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A STUDY TO DEVELOP AND PROPOSE A SYSTEM OF INDUSTRIAL
ARTS ACCOUNTING AND BOOKKEEPING FOR THE SECOND-
ARY SCHOOLS OF FORT WORTH, TEXAS

THESIS

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MASTER OF SCIENCE

By

179855
Richard L. Boyd, B. S.

Fort Worth, Texas

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179855

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CHAPTER I

INTRODUCTION

Background or History of the Problem

Industrial arts is a phase of general education that concerns itself with the materials, processes, and products of manufacture, and with the contributions of those engaged in industry.¹ Not only must the teacher develop teaching skills and have a knowledge of the subject matter he wishes to teach, but he must maintain a proper attitude in performing the numerous tasks of instruction of he is to succeed as a teacher.

One of the most disagreeable tasks, yet an important one, required of the industrial arts teacher is the keeping of records.² This task is often neglected, because the keeping of accurate and clear records consumes much of the teacher's time and energy. The success of any endeavor depends largely upon the careful planning and systematizing of different procedures of finance. That this policy is not

¹Industrial Arts, Its Interpretation in American Schools, Bureau of Education, Department of the Interior, p. 1.

²G. O. Wilber, Industrial Arts in General Education, p. 237.

always practiced is evident from the fact that so many different practices in record keeping are followed.³

What industrial arts instructor can afford to meet from wages a deficiency that may occur in the accounting and book-keeping records? Such a shortage does not necessarily mean there has been a misappropriation of funds but denotes the results of inefficient bookkeeping. J. F. Friese said:

The lack of promptness, neatness and system in making out reports, both regular and special, the lack of ability to make out inventories and supply lists are some criticisms of inexperienced industrial arts teachers.⁴

Inexperienced industrial arts instructors often reveal inefficiency in making out reports and inventories.

Mead made a study concerning some of the specific and special problems confronting beginning teachers of industrial arts. This statement was made:

Many teachers stated that they had received insufficient instruction in methods of making and keeping shop records including: ordering, receiving, cost accounting, inventory, and personnel records and reports.⁵

Frequently, a teacher's reputation and standing in the school and community may depend on his ability to show clearly the disposition of funds which he has collected during the school

³J. W. Bollinger, "Keeping Account of the Materials Used in the School Shop," Industrial Arts and Vocational Education, XVI (September, 1927), 335.

²J. F. Friese, Exploring the Manual Arts, p. 366.

³C. R. Mead, "Neglected Phases in the Professional Preparation of Industrial Arts Teachers," Industrial Education Magazine, XXXIX (January, 1937), 274.

year. And yet, relatively little is being written to aid in the solution of this bookkeeping dilemma.

Statement of Problem

The purpose of the study is to develop and propose a system of industrial arts accounting and bookkeeping for the secondary schools of Fort Worth, Texas, if it is found, through the study, that the instructors of industrial arts in Fort Worth, Texas, need and desire a systematic method of keeping financial records. If the answer to this question is in the affirmative, a system will be proposed that should meet the following standards:

1. It should be designed to meet all special conditions governing the instructional activities and the general administrative policies and practices of the Fort Worth Public Schools.
2. It should be simple so that it will not consume too much of the shop instructor's time.
3. It should protect the teacher against any question concerning financial accounting.
4. It should show individual student transactions in order that each student can find out at any time just how his account stands.

Delimitation of Problem

The study was limited to the accounting needs of the industrial arts instructors in the secondary schools of

Fort Worth, Texas, and the accounting needs as expressed by industrial arts supervisors in the State of Texas. As used in the study, industrial arts accounting and bookkeeping includes the purchase of supplies, handling of shop fees and project money, student consumption of materials, annual inventory, and maintenance.

Definition and Identification of Terms

Certain terms pertinent to the study are defined as follows:

The term "bookkeeping" is the art or practice of keeping a systematic record of shop transactions.

