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Scope of Study: In this study a survey was conducted to determine the eight most popular or important objectives of industrial arts from those formulated by a State Advisory Committee in 1948. The author used this data as a basis to reword, combine and revise the previously listed objectives of industrial arts.

Findings and Conclusions: The author submits the following objectives as suggested revisions of Industrial Arts Objectives: (1) To provide experience in the construction of projects related to scientific principles peculiar to the industrial processes, thereby enabling the students to develop and apply scientific knowledge, and an opportunity to express themselves, and experiment with creative ideas. (2) To provide experience in organization and performance, thereby enabling the students to develop skills, cooperative attitudes, and safety consciousness. (3) To provide experience in the correct manipulation and nomenclature of tools, thereby enabling the students to develop aptitudes for vocational pursuits and avocational interest. (4) To provide experience in drawing and design, thereby providing the student with the language of industry, and requirements of good design. (5) To provide experience with materials and processes, thereby enabling the students to develop consumer knowledge, values of industrial materials, and the need for the conservation of industrial materials. (6) To provide experience in industrial techniques, thereby enabling the student to develop an appreciation, dignity and importance of the occupation of one's neighbor, also to realize the social values of various occupations.

ADVISOR'S APPROVAL

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SUGGESTED REVISIONS OF INDUSTRIAL
ARTS OBJECTIVES

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CHAPTER I

INTRODUCTION

In 1948 a State Advisory Committee was named to write an Industrial Arts Policies Bulletin for Oklahoma. In formulating this bulletin, the committee selected seventeen objectives of Industrial Arts.

Now, after approximately ten years have elapsed, some leaders of Industrial Arts feel these objectives should be more concise, and not cover such a wide scope. With this assumption, the writer has made a survey to determine eight objectives of Industrial Arts that need to be stressed.

Need and Purpose of the Study. Since the "Sputnik era" educators have been asked to re-evaluate programs of instruction. With this in mind, this research is to help fulfill the obligation of keeping up with the development and changes of General Education philosophy, and to help improve the task of inducting the young into the culture of the American democratic society.

Available Information on Objectives of Industrial Arts.

There are numerous amounts of literature in the library of Oklahoma State University, listing objectives of Industrial Arts. However, it is common opinion that possibly, the

current programs of Industrial Arts have too many objectives and those listed for Industrial Arts in Oklahoma should be condensed, to attain their fulfillment, also, to keep abreast with the current trends of General Education.

Since Industrial Arts is a phase of general education, and an objective is an end in itself, the objectives of Industrial Arts will contribute to the overall realization of the ends to general education. (14, page 2)

Through the ages of educational history Industrial Arts has been introduced in schools for various purposes. As history is reviewed, which will be described in more detail later, the following purposes or objectives of Industrial Arts are found.

1. Apprentice training was used often to broaden the outlook of the noblemen's sons.

2. Comenius, over 350 years ago, emphasized the values of consumer appreciation and vocational guidance.

3. Lock, during the latter half of the 17th century, spoke of training in handwork as a worthy use of leisure time.

4. Sir William Petty advocated that all children be taught one of the mechanical arts in order that they might be less likely to be cheated by vendors of consumers supplies.

5. Rousseau urged that every boy learn a trade, not merely for the sake of knowing how to use it, but that he might overcome the prejudices usually conceived against it. Rousseau also emphasized Industrial Arts as a means of teaching other subjects.

6. Most recently, the generalization that Industrial Arts is concerned with developing an appreciation of the dignity and importance of the occupations of others has been widely accepted. (14, page 19)

The above listed objectives portray the philosophy of Industrial Arts of the past. These objectives are not completely forgotten; however, leaders and committees in the educational field of Industrial Arts have expanded the objectives and have formulated new concepts which govern the present progress of Industrial Arts today. They are as follows:

Warner's Objectives. (1) Exploratory or finding values which relate to the detection, discovery, or tryout of interests. (2) General guidance, both educational and vocational, gained through broad contacts and studies of industrial vocations. (3) Household mechanics or the development of handyman abilities about ability to do useful things. (4) Avocational opportunities for the development of hobbies, or a side-line interest. (5) Formation of desirable personal and social habits and insights which will influence conduct. (6) Consumer or utilizers knowledge and appreciations of the products of industry. (7) Development of a degree of skill with tools and in tool or machine processes commensurate with the ability of the pupil and incidental to the completion of a project or activity which seems to have "educational" value. (8) Correlation or integration with other studies and interests both in and out of school. (9) Vocational purposes in the definite preparation for a future industrial vocation. Applicable to from 0 to 16 per cent of the average junior high school group where the occasional boy has to drop out of school. (14, page 21)

The American Vocational Association Committee's Objectives. (1) To develop in each pupil an active interest in industrial life and in the methods of production and distribution. (2) To develop in each pupil the ability to select wisely, care for, and use properly the things he buys or uses. (3) To develop in each pupil an appreciation of good workmanship and

good design. (4) To develop in each pupil an attitude of pride or interest in his or her ability to do useful things. (5) To develop in each pupil a feeling of self-reliance and confidence in his ability to deal with people and to care for himself in an unusual or unfamiliar situation. (6) To develop in each pupil the habit of an orderly method of procedure in the performance of any task. (7) To develop in each pupil the habit of self-discipline which requires one to do a thing when it should be done, whether it is a pleasant task or not. (8) To develop in each pupil an attitude of readiness to assist others when they need help and to join in group undertakings (cooperation). (9) To develop in each pupil the habit of careful, thoughtful work without loitering or wasting time (industry.) (10) To develop in each pupil a thoughtful attitude in the matter of making things easy and pleasant for others. (11) To develop in each pupil a knowledge and understanding of mechanical drawing, the interpretation of the conventions in drawing and working diagrams, and the ability to express his ideas by means of a drawing. (12) To develop in each pupil elementary skills in the use of the more common tools and machines in modifying and handling materials, and an understanding of some of the more common construction problems. (14, page 22)

In observing the objectives thus far listed, the concepts of guidance and appreciation are strongly emphasized. Dr. Newkirk, in his book, The Industrial Arts Program brings out Rousseau's contention that Industrial Arts be taught as a means of teaching other subjects. Newkirk clearly states this in his sixth objective.

