earned 1979-80

Male 

--	--	--

Female 

--	--	--

Total 

--	--	--

4. Indicate the total number of male and female students enrolled in industrial arts at each grade level in your state or territory during 1979-80.

Enrollment by Sex and by Grade Level 1979-80

(If male and female breakdown is not available, give total)

Grade	Male		Female		Total
K-5	<input type="text"/>	+	<input type="text"/>	=	<input type="text"/>
6	<input type="text"/>	+	<input type="text"/>	=	<input type="text"/>
7	<input type="text"/>	+	<input type="text"/>	=	<input type="text"/>
8	<input type="text"/>	+	<input type="text"/>	=	<input type="text"/>
9	<input type="text"/>	+	<input type="text"/>	=	<input type="text"/>
10	<input type="text"/>	+	<input type="text"/>	=	<input type="text"/>
11	<input type="text"/>	+	<input type="text"/>	=	<input type="text"/>
12	<input type="text"/>	+	<input type="text"/>	=	<input type="text"/>

(IF grade level breakdown by sex is not available, give totals)

	Total Male		Total Female		Grand Total
Total	<input type="text"/>	+	<input type="text"/>	=	<input type="text"/>

5. Indicate the total number of male and female students enrolled in vocationally approved and vocationally funded (local/state/federal) industrial arts courses for each grade level in your state or territory during 1979-80.

Enrollment in Vocationally Approved/ Funded Courses 1979-80

Grade	Male	Female	Total
6	<input type="text"/>	<input type="text"/>	<input type="text"/>
7	<input type="text"/>	<input type="text"/>	<input type="text"/>
8	<input type="text"/>	<input type="text"/>	<input type="text"/>
9	<input type="text"/>	<input type="text"/>	<input type="text"/>
10	<input type="text"/>	<input type="text"/>	<input type="text"/>
11	<input type="text"/>	<input type="text"/>	<input type="text"/>
12	<input type="text"/>	<input type="text"/>	<input type="text"/>

(If grade level breakdown by sex is not available, give totals)

Total	Total Male	Total Female	Grand Total
	<input type="text"/>	<input type="text"/>	<input type="text"/>

6. Indicate the total number of handicapped (all disabilities excluding disadvantaged) students enrolled in industrial arts courses in your state or territory during the 1979-80 school year.

Total Handicapped



7. Indicate the total number of disadvantaged students (by P.L.94-482 definition) enrolled in industrial arts courses in your state or territory during the 1979-80 school year.

Total Disadvantaged

- 8.a. List below the course titles and applicable grade levels of vocationally approved and vocationally funded industrial arts courses in your state or territory.

<u>Course Titles</u>	<u>Grade Level(s)</u>
_____	<input type="text"/>
_____	<input type="text"/>
_____	<input type="text"/>
_____	<input type="text"/>
_____	<input type="text"/>
_____	<input type="text"/>
_____	<input type="text"/>
_____	<input type="text"/>
_____	<input type="text"/>
_____	<input type="text"/>
_____	<input type="text"/>
_____	<input type="text"/>
_____	<input type="text"/>

- 8.b. If no courses are vocationally approved or vocationally funded in the state or territory, mark here.

- 8.c. If no courses are currently eligible for vocational funding, does your state or territory have plans to include industrial arts courses among vocationally fundable courses during the next two school years (1981-83)?

Yes  No

- 9 . If your state or territory has utilized vocational funds for industrial arts courses and supporting activities, check any or all activities/items for which funds were spent.

<u>Activities/Items</u>	<u>For Public Schools</u>	<u>For State/Local Supervision</u>	<u>For Teacher Ed.</u>
Salaries	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Travel (excluding student club activity)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Equipment	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Consumable Supplies	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Inservice/Staff Development	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
AIASA, or non-affiliated student organizations	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Instructional Materials Development	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Other:	_____	_____	_____
	_____	_____	_____

No vocational funds are used for industrial arts

10. Has your state or territory developed a program structure or master plan for the scope and sequence of industrial arts courses?

Yes  No (If no, go to #12.)

If yes, is the plan approved for the application of vocational funds?

Yes  No

If yes, does this plan include student club activities?

Yes  No

11. Do provisions in the state or territorial plan for vocational education cover industrial arts courses?

Yes

No

If no, are there plans for inclusion of industrial arts in the state or territory plan for vocational education within the next three years (1981-84)?

Yes

No

12. How many Full-Time Equivalent (F.T.E.) supervisory personnel for industrial arts programs are employed at the state or territory level (use decimal equivalent for fraction)?

.

13. Is there a state or territorial staff member assigned to supervise industrial arts student organizations (either AIASA affiliated or non-AIASA affiliated)?

Yes

No

If yes, what percentage of time?

%

If no, are there plans to make such an assignment within the next two years (1981-83)?

Yes

No

14. How does the state or territory provide funding for industrial arts student organizations (AIASA)? (Mark as many as apply)

Supplement to teacher salary

Extended employment for teachers

Travel, for whom \_\_\_\_\_

Materials, handbooks, printing

None is provided

Other: \_\_\_\_\_  
 \_\_\_\_\_

15. Indicate the number of AIASA chapters in your state or territory.

--	--	--	--

16. Have any AIASA in-service workshops been conducted in your state or territory for teachers during the past year (1980-81)?

Yes

No

If yes, what was the total number of teachers who participated?

--	--	--	--

If no, are there any plans to conduct such a workshop within the next three years (1981-84)?

Yes

No

17. Do you have an advisory committee to assist in the promotion and establishment of industrial arts student organizations in your state or territory?

Yes

No

18. Does the state or territory have regular and systematic evaluations of industrial arts programs?

Yes

No

19. Does the state or territory have specific certification requirements for industrial arts teachers?

Yes

No

Thank you for your valuable input into this research.

Please complete this instrument by May 1, 1981  
and mail it in the attached envelop to:

Industrial Arts Education  
Virginia Polytechnic Institute  
and State University  
220 Lane Hall  
Blacksburg, Va. 24060  
(703) 961-6830

Appendix D  
PANEL OF CONSULTANTS

Bobbie Andrusky  
Pearl River High School  
Pearl River, Louisiana

Les Litherland  
Past President, AIAA  
Lakewood, Colorado

Ronald Applegate  
Executive Director, AIASA  
Reston, Virginia

Pete Martinez  
Oregon State University  
Corvallis, Oregon

Leon Copeland  
University of Maryland  
Princess Anne, Maryland

Donald Moon  
Western Washington Univ.  
Bellingham, Washington

Michael J. Dyrenfuth  
University of Missouri  
Columbia, Missouri

C. Daniel Miller  
Auburn University  
Auburn, Alabama

Ronald Foy  
President-Elect, AIAA  
Austin, Texas

Willis E. Ray  
The Ohio State University  
Columbus, Ohio

James E. Good  
Greece Central School Dist.  
Greece, New York

Arthur Robb  
Hiland Middle School  
Louisville, Kentucky

Daniel Householder  
Texas A & M University  
College Station, Texas

Michael Scott  
Ohio Dept. of Education  
Columbus, Ohio

Tom Hughes  
State Dept. of Education  
Richmond, Virginia

Ralph V. Steeb  
Florida Dept. of Education  
Tallahassee, Florida

Pamela Joblonsky  
California State Univesity  
Los Angles, California

Kendall Starkweather  
Executive Director, AIAA  
Reston, Virginia

David Jelden  
Univ. of Northern Colorado  
Greeley, Colorado

William West  
Clemson Univ.  
Clemson, South Carolina

Appendix E

LETTER TO PANEL OF CONSULTANTS



A LAND-GRANT UNIVERSITY

## VIRGINIA POLYTECHNIC INSTITUTE AND STATE UNIVERSITY

Blacksburg, Virginia 24061

Industrial Arts Education

January 20, 1982

Dear

Let me introduce myself as a graduate student in the Division of Vocational and Technical Education at Virginia Polytechnic Institute and State University. Currently I am conducting a doctoral dissertation research study under the direction of Dr. William E. Dugger, Jr. The purpose of this study is to design a continuous data based information system model for industrial arts education programs in the United States and territories. I need your help!

A major problem for research and development in industrial arts education continues to be locating, storing, and organizing basic data about the current status of industrial arts education programs. Industrial arts educators are continually faced with the challenges of planning and modifying programs in the environment of a continually changing and complex society. Most of Data collected on industrial arts programs in the United States and territories have been found to be fragmented, inaccurate and poorly organized. Although selected data have been collected on various aspects of education by agencies such as the National Education Association and United States Department of Education, there is currently no continuous national reporting system aimed specifically at collecting comprehensive data on all industrial arts programs. With these data, the profession can make sounder judgements for improvements needed on a national basis.

A panel of consultants will be used to determine the needed elements for the system design. Your name was recommended along with nineteen other industrial arts educators in the United States as a member of the panel. You will receive a brief questionnaire which will allow you to express your opinions on the informational needs of the industrial arts profession. Your answers will provide valuable knowledge not available from any other source.

All responses will be completely anonymous. If you decide to participate you will receive the questionnaire within the month. You will be asked to return the completed questionnaire in an enclosed stamped self-addressed envelope.



I sincerely hope that you will agree to participate in this study. Please check the appropriate box on the form attached, and return it at your very earliest convenience in the self-addressed stamped envelope provided. Thank you for your time and interest.

Sincerely,  
*La Verne Herring Young*  
La Verne Herring Young  
Administrative Assistant  
Division of Vocational and  
Technical Education

*William E. Dugger, Jr.*  
William E. Dugger, Jr.  
Program Area Leader  
Industrial Arts Education  
368 Smyth Hall  
Virginia Polytechnic Institute  
and State University

Enclosure

NAME \_\_\_\_\_

Yes, I will be able to serve as a member of the panel of consultants.

No, I will be unable to serve as a member of the panel of consultants at this time.

\_\_\_\_\_  
Signature Date

(Please return this form in the enclosed envelope immediately)

Appendix F  
PANEL OF CONSULTANTS EVALUATION PACKAGE



COLLEGE OF EDUCATION

## VIRGINIA POLYTECHNIC INSTITUTE AND STATE UNIVERSITY

Blacksburg, Virginia 24061

DIVISION OF VOCATIONAL &amp; TECHNICAL EDUCATION

February 5, 1982

Dear Colleague:

Thank you for consenting to participate as a member of the panel of consultants for my research study. Enclosed is the evaluation instrument on which you will be asked to rate certain data elements included in the enclosed state and territorial supervisors survey instrument. The instrument was developed by the Standards for Industrial Arts Programs Project at Virginia Tech University and disseminated to the industrial arts supervisors in 1979, 1980, and 1981.

