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Scope of Study: This report deals with financing industrial arts shops. Emphasis is placed on organizing or improving the financial system in the school shop. Methods and procedures in starting such a system is included in this study along with examples of requisitions and inventories. The writer has tried to show the importance and educational values of a well-developed financial system.

A brief history and philosophy of industrial arts is included. A close study of the history of education will present instances where the failure of a proposed idea for education has occurred because of poor financial management.

Finding and Conclusion: The writer found that a number of shops are without financial organization. Schoolshops improving in industrial arts are those with well organized financial systems. Although, there have been vast improvements in financing shops there is still room for more.

Advisor's Approval C. R. Hall

FINANCING
INDUSTRIAL ARTS SHOPS

1957

FINANCING INDUSTRIAL ARTS SHOPS in 1957

by

CAL JOHNSON

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FINANCING

INDUSTRIAL ARTS SHOPS

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CHAPTER I

VIEW AND IMPLICATIONS OF THE STUDY

Industrial arts in American schools has expanded the school curriculum to meet the demand of society. During the junior and senior high school period pupils are coming in contact with various types of materials. By coming in contact with such wide variations of materials it is necessary that they have experience in handling and using these materials. The skills accomplished in manipulating tools through the handling and forming of various materials are very effective in making a good citizen. Thus, it seems imperative that schools assume a progressive attitude toward industrial enlightenment. Taking a giant step in this endeavor, has been some of the leaders in the schools of today.

Some of the questions being discussed by the leaders are of utmost importance. Some of the items under discussion are: (1) The availability of industrial arts teachers; (2) Uselessness of some industrial arts subjects because of the locality; (3) Type of shop, general or unit; (4) Have T&I in place of industrial arts; (5) How the shop should be financed; and (6) The relationship industrial arts to the school curriculum. After viewing the importance of these subjects for discussion it is possible that many studies may be made in relationship to industrial arts in Oklahoma schools.

Need for the Study. The world of today has accomplished a great deal through industrial activities, and in order to make a step forward in that endeavor, many studies must be made on state-wide level as well as nationally. Surveys on state-wide contacts are needed to show the educators that progress is being made in that particular field. This will also furnish facts and principles from which future development and improvement may be made. It is an established fact that Oklahoma has made much progress in the field of industrial arts. In order to acquaint the people with the present condition under which industrial school shops are operated in Oklahoma, it was decided to make a general study of the financing of school shops in Oklahoma. This study is intended to inform teachers in the financing of school shops as well as trying to show how Oklahoma teachers finance their industrial arts programs.

Purpose of the Study. The purpose of the study is to enlighten the instructor as to how the industrial arts school shops are being run financially. After viewing the financial situation as it really should be, many ideas should arise in the minds of the industrial arts teacher and the school administrators. If this should occur, there are great possibilities that many accomplishments may be contributed toward promoting progress in the industrial arts school shops of Oklahoma. In order to accomplish this it was proposed that the problem be approached with the following objectives in mind: (1) To present the history and philosophy of industrial

arts; (2) To present the general status of financing the present school shop; (3) To provide basis for recommendations of the best financial method to use at the present; (4) to provide recommendation for improvement in financing industrial arts shops.

With the world changing as it is and industrial development progressing very fast this study is very much limited to the present day industrial arts shops. It is desired by the writer that many concurrent surveys be made in the financing of industrial arts school shops.

Method used in Collecting Data. The techniques used in collecting data for this report were available information taken from textbooks on the history and philosophy of industrial arts shops. Additional information was taken from bulletins, and from the Oklahoma School Directory. The names of Oklahoma junior and senior high schools were selected, and questionnaires were sent to these schools for additional information. This study does not cover every junior and senior high school in Oklahoma which offers some limitations as to the validity of this study.

Definitions of terms. A clear conception of industrial terms is necessary in order to get a better understanding of the following chapters. Education has been described by many educators, but a good definition is defined in the following statement by Dewey.

> Education. It is that reconstruction or reorganization of experiences which adds to the meaning of

experience, and which increases the ability to direct the course of subsequent experiences. (5- page 243)

Industrial Arts. A group of school subjects that contribute to the attainment of the goal of general education by furnishing guided experiences in the use of tools, materials and machines, and insights into those phrases of industry that have become an important part of our social culture. (21 - page 1)

Industrial Education. A general term, including all educational activities concerned with modern industry, machines, personnel and problems. It, therefore, includes both, industrial arts and vocational industrial education. (5 - page 7)

Vocational education. A program of education organized to prepare the learner for entrance into a particular chosen vocation or to upgrade employed workers; includes such divisions as trade and industrial education, agricultural education, distributive education, and home economics education. (12 - page 448)

Inventory. To itemize or sum up, stock, articles or person qualities. (22 - page 950)

Equipment. The physical facilities available for production machines, tools, etc. (2 - page 350)

Supply. To fill the need of or furnish with paper, wood, etc. (22 - page 1200)

Requisition. Act of requesting, application made by one officer or department to another, for things needed in the service or business. (22 - page 1050)

The purpose of this chapter has been to state the problem, define terms used, and discuss the techniques of research used to accumulate data for analysis in a later chapter of this study. In order to make a study in any particular field one should know the history of that area. The history and philosophy of industrial arts will be presented in the following chapter.

CHAPTER II

HISTORY AND PHILOSOPHY OF INDUSTRIAL ARTS

Industrial arts has been considered in some locations as being of recent origin, but that is very much a mistake. Starting from the beginning of time there have been two kinds of education: the education of manual labor through the use of tools and the education of brain work with the aid of books.

The earliest form of industrial education may be illustrated in the form of securing food and gathering materials for physical needs in order to survive. Due to these facts, methods of training and developing skills were put into operation early in Europe.