Newkirk's Objectives. (1) Develop the ability to plan and complete projects, using a variety of tools and construction materials in a workman-like manner. (2) Give experience that will increase understanding of modern industry and that will lay the foundations for and help determine vocational interests. (3) Develop the ability to read and make working drawings, charts, and graphs. (4) Develop the ability to recognize quality and design in the products of industry. (5) Develop the ability to maintain and service in a safe and efficient manner the common products of industry. (6) Provide an

objective medium for expression in mathematics, science, language, arts and social science. (7) Develop an interest in crafts as a valuable medium for creative expression in leisure time. (8) Give experience that will develop social understanding and the ability to work effectively with others either as a leader or as a member of the group. (14, page 22)

Methods of Research Used. The writer employed two techniques of research in formulating this report. First, the documentary method, to review the History of Industrial Arts and objectives of Industrial Arts as they have evolved through period of development.

Secondly, the questionnaire or jury method, to provide selected members of the Oklahoma Industrial Arts Association an opportunity to select eight objectives of Industrial Arts.

Definitions of Terms. To help reduce ambiguity, the following terminology is defined.

Manual Arts. An early means of identifying shop instruction, usually of hand projects to develop hand skills. (this term was later changed to industrial arts) (6, page 32)

Manual Training. Manual training serves as a means to educate the individual on many sides by giving him different angles of perspectives by familiarizing him with world materials which classroom subjects alone cannot do. (6, page 32)

Practical Arts. The term as used in education is the broad inclusive term that embraces as subject of instruction; manual training, industrial arts, mechanical arts, household arts, domestic science, general agriculture, and general commercial education. (12, page 36)

Industrial Arts. Industrial Arts is a group of school subjects that contribute to the attainment of the goal of general education by furnishing guided experience in the use of tools, materials and

and machines, and insights into those phases of industry that have become an important part of our social culture. (14, page 1)

Predicted Views of the Results of This Study. The objectives of Industrial Arts are the basis for the Department of Industrial Arts to occupy a place in the curriculum of general education. The eight selected objectives are intended to be emphasized, by the teacher, to perpetuate the status-quo of Industrial Arts.

The second chapter of this report will provide information as to the role and significance of Industrial Arts in past history. The uninformed person will become aware that Industrial Arts is not a new school subject, but, has occupied a place in the curriculum of education from the beginning. The third chapter will give the results of the opinion poll or survey concerning the selection of eight objectives for Industrial Arts. The fourth chapter will summarize the findings, give conclusions of the study and list recommendations for further study.

CHAPTER II

HISTORY AND PHILOSOPHY OF INDUSTRIAL ARTS

The writer has endeavored to trace the history of Industrial Arts from the beginning to the present. In doing so, the writer has reviewed civilization through the periods of culture. Periods of culture may be traced through the advancement and use of tools and materials or through the philosophical ideals of man. This chapter on the history of Industrial Arts gives special attention to the development of concepts in teaching children the practical arts subjects. For a more complete understanding keep in mind the basis for education which has varied in different geographical areas and needs of the era.

Part A

Resume of Civilization Through the Invention of Tools

Reviewing the dawn of civilization, man is found existing without tools, weapons, or fire. Man was also without the experience of working with others. Man was inferior to the many animals that inhabited the earth at that time. Living in these surroundings man sought the branches of large trees for his home.

As fire was kindled by lightning, man first worshiped the fire just as he worshiped the powerful and much dreaded beast of prey. Finally man found that fire at the foot of the tree kept wild animals away from that spot. Realizing that animals were afraid of fire they were able to come down from the branches and make their home on the ground.

It was a slow process but as time went on man learned that fire could be used in hunting, in cooking, and in making weapons. The conquest of fire was a major advancement in the struggle toward civilization and surely improved the chances for survival.

After inheriting the caves from the saber-toothed tiger, man was protected by the use of fire at the entrance and was able to fashion crude tools. The first tools were weapons used in defense from wild animals, the stone ax, spearhead, weapons he could hurl through the air, throwing stick, and finally that remarkable invention the bow and arrow.

After these weapons were invented, knives, files, saws, and needles were fashioned from bone, horn, stone, and ivory. Next in importance came the invention of pottery which gave man cooking utensils that could withstand heat. Before the invention of pottery man ate much of his food raw.

Gradually man learned to sow seed and make gardens, and to raise the young animals brought home from the hunt. The domestication of the dog aided, not only in hunting but in the care of other domesticated animals. Until this period the cave provided shelter but as life became more settled the adobe brick home came into use.

When the discovery of how to smelt metals came into existence more and better tools were made. The metal ax was used to change forests into farm lands and meadows. This brought about the division of labor and development of trade. The ruling classes lived within the protection of stockades or walls, while the slaves and serfs lived outside and cultivated the land.

The invention of gunpowder and printing marked another plateau in the long struggle toward civilization. After guns were perfected a knight in armor was not much safer than the lower class of people. The masses of people were held down by the upper classes through ignorance and poverty. The use of printing was a tremendous power toward removing this ignorance and helped to overthrow the power of the upper classes. It also drew people together and stimulated a desire for knowledge of other people and other lands.

These advancements toward culture led Copernicus and Galileo to theories and facts about the universe, also the discovery of a new world by Columbus. In the seventeenth hundreds, steam power and machinery were applied to the manufacture of cotton cloth, which brought about the Industrial Revolution. The use of electricity has enabled man to control nature and do almost anything he wants to do. Now with the harnessing of atomic power there are few things man cannot do in the control of nature. (7, page 458)

Part B

Early Conceptions and Attitudes Toward Education

An examination of early conceptions and attitudes toward education reveals a high degree of culture. The following illustrations indicate the application and practice of education which is comparable to the modern techniques of pedagogy today.

The Jewish educational philosophy afforded an opportunity for the development of personality. Synagogues were established in all towns for the purpose of expounding the law and holding religious services. Later, in the second century B.C., minor officers of the synagogues began to teach children. After the Maccabean revolt, 167 B.C., these schools became quite common. Reading, writing, and the rudiments of arithmetic were taught in a public school.

The Greeks were the first to advocate what is now called liberal education. Greek education and modern education are very similar. The contrast is found not in its organization, but in its content, especially in the importance given to gymnastics. The Greek schools stressed and developed the personality and individuality in the student. The individual was given more emphasis. Aristotle, a Greek philosopher and scientist became the originator of physiology, mechanics, physics, and natural history. (8, page 28)

Roman education was dominant from 776 B.C. to about 250 B.C. The rearing of the child was in the hands of the mother, the training of the boy in the hands of the father. This type

of education was the best illustration of the practical education. Their basis for education, to a large extent, was for social purposes. The home was the chief educational institution, imitation the chief method, and the practical process of life the chief educative means. (8, page 81)

Part C

Apprenticeship and its Evolution

The origin of apprenticeship dates to pre-historic time when the father or mother or some leader in the clan or tribe was the instructor. The method of instruction was that of demonstration, imitation, and practice on the job. It is probable in earliest days as at present there were many variations in what the term "apprentice", implied, in terms of length of service, nature of instruction, and the relationship that existed between the apprentice and the master.