As you recall from the brief description given in my letter, the purpose of this study is to design a continuous data-based information system model that will aid the profession in responding to the current and future information needs of industrial arts education. The evaluation instrument utilizes a rating scale of 1 (low) to 5 (high) for each data element included in the survey. An overall rating of 3.0 or greater will be considered as representing a positive feeling toward the inclusion of the data elements in the system.

All questionnaire responses will be completely anonymous. A code number appears in the upper right corner of the questionnaire for follow-up purposes only. Therefore, your signature is not required. Time is an important factor in scheduling the mailings for this study. Therefore, it will be very much appreciated if you will complete the questionnaire within a week and mail it in the envelope provided.

I am very pleased that you have agreed to participate in this research study, and I am sure that your ideas and experience will make a valuable contribution. Final results of the study will be furnished upon request. Again, thank you for your time and interest.

Sincerely,

A handwritten signature in cursive script that reads "La Verne Herring Young".

La Verne Herring Young

Dr. William E. Dugger, Jr.  
Professor  
Industrial Arts Education

PANEL OF CONSULTANTS  
EVALUATION OF DATA COLLECTION  
FORM

USER GROUP: Please identify yourself as a potential system user by checking one (or more if applicable) of the following categories:

- Teacher Educator
- Classroom Teacher
- Local Supervisor
- State Supervisor
- Professional Association Officer

The data collection instrument is an important feature of a data base information system. If it is not useful, readable, and feasible to each group using the system, there is little chance of the system being worthwhile.

From your standpoint, please rate these factors as they apply to the attached form. Feel free to comment on your responses so the researcher can include your suggestions for system improvement in the further development of the system.

PART I

Usefulness: Does it appear that knowing the data collected will be useful to your mission in industrial arts education? Please evaluate each question in the attached data collection instrument in terms of its usefulness in an information system according to the criteria given below:

- 1 Totally useless.
- 2 Very little useful data collected.
- 3 Only moderately usable data collected.
- 4 Generally useful data collected.
- 5 Totally useful.

Readability: Readability refers to the ease of understanding the data being requested in the data collection form. It refers to the choice of vocabulary, format, lay out, type size, and other editorial factors. Please evaluate each question in the attached data collection instrument in terms of its readability according to the criteria given below:

- 1 Totally unreadable.
- 2 Practically unreadable. Little of the information is presented effectively.
- 3 Moderately readable. Some of the information is hard to understand or is hidden in the report.
- 4 Good readability. Most information stands out quite well.
- 5 Excellent readability. All information is easily read and understandable.

\* \* \* \* \*

EVALUATION OF DATA COLLECTION FORM

Part I

SURVEY QUESTIONS

EVALUATION CRITERIA

Refer to Supervisors Survey Form	EVALUATION CRITERIA									
	Usefulness (Circle one per line)					Readability (Circle one per line)				
1. Vacant Industrial Arts Positions	1	2	3	4	5	1	2	3	4	5
2a. Certified IA Teachers	1	2	3	4	5	1	2	3	4	5
2b. Non-Certified IA Teachers	1	2	3	4	5	1	2	3	4	5
2c. Total Number IA Teachers	1	2	3	4	5	1	2	3	4	5
3. Bachelor Degrees Earned	1	2	3	4	5	1	2	3	4	5
4. Enrollment by Sex and Grade Level	1	2	3	4	5	1	2	3	4	5
5. Enrollment in Voc. Approved/Funded IA Courses	1	2	3	4	5	1	2	3	4	5
6. Total Number Handicapped Students	1	2	3	4	5	1	2	3	4	5
7. Total Number Disadvantaged Students	1	2	3	4	5	1	2	3	4	5
8a. Course Titles by Grade Level	1	2	3	4	5	1	2	3	4	5
8b. Vocationally Approved/Funded IA Courses in State or Territory	1	2	3	4	5	1	2	3	4	5
9. Industrial Arts Courses and Supporting Activities Which Utilize Vocational Funds	1	2	3	4	5	1	2	3	4	5

Part I--Evaluation of Data Collection Form (Continued)

SURVEY QUESTIONS	EVALUATION CRITERIA									
	Usefulness (Circle one per line)					Readability (Circle one per line)				
Refer to Supervisors Survey Form										
10. Master plan for the scope and sequence of industrial arts courses.	1	2	3	4	5	1	2	3	4	5
11. Provisions in the state or territorial plan for industrial arts courses.	1	2	3	4	5	1	2	3	4	5
12. Full-time equivalent state supervisory personnel for industrial arts programs.	1	2	3	4	5	1	2	3	4	5
13. State level supervisory personnel for industrial arts student organizations.	1	2	3	4	5	1	2	3	4	5
14. State funding for industrial arts student organizations.	1	2	3	4	5	1	2	3	4	5
15. Number of AIASA Chapters in the state.	1	2	3	4	5	1	2	3	4	5
16. AIASA in-service workshops.	1	2	3	4	5	1	2	3	4	5
17. Advisory Committee for industrial arts student organizations in the state.	1	2	3	4	5	1	2	3	4	5
18. Regular and systematic evaluations of industrial arts programs.	1	2	3	4	5	1	2	3	4	5
19. Certification requirements for industrial arts teachers.	1	2	3	4	5	1	2	3	4	5

\*\*\*\*\*

Part II

Feasibility: Will the form collect the needed data in its present format? To what extent is the form feasible for gathering comprehensive data on industrial arts programs in the United States and territories? (Please circle numeral)

- |   |   |   |  |  |
|---|---|---|--|--|
| (1)<br>Totally unfeasible.<br>This will never work. | (2)<br>Barely feasible.<br>This will not work well. It will cause more trouble than it's worth. | (3)<br>Moderately feasible. It may or may not work. | (4)<br>Feasible. Only a few problems anticipated | (5)<br>Totally feasible. No problems will be encountered getting the data. |
|---|---|---|--|--|

Comments: \_\_\_\_\_

Part III

What other data (not included in the state and territorial survey) should be included in a data base information system for industrial arts education?

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

Part IV

How often do you feel the data should be collected? (Please check)

- \_\_\_\_\_ Every year
- \_\_\_\_\_ Every other year
- \_\_\_\_\_ Every 2-3 years
- \_\_\_\_\_ Every 5 years
- \_\_\_\_\_ Other (please specify) \_\_\_\_\_

\*\*\*\*\*

THANK YOU

for your valuable time and assistance in this research. Please return the evaluation form in the enclosed self-addressed, stamped envelope to me by February 19, 1982.

Appendix G  
PILOT TEST PARTICIPANTS

Chris Almeida  
State Supervisor, Industrial  
Arts Education  
California State Department of Education

Stan Grajewski  
State Supervisor, Industrial  
Arts Education  
New Jersey State Department of Education

Dennis Hirsch  
State Supervisor, Industrial  
Arts Education  
Tennessee Department of Education

Joe O. Luke  
State Supervisor, Industrial  
Arts Education  
Utah Department of Education

Appendix H  
LETTER TO PILOT TEST PARTICIPANTS



COLLEGE OF EDUCATION  
VIRGINIA POLYTECHNIC INSTITUTE AND STATE UNIVERSITY

Blacksburg, Virginia 24061

DIVISION OF VOCATIONAL &amp; TECHNICAL EDUCATION

February 26, 1982

Dear

Let me introduce myself as a graduate student in the Division of Vocational and Technical Education at Virginia Polytechnic Institute and State University. Currently I am conducting a doctoral dissertation research study under the direction of Dr. William E. Dugger, Jr. The purpose of this study is to design a continuous data based information system model for industrial arts education programs in the United States and territories. I need your help!

A major problem for research and development in industrial arts education continues to be locating, storing, and organizing basic data about the current status of industrial arts education programs. Industrial arts educators are continually faced with the challenges of planning and modifying programs in the environment of a continually changing and complex society. Most of the data collected on industrial arts programs in the United States and territories have been found to be fragmented, inaccurate and poorly organized. Although selected data have been collected on various aspects of education by agencies such as the National Education Association and United States Department of Education, there is currently no continuous national reporting system aimed specifically at collecting comprehensive data on all industrial arts programs. With these data, the profession can make sounder judgements for improvements needed on a national basis.

A panel of consultants was used to help develop the initial data collection instrument for the system. Your name was recommended along with three other industrial arts supervisors to pilot test the instrument. You will be allowed to express your opinions on the readability of the instrument and the feasibility of collecting the needed data. Your responses will be used to further refine the instrument. The revised instrument will then be field tested by the fifty-four state and territorial industrial arts supervisors.

All responses will be completely anonymous. If you decide to participate you will receive the instrument within the month. You will be asked to return the completed questionnaire in an enclosed stamped self-addressed envelope.

I sincerely hope that you will agree to participate in this study. Please check the appropriate box on the form attached, and return it at your very earliest convenience in the self-addressed stamped envelope provided. Thank you for your time and interest.

Sincerely,

La Verne Herring Young  
Administrative Assistant  
Division of Vocational  
and Technical Education

William E. Dugger, Jr.  
Program Area Leader  
Industrial Arts Education  
368 Smyth Hall  
Virginia Tech

Enclosure

-----  
Name \_\_\_\_\_

\_\_\_\_\_ Yes, I will be able to participate in the pilot test.

\_\_\_\_\_ No, I will be unable to participate in the pilot test at this time.

\_\_\_\_\_  
Signature

\_\_\_\_\_  
Date

(Please return this form in the enclosed envelope immediately)

Appendix I  
PILOT TEST PARTICIPANTS EVALUATION FORM

PILOT TEST PARTICIPANTS  
EVALUATION OF DATA COLLECTION FORM

DIRECTIONS: Please evaluate each item in the enclosed data collection instrument in terms of readability, availability, and collectability of the data being requested.

PART I

READABILITY: Readability refers to the ease of understanding the data being requested in the data collection form. It refers to the choice of vocabulary, format, layout, type size, and other editorial factors. Please rate each question in the attached instrument in terms of its readability according to the criteria given below:

- 1 Totally unreadable.
- 2 Practically unreadable. Little of the information is presented effectively.
- 3 Moderately readable. Some of the information is hard to understand or is hidden in the question.
- 4 Good readability. Most of the information stands out quite well.
- 5 Excellent readability. All information is easily read and understandable.