Part A

Early History in Europe. The beginning of the current tradition of industrial education began in the Renaissance age. The movement of industrial education seems to fall in three stages:

> The first period, which systematic education in agriculture, carpentry, and other forms of manual industry is presented as a feature of life in ideal states, such as the utopias of More and Rabelais, and Companella's city of the sun.
>
> The second period is characterized by attempts on the part of progressive and original thinkers to plan courses of institutions which would afford industrial as well as general education. It is the period in which Petty plans the "literary workshop"

> so similar to the modern industrial high school. It is the period of Cowley's trade school, of Morhof's Scholae Naturae, artis et actionum humanarum, of Becher's mechanical or trade school, of Descartes' technical school for workingmen, and of Comenius vernocular and latin schools, in both of which instruction in the industries was to be given.
>
> In the third period, the theorizing of Comenius and other reformers bears fruit in the actual introduction into the school by Franke, Semler, and Hecker of the study of industrial subjects and the practice of the industrial arts. (1 - page 5)

The works of some of the reformers during these periods will follow.

The European Reformers. These stages of industrial education came into being through the changing of time in industrial life and through influential leaders and writers of that time. Many recommendations were made by great leaders.

Luther. (1483-1546), a great reformer during the sixteenth century, advocated the following:

> A state supported, comprehensive education the right kind of schooling should be given to "all the people, noble and common, rich and poor. It was to include both boys and girls - a remarkable advance; finally, the state was to use compulsion if necessary. Luther advocated a school day of two hours, so arranged that it would allow the older children and youths to carry on the ordinary economic duties of life uninterruptedly. "My 'opinion'", said Luther, "is that we must send the boys to school one or two hours a day, and have them learn a trade at home for the rest of the time. It is desirable that these two occupations march side by side." (3 - page 31)

This was taking place in Germany because Luther was against the monastic and ecclesiastical schools. At the same time Rabelais, in France, began to disagree with the shallowness, formalism of the church, school and state.

Rabelais, (1483-1553), was a member of the Catholic church, although he disagreed with some of the high officials, he remained in the church and from his affiliation with the church school and his training and practice of medicine formulated the basis for his two novels, Gargantua and Pantagruel, into which he wrote his ideas of reform. Here he considered his novels as children and describes how they are to be taught.

Gargantua would be turned over to a teacher. All his previous habits were to be forgotten. From here the teacher would start with a new mind. The advantage of this approach was to get to the concrete through the abstract and remote. Here is how Gargantua learned about arithmetic.

> They brought in cards, not to play, but to learn a thousand tricks, and new inventions, which were all grounded upon arithmetic. By this means he fell in love with numerical science, and every day after dinner and supper he passed his time in it as pleasantly as he would want to do at cards and dice.
>
> The arts of painting and carving he places on the same plane with playing games as a rainy weather occupation. Knowledge of handicrafts and industries was gained through observation only. (3 - page 32)

Rabelais was one of the many reformers of education, but perhaps one of the most thought of reformers was Comenius.

Comenius, (1592-1610), may be given credit for formulating the six year unit plan for schools. His plan comprised the following:

1. The infant school (school of mother knee, including the year one to six.)

2. The vernacular school (for people with a limited school career before them, including the

years seven to twelve).

3. The gymnasium (for pupils with preparing for the university, including the year thirteen to eighteen.)

4. The university (affording opportunities for liberal culture, including the year nineteen to twenty-four.)

5. The college of light (providing facilities for scientific investigation and professional training, including the year twenty-five to thirty.) (3 - page 38)

In this plan Comenius advocated that words and things should go together.

Rousseau, (1712-1779), was an advocator of internal practices and spirit, also writer of the social contract, which has been blamed for the French Revolution, and Emile which caused an upheaval in educational thinking and caused Rousseau to leave France to avoid arrest, but was just the kind of force needed to break down the walls of educational formalism. Rousseau believed in the economic value of industrial training. That a trade is the best means of making a living. In the later years of Rousseau's life there were many followers and believers of Rousseau Emile and the social contact. One of those was Pestalozzi.

Pestalozzi, (1746-1827), was very much impressed with the writing of Rousseau, when Pestalozzi left law school and went to agriculture, influenced by Rousseau's writings, a school was established, called Neuhof, which was devoted entirely to agriculture. Later another school was started in Switzerland by Pestalozzi. This was to help poor children.

Some of the schools of Pestalozzi did not last long because of poor management of financial difficulties. During Pestalozzi's last years he came to work with Fellenberg, but because of many different ideas the school did not succeed.

Fellenberg, (1771-1844), a reformer, believed that each individual should be prepared to live a happy life, but in preparing the individual there should be no disturbances in society by confounding the classes. Every man should be educated for his own sphere. From these ideas Fellenberg established the institution of Hofwyl along with Pestalozzi, because of contrasting personalities the school failed. Later, Fellenberg established an academy by himself.

Fellenberg Academy, began by Fellenberg taking in a few poor boys and providing for them. Fellenberg believed in the slow process. Later, a building was erected for the well-to-do boy. This school included instruction in science, agriculture, and manual labor. The school became well known and students from all parts of the world attended. In the Fellenberg farm and trade school the boys were clothed like farmers and fed mostly on vegetables. The program taught by instructor Wehrl was as follows:

> While working with them in the field he told them instructive stories, gave them problems in arithmetic to solve. He explained the properties of the soil which they were working, led them to examine it in regard to its composition, weight, chemical action, and its capacity to their attention to the characteristics of the plants which they found, explained to them natural phenomena, and in connection with the laying out of plots in the fields he made them familiar with some of the fundamental

principles of geometry. (3 - page 135)

This was not the only school Fellenberg had. There were many more, such as Fellenberg's school of Applied Science, Fellenberg's normal school, and Fellenberg's school for girls. Out of these schools foundations were laid for more schools in Europe.

School for the poor in England. It was not uncommon to see schools of industrial training in order for poor children to accomplish a means of self-support. This would relieve taxpayers of the burden of maintaining them. The schools were also organized to take the place of the apprenticeship system.