In the period 500 A.D. to 1500 A.D. fraternities, societies or companies organized the Guilds. These Guilds were formed to regulate and govern trade. The Guilds of the Middle Age are thought to be the forerunners of the modern trade unions. The Guilds also compelled the masters to teach the whole trade to the apprentices.

Apprenticeship in England developed into one of the worst forms of white slavery the English had ever known. England passed a law, in accordance, in which pauper and poor children served as apprentices, until twenty-one years of age, the girls until they were eighteen, or until they were

married. This apprenticeship was in name only, it was simply involuntary servitude, and was very bad because it took children entirely too young to work. (12, page 1)

As apprentice in the early colonial period was usually a minor who was bound to a master to learn from him his art or trade. The master took the apprentice into his home and looked after him. In turn the boy had to obey the master and work for a certain period of time, which varied in length according to the trade. After the apprenticeship was served he then became a journeyman, or independent worker. After a few years the journeyman might then become a master. (7, page 347)

Part D

Practical Education Theorists and Experiments in Manual Instruction

Throughout the history of organized school, educators, philosophers, and men devoted to the welfare of mankind, have been introducing experiments in the instruction of the various criteria of education. The methods, techniques, and experiments carried on by the following men have a direct influence on the current program of Industrial Arts as programed in the Public Schools of today. Therefore, bear in mind the circumstances in which these men made their experiments, and form an opinion as to whether or not the present methods, aims, and principals are related to the curricula of yester-years.

Luther, Martin (1483-1553). Luther was a German Protestant reformer and advocate of the development of an organization of schools, and the reformation of school subjects. He led in the Protestant revolt against the Roman Catholic Church. Education was conceived by Luther as an essential preparation for the ordinary duties of life in the home, vocation, civic life, and the church.

Luther was a firm believer in vocational training, insisting that every boy and girl learn the practical arts of trade and home. However, Luther did not advocate these subjects as part of the school curriculum. (13, page 282)

Rabelais, Francois (1483-1553). Rabelais was a French humorist and satirist. His educational importance is not direct, but had influence upon the thought of Locke and Rousseau. In his educational philosophy, he was one of the early realists, in violent opposition to the prevailing scholastic formalism of his time. He advocated the formation of a complete man, skilled in art and industry and the development of the whole man physically, morally and intellectually. (13, page 316)

Mulcaster, Richard (1531-1611). Mulcaster, graduated from Oxford in 1556, was appointed headmaster of Merchant Taylors School and taught there for twenty-five years. He was the author of two books on education, Positions and Elementarie. Mulcaster held that education should not aim to force or repress the child, but that "the end of education

and training is to help nature to her perfection". Mulcaster, was also noted as one of the great practical schoolmen as well as that of a theorist. (9, page 324)

Comenius, John Amos (1592-1670). Comenius is known as the pioneer of modern educational science and the greatest representative of sense realism, both in theory and practice, also one of the commanding figures in the history of education. Comenius introduced the whole modern conception of the educational process, and outlined many of the modern movements for the improvement of educational procedure. Comenius was far more liberal than the Lutheran, Calvinistic, Anglican, or Catholic contemporaries, planning schools for the education of youth in religion, learning, and to fit the children for a modern world. (8, page 480)

Locke, John (1632-1704). Locke was an English philosopher and advocated the doctrine of formal discipline, and rationalism. Locke's theory of formal discipline stressed the value of the processes of learning rather than the value of the things learned, and held the ultimate aim of disciplinary education was formation of character. It involved the development of the whole man, morally, physically, and mentally. In order of importance Locke placed physical education first, then moral education, and intellectual education last. When Locke developed his doctrine of rationalism its original intent was a protest against the arbitrary authority of the Church and State, but later became a reaction

against the newly awakening forces of democracy and universal education. In his zeal for development and use of the individual's mind, Locke emphasized that rational freedom made possible a reign of reasoning. (13, page 358)

Rousseau, Jean-Jacques (1712-1778). Rousseau was one of the first reformatory pedagogical writers. He was the author of the famous book "Emile", in which he described his philosophy of education, from birth to manhood. Rousseau advocated the following educational conceptions. (4, page 530)

(1) The replacement of authority by reason and investigation. (2) That education should be adopted to the gradually unfolding capacities of the child. (3) That each age in life of a child has activities which are normal to that age, and that education should seek for and follow these. (4) That physical activity and health are of first importance. (5) That education, and especially elementary education, should take place through the senses, rather than through the memory. (6) That the emphasis placed on the memory in education is fundamentally wrong, dwarfing the judgment and reason of the child. (7) That catechetical and jesuitical types of education should be abandoned. (8) That the study of theological subtleties is unsuited to child needs or child capacity. (9) That the natural interests, curiosity, and activities of children should be utilized in their education. (10) That the normal activities of children call for expression, and that the best means of utilizing these activities are conversation, writing, drawing, music, and play. (11) That education should no longer be exclusively literary and linguistic, but should be based on sense perception, expression, and reasoning. (12) That such education called for instruction in the book of nature, with home geography and the investigation of elementary problems in science occupying a prominent place. (13) That the child be taught rather than the subject matter, life here rather than hereafter and the development of reason rather than the loading of the memory, were the proper objects of education. (14) That a many sided education is necessary to reveal child possibilities, to correct the narrowing effect of specialized class education, and to prepare one for possible changes in fortune. (4, page 532)

Rousseau's philosophy spread not only in France, but throughout the continent of Europe. The publication of Emile, in Germany, coincided with the rising tide of nationalism. (4, page 533)

Francke, August H. (1663-1727). Francke, one of the most prominent German educators and philanthropists, the chief pedagogical representative of the Luthern Church, was born in Lubeck, Germany. (9, page 684)

Francke's pioneer work in giving the industrial occupations a place among the activities of the classical secondary school was carried out in the Pedagogium Regium, a school established by him for the youth of the aristocratic classes. Tools and shop work were prescribed not as part of the regular and required work of the school, but as an optional employment for hours of leisure.