By "industrial arts" is meant that phase of general education for both boys and girls which places the emphasis on "materials, organization, tools, processes, products, jobs, and human problems of industry."⁶

As used in this study the term "inventory" is a semi-annual catalogue of tools, equipment, and supplies on hand.

An "account" is that form of record kept on items of transactions.

"The school fee account" consists of supplies and materials used in the upkeep and repair of the school shop and is financed by the shop maintenance fund.

⁶G. O. Wilber, Industrial Arts in General Education, p. 2, quoting Industrial Arts, Tentative Syllabus in Comprehensive General Shop, p. 3.

"The student fee account" is composed of purchases of supplies and materials to be used by the student in the industrial arts shop.

By the use of "order numbers" which are issued to teachers by the supervisor of industrial arts, retail stores recognize the teacher's authority to purchase materials on credit.

"The book of original entry" is used to record transactions before they are entered in the ledger. In this study the duplicate cash receipts book together with the student requisition slips make up the record of original entry.

A "ledger" is a record containing a group of accounts.

A "standard ledger ruling" means the "T" form of account illustrated below. The debits are entered to the left of the

Date	Items	Folio	Debits	Date	Items	Folio	Credits

Fig. 1.--The "T" account.

triple perpendicular ruling, and the credits are entered to the right. The columns on both the debit and the credit side provide for: (1) the date; (2) a brief explanation of the

entry, if it is desired; (3) the page reference of the book of original entry in which the transaction was recorded; and (4) the amount.⁷

Sources of Data

To obtain the data for the study, a survey was made of the present method of record keeping in the industrial arts shops in the secondary schools of Fort Worth, Texas. Questionnaires were sent to twenty-six industrial arts instructors of Fort Worth, Texas, to determine what methods of record keeping were being used and the need for a systematic method of bookkeeping and accounting for the industrial arts shop as seen by the instructors. Questionnaires were sent to seven supervisors of industrial arts in the State of Texas to determine the accounting needs of the industrial arts teacher as seen by the supervisor. Personal interviews were held with eighteen administrators of the secondary schools of Fort Worth, Texas, and the Director of Industrial Arts of the Fort Worth Public School. These interviews were for the purpose of ascertaining all special conditions governing the instructional activities and the general administrative policies and practices of the Fort Worth Public Schools. Additional data were obtained from professional literature in the fields of industrial arts and business administration.

⁷H. S. Noble, Accounting Principles, p. 98.

Method of Procedure

The following procedure was followed in conducting the study:

1. The first step in solving the problem was to determine if a standard system of accounting and bookkeeping was needed by the instructors of industrial arts in the Fort Worth Secondary Schools. The study proposes to answer this question by obtaining facts and opinions from the instructors of industrial arts in the secondary schools of Fort Worth, Texas, and from the Supervisor of Industrial Arts of the Fort Worth Public Schools.

2. If it was found that a majority of industrial arts instructors needed and wanted a standard system of accounting and bookkeeping for the industrial arts shops, the next step in solving the problem was to determine and propose a system of bookkeeping and accounting through the evaluations and opinions of the industrial arts supervisors and instructors.

Recent and Related Studies

A survey of the available literature treating the methods or systems of industrial arts accounting and bookkeeping indicate that few studies have been made. In 1948, however, a study was made by Naidene Goy dealing with the problems of industrial arts bookkeeping and accounting. In this study some principles were set forth that should prevail in any

system of accounting. These standards are as follows:

1. It should be simple so as not to tie up too much of the shop instructor's time.
2. It should show individual student transactions in order that each may be traced with a reasonable degree of thoroughness.
3. It should be reasonably "foolproof" so that a part-time reliable student employee may assist in keeping the records.⁸

An efficient accounting and bookkeeping system for an industrial arts shop is one that is reliable and economical of the instructor's time.