AVAILABILITY: Availability refers to whether or not the data being requested is on hand or obtainable. Please respond to each item by circling "YES" or "NO". If you respond by circling "YES" please provide the data. If you respond by circling "NO" in this category for any item, please respond to the next category, "Collectability".

COLLECTABILITY: Collectability refers to whether the data being requested can be gathered within a reasonable specified period of time in order to complete this instrument. Please respond to this category by circling "YES" or "NO".

#####

DATA REQUESTED	EVALUATION CRITERIA								
	Readability (circle one per line)					Availability (circle one)		Collectability (circle one)	
1. Vacant IA positions	1	2	3	4	5	YES	NO	YES	NO
2a. Total number IA teachers	1	2	3	4	5	YES	NO	YES	NO
2b. Number cert/non-cert.	1	2	3	4	5	YES	NO	YES	NO
3. Average starting salary	1	2	3	4	5	YES	NO	YES	NO
4a. Bachelors degrees earned	1	2	3	4	5	YES	NO	YES	NO

PART I-- Evaluation of Data Collection Form (Continued)

DATA REQUESTED Refer to instrument	EVALUATION CRITERIA								
	Readability (circle one per line)					Availability (circle one)		Collectability (circle one)	
4b. Employed as IA Teachers	1	2	3	4	5	YES	NO	YES	NO
5. F.T.E. Supervisors	1	2	3	4	5	YES	NO	YES	NO
6. Staff Assigned to AIASA	1	2	3	4	5	YES	NO	YES	NO
7. Enrollment by Sex by Grade	1	2	3	4	5	YES	NO	YES	NO
8. Voc. Enrollmt. by Sex by Grade	1	2	3	4	5	YES	NO	YES	NO
9a. Handicapped Enrollment-Spec.	1	2	3	4	5	YES	NO	YES	NO
9b. Handicapped Enrollment- Reg.	1	2	3	4	5	YES	NO	YES	NO
10. Disadvantaged Enrollment	1	2	3	4	5	YES	NO	YES	NO
11. Course Titles	1	2	3	4	5	YES	NO	YES	NO
12a. Number AIASA Chapters	1	2	3	4	5	YES	NO	YES	NO
12b. Number AIASA Students	1	2	3	4	5	YES	NO	YES	NO
13. Voc. Funded IA Courses	1	2	3	4	5	YES	NO	YES	NO
14. Inservice Workshops	1	2	3	4	5	YES	NO	YES	NO
15. State Advisory Committee	1	2	3	4	5	YES	NO	YES	NO
16a. Regular IA Evaluations	1	2	3	4	5	YES	NO	YES	NO
16b. Adopted Standards for IA	1	2	3	4	5	YES	NO	YES	NO
16c. Plans Within Next Two Yrs.	1	2	3	4	5	YES	NO	YES	NO
17. Certification Requirements	1	2	3	4	5	YES	NO	YES	NO

PART II

Please feel free to make any additional comments or suggestions pertaining to the instrument or the system being designed.

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#####

THANK YOU

for your valuable time and assistance in this research. Please return the instrument and evaluation form in the enclosed envelope immediately.

Appendix J

PILOT TEST PARTICIPANTS LETTER



COLLEGE OF EDUCATION

## VIRGINIA POLYTECHNIC INSTITUTE AND STATE UNIVERSITY

Blacksburg, Virginia 24061

DIVISION OF VOCATIONAL &amp; TECHNICAL EDUCATION

March 15, 1982

Dear Colleague:

Thank you for consenting to participate as a Pilot Test Participant for my research study. Enclosed is the evaluation form and data collection instrument. You are asked to spend a few minutes rating the data elements requested in the instrument. The instrument was designed by the Standards for Industrial Arts Programs Project at Virginia Tech, Blacksburg, Virginia, and revised by a panel of state supervisor. It was further refined by a panel of nationally recognized consultants in the profession chosen for this study.

As you recall from the brief description given in my letter, the purpose of this study is to design a continuous data-based information system model that will aid the profession in responding to the current and future information needs of industrial arts education. Your assistance is needed in determining whether the data being requested is readable, available or collectable, for completing this instrument and for use in a data-based information system for industrial arts education programs.

All questionnaire responses will be completely anonymous. A code number appears in the upper right corner of the form for follow-up purposes only. Therefore, your signature is not required. Time is an important factor in scheduling the mailings for this study. Therefore, it will be very much appreciated if you will complete both forms within a week and mail them in the enclosed envelope. All state and territorial supervisors (including yourself) will then be asked to field test the instrument.

I am very pleased that you have agreed to participate in this research study, and I am sure that your ideas and experience will make a valuable contribution. Final results of the study will be furnished upon request. Again, thank you for your time and interest.

Sincerely,

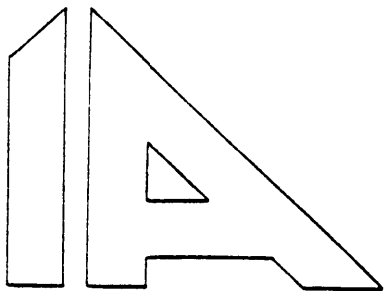
A handwritten signature in cursive script, appearing to read "La Verne Herring Young".

La Verne Herring Young  
Administrative Assistant  
Division of Vocational & Technical  
Education

William E. Dugger, Jr.  
Professor  
Industrial Arts Education

Appendix K  
REVISED DATA COLLECTION INSTRUMENT





**INDUSTRIAL ARTS  
DATA COLLECTION  
FORM**

TO: State and territorial staff assigned to supervise industrial arts education.

**PURPOSE:** The purpose of this instrument is to collect demographic data on industrial arts education programs in the United States and territories. This research is being conducted by LaVerne Herring Young under the direction of Dr. William E. Dugger, Jr., as part of a doctoral dissertation study. This data will contribute to a data based information system design model for industrial arts education and will be made available to the profession in the form of a report.

**DIRECTIONS:** The state and territorial supervisor for industrial arts is asked to complete the attached form and return it within ten (10) days in the self-addressed stamped envelope. Please provide actual data if available. If this is not possible, supply us with your BEST ESTIMATE based on the latest information available to you. Supply totals only if breakdowns by sex and/or grade level are not available. Print all comments.

Right justify the answers in the response box. Example: 352 female industrial arts teachers in the state should be shown as:

0	3	5	2
---	---	---	---

DEFINITIONS

**INDUSTRIAL ARTS EDUCATION PROGRAMS:** Those programs (A) which pertain to the body of related subject matter, or related courses, organized for the development of understanding about all aspects of industry and technology, including learning experiences involving activities such as experimenting, designing, constructing, evaluating, and using tools, machines, materials, and processes and (B) which assist individuals in the making of informed and meaningful occupational choices or which prepare them for entry into advanced trade and industrial or technical education programs. (P.L. 94-482).

DEFINITIONS (Cont'd.)

**AIASA:** American Industrial Arts Student Association, the industrial arts student organization for secondary school students. AIASA helps assure the quality and relevance of instruction, develop student leadership, enhance citizenship responsibilities, overcome sex and race discrimination and sex stereotyping, and serve students with special needs.

**DISADVANTAGED PERSON (VOCATIONAL EDUCATION):** Persons (other than handicapped persons) who have academic or economic handicaps and who require special services and assistance in order to enable them to succeed in vocational education programs under criteria developed by the Commissioner based on objective standards and the most recent available data. (Vocational Education Act of 1963)

**FULL-TIME EQUIVALENCY (F.T.E.):** The amount of time spent or required in a less than full-time activity during the regular school term. Full-time equivalency usually is expressed as a decimal fraction to the nearest tenth. (National Center for Education Statistics)

**HANDICAPPED PERSONS:** Persons who are mentally retarded, hard of hearing, deaf, speech impaired, visually handicapped, seriously emotionally disturbed, orthopedically impaired or other health impaired person or persons with specific learning disabilities who by reason thereof require special education and related services, and who, because of their handicapping condition, cannot succeed in the regular vocational education program without special education assistance or who require a modified vocational education program. (Vocational Education Act of 1963)

**SECONDARY SCHOOL:** A school comprising any span of grades beginning the next grade following an elementary or middle school and ending with or below grade 12. (National Center for Education Statistics)

**TERRITORY:** The territories included are: Puerto Rico, Guam, Virgin Islands, and Washington, D.C.

1. How many secondary school industrial arts positions were vacant (not filled by anyone) in your state or territory at the beginning of the 1981-82 school year?
 

Vacant I.A. Positions 1981-82

[ ] [ ] [ ]
  
2. (a) Give the total number of male and female industrial arts teachers in your state or territory in 1980-81.
 

Total Number I.A. Teachers 1980-81

Male [ ] [ ] [ ] [ ] [ ]

Female [ ] [ ] [ ] [ ] [ ]

Total [ ] [ ] [ ] [ ] [ ]
  
2. (b) Indicate the number of emergency/temporary or non-certified male and female industrial arts teachers employed in your state or territory in 1980-81.
 

Non-Certified I.A. Teachers 1980-81

Male [ ] [ ] [ ] [ ] [ ]

Female [ ] [ ] [ ] [ ] [ ]

Total [ ] [ ] [ ] [ ] [ ]
  
3. Indicate the average starting salary for industrial arts teachers employed in the state or territory.
 

\$ [ ] [ ] [ ] [ ] [ ] [ ] [ ] [ ] [ ] [ ] [ ] [ ]
  
4. (a) Indicate (by sex) how many persons earned bachelor degrees with teaching certification in industrial arts in your state or territory during the 1980-81 school year.
 

Bachelor Degrees Earned 1980-81

Male [ ] [ ] [ ] [ ] [ ]

Female [ ] [ ] [ ] [ ] [ ]

Total [ ] [ ] [ ] [ ] [ ]
  
4. (b) Indicate how many of those persons were employed as industrial arts teachers during the 1981-82 school year.
 

Employed as I.A. teachers 1981-82

[ ] [ ] [ ] [ ] [ ]
  
5. How many Full-Time Equivalent (F.T.E.) supervisory personnel for industrial arts programs are employed at the state or territory level (use decimal equivalent for fraction)?
 

[ ] [ ] [ ] [ ] [ ] . [ ] [ ] [ ] [ ] [ ]

6. Is there a state or territorial staff member assigned to supervise industrial arts student organizations (either AIASA affiliated or non-AIASA affiliated)?

Yes

No

If yes, what percentage of time?