The introduction, therefore, simply afforded the boys of this aristocratic school an opportunity of engaging in a form of recreation and physical exercise. Students were permitted outside of the regular study hours both to visit workshops and factories and to practice one or more of the handicrafts. A number of lathes were installed for the use of the students and a master workman was employed to give instruction and training in wood turning. Training was afforded also in the grinding and polishing of glasses, in engraving on copper, and in other handicrafts. (1, page 34)

Hecker, Johann J. (1707-1768). Hecker, a German educator, the father of the Realschule, was born at Werden on the

river Ruibr. In 1726 Hecker went to the University of Halle and, for a short time at least, came under the influence of Francke. (9, page 242)

Hecker went to Berlin, and in 1747 founded what was known as the Royal Realschule. The purpose of this school was that "not mere words should be taught to the pupils, but realities, explanations being made to them from nature, from models and plans, and of subjects calculated to be useful in after life." The school included drawing, mathematics, science, and history as well as modern languages and Latin. In connection with this school, instruction was given in turning, pasting, glass-cutting, finishing and other activities. Thus began the non-classical secondary school curriculum in Germany. (2, page 76)

Basedow, Johann B. (1723-1790). Both temperamentally and chronologically, Basedow was the successor to Rousseau in the field of educational reform. Basedow, was the son of a Hamburg wig maker. His early youth was gloomy and unhappy, owing to the excessive severity of his father and the habitual melancholy of his mother. His father wanted to make a wig maker out of him but Johann protested by running away from home and entering the service of a country physician. The physician discovered that the boy had unusual abilities and sent Johann home with a letter which resulted in his being sent to the Hamburg grammar school. Later some friends helped him to go to the University of Leipsic.

From 1768 to 1774 Basedow produced several books, the most important of which were his Methodenbuch published in 1770, and his Elementarwerk, complete in four volumes, in 1774. The Elementarwerk contained one hundred plates of illustration. These illustrations were intended to help in giving the student a knowledge of the world and nature. (2, page 82)

The same year Basedow published Elementarwerk, Prince Leopold of Dessau helped him found an educational institution at Dessau in which the principles of the Elementarwerk were to be put into practice. The prince gave a building, a garden, and \$12,000. The institution was called the Philanthropinum. Many men of prominence were interested in it, but Basedow proved to be totally unfitted to direct such an institution. Although the Philanthropinum experiment was a failure as a school, it had a very stimulating effect on educational discussion, and through the assistants of Basedow, the practices were the center of several reforms. (2, page 84)

Campe, Joachim H. (1746-1818). One of the best known representatives of the Philanthropinist movement, author of many books for children, German lexicographer. Campe was born at Deensen in Brunswick, and studied theology at the University of Halle. In 1777 he was called to the charge of the Dessau "Philanthropium", which had been nearly ruined by the erratic management of its founder, Basedow. Unable to

agree with Basedow, Campe left rather precipitously after a few months, and established an educational institute of his own at Triton, near Hamburg. (9, page 513)

Raised to the rank of School Councilor by his friend and patron, the Duke of Brunswick, Campe devoted himself as a writer and publisher to the promotion of educational and other reforms. In two pamphlets addressed to Frederick William II of Prussia, Campe urged the first of several proposed means of promoting public welfare, the introduction of trade instruction and training into the Folk Schools. Ungraded and with only one teacher, these schools, Campe contended, by leaving the pupils so largely to their own resources, were actually instilling into them habits of idleness and of corrupt conduct. To counteract this, Campe proposed the addition to each school a teacher of handicrafts, who should provide industrial training for successive groups of pupils during the periods when they were not kept employed by the regular teacher. (1, page 58)

Salzmann, Christian G. (1741-1811). Salzmann was the preacher at the Philanthropinum and conducted the devotional exercises and gave religious instruction there for three years. In 1784 Salzmann purchased a villa at Schnepfenthal, near Gotha, and founded a new school for the sons of people belonging to the higher classes of society. Following the ideas of Rousseau and Basedow, Salzmann placed emphasis on physical training and on manual work, however, Salzmann was

saner and more practical. Pupils were given instruction in paper work, carpentry, basket-making and turning by specially trained teachers in each subject, not by mere artisans.

In addition to these Salzmann placed carpentry benches and tools in the rooms where pupils came together in their free hours so as to tempt them to work. He found the boys often preferred work at the bench to any other way of spending their time. Salzmann believed that all institutions claiming to give children an adequate education should make an indispensable condition that pupils be trained to readiness in play of various kinds and later in the use of tools. Also maintained that all teachers should be able to work with their hands. (5, page 85)

Kindermann, Ferdinand (1740-1801). While the efforts to adapt the principles of Rousseau's teaching to school conditions were taking place in Central Europe, economic conditions, Christian zeal, and the experiences of Francke led to the development of a new type of school in Austria, Germany, and England.

During the time when Kindermann was serving as a parish priest in Kaplitz he determined to make school reform his life work. The schools under Kindermann's charge soon became famous, and in 1775, he was appointed superintendent of schools in Bohemia, and became professor of pedagogy in a Gymnasium at Prague.

The special service rendered by Kindermann was in his introduction of remunerative industrial work into the Volksschule.

Kindermann noticed that when peasants were trained in the normal school they did not want to cultivate the ground any more or do any hard work. This suggested to him the idea of putting industrial work into the Volksschule. Kindermann knew the poverty of the teachers, also the poverty of the parents who were obliged to pay tuition for their children. He thought, therefore, that by bringing into the schools industrial work for which pupils would receive pay, parents and teachers would be helped. The motive of Kindermann was, therefore, economic rather than pedagogic. (2, page 86)

Pestalozzi, Heinrich (1746-1826). Pestalozzi has been referred to as the Father of Manual Training, however, actually he only put into practice the conceptions and philosophy of Rousseau.

Pestalozzi was the first man to organize handwork as part of general school work, and probably enunciated certain principles of handwork instruction in a rather definite and organized form. (8, page 307) Pestalozzi prepared for the ministry and later made a study of law, but this also was soon given up. Pestalozzi, impressed with the writings of Rousseau, concluded the real cause of the material poverty of the people was their intellectual and moral degradation.

After giving up the study of law Pestalozzi turned his attention to agriculture. He purchased about fifteen acres near the village of Birr, this was later increased to about one hundred acres. His farm did not prosper because he

lacked practical business and the philanthropic motives worked against his financial success.