A knitting school was founded in Lincoln in 1591 and instructed by an experienced knitter. Knitting was established in Leicester. Sir William Borlase, in 1628, established a school for poor boys and girls. The girls were to take bone lace, knitting, and sewing. A lady was employed in the workhouse to teach girls to make lace. The idea of industrial schools for the poor spreaded with success.

School for the poor in Germany. A Catholic clergyman, Kinderman, had been successful in introducing industries in his parish. From this idea Pastor L. G. Wagermann, in 1784, established an industrial school in Gottingen. This type of school brought about a new trend in German education. In the last decade of the eighteenth century industrial schools were established in Lippe, Brunswick, as well as other parts of Germany. The girls were trained usually in spinning, knitting, sewing, and mending. Boys in the country were taught silk

culture, gardening, and beekeeping.

All the systems of education in Europe, such as home sloyd, educational sloyd, and many others, will not be explained, but their influence spread to all sections of the world, one in particular, the United States.

Industrial Education in America. Industrial education in America seems to get its foundation not from merely local conditions but from Europe. All legislations and ordinances, provided by the colonists concerning education during the seventeenth century come from customs and laws in England.

Hand woodwork was not introduced into American schools until the nineteenth century, however, the United States had a much different situation than that in Europe. Free public schools for the poor were well established. The state provided elementary education. The only educational problem left for individual philanthropic and associations was secondary industrial and professional education. The mechanics institute began in 1820 had given some helpful instruction in secondary and technical education. One of the most famous of these institutes was the Franklin Institute of Philadelphia. In 1827 Gardiner Lyceum movement had begun. This led toward higher education in applied science by offering surveying, navigation, mechanics, agricultural chemistry, and engineering. The Worcester Polytechnic Institute in Massachusetts was a new type of school. In one department a machine shop was set up. The shop had two important factors: (1) The shop was to produce articles to be sold. This work was to be done

by the students for educational purposes only; (2) No pay was to be received for work done.

School of Mechanical Arts in Boston. After Dr. John Runkle had visited the Russian exhibit, there was a need seen for workshops in the engineers' school to train students in engineering. Dr. Runkle recommended to the corporation of the Massachusetts Institute of Technology that they establish workshops for instructional purposes. On August 17, 1876, such a shop was established. At the same time there was a new school established through this system, called the school of Mechanical Arts. Boys that had finished grammar school or could pass an examination in English, arithmetic, and geography could attend. They must be over 15 years of age. The tuition was $150.00 a year. During this century other new types of schools were started.

New Type High School. The beginning of the manual training movement started in the high school. One of the first was the manual training school in St. Louis. The purpose of this school was stated thus:

> Its object shall be instruction in mathematics, drawing, and English, branches of a high school course, and instruction and practice in the use of tools. The tool instruction, as at present contemplated, shall include carpentry, wood turning, pattern making, iron chipping and filling, forge work, brazing, and soldering, and the use of machine shop tools, and such other instruction of a similar character as may be deemed advisable to add to the foregoing, from time to time.
>
> The students will divide their working hours, as nearly as possible, equally between mental and manual labor.

> They shall be admitted, on examination, at not less than fourteen years of age, and the course shall continue three years. (5 - page 347)

This method of training was very successful in St. Louis and because of this success manual training was introduced in the general high school.

Manual Training in General High School. Many high schools began to introduce shopwork courses in the school curricula, in most schools woodwork with a little drawing was introduced. One of the first schools to introduce this was Peru, Illinois. In the year of 1884 manual training was introduced in the high school of Eau Clair, Wisconsin, located in an industrial center. In 1885, Cleveland, Ohio, a carpenter shop was provided to teach manual training to a group of boys after school hours. This shop was such a success that later in 1886 a manual training school was started. Industrial education in the high school was so successful that it spreaded to another grade level.

Manual training in elementary schools. The officials of Kansas State College were developing an industrial system. The administration in St. Louis was discovering the value of tool exercise and the need for such instruction in the common schools. Industrial education was used as recreation and educational improvements and through all these experiments led the way toward the establishment of manual training in public elementary schools. During the year 1835 sewing and knitting was taught to girls one hour a day in the grammar schools of

Boston. In 1864, drawing became a required subject in Boston schools and by 1872 Massachusetts passed a law legalizing sewing and other industrial subjects in the school. Industrial subjects were introduced in many schools all over Massachusetts.

In the city of New York manual training was introduced into the public elementary school due to its success in Boston. The manual training system in elementary schools spread to many other states.

In the late 19th century industrial education was introduced into the normal schools for the training of teachers. One of these schools was Oswego State Normal School. A regular two year normal school curriculum was set up for this. Later the same type of education was introduced into the universities; because of the advancement of industrial education a new movement came about.

Vocational Education Movement. After the school accomplishment of industrial education in 1906 the vocational education movement in the United States began. This movement started mostly with trade schools and the technical part of educational schools. One of the most important schools of this time was the New York trade school opened in 1881. Here the students were taught the best practical procedure of each trade and, also, the scientific principles. This school grew from 30 the first year to 389 the tenth. Wealthy men served on its board. The school also received help from influential organizations. This same type of school was

established by the trade school department of Pratt Institute, 1887.

A different type of school was set up just outside of Philadelphia, the Williams free school of mechanical trades, opened in 1891. All boys were admitted as indentured apprentices to the trustees of the school for three years. In this school trades were offered such as wood working, building, and machine. The boys took but one trade along with mechanical drawing.

In another section of the country, such as California, industrial schools had begun to be established. James Lick set up a mechanical arts school that was under the leadership of George A. Merrill. Later came a new school which was an adjoining property to the mechanical art school and under the leadership of Mr. Merrill, the Wilmerbing school of industrial arts. These schools gave instruction in machine and building trade. As time passed the country grew; manufacturers all over the country were set up and there was more need for training people for trade. Funds were not being provided to teach trades. Out of these experiments and others came the need for further developments. During the ten years from 1907 to 1917 new schools were developed.