%

7. Indicate the total number of male and female students enrolled in ALL industrial arts courses (regardless of funding source) at each grade level in your state or territory during 1980-81.

Enrollment by Sex and by Grade Level 1980-81

(If male and female breakdown is not available, give total)

Grade	Male		Female		Total
K-5	<input type="text"/>	+	<input type="text"/>	=	<input type="text"/>
6	<input type="text"/>	+	<input type="text"/>	=	<input type="text"/>
7	<input type="text"/>	+	<input type="text"/>	=	<input type="text"/>
8	<input type="text"/>	+	<input type="text"/>	=	<input type="text"/>
9	<input type="text"/>	+	<input type="text"/>	=	<input type="text"/>
10	<input type="text"/>	+	<input type="text"/>	=	<input type="text"/>
11	<input type="text"/>	+	<input type="text"/>	=	<input type="text"/>
12	<input type="text"/>	+	<input type="text"/>	=	<input type="text"/>

(If grade level breakdown by sex is not available, give totals)

	Total Male		Total Female		Grand Total
Total	<input type="text"/>	+	<input type="text"/>	=	<input type="text"/>

8. Indicate the total number of male and female students enrolled in vocationally approved or vocationally fundable (local/state/federal) industrial arts courses for each grade level in your state or territory during 1980-81.

Enrollment in Vocationally Approved/Funded Courses 1980-81

Grade	Male		Female		Total
K-5	<input type="text"/>	+	<input type="text"/>	=	<input type="text"/>
6	<input type="text"/>	+	<input type="text"/>	=	<input type="text"/>
7	<input type="text"/>	+	<input type="text"/>	=	<input type="text"/>
8	<input type="text"/>	+	<input type="text"/>	=	<input type="text"/>
9	<input type="text"/>	+	<input type="text"/>	=	<input type="text"/>
10	<input type="text"/>	+	<input type="text"/>	=	<input type="text"/>
11	<input type="text"/>	+	<input type="text"/>	=	<input type="text"/>
12	<input type="text"/>	+	<input type="text"/>	=	<input type="text"/>

(If grade level breakdown by sex is not available, give totals)

	Total Male		Total Female		Grand Total
Total	<input type="text"/>	+	<input type="text"/>	=	<input type="text"/>

9. (a) Indicate the total number of handicapped (all disabilities excluding disadvantaged) students enrolled in specially designed industrial arts programs for the handicapped during the 1980-81 school year.

9. (b) Indicate the total number of handicapped (all disabilities excluding disadvantaged) students enrolled in regular industrial arts courses in your state or territory during the 1980-81 school year.

Total Handicapped

10. Indicate the total number of disadvantaged students (by P.L. 94-482 definition) enrolled in industrial arts courses in your state or territory during the 1980-81 school year.

Total Disadvantaged

--	--	--	--	--	--	--	--

11. List below the course titles and applicable grade levels for ALL industrial arts courses in your state or territory.

Course Titles	Grade Level(s)	Check if Vocationally Fundable
_____	<input type="text"/>	<input type="checkbox"/>
_____	<input type="text"/>	<input type="checkbox"/>
_____	<input type="text"/>	<input type="checkbox"/>
_____	<input type="text"/>	<input type="checkbox"/>
_____	<input type="text"/>	<input type="checkbox"/>
_____	<input type="text"/>	<input type="checkbox"/>
_____	<input type="text"/>	<input type="checkbox"/>
_____	<input type="text"/>	<input type="checkbox"/>
_____	<input type="text"/>	<input type="checkbox"/>
_____	<input type="text"/>	<input type="checkbox"/>
_____	<input type="text"/>	<input type="checkbox"/>
_____	<input type="text"/>	<input type="checkbox"/>
_____	<input type="text"/>	<input type="checkbox"/>
_____	<input type="text"/>	<input type="checkbox"/>
_____	<input type="text"/>	<input type="checkbox"/>

12. (a) Indicate the total number of AIASA affiliated chapters in your state or territory.

--	--	--	--	--

12. (b) Indicate the total number of AIASA affiliated students in your state or territory.

--	--	--	--	--

13. If your state or territory has utilized vocational funds for industrial arts courses and supporting activities, check any and all activities/items for which funds were spent.

<u>Activities/Items</u>	<u>For Public Schools</u>	<u>For State/Local Supervision</u>	<u>For Teacher Ed.</u>
Salaries	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Travel (excluding student club activity)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
AIASA support or non-affiliated student organizations	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Equipment	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Consumable Supplies	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Inservice/Staff Development	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Instructional Materials Development	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Other:	_____	_____	_____
	_____	_____	_____

No vocational funds are used for industrial arts





Appendix L

FIELD TEST PARTICIPANTS -- STATE AND TERRITORIAL INDUSTRIAL  
ARTS SUPERVISORS

Charles F. Tate  
Indust. Arts Specialist  
Montgomery, Alabama

Ray Minge  
Industrial Arts Supv.  
Juneau, Alaska

Hoyt Kenmore  
Indust. Arts Specialist  
Phoenix, Arizona

Charles W. Easley  
Industrial Arts Supv.  
Little Rock, Arkansas

Chris Almedia  
Industrial Arts Supv.  
Sacramento, California

Industrial Arts Consultant  
State Dept. of Education  
Denver, Colorado

David Mordavsky  
Industrial Arts Consultant  
Hartford, Connecticut

Franklin Arbaugh  
Industrial Arts Supervisor  
Dover, Delaware

Marvin Lytle  
Industrial Arts Supervisor  
Washington, D.C.

Robert Putoff  
Industrial Arts Supervisor  
Frankfort, Kentucky

Industrial Arts Supervisor  
State Dept. of Education  
Baton Rouge, Louisiana

Tom Birmingham  
Industrial Arts Consultant  
Augusta, Maine

Ralph Steeb  
Indust. Arts Specialist  
Tallahassee, Florida

Sammy Powell  
Industrial Arts Supv.  
Atlanta, Georgia

John Salas  
Indust. Arts Supervisor  
Guam, Marina Islands

Eric Chang  
Industrial Arts Supv.  
Honolulu, Hawaii

Industrial Arts Supervisor  
State Dept. of Education  
Boise, Idaho

Robert Metzger  
Industrial Arts Supv.  
Springfield, Illinois

Industrial Arts Consultant  
State Dept. of Education  
Indianapolis, Indiana

Harold Berryhill  
Industrial Arts Consultant  
Des Moines, Iowa

Edwin Henry  
Industrial Arts Supervisor  
Topeka, Kansas

Delmar Johnson  
Industrial Arts Supervisor  
Lincoln, Nebraska

Industrial Arts Supervisor  
400 W. King Street  
Carson City, Nevada

Kenneth Latchaw  
Industrial Arts Consultant  
Concord, New Hampshire

Allan B. Myers  
Industrial Arts Specialist  
Baltimore, Maryland

Dr. George B. James  
Director, Ind. Tech. Dept.  
Fitchburg, Massachusetts

James Rudnick  
Department of Education  
Lansing, Michigan

Thomas Ryerson  
Supervisor Indust. Arts  
St. Paul, Minnesota

A. D. Nabors  
Supervisor Industrial Arts  
Jackson, Mississippi

B. Eugene Brightwell  
Supervisor Industrial Arts  
Jefferson City, Missouri

Jeff Wulf  
Industrial Arts Supervisor  
Helena, Montana

John Fessant  
Industrial Arts Specialist  
Salem, Oregon

Industrial Arts Supervisor  
Dept. of Education  
Harrisburg, Pennsylvania

Franklin Ramirez  
Industrial Arts Supervisor  
Hata Rey, Puerto Rico

Frank Santoro  
Industrial Arts Supervisor  
Providence, Rhode Island

William Singletary  
Industrial Arts Supervisor  
Columbia, South Carolina

Richard Callan  
Director, Ind. Arts.  
Concord, New Hampshire

Dr. Albert Zamora  
Industrial Arts Supv.  
Sante Fe, New Mexico

Dr. Betty Brown  
Practical Arts Supv.  
Albany, New York

Ralph Johnson  
Industrial Arts Consult.  
Raleigh, North Carolina

Ernest Breznay  
Industrial Arts Educ.  
Bismark, North Dakota

Robert Gates  
Industrial Arts Supervisor  
Columbus, Ohio

Harold Winburn  
Industrial Arts Supervisor  
Stillwater, Oklahoma

Joe O. Luke  
Industrial Arts Supervisor  
Salt Lake City, Utah

Joseph Kisko  
Industrial Arts Supervisor  
Montpelier, Vermont

Thomas A. Hughes, Jr.  
Industrial Arts Supervisor  
Richmond, Virginia

Norvell O. Wells  
State Supervisor  
St. Thomas, Virginia Islands

Industrial Arts Supervisor  
Old Capitol Building  
Olympia, Washington

David Merrill  
Industrial Arts Supervisor  
Pierre, South Dakota

Dennis Hirsch  
Industrial Arts Supervisor  
Nashville, Tennessee

Neil Ballard  
Industrial Arts Supervisor  
Austin, Texas

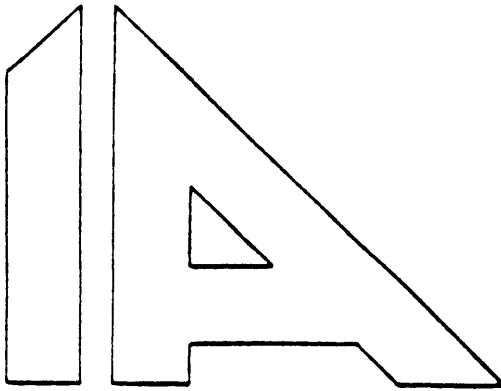
James Snyder  
Industrial Arts Supervisor  
Charleston, West Virginia