Later, after the war when the French invaded Switzerland, he was asked to take charge of a home for the children whose parents had been killed in combat. This school only lasted five months because the soldiers needed the building for a hospital. During those five months Pestalozzi was able to put into practice his ideas and establish methods of teaching which were developed later. Pestalozzi recognized the fact that doing leads to knowing, and all intuitional knowledge proceed from number, form, and speech. (2, page 309)

Morf summarizes the general principles of Pestalozzi's methods as follows. (1) Observation, or sense-perception, is the basis of instruction. (2) Language should always be linked with observation with an object or content. (3) The time for learning is not the time for judgment and criticism. (4) In any branch, teaching should begin with the simplest elements, and proceed gradually according to the development of the child, that is in psychologically connected order. (5) Sufficient time should be devoted to each point of the teaching in order to secure the complete mastery of it by the pupil. (6) Teaching should aim at development, and not at dogmatic exposition. (7) The teacher should respect the individuality of the pupil. (8) The chief end of elementary teaching is not to impart knowledge, and talent to the learner, but to develop and increase the powers of his intelligence. (9) Power must be linked to knowledge, and skill to learning. (10) The relation between the teacher and the pupil, especially as to discipline, should be based upon and ruled by love. (11) Instruction should be subordinate to the higher aim of education. (8, page 318)

Part E

Special Systems

The Russian's System. In the year of 1830, there was established in the City of Moscow a school of Trades and

Industries. This school was not an adequate analysis of mechanical arts until the year 1868, when it was reorganized by Della Vos. The school was then raised to the rank of the leading polytechnic school of Europe and was known as the Imperial Technical School. The purpose of the school was to train civil engineers, mechanical engineers, draftsmen, foremen and chemists.

Della Vos realized the inadequacy of the imitative or apprenticeship method of instruction and organized instruction shops separate from construction shops. The instruction shops were a prerequisite to the construction shops. Bennett summarizes the Russian system as follows:

- (1) Each art or distinct type of work has its own separate instruction shop.
- (2) Each shop is equipped with as many working places and set of tools as there are pupils to receive instruction at one time.
- (3) The courses of models are arranged according to the increasing difficulty of the exercises involved, and must be given to the pupils in strict succession as arranged.
- (4) All models are made from drawings. Copies of each drawing are supplied in sufficient number to provide one for each member of a class.
- (5) The drawings are made by the pupils in the class for elementary drawing, under the direction of the teacher of drawing with whom the manager of the shops comes to an agreement concerning the various details.
- (6) No pupil is allowed to begin a new model until he has acceptably completed the previous model in the course. He must receive at least a grade of three which is considered good.
- (7) First exercises will be accepted if dimensions are no more than approximately correct, later exercises should be exactly to dimensions, therefore, the same marks given a student at different periods during his course do not express the absolute, but the relative, qualities of his different pieces of work.
- (8) Every teacher must have more knowledge of his speciality than is necessary merely to perform the exercises in the course of instruction. He must keep constantly in practice so that his work may be an example of perfection to his pupils. Such dexterity increases the authority of the teacher.

(3, page 13)

Sloyd System and its Application. The pedagogical ideas of hand work formulated in Germany were first extensively applied in the public schools of the northern countries of Europe. These countries, having long dark evenings, the rural folk would spend many hours working with some useful handiwork. The men and boys of the family would work with a few simple tools in making ax helves, hammer handles, rakes, pens for yokes and other devices needed for farm use. The mother and daughter would be spinning, knitting, weaving, and sewing the clothing for the family. These fireside industries were called Home Sloyd.

Later, the use of power machinery and the factory system broke down this home industrial process. The economy of the countries caused the men to leave their homes in the winter months to find extra employment, especially in the lumber trade. This left the women folk with all the house and farm work, with little or no time for the pursuit of sloyd. The freedom allowed in the manufacture and sale of alcoholic drinks also was a cause for the decline of the Home Sloyd.

This decline of Home Sloyd brought about a breaking down of standards of both skill and character of the young people. The leaders in national policy realizing this decline in morality, established sloyd in the public schools. Sloyd in the schools did not take the place of home sloyd. The early Sloyd Schools were run on an economic basis rather than pedagogically, however, in the minds of the promoters the idea

persisted that skill in sloyd and good character were developed together.

In the year of 1877 Otto Soloman made a scientific study of sloyd as a means in education, and developed what he called educational sloyd by making useful objects, analysis of processes and educational method. These characteristics were similar to the Russian system of tool instruction, except, unlike Della Vos, Soloman combined his exercises into useful models. Educational Sloyd was a significant development, in that, the basis for tool instruction was introduced as a part of general education and not as a trade, or leisure time activity. (3, page 53)

Part F

Organized Shopwork Instruction in the United States of America

The evolution of shopwork in Colonial times was influenced by the important changes as they took place in Europe. As in Europe, the concept of elementary education for everybody and free public schooling for the poor was well established, thus, higher education was left to private institutions. In 1870 the Mechanics Institute movement provided considerable instruction in secondary and technical educational subjects. Their curriculum included surveying, navigation, mechanics, agricultural chemistry, and civil engineering.

In 1862 the famous Land Grant Act provided for the endowment of higher education in agriculture and the mechanic arts. Some of the schools under this act were in name only,

however, at the Kansas State Agricultural College the curriculum included, carpenter shop, a wagon shop, blacksmith shop, paint shop, turning shop, scroll-sawing, carving, engraving, printing, telegraph department, and drawing.

In the early seventies, Calvin Milton Woodward, professor of mathematics and applied mechanics and dean of the Polytechnic faculty of Washington University, while teaching a class in applied mechanics found students having difficulty in visualizing forms of construction. To make the instruction more concrete he arranged for students to make forms in wood. Finding the students didn't know how to use the simplest woodworker's tools, he proceeded to teach tool instruction. Woodward described the classes in tool instruction as "Manual Training", and was later known as the great American champion of Manual Training. The term, "Manual Training" was later replaced by the terminology, "Industrial Arts". In 1904 Charles A. Richard, director of the Manual Training Department of Teachers College, Columbia University, was first to use the term "Industrial Arts". (3, page 75)

Industrial Arts as a school subject has flourished in the United States as technology has increased in importance. The acceptance of the experimentalism philosophy of John Dewey, which is predominant in the public schools as a way and means to achieve the ends of general education has related the field of Industrial Arts Education.

Presently, the objectives of Industrial Arts, as previously discussed, provides the school with an opportunity

to motivate the youth of America to the complex industrial society which exists in the world today. Industrial Arts being a part of General Education formulates its objectives to compliment the overall objectives or purposes of general education. Since a foreign power has proved to be further advanced in the field of science and technology the objective "Survival" has become increasingly important in the overall objectives of education. With this in mind, it is the author's opinion that Industrial Arts will take on an additional air of importance in helping to clarify the ends and means of education through indoctrination of the objectives.

The author has used the jury technique to determine eight objectives to be emphasized in the junior high and secondary public schools. The results of this study will be given in the next chapter.

CHAPTER III

REPORT OF THE STUDY

The intention of this report is to determine a suggested list of objectives for industrial arts in Oklahoma. The necessity of this undertaking is well established, in that, a period of approximately ten years have elapsed since any official action has been taken on revising the existing objectives.