> Among these were (a) the pre-vocational or industrial school; (b) the continuation school; (c) the part time cooperative school; (d) the day vocational or trade school; and (e) the apprenticeship or corporation school. (4-328 page)

With the schools'needs, various laws were passed to help this cause. The National Society for Industrial Education

was one of the great leading organizations in promoting the changes in industrial education. One of the most effective laws passed was the Smith-Hughes Act of 1917. This began a new era of vocational training and has put our vocational educational system where it is today. This law is probably the best that could have been passed at that time.

Today the two main industrial educational systems are well established (Industrial Arts and Vocational Industrial Education) in the schools. A philosophy of industrial arts will follow.

Part B

Philosophy of Industrial Arts: Industrial Arts Education is a new concept in the industrial education field. This new concept was started in 1909 by James E. Russell and in 1911 by Frederick G. Bonser. The new concept was largely on the elementary school level. The main idea was to educate the student how to interpret, react to, and secure the greatest benefits from industry and its products. These two men had found that hand skills were not enough and that industrial intelligence and consumer knowledge should go along with skills.

The philosophy brought forth by Russell and Bonser resulted in bringing about the following influences:

(1) The various types of related or informative subject matters of industrial arts assumed a position of greater importance.

(2) Consumer's value rather than producer's values became a controlling purpose.

(3) Industrial arts became more generally accepted as a branch of general education.

(4) Industrial arts was based on the theory that a wide sampling of industrial experiences was desirable.

(5) In school work, industrial life assumed greater importance, as compared with hand or assembling trades than formerly was the case.

(6) The general shop and the general industrial arts course was born. (11 - page 48)

These influences have laid a foundation broad enough to bring about a balanced development of such attitudes, knowledges, appreciations and skills that are essential in the progressive development of the students of both sexes.

Industrial Arts - Coeducational. Industrial arts cannot be set up just for the boys or men alone. Today, with the operation of the household, the car, and sometimes repairing mechanized labor saving devices it is just as important for girls to take electricity or plumbing as it is for boys to take clothing, diet, or preparation of food. In a school system trying to educate girls in this type of endeavor, there should be established a home mechanics course for girls. Some writers recommend separate classes for girls so that the subjects may be limited to their physical ability. There are various types of craft work courses that may be taught with little difficulty in mixed classes of boys and girls.

Nature and Purpose of Industrial Arts. The educational school system of today could not start setting up its program without establishing many aims and objectives for each of its various course offerings. The industrial arts teacher should recognize the fact that many justifiable and achievable aims

must be used to attain the goal of the pupil.

A true picture of industrial education aims may be shown by using the objectives of secondary schools as a base. They are the seven cardinal principles listed as follows:

1. Health
2. Command of the fundamental processes
3. Worthy home membership
4. Vocation
5. Civic intelligence
6. Worthy use of leisure
7. Ethical appreciation and development. (11 - page 86)

The cardinal principles made a good starting point for industrial arts education. It revealed the fact that industrial arts may be taught so as to contribute toward the achievements of several objectives, such as occupational hygiene and disease, arithmetic, oral and written English, etc. The subject matter uses trained handyman skills, appreciation of design, material and workmanship. It also teaches civic intelligence, worthy use of leisure time and may aid toward an avocation. The facts are clearly seen that Industrial Arts is a part of general education.

Aims of Junior High School Industrial Arts. The recognition of emotional, physical and mental characteristics resulting from students between ages twelve and fifteen made it necessary to organize a school with aims and methods different from those of the grades below and the grades above. To determine the contribution of industrial arts to the school one must first analyze the student. A good analysis of the junior high boy is written by Dr. Arthur Dean, which follows.

1. He is interested in doing worthwhile things

in his own way, or, at least, desires to originate an idea.

2. He wants to work with gangs or with groups.

3. He likes to see his name attached to what he does, to have it carry public approval.

4. He wants to do something big.

5. He must see why a thing works and "why" counts more in his eyes than his teacher's "because".

6. He needs orientation in several types of craftwork.

7. He can see his mistakes much easier than he can hear them.

8. He can be lead into appreciation of beautiful things but he can never be pushed into them.

9. He learns through example rather than by preachment; through doing rather than reciting about it; through ear and memory.

10. He learns quicker the more formal things of life when they are presented to him on an achievement basis. (11 - page 96)

Industrial arts provides many purposeful mechanical expressions. The junior high school as an exploratory school makes it necessary and significant to provide industrial arts as a part of general education. With industrial arts as a part of general education in the junior high school it provides the student with excellent opportunities to develop his true and hidden potentialities. This development should not stop with the junior high school and in many cases it does not as it is shown in a higher developing stage that follows.

Industrial Arts in the Senior High School. The senior high school industrial arts may be looked upon as having the

same essential value as those in junior high school, but with different emphasis. There should be no coverage of the same subject matter unless the student did not have the chance to take industrial arts in junior high school. Some of the characteristics are similar in high school to those in junior high school, such as the emphasis on health education, leadership and guidance. There must also be realized the degree of difference in the school level as for age and environment, because of this the student has a different view of life, also a different approach. This makes for many different characteristics.

Therefore, the educational program should be developed to meet the needs of the child. Where vocational industrial education programs cannot provide the following education services, they will fall within the industrial arts department to be developed to the degree such as possible.

> To provide "general" vocational industrial education (for degrees of versatility) in a family of trades, if equipment is adequate.
>
> To provide shop training in technical curriculums.
>
> To provide limited training in industrial service jobs, if equipment is adequate.
>
> To provide creative experience in aircrafts for vocational as well as avocational purposes.
>
> To keep academically slow students interested. (11 - page 102)

These services can be rendered and must be if industrial education expects to keep its place in general education.