William Ratzburg  
Industrial Arts Supervisor  
Madison, Wisconsin

Harley Strayer  
Industrial Arts Supervisor  
Cheyene, Wyoming

Appendix M

REPORT OF STATE AND TERRITORIAL INDUSTRIAL ARTS EDUCATION  
DATA COLLECTION 1981-82



**1981-82**

**REPORT OF STATE AND TERRITORIAL  
INDUTRIAL ARTS EDUCATION  
DATA COLLECTION**

INDUSTRIAL ARTS EDUCATION  
DATA COLLECTION  
OUTLINE OF REPORT FORMAT

I	ACKNOWLEDGMENTS
II	TABLE OF CONTENTS
III	INTRODUCTION AND OVERVIEW OF DATA COLLECTION IN INDUSTRIAL ARTS EDUCATION
IV	DATA COLLECTION PROCEDURES
V	ANALYSIS OF THE DATA
IV	FINDINGS
	Table 1a Vacant Industrial Arts Positions
	Table 2a Employed Industrial Arts Teachers by Certification
	Table 3a Average Starting Salary for Industrial Arts Teachers
	Table 4a Bachelors Degrees Awarded and Number of Grads. Employed
	Table 5a State/Territorial Staff Assigned to Ind. Arts
	Table 6a Total Industrial Arts Enrollment by Sex
	Table 7a Total Industrial Arts Enrollment in Voc. Funded Courses
	Table 8a Handicapped and Disadvantaged Students Enrolled in IA
	Table 9a American Industrial Arts Student Association Membership
	Table 10a Use of Vocational Funds for Industrial Arts Activities
	Table 11a General State/Territory Industrial Arts Policies
	Table 12a Inservice Workshops Conducted for Industrial Arts Teachers
	Table 12b Number of Teachers Who Participated in Inservice Workshops
	Table 13a Use of Standards for Industrial Arts
VI	SUMMARY
VII	APPENDICES

Table 1a

STATE (Total Number)	NUMBER OF VACANCIES				
	77-78 (N=40)	78-79 (N=41)	79-80 (N=44)	80-81 (N=43)	81-82 (N=24)
ALABAMA	0	0	0	0	.
ALASKA	.	.	.	.	.
ARIZONA	8	11	.	45	10
ARKANSAS	5	1	6	.	0
CALIFORNIA	61	65	124	128	.
COLORADO	0	0	.	.	.
CONNECTICUT	.	6	35	.	8
DELAWARE	1	1	0	.	.
DIST OF COL	3	8	36	.	.
FLORIDA	10	25	25	30	30
GEORGIA	30	40	35	30	30
GUAM	.	.	.	.	.
HAWAII	1	0	1	0	1
IDAHO	0	0	0	0	.
ILLINOIS	.	110	100	.	.
INDIANA	75	80	8	1	.
IOWA	22	29	39	24	.
KANSAS	.	.	.	.	.
KENTUCKY	4	0	4	8	3
LOUISIANA	50	75	50	77	77
MAINE	.	.	14	12	.
MARYLAND	17	20	5	9	.
MASSACHUSETTS	.	.	.	0	.
MICHIGAN	.	.	.	0	.
MINNESOTA	0	5	5	0	0
MISSISSIPPI	12	14	8	8	6
MISSOURI	47	55	23	25	38
MONTANA	2	3	2	2	.
NEBRASKA	6	13	26	37	.
NEVADA	0	0	.	15	.
NEW HAMPSHIRE	.	.	2	0	0
NEW JERSEY	0	0	35	22	18
NEW MEXICO	6	6	7	8	2
NEW YORK	50	40	.	50	25
NORTH CAROLINA	16	19	8	8	.
NORTH DAKOTA	6	6	10	5	2
OHIO	15	28	50	109	0
OKLAHOMA	8	10	10	.	10
OREGON	8	3	5	5	2
PENNSYLVANIA	40	30	45	.	.
PUERTO RICO	8	11	0	81	.
RHODE ISLAND	.	.	.	.	.
SOUTH CAROLINA	.	.	.	.	.
SOUTH DAKOTA	.	.	.	.	.
TENNESSEE	12	6	6	8	6
TEXAS	270	290	300	300	.
UTAH	0	0	1	0	.
VERMONT	0	0	0	1	.
VIRGIN ISLANDS	10	8	1	6	.
VIRGINIA	20	24	15	10	15
WASHINGTON	0	0	2	.	.
WEST VIRGINIA	.	18	20	.	.
WISCONSIN	10	10	90	.	.
WYOMING	5	7	3	0	0
TOTALS	838	1077	1178	1100	289



Table 2a

EMPLOYED INDUSTRIAL ARTS TEACHERS  
BY LEVEL OF CERTIFICATION

STATE (Total Number)	TOTAL EMPL			TEMP/NON CERT		
	M (19)	F (19)	TOT (21)	M (17)	F (17)	TOT (20)
ALABAMA	.	.	.	.	.	.
ALASKA	.	.	.	.	.	.
ARIZONA	776	7	783	.	.	75
ARKANSAS	100	0	100	0	0	0
CALIFORNIA	.	.	.	.	.	.
COLORADO	.	.	.	.	.	.
CONNECTICUT	1295	28	1323	20	0	20
DELAWARE	.	.	.	.	.	.
DIST OF COL	.	.	.	.	.	.
FLORIDA	1238	12	1250	.	.	18
GEORGIA	.	.	563	.	.	.
GUAM	.	.	.	.	.	.
HAWAII	219	3	222	0	0	0
IDAHO	.	.	.	.	.	.
ILLINOIS	.	.	.	.	.	.
INDIANA	.	.	.	.	.	.
IOWA	.	.	.	.	.	.
KANSAS	.	.	.	.	.	.
KENTUCKY	475	3	478	0	0	0
LOUISIANA	430	5	435	30	0	30
MAINE	.	.	.	.	.	.
MARYLAND	.	.	.	.	.	.
MASSACHUSETTS	.	.	.	.	.	.
MICHIGAN	.	.	.	.	.	.
MINNESOTA	1297	3	1300	0	0	0
MISSISSIPPI	271	1	272	0	0	0
MISSOURI	1161	19	1180	12	3	15
MONTANA	.	.	.	.	.	.
NEBRASKA	.	.	.	.	.	.
NEVADA	.	.	.	.	.	.
NEW HAMPSHIRE	.	.	.	.	.	.
NEW JERSEY	2164	32	2196	53	0	53
NEW MEXICO	.	.	.	.	.	.
NEW YORK	3997	96	4093	10	0	10
NORTH CAROLINA	.	.	.	.	.	.
NORTH DAKOTA	172	0	172	0	0	0
OHIO	2422	42	2464	44	2	46
OKLAHOMA	565	10	575	10	0	10
OREGON	894	6	900	0	0	0
PENNSYLVANIA	.	.	.	.	.	.
PUERTO RICO	.	.	.	.	.	.
RHODE ISLAND	.	.	.	.	.	.
SOUTH CAROLINA	.	.	.	.	.	.
SOUTH DAKOTA	236	2	238	3	0	3
TENNESSEE	359	6	365	34	1	35
TEXAS	.	.	.	.	.	.
UTAH	.	.	.	.	.	.
VERMONT	.	.	.	.	.	.
VIRGIN ISLANDS	.	.	.	.	.	.
VIRGINIA	.	.	1092	.	.	126
WASHINGTON	.	.	.	.	.	.
WEST VIRGINIA	.	.	.	.	.	.
WISCONSIN	.	.	.	.	.	.
WYOMING	250	1	251	0	0	0
TOTAL	18321	276	19689	216	6	441

Table 3a

## Average Starting Salary for Industrial Arts Teachers

State (Total Number)	\$ Average Starting Salaries (N=19)
ALABAMA	.....
ALASKA	.....
ARIZONA	12,500
ARKANSAS	11,000
CALIFORNIA	.....
COLORADO	.....
CONNECTICUT	10,000
DELAWARE	.....
DIST OF COL	.....
FLORIDA	11,500
GEORGIA	.....
GUAM	.....
HAWAII	14,000
IDAHO	.....
ILLINOIS	.....
INDIANA	.....
IOWA	.....
KANSAS	.....
KENTUCKY	.....
LOUISIANA	13,500
MAINE	.....
MARYLAND	.....
MASSACHUSETTS	.....
MICHIGAN	.....
MINNESOTA	11,500
MISSISSIPPI	11,000
MISSOURI	12,000
MONTANA	.....
NEBRASKA	.....
NEVADA	.....
NEW HAMPSHIRE	.....
NEW JERSEY	12,500
NEW MEXICO	12,000
NEW YORK	13,000
NORTH CAROLINA	.....
NORTH DAKOTA	11,500
OHIO	12,342
OKLAHOMA	13,000
OREGON	11,500
PENNSYLVANIA	.....
PUERTO RICO	.....
RHODE ISLAND	.....
SOUTH CAROLINA	.....
SOUTH DAKOTA	15,000
TENNESSEE	.....
TEXAS	.....
UTAH	.....
VERMONT	.....
VIRGIN ISLANDS	.....
VIRGINIA	11,418
WASHINGTON	.....
WEST VIRGINIA	.....
WISCONSIN	.....
WYOMING	17,000
AVERAGE	\$ 12,435

Table 4a

BACHELORS DEGREES AWARDED IN INDUSTRIAL  
ARTS WITH TEACHING CERTIFICATION FROM 1980-81, BY SEX AND THE NUMBER  
OF GRADUATES WHO WERE EMPLOYED AS INDUSTRIAL ARTS TEACHERS, 1981 82

STATE (Total Number)	Bachelors Degrees Awarded			Grad. Employ. as IA Teachers (N=15)
	MALE (N=20)	FEMALE (N=20)	TOTAL (N=21)	
ALABAMA	.	.	.	.
ALASKA	0	0	0	27
ARIZONA	40	2	42	6
ARKANSAS	15	0	15	.
CALIFORNIA	.	.	.	.
COLORADO	.	.	.	.
CONNECTICUT	37	1	38	.
DELAWARE	.	.	.	.
DIST OF COL	.	.	.	.
FLORIDA	.	.	25	12
GEORGIA	.	.	.	.
GUAM	.	.	.	.
HAWAII	10	1	11	3
IDAHO	.	.	.	.
ILLINOIS	.	.	.	.
INDIANA	.	.	.	.
IOWA	.	.	.	.
KANSAS	.	.	.	.
KENTUCKY	40	3	43	17
LOUISIANA	37	3	40	20
MAINE	.	.	.	.
MARYLAND	.	.	.	.
MASSACHUSETTS	.	.	.	.
MICHIGAN	.	.	.	.
MINNESOTA	80	5	85	.
MISSISSIPPI	30	0	30	15
MISSOURI	37	4	41	36
MONTANA	.	.	.	.
NEBRASKA	.	.	.	.
NEVADA	.	.	.	.
NEW HAMPSHIRE	20	0	20	.
NEW JERSEY	65	7	72	.
NEW MEXICO	22	1	23	.
NEW YORK	175	25	200	100
NORTH CAROLINA	.	.	.	.
NORTH DAKOTA	14	0	14	8
OHIO	198	11	209	156
OKLAHOMA	40	1	41	20
OREGON	.	.	.	.
PENNSYLVANIA	.	.	.	.
PUERTO RICO	.	.	.	.
RHODE ISLAND	.	.	.	.
SOUTH CAROLINA	.	.	.	.
SOUTH DAKOTA	35	1	36	30
TENNESSEE	.	.	.	.
TEXAS	.	.	.	.
UTAH	.	.	.	.
VERMONT	.	.	.	.
VIRGIN ISLANDS	.	.	.	.
VIRGINIA	73	5	78	52
WASHINGTON	.	.	.	.
WEST VIRGINIA	.	.	.	.
WISCONSIN	.	.	.	.
WYOMING	11	0	11	6
TOTALS	959	70	1054	509