In a treatise on accounting and bookkeeping for the industrial arts shop, C. R. Kinison stated that an accounting system for the industrial arts class was necessary for the following reasons:

1. Because there is a certain amount of money involved.
2. Because the administrator needs exact information about the financing of the industrial arts department.
3. Because the instructor needs a systematic method of taking care of the money that comes into his department.
4. Because the parent desires to know how the money is taken care of.
5. Because the pupils get valuable experience in accounting methods.⁹

When an industrial arts instructor collects money from students, a business transaction takes place which necessitates the recording of clear and accurate details which at

⁸Naidene Goy, "Shop Bookkeeping System," Industrial Arts and Vocational Education, V (September, 1948), 269.

⁹C. R. Kinison, "A System of Accounting for the Industrial Arts Shop," Industrial Arts Magazine, XVIII (September, 1929), 342.

any time can be audited or referred to by the school administrators, parents, or students.

The use of a card file has been suggested by E. E. Ericson as a convenient and satisfactory method for handling records of equipment and supplies. The cards should contain at least the following items of information:

1. How many tools or pieces of equipment of a particular kind have been purchased.
2. When they were purchased. Each purchase of the item covered by the card is listed separately and dates given.
3. From whom each purchase was made. This is valuable in case of breakage or inferior quality of goods.
4. The price of each purchase. This item is valuable when making new orders or when replacing broken or lost tools.
5. What equipment has been discarded or shifted to other shops.¹⁰

The record of equipment and supplies should show the number of tools or equipment purchased, date of purchase, the name of the firm where the purchase was made, the price, and the distribution of equipment.

In a recent book dealing with problems of the industrial arts instructor, G. O. Wilber emphasized the need for keeping accurate records of all financial matters related to the school shop. The major records given in this category were:

1. Money received. All money received should be immediately recorded, and, if possible, the entry should be made in the presence of the student from whom the money is collected. When money goes into the teacher's pocket to be recorded later, there is

¹⁰E. E. Ericson, Teaching Problems in Industrial Arts, p. 133.

always some doubt in the student's mind as to whether it actually is turned over to the proper fund. . . .

2. Money turned over to the school. It is important for the teacher to have a record of the money which is turned over to the proper school authority. This amount should balance exactly with the amount received from students, unless some other arrangement for the use of project money has been made. Here, again, a duplicate receipt, one copy of which is kept by the office and the other by the instructor, is an effective record of the transaction.

3. Money paid out. In some schools, teachers are permitted to use money collected for projects as a petty cash fund to purchase supplies for the shop. Where this is the case, the teacher should be particularly careful to keep an accurate record of all such expenditures. A specific entry for each purchase, together with a receipted sales slip, should be sufficient evidence. Money received and money paid out plus cash on hand should balance at all times.¹¹

It is the prudent teacher that records immediately any money that may be collected in the industrial arts shop. A record of collections and of all deposits made should be entered on duplicate receipts in the cash receipts book. In many instances, such records can determine the accuracy of a given transaction. Likewise, an accurate record should be kept on each purchase that is made.

The studies referred to in the preceding paragraphs point to a need of accounting and bookkeeping help for the industrial arts instructor. This help, to be practical, needs not only to be reliable but should be economical of the teacher's time as well.

¹¹G. O. Wilber, op. cit., pp. 246-247.

CHAPTER II

TYPE OF ACCOUNTING AND FORMS WHICH ARE USED IN THE INDUSTRIAL ARTS PROGRAM IN THE FORT WORTH SECONDARY SCHOOLS

At the beginning of the school year money is advanced by the Board of Education to the Supervisor of Industrial Arts for distribution in the industrial arts department. This money is for the purchase of materials and supplies to be used by the students in the various industrial arts shops. As these materials are used by the students, the industrial arts department is expected to charge the students for the materials and return the money to the account of the Fort Worth Board of Education.