With industrial arts aiding in the vocational program

the true aims of industrial arts should not be forgotten, especially those dealing with the students' personal interests which follow:

1. Developing a sense of security;
2. Learning how to play and enjoy life;
3. Developing a feeling of belonging;
4. Marrying and having a family;
5. Securing a sense of achievement;
6. Earning a good living;
7. Getting a sense of adult approval. (9 - page 100)

If the industrial arts department can work and provide advancement toward goals previously mentioned in all parts of the country this will be of great importance to the industrial world. To get sufficient information reports must be made in different sections of the country as to how the present day industrial arts is progressing.

Industrial Arts in Oklahoma. Industrial arts in Oklahoma, like in many other states plays its roll in general education. It has been said that general education is thought of as a group of subjects founded upon a set of principles and fundamentals. How industrial arts fits into the general education program in Oklahoma is fully described by the objectives published by the Oklahoma State Education Department in the bulletin, "Industrial Arts in Oklahoma", which are as follows.

1. Industrial arts is complementary to other school subjects and provides opportunity to apply knowledge learned in other school subjects.

2. Develops an appreciation of applied knowledge and skills.

3. Provides a knowledge of industrial drawing, the language of industry, and methods of expressing

idea by means of drawing.

4. Contributes to later, vocational efficiency.

5. Stimulates students' knowledge and appreciation of good design.

6. Instills a satisfaction in personal achievements.

7. Develops the ability to analyze a job into its processes and organize them into correct procedure.

8. Contributes to consumer's knowledge and induces an appreciation of the value of industrial material and the need for their conservation.

9. Trains in industrial and home safety (including fire safety).

10. Acquaints students with industrial information and induces a recognition of the standards of industrial attainment.

11. Develops a vocation interest.

12. Trains individuals to be more resourceful in dealing with the material problems of life.

13. Stimulates correct attitudes towards an orderly shop, home and environment.

14. Aids in making vocational choices.

15. Develops qualities of leadership.

16. Develops cooperative attitudes in work habits and importance of the occupations of one's neighbors. (22 - page 3)

Personal Philosophy. Today much of the school work centers around the life experience of others. Children have education served to them on a platter, most of it is ready prepared which in most cases is the recorded experiences of others. Such education is unreal and only a few can profit by it. Education of recorded second hand thoughts is very danger-

ous for most students.

This is where industrial arts plays an important and significant part in the educational system. Industrial arts provides real life situations, or something closely approaching them, as agencies of learning. This is one reason why students have keen interests in industrial arts education.

It is the hope of the writer that the history and philosophy and the viewpoints of many leaders in the field of industrial arts, presented in this chapter, express the purposes of industrial arts as a phase of general education.

The subject of finances is always a big problem for the administration of a school system. The following chapter will be concerned with the financial problems found in the industrial arts shop.

CHAPTER III

FINANCING INDUSTRIAL ARTS SHOPS

Financing an Industrial Arts school shop is very much like financing a business. The building must be selected, built, bought or rented. The equipment must be purchased. In order to have a successful business, it must also be well organized. The same applies to the school shop. If the instructor expects to run a successful class and one that will profit the students and community most, the instructor must operate the shop with all the qualifications of a good businessman. If a business is producing goods, that goods must be of the best quality in order for that business to survive. The school shop's finished goods are the students and the public will judge as to how well those finished goods, produced by the school, really are. Therefore, the school shop must be looked upon as big business in respect to the methods used in financing and the type of inventory kept.

The school shop has become recognized as a part of the school system. In the late nineteenth century most of the school shops were established in basement rooms or a long ways from the regular school in some old building. The financial status was very poor, which could be easily seen because of such poor equipment, while the regular academic classroom was efficiently equipped and supplied with most of their needs.

Later, the school shop became more of a part of General Education, and because of this the shop was moved closer. In the early developing stage they were called manual training shops, but are now industrial arts and fully an integral part of General Education.

The present day shop is just as spacious for the number of students as the regular academic classroom and located in the same building. Some shops have more space per student than the academic classes, especially in the elementary schools. This educational outlet is one reason why industrial arts education is a part of general education. One of the big steps in making that advancement was well financed shops.

The Need for Financial Organization in School Shops.

After sending out many questionnaires it was found that the method of financing school shops in Oklahoma is very poor. A few of the shop instructors do not know the value of their shops or what it costs to operate a shop for one year. It is very valuable to the school and especially to the department head and instructor to know the financial values of the shops. Without this, one will not be able to determine where he is or where he expects to go. The writer will try to present a picture for the need of a good financial system in the following outline as presented by Coleman in his book, "Organization and Management of Trade and Industrial Schools".

I. A good system is demanded by the public.

   A. The public has pride in its system and wants to know all its weak spots which might bring criticism.

B. The public would like the school information available at all times.

II. Public must have confidence in school.

A. Lack of confidence will result in a loss of interest on a part of the public interest in the school.

B. Department will soon die.

III. It provides a basis for establishing next year's budget.

A. It shows accurately all materials, supplies and equipment on hand.

B. It shows or indicates new needs.

IV. Assists new instructors in the system.

A. It enables them to know the amount of supplies on hand.

B. It enables them to know where to buy most advantageously.

C. It prevents any chance for criticism to be placed where it does not belong.

V. It gives protection to the shop teacher.

A. A complete record is available to explain every transaction.

B. The inventory of school supplies and the accounting of them prevents to a large degree loss or waste.

VI. Keeps a check on the inventory.

A. Shows when to purchase needed supplies.

B. It promotes the wise and efficient use of all supplies and materials.

VII. It assists in the training of students.

A. It makes them cost minded.

B. It gives valuable business training.

VIII. It gives the shop instructor rights and responsibilities.

A. He has to check, guard and more carefully care for all school property, supplies and funds.

B. He has to pay more attention to economy in all his transactions.

IX. It helps prevent over buying and under buying.

A. The inventory shows what is on hand, therefore, what is needed. (8 - page 14)

This should help the school man who has not had experience in the financial phase of school work.