Table 5a

## STATE/TERRITORIAL STAFF ASSIGNED TO INDUSTRIAL ARTS

STATE (Total Number)	NUMBER FTE STAFF IA PROGM. SUPERVISORS (N=23)	STAFF MEMBER ASSIGNED TO STUDENT ORGANIZATIONS (N=24)	PERCENT OF TIME SPENT ON STU ORG. BY STAFF (N=13)
ALABAMA	...	...	...
ALASKA	...	...	...
ARIZONA	1.0	YES	50
ARKANSAS	.25	NO	.
CALIFORNIA	...	...	...
COLORADO	...	...	...
CONNECTICUT	1.0	YES	25
DELAWARE	...	...	...
DIST OF COL	...	...	...
FLORIDA	4.5	YES	15
GEORGIA	2.0	YES	30
GUAM	...	...	...
HAWAII	.	NO	.
IDAHO	...	...	...
ILLINOIS	...	...	...
INDIANA	...	...	...
IOWA	...	...	...
KANSAS	...	...	...
KENTUCKY	1.0	NO	.
LOUISIANA	2.0	YES	50
MAINE	...	...	...
MARYLAND	...	...	...
MASSACHUSETTS	...	...	...
MICHIGAN	.50	NO	.
MINNESOTA	.50	NO	.
MISSISSIPPI	2.0	YES	75
MISSOURI	1.0	NO	.
MONTANA	...	...	...
NEBRASKA	...	...	...
NEVADA	...	...	...
NEW HAMPSHIRE	1.0	YES	.
NEW JERSEY	2.0	YES	50
NEW MEXICO	2.0	YES	50
NEW YORK	5.0	YES	50
NORTH CAROLINA	...	...	...
NORTH DAKOTA	7.0	NO	.
OHIO	2.0	YES	25
OKLAHOMA	3.5	YES	25
OREGON	1.0	NO	.
PENNSYLVANIA	...	...	...
PUERTO RICO	...	...	...
RHODE ISLAND	...	...	...
SOUTH CAROLINA	...	...	...
SOUTH DAKOTA	0	NO	.
TENNESSEE	4.0	YES	35
TEXAS	...	...	...
UTAH	...	...	...
VERMONT	...	...	...
VIRGIN ISLANDS	...	...	...
VIRGINIA	6.25	YES	100
WASHINGTON	...	...	...
WEST VIRGINIA	...	...	...
WISCONSIN	...	...	...
WYOMING	.50	NO	.
TOTALS	50.55	14 (YES)	580
MEAN	2.20		44.6

Table 6a

## TOTAL INDUSTRIAL ARTS ENROLLMENTS BY SEX

STATE (Total Number)	MALE (N=12)	FEMALE (N=12)	TOTAL (N=15)
ALABAMA	.....	.....	....
ALASKA	.....	.....	....
ARIZONA	.....	.....	....
ARKANSAS	2000	300	2300
CALIFORNIA	.....	.....	.....
COLORADO	.....	.....	.....
CONNECTICUT	.....	.....	163000
DELAWARE	.....	.....	....
DIST OF COL	.....	.....	.....
FLORIDA	.....	.....	.....
GEORGIA	61749	17296	135073
GUAM	.....	.....	79045
HAWAII	.....	.....	....
IDAHO	.....	.....	....
ILLINOIS	.....	.....	.....
INDIANA	.....	.....	....
IOWA	.....	.....	.....
KANSAS	.....	.....	....
KENTUCKY	27565	3063	30628
LOUISIANA	25013	1517	26530
MAINE	.....	.....	.....
MARYLAND	.....	.....	.....
MASSACHUSETTS	.....	.....	.....
MICHIGAN	.....	.....	.....
MINNESOTA	.....	.....	.....
MISSISSIPPI	18784	4993	23777
MISSOURI	.....	.....	125864
MONTANA	.....	.....	....
NEBRASKA	.....	.....	....
NEVADA	.....	.....	....
NEW HAMPSHIRE	19992	5811	25803
NEW JERSEY	307697	122122	429819
NEW MEXICO	.....	.....	....
NEW YORK	.....	.....	.....
NORTH CAROLINA	.....	.....	.....
NORTH DAKOTA	10622	160	10782
OHIO	267800	77200	375000
OKLAHOMA	.....	.....	....
OREGON	54860	11890	66750
PENNSYLVANIA	.....	.....	.....
PUERTO RICO	.....	.....	.....
RHODE ISLAND	.....	.....	....
SOUTH CAROLINA	.....	.....	....
SOUTH DAKOTA	.....	.....	....
TENNESSEE	39150	26100	65250
TEXAS	.....	.....	.....
UTAH	.....	.....	.....
VERMONT	.....	.....	.....
VIRGIN ISLANDS	.....	.....	.....
VIRGINIA	95707	13873	109580
WASHINGTON	.....	.....	....
WEST VIRGINIA	.....	.....	....
WISCONSIN	.....	.....	....
WYOMING	.....	.....	.....
TOTALS	930939	284325	1669201

Table 7a

TOTAL INDUSTRIAL ARTS ENROLLMENT  
IN VOCATIONALLY FUNDED COURSES

STATE (Total Number)	MALE (N=16)	FEMALE (N=16)	TOTAL (N=19)
ALABAMA	.	.	.
ALASKA	.	.	.
ARKANSAS	4000	500	4500
ARIZONA	25484	2672	28156
CALIFORNIA	.	.	.
COLORADO	.	.	.
CONNECTICUT	29415	11066	40481
DELAWARE	.	.	.
DIST OF COL	.	.	.
FLORIDA	.	.	116187
GEORGIA	.	.	.
GUAM	.	.	.
HAWAII	0	0	0
IDAHO	.	.	.
ILLINOIS	.	.	.
INDIANA	.	.	.
IOWA	.	.	.
KANSAS	.	.	.
KENTUCKY	15607	1735	17342
LOUISIANA	25013	1517	26503
MAINE	.	.	.
MARYLAND	.	.	.
MASSACHUSETTS	.	.	.
MICHIGAN	0	0	0
MINNESOTA	0	0	0
MISSISSIPPI	0	0	0
MISSOURI	.	.	12222
MONTANA	.	.	.
NEBRASKA	.	.	.
NEVADA	.	.	.
NEW HAMPSHIRE	.	.	.
NEW JERSEY	6200	6200	12400
NEW MEXICO	.	.	19263
NEW YORK	0	0	0
NORTH CAROLINA	.	.	.
NORTH DAKOTA	5052	60	5112
OHIO	0	0	0
OKLAHOMA	.	.	.
OREGON	.	.	.
PENNSYLVANIA	.	.	.
PUERTO RICO	.	.	.
RHODE ISLAND	.	.	.
SOUTH CAROLINA	.	.	.
SOUTH DAKOTA	0	0	0
TENNESSEE	38000	22000	60000
TEXAS	.	.	.
UTAH	.	.	.
VERMONT	.	.	.
VIRGIN ISLANDS	.	.	.
VIRGINIA	64360	9329	73689
WASHINGTON	.	.	.
WEST VIRGINIA	.	.	.
WISCONSIN	.	.	.
WYOMING	.	.	.
<b>TOTALS</b>	<b>213131</b>	<b>55079</b>	<b>415855</b>

Table 8a

HANDICAPPED AND DISADVANTAGED STUDENTS  
ENROLLED IN INDUSTRIAL ARTS COURSES

STATE (Total Number)	HANDICAPPED		DISADVANTAGED TOTAL NUMBER (N=11)
	SPEC. PROGM. (N=14)	REGULAR (N=11)	
ALABAMA	.	.	.
ALASKA	.	.	.
ARIZONA	1586	.	2692
ARKANSAS	.	.	.
CALIFORNIA	343	0	89647
COLORADO	.	.	.
CONNECTICUT	125	.	.
DELAWARE	.	.	.
DIST OF COL	.	.	.
FLORIDA	.	1316	2729
GEORGIA	0	.	774
GUAM	.	.	.
HAWAII	.	.	.
IDAHO	.	.	.
ILLINOIS	.	.	.
INDIANA	.	.	.
IOWA	.	.	.
KANSAS	.	.	.
KENTUCKY	40	1200	80
LOUISIANA	178	7963	13000
MAINE	.	.	.
MARYLAND	4	0	55
MASSACHUSETTS	.	.	.
MICHIGAN	.	.	.
MINNESOTA	.	.	.
MISSISSIPPI	0	870	8884
MISSOURI	.	.	.
MONTANA	.	.	.
NEBRASKA	.	.	.
NEVADA	.	.	.
NEW HAMPSHIRE	450	2819	.
NEW JERSEY	.	.	.
NEW MEXICO	.	.	.
NEW YORK	.	.	.
NORTH CAROLINA	.	.	.
NORTH DAKOTA	20	8	124
OHIO	15	7085	.
OKLAHOMA	0	.	.
OREGON	.	.	.
PENNSYLVANIA	.	.	.
PUERTO RICO	.	.	.
RHODE ISLAND	.	.	.
SOUTH CAROLINA	.	.	.
SOUTH DAKOTA	.	.	.
TENNESSEE	13	345	350
TEXAS	.	.	.
UTAH	.	.	.
VERMONT	.	.	.
VIRGIN ISLANDS	.	.	.
VIRGINIA	367	2937	17105
WASHINGTON	.	.	.
WEST VIRGINIA	.	.	.
WISCONSIN	.	.	.
WYOMING	.	.	.
TOTALS	3141	24543	135440