Supplies

Supplies are purchased directly from retail stores and lumber-yards by the instructor upon receiving a purchase order number from the Supervisor of Industrial Arts. Upon making a purchase, this order number is given to the retailer who in turn records it on the purchase invoice. This order number protects the industrial arts department as well as the instructor, since no credit purchase may be made without it. Order numbers also provide a means whereby the industrial arts instructor can, upon proper recording, re-check

the purchases against the debited account as kept by the Business Office of the Fort Worth Public Schools. The method of keeping a record of purchases is left to the expediency of the individual instructor.

Table 1 shows how purchases are recorded by twenty-six instructors of industrial arts in the secondary schools of Fort Worth, Texas. All instructors kept a permanent record

TABLE 1
HOW PURCHASES ARE RECORDED BY TWENTY-SIX
INDUSTRIAL ARTS INSTRUCTORS IN THE
SECONDARY SCHOOLS OF
FORT WORTH, TEXAS

Question	Yes	Per Cent	No	Per Cent
Do you keep a permanent record of all order numbers requested?	26	100	0	....
Do you record the date they are issued?	17	64.5	9	34.6
Do you record the name of the firm from which the purchase was made?	26	100	0	....
Do you designate whether the order number is for school account or student fee account?	16	61.5	10	38.5
Do you keep on file your carbon copy of materials bought?	25	96.2	1	3.8

of order numbers issued them throughout the school year. Seventeen of the instructors recorded the date the order

number was issued, and nine instructors recorded no date at all. All instructors recorded the name of the firm from which the purchase was made. Ten instructors did not designate whether the order number was for the school fee account or for the student fee account. Sixteen instructors delineated the two fee accounts. Only one instructor did not keep a carbon copy file of invoices of materials purchased.

Shop Fees and Bills

At the beginning of the school year each industrial arts instructor is issued a double entry ledger, a duplicate cash receipt book, and requisition slips for the handling and recording of shop fees and bills. The ledger is issued to the instructor for the purpose of keeping individual student accounts. All materials used by the students throughout the school year should be recorded in the ledger.

The way ledger accounts are kept by industrial arts instructors in the secondary schools of Fort Worth, Texas, is presented in Table 2, page 14. All but one instructor kept a ledger account for each individual student. Twenty-five instructors posted fees collected to the individual student accounts. Thirteen instructors posted the numerical number of cash receipts to the ledger account; thirteen instructors did not record this information. Only three instructors did not post money received from the

TABLE 2

HOW LEDGER ACCOUNTS ARE KEPT BY TWENTY-SIX
INDUSTRIAL ARTS INSTRUCTORS IN THE
SECONDARY SCHOOLS OF
FORT WORTH, TEXAS

Question	Yes	Per Cent	No	Per Cent
Do you keep a ledger account for each boy?	25	96.2	1	3.8
Do you post all fees collected to respective boy's account?	25	96.2	1	3.8
Do you post the numerical number of each student's cash receipt to each respective ledger account?	13	50	13	50
Do you post the amount of money received to each respective ledger account?	23	88.5	3	11.5
Do you post refunds to ledger account?	16	61.5	2*	7.7
Do you post amount of all materials used by the student to the individual student's account?	21	80.8	5	19.2
Do you close the ledger at the end of the term?	25	96.2	1	3.8

*Eight teachers did not give cash refunds.

student to the respective ledger account. Eighteen instructors gave cash refunds, but only sixteen posted refunds to the ledger. Eight instructors did not give cash refunds. The amount of materials used by the students during the school year was posted by twenty-one instructors, and five

did not post materials used. Twenty-five instructors closed the ledger at the end of the term.

The duplicate cash receipts book is issued for the purpose of giving receipts to the students for money collected from the students. It also serves as an original permanent record of all cash collected, thus protecting the instructor should any question arise concerning any given receipt.

The method for handling cash by twenty-six industrial arts instructors in the secondary schools of Fort Worth, Texas is shown in Table 3.