After reviewing this outline the writer is of the opinion that any instructor should see the importance of a good financial system and how weak the shop organization may be without one.

Purchase of Supplies. In every shop there must be some means of purchasing supplies. After checking the questionnaire sent to a number of schools in Oklahoma it was found that the method used most was that of sending the requisition to the school board or supervisor at the end of the year for the amount of supplies needed for the next year. The second highest method used, was to buy material as needed. The third method showed that the instructors were given a designated amount of money by the school administration to spend for the department. This amount ranged from one hundred to one thousand dollars per year. The fourth method used was money from the school activity fund or from a shop activity fund. This fund was not furnished by the school but accumulated by the

school shop or department and must be replenished in order to stay in operation. Supplies are purchased from money out of the fund.

In purchasing supplies it is advisable to use a requisition form. The following paragraphs will explain the requisition form and its purpose.

The requisition blank should be inclusive and yet simple as possible to use. Careful attention should be given to the size, and form so the requisition will be convenient for filing with care.

Some of the main uses of the requisitions are as follows.

1. To requisition supplies.
2. To requisition equipment.
3. To requisition service.

The requisition form for supplies and equipment illustrated in Figure 1, page 30, is for the purpose of making a request for supplies and equipment. The requisition will show the date requested and name of the department. In the first column of the requisition is the quantity which has to do with the amount or number of supplies or equipment requested. In the next column is the item and description, which deals with the name of the article requested and its description as to size, color, etc. In the next column is the unit cost. This is the dost of each particular or separate article of the same kind such as four hammers. The cost of one would be listed here. The last column deals with the total cost. This represents the total cost of all units requested. At the bottom of the requisition form is the place where the supplies or equipment are to be deliver ed and just to the right of

that is a place for the approval signature of the principal or superintendent.

The requisition form for maintenance or services illustrated in Figure 2, page 31, has a group of items listed at the top of the form as an example of what may be requested although other services may be requested. Just below that is the date and the name of the school office or department making request. Under "Service items requested" is listed the type of service needed, such as repairs to equipment or building. The next item states the reason for this request. At the bottom of the page is a place for the signature of the person requesting and the approval signature.

In many cases the requisition sent from the shop for supplies will not go any further than the principal's office. There, another requisition is filled out and sent to the store, or distributor, and, in some instances, the requisition sent by the shop teacher will only be approved by the principal or superintendent and sent to the store or distributor. In many cases the requisition for maintenance and special services is sent directly to the person who will render these services and many times the requisition will be changed at the principal's or superintendent's office as a work order before being sent to the person rendering the service. These types of requisitions have been found very beneficial and are being used in many schools.

REQUISITION FOR SUPPLIES AND EQUIPMENT

DATE:_____19____

_____Dept.

Quantity	Item and Description	Unit Cost	Total Cost

Deliver To:

School_____

Address_____

Teacher_____ Signed:_____

FIGURE 1

MAINTENANCE OR SPECIAL SERVICE REQUISITION

(This requisition form to be used for requisitioning the items listed below)

1. Repairs to Building,
2. Repairs to Equipment,
4. Printing, Mimeographing,
5. Delivery Services,
6. Miscellaneous Requests.

Requested for _____ Date _____
(School, Office or Department)

SERVICE-ITEM REQUESTED:

STATE REASONS FOR THIS REQUEST:

Requested by _____

_____
Principal or Department Head

(Each Copy Must Be Signed)

FIGURE 2

Inventory. The inventory of business is a must. The management must know how much he has on hand in order that he will know what to buy or what not to buy. The school shop must be operated on somewhat the same basis. Without inventories the business in most cases would go out of business, because there would be no control and without control there is nothing. In every instance where a school system is without a complete, adequate, and properly administered inventory, there is a lack of control. Equipment goes astray, it becomes damaged and lost, therefore no one really knows at any particular time whether or not anything is missing until too late.

Inadequate inventories produce inefficient purchases. No administrator can efficiently provide for the needs of any department or its future unless he knows what equipment already belongs in that department. It is easier to lose equipment that is used only on occasions, for example, once a month. Such equipment is easily lost and soon forgotten. Inventories will help one keep up with it.

A well kept inventory is necessary for accounting purposes in case of damage by fire or other disaster. Most of the fire insurance carried by boards of education is more or less useless because of the inability of the board to account for property in case of an actual loss.

There are a number of forms used for an equipment inventory. Just one of these which has been found adequate is illustrated in Figure 3, page 33; this inventory is in the

EQUIPMENT INVENTORY

School _____ Shop _____

Item _____ Size _____ Model _____

Serial No. _____ Manufacturer _____

Attachments _____

Motor Specifications	H.P.	Volts	Phase	Serial No.	Manufacturer

Acquired Date _____ _____ New Cost $ _____

_____ Used

Inventory Dates	On Hand	X	Inventory Dates	On Hand	X	Inventory Dates	On Hand	X

X-Condition: G-Good; F-Fair; R-Needs Repairs; W-Worn Out.
1-46-2M

FIGURE 3

SUPPLY INVENTORY

Item & Specification Walnut 2" RWL Rgh

Vendors: 1. Paxton Lbr. 3.

2. 4.

Date	Vendor	Unit Cost	Rec'd	Used	On Hand	Date	Vendor	Unit Cost	Rec'd	Used	On Hand	Date	Vendor	Unit Cost	Rec'd	Used	On Hand

Item & Specifications-

FIGURE 4

form of a 5 x 8 card for convenient filing. It gives the date of inventory, the amount on hand, the condition of the equipment, and whether the equipment is new or old. It also has a place for motor specifications, attachments and date acquired. These are individual inventory cards used for equipment such as hand tools, power equipment, tables, etc.

The second inventory which is about to be discussed is of utmost importance, because without this type of inventory there would be no need for the equipment inventory. The supply inventory is illustrated in Figure 4, page 34. This form may be printed on both sides of a 5 x 8 card. The space for current inventory may be increased by making four columns instead of three. This may be done if the card is printed instead of typed or multilithed.