Table 9a

AMERICAN INDUSTRIAL ARTS STUDENT ASSOCIATION (AIASA) MEMBERSHIP		
State (Total Number)	Number of AIASA Chapters (N=24)	Number of AIASA Students (N=23)
ALABAMA	.	.
ALASKA	.	.
ARIZONA	12	518
ARKANSAS	0	0
CALIFORNIA	.	.
COLORADO	.	.
CONNECTICUT	25	525
DELAWARE	.	.
DIST. OF COLUMBIA	.	.
FLORIDA	25	1653
GEORGIA	205	2500
GUAM	.	.
HAWAII	0	0
IDAHO	.	.
ILLINOIS	.	.
INDIANA	.	.
IOWA	.	.
KANSAS	0	0
KENTUCKY	4	.
LOUISIANA	55	1000
MAINE	.	.
MARYLAND	.	.
MASSACHUSETTS	.	.
MICHIGAN	0	0
MINNESOTA	3	60
MISSISSIPPI	39	950
MISSOURI	7	394
MONTANA	.	.
NEBRASKA	.	.
NEVADA	.	.
NEW HAMPSHIRE	.	.
NEW JERSEY	45	970
NEW MEXICO	15	207
NEW YORK	18	256
NORTH CAROLINA	.	.
NORTH DAKOTA	0	0
OHIO	14	281
OKLAHOMA	30	678
OREGON	0	0
PENNSYLVANIA	.	.
PUERTO RICO	.	.
RHODE ISLAND	.	.
SOUTH CAROLINA	.	.
SOUTH DAKOTA	0	0
TENNESSEE	29	367
TEXAS	.	.
UTAH	.	.
VERMONT	.	.
VIRGIN ISLANDS	.	.
VIRGINIA	92	2172
WASHINGTON	.	.
WEST VIRGINIA	.	.
WISCONSIN	.	.
WYOMING	2	60
TOTALS	620	12591



Table 10a

USE OF VOCATIONAL FUNDS FOR INDUSTRIAL ARTS ACTIVITIES			
ACTIVITIES/ITEMS	FOR PUBLIC SCHOOLS	FOR STATE/LOCAL SUPERVISION	FOR TEACHER EDUCATION
SALARIES	9	13	5
TRAVEL EXCLUDING STUDENT CLUB ACTIVITY	11	11	7
AIASA SUPPORT or NON- AFFILIATED STUDENT ORG.	7	10	2
EQUIPMENT	15	3	3
CONSUMABLE SUPPLIES	11	2	1
INSERVICE/STAFF DEVELOPMENT	14	10	8
INSTRUCTIONAL MATERIALS DEVELOPMENT	15	5	3
OTHER:			
Research			1
Secretarial Services	1	1	1
Number of states reporting NO vocational funds used: 2			

Table 11a

## GENERAL STATE/TERRITORY INDUSTRIAL ARTS POLICIES

STATE (Total Number)	IA ADVISORY COMMITTEE (N=24)	REGULAR IA EVALUATION (N=24)	CERTIFICATION IA TEACHERS (N=24)
ALABAMA	.	.	.
ALASKA	.	.	.
ARIZONA	YES	YES	YES
ARKANSAS	NO	NO	YES
CALIFORNIA	.	.	.
COLORADO	.	.	.
CONNECTICUT	YES	YES	YES
DIST OF COL	.	.	.
FLORIDA	YES	YES	YES
GEORGIA	NO	YES	YES
GUAM	.	.	.
HAWAII	NO	NO	YES
IDAHO	.	.	.
INDIANA	.	.	.
IOWA	.	.	.
KANSAS	.	.	.
KENTUCKY	NO	YES	YES
LOUISIANA	YES	YES	YES
MAINE	.	.	.
MARYLAND	.	.	.
MASSACHUSETTS	.	.	.
MICHIGAN	NO	NO	YES
MINNESOTA	NO	NO	YES
MISSISSIPPI	YES	YES	YES
MISSOURI	YES	NO	YES
MONTANA	.	.	.
NEBRASKA	.	.	.
NEVADA	.	.	.
NEW HAMPSHIRE	YES	YES	YES
NEW JERSEY	YES	YES	YES
NEW MEXICO	YES	YES	YES
NEW YORK	NO	YES	YES
NORTH CAROLINA	.	.	.
NORTH DAKOTA	NO	YES	YES
OHIO	NO	NO	YES
OKLAHOMA	NO	NO	YES
OREGON	NO	YES	YES
PENNSYLVANIA	.	.	.
PUERTO RICO	.	.	.
SOUTH CAROLINA	.	.	.
SOUTH DAKOTA	NO	YES	YES
TENNESSEE	YES	YES	YES
TEXAS	.	.	.
UTAH	.	.	.
VERMONT	.	.	.
VIRGIN ISLANDS	.	.	.
VIRGINIA	.	.	.
WASHINGTON	NO	YES	YES
WEST VIRGINIA	.	.	.
WISCONSIN	.	.	.
WYOMING	NO	NO	YES
TOTAL YES	10	16	24

Table 12a

PART II - INSERVICE WORKSHOPS CONDUCTED FOR INDUSTRIAL ARTS TEACHERS, 1981-82			
STATE (Total Number)	AIASA (N=24)	SPEC. NDS (N=22)	SEX EQUITY (N=23)
ALABAMA	.	.	.
ALASKA	.	.	.
ARIZONA	YES	NO	NO
ARKANSAS	NO	NO	NO
CALIFORNIA	.	.	.
COLORADO	.	.	.
CONNECTICUT	YES	YES	YES
DELAWARE	.	.	.
DIST OF COL	.	.	.
FLORIDA	YES	YES	NO
GEORGIA	YES	YES	NO
GUAM	.	.	.
HAWAII	NO	NO	YES
IDAHO	.	.	.
ILLINOIS	.	.	.
INDIANA	.	.	.
IOWA	.	.	.
KANSAS	.	.	.
KENTUCKY	NO	NO	NO
LOUISIANA	YES	YES	YES
MAINE	.	.	.
MARYLAND	.	.	.
MASSACHUSETTS	.	.	.
MICHIGAN	YES	NO	NO
MINNESOTA	YES	NO	YES
MISSISSIPPI	YES	NO	YES
MISSOURI	YES	NO	YES
MONTANA	.	.	.
NEBRASKA	.	.	.
NEVADA	.	.	.
NEW HAMPSHIRE	YES	.	.
NEW JERSEY	YES	YES	NO
NEW MEXICO	NO	YES	YES
NEW YORK	YES	.	YES
NORTH CAROLINA	.	.	.
NORTH DAKOTA	NO	YES	YES
OHIO	YES	YES	YES
OKLAHOMA	YES	NO	NO
OREGON	NO	YES	YES
PENNSYLVANIA	.	.	.
PUERTO RICO	.	.	.
RHODE ISLAND	.	.	.
SOUTH CAROLINA	.	.	.
SOUTH DAKOTA	NO	NO	NO
TENNESSEE	YES	YES	NO
TEXAS	.	.	.
UTAH	.	.	.
VERMONT	.	.	.
VIRGIN ISLANDS	.	.	.
VIRGINIA	YES	NO	NO
WASHINGTON	.	.	.
WEST VIRGINIA	.	.	.
WISCONSIN	.	.	.
WYOMING	NO	YES	YES
TOTAL YES	16	10	12

Table 12b

PART II - NUMBER OF TEACHERS WHO PARTICIPATED IN INSERVICE WORKSHOPS			
STATE (Total Number)	AIASA (N=16)	SPECIAL NEEDS (N=10)	SEX EQUITY (N=09)
ALABAMA	.	.	.
ALASKA	.	.	.
ARIZONA	32	.	.
ARKANSAS	.	.	.
CALIFORNIA	.	.	.
COLORADO	.	.	.
CONNECTICUT	500	350	150
DELAWARE	.	.	.
DIST OF COL	.	.	.
FLORIDA	50	20	.
GEORGIA	120	25	.
GUAM	.	.	.
HAWAII	.	.	35
IDAHO	.	.	.
ILLINOIS	.	.	.
INDIANA	.	.	.
IOWA	.	.	.
KANSAS	.	.	.
KENTUCKY	.	.	.
LOUISIANA	50	110	75
MAINE	.	.	.
MARYLAND	.	.	.
MASSACHUSETTS	.	.	.
MICHIGAN	16	.	.
MINNESOTA	6	.	.
MISSISSIPPI	90	.	60
MISSOURI	15	0	42
MONTANA	.	.	.
NEBRASKA	.	.	.
NEVADA	.	.	.
NEW HAMPSHIRE	150	.	.
NEW JERSEY	105	50	.
NEW MEXICO	.	.	.
NEW YORK	2	.	2
NORTH CAROLINA	.	.	.
NORTH DAKOTA	.	80	120
OHIO	18	150	75
OKLAHOMA	70	.	.
OREGON	.	.	.
PENNSYLVANIA	.	.	.
PUERTO RICO	.	.	.
RHODE ISLAND	.	.	.
SOUTH CAROLINA	.	.	.
SOUTH DAKOTA	.	.	.
TENNESSEE	105	22	.
TEXAS	.	.	.
UTAH	.	.	.
VERMONT	.	.	.
VIRGIN ISLANDS	.	.	.
VIRGINIA	176	.	.
WASHINGTON	.	.	.
WEST VIRGINIA	.	.	.
WISCONSIN	.	.	.
WYOMING	.	30	50
TOTALS	1055	837	609

Table 13a

USE OF THE STANDARDS FOR INDUSTRIAL ARTS		
STATE (Total Number)	PLANS TO ADOPT/ADAPT (N=24)	PLANS WITHIN NEXT 2 YEARS (1982-83) (N=23)
ALABAMA	.	.
ALASKA	.	.
ARIZONA	YES	NA
ARKANSAS	NO	NO
CALIFORNIA	.	.
COLORADO	.	.
CONNECTICUT	NO	NO
DIST OF COL	.	.
FLORIDA	YES	NA
GEORGIA	YES	NA
GUAM	.	.
HAWAII	YES	.
IDAHO	.	.
INDIANA	.	.
IOWA	.	.
KANSAS	.	.
KENTUCKY	NO	NO
LOUISIANA	YES	NA
MAINE	.	.
MARYLAND	.	.
MASSACHUSETTS	.	.
MICHIGAN	NO	YES
MINNESOTA	NO	.
MISSISSIPPI	NO	YES
MISSOURI	NO	NO
MONTANA	.	.
NEBRASKA	.	.
NEVADA	.	.
NEW HAMPSHIRE	NO	NO
NEW JERSEY	NO	YES
NEW MEXICO	YES	NA
NEW YORK	NO	NO
NORTH CAROLINA	.	.
NORTH DAKOTA	YES	NA
OHIO	NO	YES
OKLAHOMA	NO	YES
OREGON	NO	YES
PENNSYLVANIA	.	.
PUERTO RICO	.	.
SOUTH CAROLINA	.	.
SOUTH DAKOTA	NO	NO
TENNESSEE	YES	NA
TEXAS	.	.
UTAH	.	.
VERMONT	.	.
VIRGIN ISLANDS	.	.
VIRGINIA	YES	NA
WASHINGTON	.	.
WEST VIRGINIA	.	.
WISCONSIN	.	.
WYOMING	YES	NA
TOTAL YES	10	6