TABLE 3

HOW CASH IS HANDLED BY TWENTY-SIX INSTRUCTORS OF
INDUSTRIAL ARTS IN THE SECONDARY SCHOOLS OF
FORT WORTH, TEXAS

Question	Yes	Per Cent	No	Per Cent
Do you give duplicate receipts?	26	100	0	....
Do you give the receipts at the time the money is received?	24	92.3	2	7.7
Are these receipts numerically numbered?	22	84.6	4	15.4
Do you turn cash received into the office at the end of each day?	12	46.2	14	53.8
Do you keep cash on hand (for purpose of making change) at all times?	12	46.2	14	53.8
Do you make cash refunds?	18	69.2	8	30.8

All instructors gave duplicate receipts to the students for money received from the student. Twenty-four instructors gave receipts at the time the money was received, and two instructors issued temporary ones. Only twenty-two instructors numerically numbered the duplicate receipts. Twelve instructors turned collections from students into the office at the end of each day. Twelve instructors kept a small amount of money on hand at all times for the purpose of making change. Refunds were given by eighteen instructors; eight of the instructors did not make cash refunds.

Page_____

High School_____

Student_____ Period_____

Project_____ Date_____

Material	Pieces	Thick-	Width	Length	Quantity	Grade	Price	Cost
		ness						
Total								
								Instructor

Fig. 2.--An illustration of a material account blank used by the students of industrial arts in the secondary schools of Fort Worth, Texas.

Students' requisition blanks (see Fig. 2, page 16) are issued to each instructor at the beginning of the school year so that the students can present bills of material or requisitions for supplies which they wish to use.

Table 4, below, shows how materials were issued to the students by the instructors of industrial arts in the secondary schools of Fort Worth, Texas. Only seventeen

TABLE 4

HOW MATERIALS WERE ISSUED TO STUDENTS BY TWENTY-SIX
INSTRUCTORS OF INDUSTRIAL ARTS IN THE SECONDARY
SCHOOLS OF FORT WORTH, TEXAS

Question	Yes	Per Cent	No	Per Cent
Do your students use material requisitions in checking out supplies?	17	64.5	9	34.6
Do you post the amount of materials used by the student to the individual student's account?	12	46.2	14	53.8

instructors required their students to make out requisition slips for supplies they wished to use in the industrial arts shop. Of this number, twelve instructors posted materials requisitioned by the student to the student's individual ledger account.

The opinions of the twenty-six instructors of industrial arts in the Fort Worth Public Schools concerning book-keeping and accounting are presented in Table 5, page 18.

TABLE 5

OPINIONS OF TWENTY-SIX INSTRUCTORS OF INDUSTRIAL ARTS
IN THE SECONDARY SCHOOLS OF FORT WORTH, TEXAS
CONCERNING ACCOUNTING AND BOOKKEEPING

Question	Yes	Per Cent	No	Per Cent
Do you use student help in keeping your books?	0	....	26	100
Does this help prove to be satisfactory?	0	....	26	100
Do you feel that a standard method of keeping shop books is of importance?	24	92.3	2	7.7
Have you ever taken a course in bookkeeping?	11	42.3	15	57.7

All of the instructors were unanimously against using student help in keeping financial records in the industrial arts shops as it had been proved by past experiences to be unsatisfactory. Twenty-four instructors indicated that a standard system of keeping shop books was needed; two instructors did not think a standard system of record keeping was important. Eleven of the instructors questioned had received some instruction in accounting and bookkeeping. Fifteen of the instructors had never taken a course in accounting and bookkeeping.

Annual Inventory

In order to determine the number and condition of tools and equipment and the value of supplies on hand, it is

necessary to take inventory of tools and equipment in the industrial arts shop and supply room. In the Industrial Arts Department of the Fort Worth Public Schools, this inventory is taken twice a year, at the beginning and close of the school year. This inventory contains two distinct features; namely, (1) the inventory of tools and equipment (see Fig. 3 below), and (2) the inventory of supplies.