This supply inventory shows date of inventory, name of item, date received, withdrawn, and amount on hand. The supply inventory is conveniently arranged. It can be easily detected when the supplies were received and how much has been issued to the students. By this one will be able to tell how much is on hand. With this inventory the shop should be run very efficiently. There are many different types of inventories. The main purpose, however, is to encourage every school system to organize the best financial organization possible.

Student Financial Problem. In every industrial arts shop, the financial problem is an educational one, because it involves the student in teaching him purchasing power and

economy. After checking the questionnaire received from a number of schools in Oklahoma, it was found that a varied number of financial methods are used by the students, such as,

1. Students pay shop fee.
2. Students buy material from school before project is started.
3. Students pay for projects at end of semester.
4. Students buy supplies outside of school.

In reference to number one concerning the shop fee, in a number of schools in Oklahoma the boys pay a shop fee at the beginning of the semester. This fee ranges from fifty cents to six dollars. The fee in some cases goes for the depreciation of the shop for such things as loss of tools and the upkeep of machines. In other shops a fee is collected for an advance payment on the project being made by the student and at the end of the semester the additional amount is paid if the student exceeds the fee. This method protects the shop from a loss and offers financial training for the student in purchasing materials.

The second method referred to was the method of buying the material from the school before the project is started. This means a student selects his project, designs it and figures the bill of material and then purchases the material from the school. This also has its education values.

The third method had to do with paying for the project at the end of the semester. This is the case where no fee is paid and the boy makes what he wants under the direction of

the instructor and at the end of the semester he will pay for the finished project. This method is good, but more shop material is lost by this method than any other, because in most small schools if the boy waits until the end of the semester he will not have any money and in some cases they will destroy more material than they want to pay for, especially if the project does not look good to them.

The fourth method had to do with students buying supplies outside of the school. From the questionnaire received from schools in Oklahoma it was noticed that one school operated the shop on this method. Other schools left it up to the student to buy from the school or from outside sources. It is sometimes impossible for a school shop to have every article to complete a project, therefore, the student must purchase those articles from outside sources.

These four methods used in Oklahoma by the students are very beneficial in instructional purposes when used and directed by the instructor.

Preventing Financial Losses. No matter how economically important and how well a school may be received by the community, there is still need for improvement. One of the greatest achievements is the prevention of financial hazards. Accidents may happen, which would seriously cripple or completely wreck the financing of a school shop. More logically speaking, accidents do not happen; they are caused, and in a well organized shop with all safety precautions being taken there is less possibilities of accidents. In some cases the

financial loss is rather insignificant. The money may be readily replaced, but the ill created, will last for years.

Some schools operate like a ratchet that does not work in but one direction. According to their policies they proceed or remain where they are. They never gamble or take risks with the reputation of the school. They never launch a venture in which possible ill will is involved. Since they are always making some gains and no losses their success is assured with time. They are never so far ahead of the community as to be misunderstood, nor are they so far behind as to be inadequate. They proceed not wrecklessly but cautiously. It cannot be said that their policies are the only one that makes for success. They do, at any rate, avoid criticism. The following statements are some of the things to be avoided. (1) Avoid opportunity for charges of mismanagement. The general public is quick to charge any organization with mismanagement. This can be avoided by preventing practices that may lead to little, insignificant criticism. (2) Avoid little things, they lead to big ones. Borrowing in some schools is legitimate practice. If this becomes a habit sometimes the equipment borrowed is never returned. Janitors, teachers and superintendents have lost their jobs because equipment, new or used, which belonged to the school or had been purchased by the school, was found in their homes. The shop that never permits any of the little discrepancies will never have discrepancies that are serious. (3) Avoid accidents in a school shop where instruction is given in practical shop subjects.

There is always danger that an accident injurious to life and limbs may occur. A real hazard is involved when a juvenile in a shop is permanently injured. Of first consideration, of course, is the fact that a boy or girl has received a permanent disability. That has nothing to do directly with financial organization, but there are indirect results. A permanent injury case would result in a vast amount of unfavorable publicity for the school. Court action may become involved, and even though the injured person has no case against the school, there is, nevertheless, a most disagreeable situation involved for the board of education. To a board member who has had to go through a court case of this kind, there is no greater evil. The community generally may feel that the school is for the purpose of giving young people an opportunity to advance in life and to prepare them for the future. If then, for example, a boy in a school shop loses an eye and so becomes permanently handicapped for the future, the community reaction is bad. Certainly something would have caused such an accident. It could have been caused a number of ways; material flying from machines, by use of emery wheel without goggles or merely playing, but no board of education wants to be in a position where it must justify or attempt to excuse the case. This could result in releasing teachers or closing the shop. From this one can easily see that all shop instructors must be safety minded in every respect because the loss of a shop is about the largest financial loss a school could have. The writer is hoping that all instruct-

ors will try to realize how large and important the financial problems are.

The Teacher's Financial Transactions. Every shop teacher has various financial transactions to handle. These transactions will start at the beginning of the school year. An inventory should be taken of all supplies and equipment in the shop. In most instances the inventory would have been taken at the end of the previous year and one would only recheck the old inventory and check new supplies and equipment that had been added during the summer. If a teacher is entering a new school it is necessary that an inventory be taken at the beginning of the year to really know what one has. In most cases school inventories are taken periodically with a financial depreciation on equipment or an estimated cost. The depreciation is set by the administration or shop teacher, such as ten per cent depreciation a year on equipment.

The teacher's second financial problem of the year would be to check the invoices of supplies or equipment received during the summer. As a rule the invoice will be in the superintendent's or principal's office. From the invoice he will check the quantity and price, then fill out an inventory form for equipment or supplies, which is illustrated in this chapter, Figures 3, and 4. The invoice should be checked any time goods are received during the year.