Appendix N  
WRITTEN RESPONSES OF THE PANEL OF CONSULTANTS

Part II - Feasibility

1. Many states will not have data asked for, however, the form appears to be appropriate
2. It is a well organized document
3. Some items should be reordered to put the basic yes/no information first
4. This may force states to compile such data a great more
5. The states with no supervisors - let state association officers collect the data
6. This will be based on type of supervisor and time allotment
7. This data is not readily available - would require a statewide survey list and cannot be done by May 1.
8. Information derived maybe sketchy in many items, i.e., 3 - how many sought employment as teachers
9. No. 4, 5, 6 served or is full time equivalent more important

Part III - Other Data Needed

1. Add question about clusters and the Standards, similar to AIASA and State Plan questions.
2. Percent of teacher grads not entering education
3. Amount of funds from vocational education spent on industrial arts and how
4. Percent of vocational education teachers instructing industrial arts
5. Number of local industrial arts supervisors by title

6. Postsecondary industrial arts offerings and enrollments
7. Starting salaries for various positions, supervision, teaching, etc.
8. Specific information on certification requirements
9. Average age of industrial arts teachers -- establishes some trend lines for futured planning perhaps by age group
10. What about information on nonvocationally funded programs
11. Average experience of industrial arts teachers
12. Statewide efforts for industrial arts teacher recruitment
13. Techniques used to retain practicing teachers
14. Requirements for graduate study or dual certification
15. Maybe interesting to have information regarding teacher education enrollments--male/female/totals
16. Program reductions--schools closing shops
17. How about funding other than vocational monies
18. Many states and local supervisors have to control more than one area such as home ec.--how many are there and what effect is it having
19. Required enrollments at middle/jr. high, or high school as part of state code
20. Required industrial arts course offerings at secondary level.
21. Do you have a state advisory committee to serve the statewide industrial arts program?



Appendix O

LETTERS FROM FIELD TEST PARTICIPANTS



**Superintendent of Public Instruction**

DR. FRANK B. BROUILLET • 7510 ARMSTRONG ST. S.W. FG 11, TUMWATER, WA 98504



April 16, 1982

Mr. William E. Dugger Jr.  
Program Area Leader  
Industrial Arts Education  
Division of Vocational and  
Technical Education  
Virginia Polytechnic Institute  
and State University  
Blacksburg, Virginia 24061

Dear Mr. Dugger:

We are returning your Industrial Arts Data Collection Form without completing it.

The position of Supervisor of Industrial Arts in this agency has been vacant for two years and the information you request is not available.

We are sorry we cannot be of assistance to you in your survey.

Sincerely,

DIVISION OF VOCATIONAL-TECHNICAL  
AND ADULT EDUCATION SERVICES

A handwritten signature in cursive script that reads 'Jay Wood'.

Jay Wood, Administrator  
Program Development

JW:sm1  
Enclosure



APR 1982

COLLEGE OF EDUCATION

## VIRGINIA POLYTECHNIC INSTITUTE AND STATE UNIVERSITY

Blacksburg, Virginia 24061

DIVISION OF VOCATIONAL &amp; TECHNICAL EDUCATION

March 30, 1982

*The data requested isn't available in the state of Alaska as this type of information isn't collected. There is no I.A. Teacher training program in Alaska.*

Dear Colleague:  
 Let me introduce myself as a graduate student in the Division of Vocational and Technical Education a Virginia Polytechnic Institute and State University. Currently I am conducting a doctoral dissertation research study under the direction of Dr. William E. Dugger, Jr. The purpose of this study is to design a continuous data based information system model for industrial arts education programs in the United States and territories. I need your help. *Ray Young*

A major problem for research and development in industrial arts education continues to be locating, storing, and organizing basic data about the current status of industrial arts education programs. Industrial arts educators are continually faced with the challenges of planning and modifying programs in the environment of a continually changing and complex society. Most of the data collected on industrial arts programs have been found to be fragmented, inaccurate, and poorly organized. Although selected data have been collected on various aspects of education by agencies such as the National Education Association and the United States Department of Education, there is currently no continuous national reporting system aimed specifically at collecting comprehensive data on all industrial arts programs. With these data, the profession can make sounder judgements for improvements needed on a national basis.

A panel of consultants including several industrial arts supervisors were used to determine the needed elements for the system designed. Also, another group of supervisors was used to pilot test the initial instrument designed for the system. You are being asked to field test the revised instrument by providing selected data on the industrial arts programs in your state or territory. Please spend about an hour to complete the enclosed data collection instrument. Your responses will be used to further evaluate and refine the system model. The results of the study will be available to you in the form of a report.

Please return the completed instrument to me in the enclosed stamped-self addressed envelope by April 23, 1982. Again, thank you for your time and support.

*Bill*  
 William E. Dugger, Jr.  
 Program Area Leader  
 Industrial Arts Education

Sincerely,

*La Verne Herring Young*  
 La Verne Herring Young  
 Administrative Assistant  
 Division of Vocational  
 Technical Education



Georgia Department of Education  
Office of Vocational Education  
Twin Towers East  
Atlanta, Georgia 30334

Charles McDaniel  
State Superintendent of Schools

April 19, 1982

Joseph G. Freund  
Associate State Superintendent

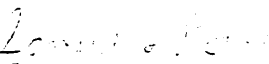
Ms. Laverne H. Young  
Virginia Tech  
Vocational Technical Division  
115 Lane Hall  
Blacksburg, Virginia 24061

Dear Ms. Young:

I received your request for data on industrial arts several days ago; however, at that time we were in the process of preparing for our youth club conference which was held on the weekend of April 3rd and, in addition, in the process of moving our offices from the State Office Building to Twin Towers. Therefore, I have not been able to respond.

The red tape process in state government is such that I might not get this back to you by April 23rd; however, I assure you that I will do my best to return it as soon as possible. It is necessary for me to send the form to our management information system for them to provide much of the information. Please be patient and keep up the good work.

Sincerely,

  
Samuel L. Powell  
State Supervisor  
Industrial Arts Education

SLP/cd

STATE OF MICHIGAN



PHILLIP E. RUNKEL  
Superintendent  
of Public Instruction

## DEPARTMENT OF EDUCATION

VOCATIONAL-TECHNICAL EDUCATION SERVICE

Box 30009, Lansing, Michigan 48909

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JOHN WATANEN, JR.  
GOV. WILLIAM G. MILLIKEN  
*Ex-Officio*

April 5, 1982

Ms. LaVerne H. Young  
Virginia Tech  
Vocational Technical Division  
115 Lane Hall  
Blacksburg, Virginia 24061

Dear Ms. Young:

Enclosed is the Industrial Arts Data Collection Form which I completed at your request for the State of Michigan. As you will note as you look through it, there is very little usable data in it. I would like to explain the reason that much of the information requested in the form is not available. First of all, in the State of Michigan we have no vocationally approved industrial arts courses. The only money spent in the area of industrial arts is for inservice training of industrial arts teachers. Because there are no funded programs, we do not require any local schools to supply us with data relating to the industrial arts programs that they offer.

In June of each year the Office of Teacher Certification does supply me with a printout which gives basic information about the number of industrial arts teachers employed in the state. However, because it is not available until June, I cannot respond with this year's data on your form.

I wish you success on your attempt to collect industrial arts data on a national basis. I also wish you luck in the pursuance of your doctorate degree.

Sincerely,

James L. Rudnick  
Industrial Arts Consultant  
State of Michigan

JLR/dl

Enclosure

## VITA

The author was born in Greensboro, North Carolina on October 10, 1947. She was graduated from Huntington High School in Newport News, Virginia, in 1965. She entered Hampton Institute, Hampton, Virginia, and was awarded the Bachelor of Science degree in Industrial Arts Education in 1973. In 1976 she was awarded a Master of Science degree in Industrial Education from Virginia State University, Petersburg, Virginia. From August, 1973 to August 1978, she was employed with the Williamsburg, James City County School System as an industrial arts teacher and department chairperson. In 1978 the author entered Virginia Tech where she began doctoral studies and accepted a position as Lecturer with the University.

She served as a Research Associate with the Standards for Industrial Arts Programs Project from 1978-81, and was awarded a Higher Education Administrative Internship with the division of Vocational and Technical Education at Virginia Tech for the 1981-82 academic year. Ms. Young completed the degree requirements for a Doctor of Education degree in Vocational and Technical Education at Virginia Tech, Blacksburg, Virginia on May 14, 1982.



THE DESIGN OF A DATA-BASED INFORMATION SYSTEM MODEL  
FOR INDUSTRIAL ARTS EDUCATION PROGRAMS IN THE  
UNITED STATES AND TERRITORIES

by

La Verne Herring Young

(ABSTRACT)

The purpose of this study was to design a continuous data-based information system model that will aid in the response to the current and future information needs of industrial arts education.

A major problem for research and development in industrial arts education continues to be locating, storing, and organizing basic data about the current status of industrial arts education programs. Industrial arts educators are continually faced with the challenges of planning and modifying programs in the environment of a continually changing and complex society. Data collected in industrial arts programs in the United States and territories have been found to be fragmented and inaccurate. Although selected data have been collected on various aspects of education by agencies such

as the N.E.A. and U.S.D.E., there is currently no continuous national reporting system aimed specifically at collecting comprehensive data on all industrial arts programs. With these data, the profession can make sounder judgements for improvements needed on a national, state and local basis.

A panel of recognized industrial arts consultants were solicited to determine and evaluate the data needs and proposed system components. Further refinement of the system resulted in a field test using the 54 state and territorial industrial arts supervisors as the population. The results of the study identified weaknesses and strengths of the system as a basis for further refinement. The product of the study was a set of functional procedures and components necessary for a data-based information system model.