Moreover, the objectives that were formulated in 1948 by a State Advisory Committee are now considered, by many leaders in the field of Industrial Arts, to be out of date and should be revised. With these presuppositions the author has made an attempt to revise the existing objectives of Industrial Arts for the public schools of Oklahoma. The procedure used to resolve the suggested objectives, listed on page 35 is as follows:

A conscientious study was made of the history of Industrial Arts to provide a background on what were the ultimate aims and objectives of Industrial Arts of the past. Special consideration was given to the recent objectives listed by Dr. William E. Warner, Dr. Newkirk, Wilber, and those formulated by the Industrial Arts Policy and Planning Committee for the American Vocational Association.

Furthermore, to substantiate, validate and provide a basis for the selection of the suggested objectives, the author has procured data by means of conducting a survey which will be described as follows:

The Questionnaire Used. For expediency and feasible purposes, a questionnaire was used to obtain information that could not have been gathered unless an equal number of personal interviews had been scheduled. The questionnaire asks only three questions, (1) The number of years that the teacher has been teaching in the field of Industrial Arts; (2) From what college or institution the teacher had received a degree, or qualifications to teach Industrial Arts; and (3) To rearrange, in order of importance, sixteen objectives found in the Industrial Arts Policies Bulletin, formulated by the State Advisory Committee in 1948. With regard to the teachers time and patience the questionnaire was designed, purposely, to be in a very simple form. A copy of this questionnaire may be found in Appendix B of this report.

The Letter of Transmittal. A letter giving the purpose of the questionnaire and specific instructions for completing the questionnaire was inclosed with a stamped self-addressed envelope, which was mailed to each selected individual. A copy of this letter may be found in Appendix A of this report.

The Respondents to the Questionnaire. The questionnaire was limited to members of the Oklahoma Industrial Arts

Association who attended the state meeting in Oklahoma City in 1959. Registration cards were obtained from the secretary of the Oklahoma Industrial Arts Association, Mr. C. L. Hill, and two hundred teachers were selected from this group. A good geographical representation was thus obtained, also, this means of selection solicited those teachers who are more likely to be more interested and professional in the field of Industrial Arts. From the two hundred selected teachers who received the questionnaire, along with the letter of transmittal and a self-addressed envelope, one hundred ten were returned completed. This number represents a fifty-five per cent return. In comparison to other studies with similar techniques of research the fifty-five per cent is considered a good return.

Data Obtained. From compiling and tabulating the data obtained from the one hundred ten respondents to the questionnaire the following facts were obtained.

(1) That the respondents received their qualifications to teach Industrial Arts as listed in Table I. The number of respondents follows the listed institution.

(2) That the respondents have been teaching in the field of Industrial Arts for an average of eleven and one half years.

(3) That the respondents selected eight objectives from the sixteen objectives found on the questionnaire and listed them in order of importance as follows:

- (1) Industrial Arts is complementary to other school subjects and provides opportunity to apply knowledge learned in other subjects.
- (2) Develops an appreciation of applied knowledge and skills.
- (3) Develops the ability to analyze a job into its processes and organize them into correct procedure.
- (4) Provides a knowledge of industrial drawing, the language of industry, and methods of expressing ideas by means of drawing.
- (5) Instills a satisfaction in personal creative achievement.
- (6) Contributes to later vocational efficiency.
- (7) Stimulates students knowledge and appreciation of good design.
- (8) Contributes to consumer knowledge and induces an appreciation of the value of industrial materials and the need for their conservation.

TABLE I

INSTITUTIONS WHERE RESPONDENTS RECEIVED THEIR DEGREE

Institution Attended	No. of Respondents
Oklahoma State University	25
Central State College	15
Northeastern State College	14
Southwestern State College	13
East Central State College	9
Southeastern State College	9
From Institutions Out of State	8
Oklahoma University	6
Panhandle A. & M. State College	5
Northwestern State College	4
Langston State College	2

Table II, DISTRIBUTION OF CHOICE, shows the exact numerical rating each objective received. Several interesting

TABLE II

DISTRIBUTION OF CHOICE

Choice	1st	2nd	3rd	4th	5th	6th	7th	8th	Total
Objective No.									
1.	44	12	8	7	2	4	6	7	90
2.	5	12	16	10	13	13	8	10	87
3.	11	6	13	11	7	8	14	4	74
4.	6	11	13	4	1	14	8	8	65
5.	2	5	8	8	12	8	11	9	63
6.	8	17	9	9	5	8	9	6	71
7.	8	19	8	9	13	4	7	13	81
8.	6	5	11	14	11	7	4	5	63
9.	3	3	2	8	7	5	7	4	39
10.	6	3	5	3	5	7	7	7	45
11.	1	2	6	6	5	6	8	7	41
12.	4	2	1	12	7	7	4	6	43
13.	1	3	3	1	9	2	6	7	32
14.	3	2	3	3	9	7	1	3	31
15.	3	3	1	4	5	7	8	10	43
16.	0	1	2	1	1	2	1	2	10

comments were made, by the respondents, concerning the selection of eight objectives of Industrial Arts. Some of these comments are as follows:

(1) They are all important, to eliminate some of these or combine any of them is a waste of a job. I would add to the list, rather than reduce the number, the field is becoming broader instead of narrower.

(2) Objective number one should be re-worded.

(3) Perhaps my rating has been influenced by the fact that eighty-five per cent of our graduates attend Colleges or Universities. Therefore, our courses are slanted towards fields of engineering.

(4) Objective number 2, 17, 3, 5, 7, and 12 should be re-worded.

(5) How about a better objective than any listed in your survey.

(6) These objectives are all worth while. It is very hard to tell which is the most important.

(7) Numbers 2 through 16 are very fine objectives and it is very difficult to say which is the most important to be placed first or second. Number 17 should be near the last of the list and number 1 should be reworded so as to remove the implication that Industrial Arts is sub-servient to other studies and placed on equal standing.

(8) I would not necessarily always list them in this order, it is hard to place any one objective as the best.

(9) None of these objectives are necessarily valid. Complete re-wording may be in order.

(10) In checking the objectives here I have attempted to evaluate Industrial Arts as an over-all phase of general education. I might change the rating if I were called on to re-rate these tomorrow.

In view of the data collected and comments made, the author will list suggested objectives in the conclusion of the study in Chapter IV of this report.

CHAPTER IV

SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS

The previous chapters have shown a need and purpose of the study, the available information on objectives of Industrial Arts, methods of research, the history and philosophy of Industrial Arts, and a report on the data collected. The summary, in this chapter, will be a resume of the facts collected from the one hundred ten shop teachers who completed the questionnaire. The conclusion will contain a suggested list of objectives for Industrial Arts, based on the data collected, previously listed objectives and the philosophy of the author. The conclusion will be followed by recommendations for further study.