The next financial problem is keeping a record of money owed and received by the students. This may be kept in a separate book. If the student pays a shop fee the name of

student, amount paid, and date paid must be kept of every student. If the student pays at the end of the year for supplies used during the year, the supplies issued, cost, and the date paid must be recorded. This record will keep the shop up to date financially. From these financial records and the inventory a financial report may be prepared for the superintendent's or principal's office. The cost to operate a shop department for one year may be determined, and the profit and loss may also be determined.

The financial situation in the school shops concern every one connected with the school system. The financial situation of the school is only as strong as its weakest link. If the shop financial system is weak the entire school's financial program is weak. In order to have a strong financial system one should follow some particular system. The conclusion and recommendation will follow.

CHAPTER IV

CONCLUSION AND RECOMMENDATION

The financial problem in most small schools in Oklahoma is a big one. It was the writer's hope to give more statistical data of the financial problem, but, after the return of a number of questionnaires without the necessary information, it was impossible to give a true picture, so the writer decided to give a complete story of how some industrial arts shops are run financially.

From information gathered a number of the shop teachers are lacking financial information about their particular shop such as the value and cost to operate for one year. It is evident from data collected progress is being made by the increase in the number of shops being established.

Conclusion. This study has covered the history and philosophy from the early industrial education period up until the present time. The idea of this study is to inform those industrial arts instructors who pay very little attention to the financial problem, that financing the shop is as important as teaching the class and, without knowing their financial situation, there may be very little teaching done. If the industrial arts teachers expect to live up to the objectives of general education, knowing their financial problems and having the best financial system possible is necessary

in the industrial arts field.

Recommendation. It is recommended that another study of similar nature with more financial statistical data be made. All school shops regardless of size should have a financial system in order to operate successfully. Financing the school shop should involve the student for the purpose of acquainting him with buying and selling goods. The shop instructor should take more interest in financing the shop even though the administrator does not make it compulsory.

APPENDICES

A Selected Bibliography

B. Letter of Transmittal

C. Questionnaire

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Box 127
Bristow, Oklahoma
February 26, 1957

Dear Instructor:

As a graduate requirement, I am making a study of the financing of industrial art shops in Oklahoma. This study will help our school and other schools in Oklahoma to use the best financial system available.

This study is approved by the Head of the Industrial Arts Department, Mr. C. L. Hill, Stillwater, Oklahoma.

Your cooperation in helping with this study by completing the enclosed questionnaire and returning it to us will be appreciated. The enclosed self-addressed envelope is for your convenience in replying.

Thank you for any consideration you may be able to give this request.

Very truly yours

Cal Johnson

/b

Enclosures - Questionnaire
Self-addressed envelope

APPROVED: _____

Cal Johnson
P.O. Box 127
Bristow, Okla.

QUESTIONNAIRE

FINANCING IND. ART SCHOOL

I. CHECK TYPE OF SCHOOL SHOP:
Sr. High_____ Jr. High_____ Grade_____

II. CHECK THE TYPE OF IND. ART SHOP OR SHOPS:
( ) Woodwork; ( ) Metal; ( ) Plastic; ( ) Welding; ( ) Forging; ( ) Shoe Repair; ( ) Automobile and Transportation; ( ) Drawing; ( ) Electricity; ( ) Radio; ( ) Printing; ( ) Graphic arts; ( ) Home Mechanics; ( ) Leather; ( ) Upholstery; ( ) Art Metal; ( ) Pattern Making; ( ) Foundry Work: _____

III. CHECK ONE OR MORE OF THE FOLLOWING PROCEDURES IN WHICH YOUR SHOP MATERIALS ARE FINANCED:

A. ( ) The student pays for the material before projects are made.

B. ( ) The school buys the material and students pay after they have finished their projects.

C. ( ) The student pays a special lab fee at the beginning of school year.

D. ( ) If any other method, please state:

_____

_____

_____

_____

_____

IV. THE APPROXIMATE COST TO RUN EACH SHOP PER YEAR:

Wood Work----- _____
Metal Work---- _____
Etc.---------- _____

V. THE VALUE OF YOUR SHOP: _____ _____

When was it set up _____

The amount spent on safety per year _____

The amount your school spends on teaching aids and professional materials such as;

Books_____
Films_____
Magazines_____

Number of students enrolled in shop classes _____

Please return this by _____

VITA

Cal Johnson
Candidate for the Degree of
Master of Science

Report: FINANCING INDUSTRIAL ARTS SHOPS

Major: Industrial Arts Education

Biographical and Other Items:

Born: July 12, 1924, at Holyoke, Mass.

Education: Attended grade school in Okmulgee, Oklahoma; graduated from Dunbar high school at Okmulgee, Oklahoma, in 1943; received the Bachelor of Science degree from Langston University at Langston, Oklahoma, with a major in Industrial Arts, in May 1950; attended Oklahoma Agricultural and Mechanical Technical School at Okmulgee, Oklahoma, in 1951-52; entered Oklahoma Agricultural and Mechanical College in June, 1955; completed the requirements for the Master of Science degree in August, 1957.

Professional Experience: Entered the United States Army, June, 1943. Received honorable discharge February, 1946. Coached basketball and taught Industrial Arts at Grayson High School, Okmulgee, Oklahoma, 1950-53. Coached basketball and taught Industrial Arts at Lincoln High School, Pawnee, Oklahoma, 1954-55. Teacher of Industrial Arts at Lincoln High School at Bristow, Oklahoma, 1955 - .

REPORT TITLE: FINANCING INDUSTRIAL ARTS SHOPS

AUTHOR: Cal Johnson

REPORT ADVISOR: Cary L. Hill, Acting Head,
School of Industrial Arts Education

The content and form have been checked and approved by the author and report advisor. Changes or corrections in the report are not made by the Graduate School office or by any committee. The copies are sent to the bindery just as they are approved by the author and faculty advisor.

TYPIST: Rose Chamberlain