SCHOOL _____

ROOM _____

Name of Tools	September, 1950					September, 1951					September, 1952					September, 1953
	Received	Transferred	Lost	Need Repairs	June, 1951	Received	Transferred	Lost	Need Repairs	June, 1952	Received	Transferred	Lost	Need Repairs	June, 1953	
AWL																
AX, hatch																
AX, hand																
BENCH, single																
CABINET, tool																
CABINET, key																

Fig. 3.--Form used in the industrial arts department of the Fort Worth Public Schools to record the inventory of tools and equipment.

In order to have uniform inventories of tools and equipment and for the convenience of the instructor, the Supervisor of

the Industrial Arts Department of the Fort Worth Public Schools provides each instructor with an inventory book. This book was designed to accommodate inventories for a space of three years and consists of twenty pages. As a time-saving device for the instructor, the name of each tool was arranged alphabetically on these inventory blanks. Ample space was provided for the instructor to enter any tool or equipment that may not be included on the original printed form. Duplicate copies of the inventory are made. One copy is the principal's copy and is filed in his office. The other copy is the superintendent's copy and is kept on file in the office of the Supervisor of Industrial Arts. Upon receiving any new tools or equipment during the school year, the instructor records this acquisition in the inventory copy that is filed in the principal's office. Record is also made of this acquisition on the superintendent's copy in the supervisor's office.

There is no standard form issued to instructors for taking inventory of supplies in the shop supply room; each instructor may use his own method of listing supplies on hand. There is, however, certain information this inventory should contain: (1) the names of the materials and supplies, (2) quantity of materials and supplies, and (3) value of supplies on hand. Two copies are made; one copy is retained by the principal, and the duplicate copy is filed with the superintendent's tools and equipment inventory in the supervisor's office.

Maintenance

Each instructor is responsible for seeing that all tools and equipment in his shop are at all times in working order. Tools that are broken and in need of welding are taken to Paschal High School of Fort Worth, Texas, and are there repaired in the machine shop by an industrial arts instructor of Paschal High School who is paid by the Business Office for rendering this service. Funds for this service are paid from the local maintenance fund and not by student fees or project money.

Major repairs of machines and equipment which cannot be repaired by the instructor at Paschal High School are taken by the individual instructor to one of the machine shops in the City of Fort Worth. Order numbers are issued for this service as for any purchase of supplies or materials, and the business office is billed for this work. Each instructor, with the aid of the students, is responsible for the up-keep of the shop in regard to cleanliness, orderliness, and minor repairs.

CHAPTER III

SOUND PRINCIPLES OF ACCOUNTING AND BOOKKEEPING

A Generalization of Sound Principles of Accounting and Bookkeeping

Usually, the success or failure of a business depends upon the management of the business. In order to manage a business successfully, the owner must keep informed at all times regarding the conditions and activities of the enterprise. Ownership in a business is the difference between the properties and the debts of a business.¹ The object of bookkeeping, then, is to record business transactions in a systematic way in order to provide information which will aid in the management of a business. Accounting analyzes and interprets these records.

It is the function of accounting (1) to record, (2) to analyze and classify, and (3) to summarize the effects of these activities for aid in planning for the future. In recording, only the essential activities should be included and their inclusion should be accomplished in the most effective manner.²

¹A. H. Rosenkampff and W. C. Wallace, Bookkeeping Principles and Practices, p. 3.

²H. S. Noble, Accounting Principles, p. 8.

Every accounting transaction and procedure should be evaluated in regard to its desired effect. This is more easily accomplished when an orderly procedure is followed as suggested by analysis and classification. Through this plan, the records are more easily understood. Records are justified only when they are useful to those using them.

A system, the mechanics of records and procedure, must be such as to maintain a correct picture of the financial position of the enterprise. Then the aggregation of data when properly classified and summarized, will provide an adequate array of safeguards against fraud, error, and waste.