Summary. Data was collected from one hundred ten shop teachers from the State of Oklahoma. From this data it was found that, all respondents except eight had received their qualifications to teach shop in the State of Oklahoma, and that the average experience in the field of Industrial Arts was eleven and one half years. In rating the sixteen objectives it appears the respondents, in general, merely selected the first eight, however, objective number one was rated very high in comparison with the others. From comments made by

the respondents there is a general concensus that all of the sixteen objectives should be re-worded, combined and revised.

Conclusions. In view of previously listed objectives of Industrial Arts, data collected from the survey, and philosophy of Industrial Arts as acquired through research and influence of present and former professors of Industrial Arts the author submits the following objectives:

(1) To provide experience in the construction of projects related to scientific principles peculiar to the industrial processes, thereby enabling the students to develop and apply scientific knowledge, and an opportunity to express themselves, and experiment with creative ideas.

(2) To provide experience in organization and performance, thereby enabling the students to develop skills, cooperative attitudes, and safety consciousness.

(3) To provide experience in the correct manipulation and nomenclature of tools, thereby enabling the students to develop aptitudes for vocational pursuits and avocational interests.

(4) To provide experience in drawing and design, thereby providing the student with the language of industry, and requirements of good design.

(5) To provide experience with materials and processes, thereby enabling the students to develop consumer knowledge, values of industrial materials, and the need for the conservation of industrial materials.

(6) To provide experience in industrial techniques, thereby enabling the student to develop an appreciation, dignity and importance of the occupation of one's neighbor, also to realize the social values of various occupations.

The above suggested objectives should be supplemented with specific objectives depending on the geographical location and industrial development of the area. It is further recognized that the above listed objectives are not original objectives, but combinations and rewording of previously listed objectives by leaders and policy committees of Industrial Arts. The first objective is felt to be most important, with emphasis on "scientific principles", because of the trend toward science in general education. The last five objectives are not necessarily in order of importance.

These objectives apply to both junior high school and senior high school, the difference being only in level of achievement. The author is assuming the teacher of Industrial Arts will take into consideration the individual differences of the students and will employ the modern methods of motivation to bring about the changes in behavior which should result from the experiences as stated in the objectives.

Recommendations for Further Study. It is an established fact that social evolution does occur. Therefore, the changes brought about by social evolution will cause changes in general education. With Industrial Arts being a part of general education it is recommended that periodically or when the

need arises the objectives of Industrial Arts be revised to fit the overall trend of general education.

A similar study on objectives of Industrial Arts is recommended to every graduate student in the field of Industrial Arts Education, whereas a group concensus may be obtained in formulating the objectives and policies, and to determine what part Industrial Arts is to play in the education of youth.

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APPENDICES

- A. Letter of Transmittal
- B. Questionnaire
- C. Respondents to Questionnaire

APPENDIX A

Industrial Arts Department
Oklahoma State University
Stillwater, Oklahoma
October 26, 1959

Dear Sir:

This letter is to solicit your aid in selecting eight objectives for Industrial Arts in Oklahoma. Your opinion is of vital importance because only teachers of Industrial Arts know which objectives need to be emphasized.

Since the Rocket era educators have been asked to re-evaluate their programs of instruction, it is common opinion that the current sixteen objectives of Industrial Arts should be condensed, and not cover such a wide scope.

Enclosed you will find the sixteen objectives for industrial arts as formulated in 1951 under the sponsorship of the State Advisory Committee for Industrial Arts in Oklahoma. Instructions for completing the questionnaire are as follows: After studying the list of objectives, re-arrange them by placing your first, second, and third, etc., choices in the boxed column at the left, for example, if objective number 6 is your first choice place that number in the first space at the top of the column, second choice number in the second space, etc. Feel free to re-arrange these objectives for Industrial Arts in secondary schools, as your opinion will be treated with the highest respect.

As I am making this study to be used in a report for partial fulfillment of the requirements for the degree of Master of Science, in Industrial Arts Education, your response will be appreciated and a self-addressed envelope is enclosed for your convenience.

Sincerely yours,

Frank D. Keck
Graduate Student

Approved: _____

C. L. Hill, Head
Department of Ind. Arts Educ.
Oklahoma State University

APPENDIX B

OBJECTIVE OF INDUSTRIAL ARTS IN OKLAHOMA

Name _____ School _____ City _____

Number of years you have been teaching in the field of Industrial Arts _____

From what college did you receive your degree _____

Please re-arrange these objectives in order of their importance.

- (1) Industrial Arts is complementary to other school subjects and provides opportunity to apply knowledge learned in other subjects.
- (2) Develops an appreciation of applied knowledge and skills.
- (3) Provides a knowledge of industrial drawing, the languages of industry, and methods of expressing ideas by means of drawings.
- (4) Contributes to later vocational efficiency.
- (5) Stimulates students knowledge and appreciation of good design.
- (6) Instills a satisfaction in personal creative achievement.
- (7) Develops the ability to analyze a job into its processes and organize them into correct procedure.
- (8) Contributes to consumer knowledge and induces an appreciation of the value of industrial materials and the need for their conservation.
- (9) Trains in industrial and home safety.
- (10) Acquaints students with industrial information and induces a recognition of the standards of industrial attainment.
- (11) Develops avocation interests.
- (12) Trains individuals to be more resourceful in dealing with the material problems of life.

- (13) Stimulates correct attitudes toward an orderly shop and home and their environment.
- (14) Aids in making vocational choices.
- (15) Develops cooperative attitudes in work habits.
- (16) Develops an appreciation of the dignity and importance of the occupation of one's neighbor.

APPENDIX C

Respondents to Questionnaire

<u>Instructor</u>	<u>School</u>
Adams, Edward L.	Bowlegs, High School
Allright, Buford	Mooreland, High School
Baldrige, R.	Stillwater, Jr. High School
Barton, Woodrow	El Reno, High School
Berry, Jack P.	McAlester, High School
Blosch, Charles H.	Arcadia, High School
Bolinger, T. D.	Bristow, High School
Bond, Othal	Colony, High School
Bowers, Bob	Maud, Harjo School
Bradley, Orin E.	Rush Springs, High School
Braun, F. G.	Tahlequah, Jr. High School
Brown, Harry H.	Ponca City, High School
Brownrigg, Jerry	Alva, NW State College
Cermak, J. L.	Weatherford, SW State College
Chapman, Charles H.	Oklahoma City, OCU
Cobb, Richard A.	Cushing, High School
Cook, W. O.	Ponca City, Jr. High School
Cordis, Orville G.	Guthrie, High School
Cravens, Wayne	Tulsa, Madison Jr. High School
Davis, William A.	Miami, High School
DeMand, Mary	Oklahoma City, John Marshall
Deter, Earl	Guthrie, High School
Dillman, Ray	Sapulpa, Jr. High School
Dobbins, M. E.	Durant, Jr. High School
Ebersole, A. L.	Perry, High School
Ethridge, Don F.	Jones, High School
Ernst, Dale L.	Norman, Jr. High School
Franklin, M. E.	Tahlequah, NE State College
Frisch, J. J.	Tulsa, Roosevelt School
Gann, Raymond L.	Muskogee, AR Jr. High School
Gilliland, Billy L.	Wetumka, High School
Goucher, Alfred	Altus, Jr. High School
Guess, Edgar O.	Tulsa, Carver Jr. High School
Gragg, Johnie	Tulsa, Horace Mann School
Hager, Earl	Gotebo, High School
Hamilton, Joe D.	Chickasha, Friend School
Harden, J. G., Jr.	Velma, Velma-Alma School
Hardin, Robert A.	Norman, Oklahoma University
Hardin, Ralph C.	Crescent, Crescent High
Harugy, Dewey	Boswell, High School
Hayhurst, Dale	Pauls Valley, High School
Heaton, Joe D.	Alva, High School
Hendrix, Grant	Weatherford, SW State College
Heusel, Charles W.	Hooker, High School
Hill, C. L.	Stillwater, O.S.U.
Hogg, Dwight	Granite, High School

Ingraham, C. B.
Isom, Vernon
Jackson, Earl W.
Jansen, Lester
Jeck, Arnold
Jones, Wilbur C.
Kear, Dean
Keck, Robert V.
Kester, Paul
Killingsworth, John
Large, J. E.
Ledbetter, J. L.
Lindsey, James W.
Littlefield, H. L.
Lombardi, C. L.
Loshbaugh, Dean
Lowrance, Monte
Mason, Henry
McCoy, Jake L.
McCreary, Clyde
Meek, Blake
Meissner, Wayne H.
Morgan, Bill
Morgan, Neal
Musselman, L. H.
Nees, James B.
Ogle, Leonard C.
Palmer, George
Paul, C. E.
Parkhurst, Roy C.
Peterson, Marvin
Phelps, Robert K.
Porter, L. C.
Prock, John
Randolph, Robert Jr.
Reeder, Clarence
Reeves, Chester A.
Reid, Joe R.
Reynolds, Lawrence
Rhoads, Glenn
Richards, Joe B.
Ridgway, Carroll M.
Rogers, Leroy
Rutledge, Bill
Sanders, W. H.
Shirk, Howard
Stiles, Darrel
Stinnett, Faxon
Stokes, Jess
Sipe, Robert R.
Snyder, F. C.
Spencer, F. R.
Suggs, James

Edmond, Central State College
Oklahoma City, Northeast
Blue, Blue High
Forgan, Forgan High
Chickasha, Jr. High
Moore, High School
Guymon, High School
Norman, O. U.
Ponca City, High School
Shawnee, Jr. High
Tulsa, Nathan Hale High
Tahlequah, NE State College
Tulsa, Bell Jr. High
Oklahoma City, Capitol Hill
Tahlequah, NE State College
Tulsa, Hamilton Jr. High
Goodwell, High School
Midwest City, High School
Durant, SE State College
Mill Creek, High School
Choctaw, High School
Wellston, High School
Mangum, Centravue School
Red Oak, High School
Oklahoma City, Capitol Hill
Oklahoma City, U. S. Grant
Oklahoma City, Harding High
Meeker, High School
Muskogee, Central High
Mulhall, High School
Bethany, High School
Carnegie, High School
McAlester, L'Ouverture
Clinton, Clinton School
Anadarko, Riverside
Hugo, High School
Oklahoma City, Classen
Kingston, High School
Ada, East Central State College
Maud, High School
Harrah, High School
Fletcher, High School
Boswell, High School
Duncan, High School
Tulsa, Will Rogers
Claremore, O. M. A.
Bristow, High School
Vian, High School
Red Rock, High School
Oklahoma City, John Marshall
Oklahoma City, SE State
Drumright, Olive School
Ponca City, Jr. High

Teague, Ralph
Thomas, Joe E.
Towns, Homer B.
Trimm, Robert Roy
Utley, J. G.
Wade, Bill
Walker, W. T.
Ward, Brad
Whilchel, A. E.
Winburn, Harold J.
Wright, L. L.
Younts, Vernon

Pawnee, High School
Idabel, Washington School
Tulsa, Webster School
Tulsa, Central High
Tulsa, Horace Mann
Tulsa, Monroe Jr. High
Afton, High School
Bartlesville, Central Jr. High
Paoli, High School
Tishomingo, Northern State
Shattuck, High School
Stonewall, High School

VITA

Frank Daniel Keck

Candidate for the Degree of
Master of Science

Report: SUGGESTED REVISIONS OF INDUSTRIAL ARTS OBJECTIVES

Major Field: Industrial Arts Education

Biographical:

Personal Data: Born at Weleetka, Oklahoma, March 31, 1931, the son of Arley and Dollie Keck.

Education: Attended elementary and secondary school in Weleetka, Oklahoma; graduated from Weleetka Public High School in May, 1949; attended Connors State Agricultural and Mechanical College at Warner, Oklahoma from 1949 to 1951; received the Bachelor of Science Degree from Northeastern State College in May, 1953; and completed requirements for the Master of Science degree at Oklahoma State University in January, 1960.

Professional experience: Entered the United States Army, July 1953, worked in the capacity of Personnel Specialist, promoted to the rank of Sergeant and released from active duty July 14, 1955. Accepted a position as teacher of Industrial Arts at Cotteral Junior High, Guthrie, Oklahoma, from September 1955 to May 1959.

Organizations: Iota Lambda Sigma, Phi Delta Kappa, Oklahoma Industrial Arts Association, National Industrial Arts Association, Student Industrial Arts Association.

REPORT TITLE: SUGGESTED REVISIONS OF INDUSTRIAL ARTS
OBJECTIVES

AUTHOR: Frank Daniel Keck

REPORT ADVISOR: C. L. Hill

The content and form have been checked and approved by the author and report advisor. The Graduate School Office assumes no responsibility for errors either in form or content. The copies are sent to the bindery just as they are approved by the author and faculty advisor.

TYPIST: Eileen Meyerdirk