The use of debit and credit in balancing an account.--

In single entry bookkeeping there are two classes of accounts which may be distinguished as "Personal" and "Impersonal." The "Personal" account is an account with a person or a firm such as John Jones or Brown and Company. It is the "Personal" account that is under consideration in this study.

In every account "Debtor," or "Dr.", signifies the left-hand side and "Creditor," or "Cr.", the right-hand side of the account. When applied to a personal account, "Debtor" means one who is in debt, and "Creditor" means one from whom something of value has been received.

Balance denotes the difference between the two sides of an account. Balancing an account is making an entry that will equalize the two sides.

To balance and close the personal account the difference between the sum of the debits and the sum of the credits must be ascertained. In order to equalize the two sides, it may be necessary to place the "Balance" on either the debit or credit side. This entry should be made in red ink. A single line should be drawn under the total money column on each side without moving the ruler (see Fig. 4 below). Under the

John Jones								
Date	Items	Folio	Debit		Date	Items	Folio	Credit
Jan. 2	Table	1	4	00	Jan 7	Cash	3	4 00
Jan 15	Lumber	1	2	00	Feb 1	Cash	21	2 00
			6	00				6 00

Fig. 4.--An illustration of how to close a personal account.

single line on each side, enter the total amount, or footing, and draw double lines underneath.

It is customary to make a preliminary record of transactions before they are entered in the accounts. This is a good rule to follow, for if transactions are recorded directly in the accounts, errors made in the record cannot be corrected easily. Then, too, it is difficult and tedious to enter transactions one by one in accounts. Such a record is called a record of original entry. From time to time the debits and the credits entered in this record are transferred to the

accounts in the ledgers, which in turn constitute the basis of the accounting reports.

Various kinds of records of original entry may be used depending on the size of the business and the nature of the operations. Regardless of what may be the specific title applied to a particular record, it is understood that these records are books of original entry and are sometimes called Journals. When it is desired to add one of these special Journals to a system, it should be decided first that such an addition will actually be a convenience and will promote a saving of time.

There are certain rules to follow for making an entry in the book of original entry: (1) write the name of the person who is to be debited or credited; (2) write the items or particulars of the transactions including the amount; and (3) note the month and the day of each transaction.

Sound Principles of Accounting and Bookkeeping
as Related to the Industrial Arts Field

Records are likely to be affective and accurate to the extent to which they can be kept without an excessive expenditure of time and effort.³ The purchasing of supplies, the handling of money, and the annual inventory constitute the accounting needs of the industrial arts instructor.

³G. O. Wilber, op. cit., p. 248.

Purchasing supplies.--In purchasing and using supplies the instructor should be careful to provide himself with all records necessary for future reference. The instructor will profit greatly when ordering supplies for the coming year or for coming classes if he has provided for himself a means of knowing how much has been used in the past and how materials were distributed in various classes. It also happens occasionally that teachers are charged with supplies that in reality were delivered elsewhere, and for this reason, a thorough check should be made of all items received.

For convenient handling of records of equipment and supplies, a record sheet can be used to great advantage. Such sheets should contain the following items of information (see Fig. 5 below): (1) order number and date issued; (2) name of firm where the purchase is to be made; (3) a column for identifying which fee account is to be debited; and (4) the amount of the purchase.

Order Number	Date	Firm	Student		School	
			Fee	Amt.	Fee	Amt.

Fig. 5.--An illustration of the record of purchases and supplies to be kept by the industrial arts instructor.

Immediately upon receiving an order number, the instructor should record the date the order number was issued, the order number, and the name of the firm where the purchase is to be made. Occasionally there is an error in the distribution of invoices from the supervisor's office to the various instructors, and a charge is made against the wrong industrial arts shop. Accurate and numerical recording of all order numbers and dates is an effective way of back-checking on supplies that have been bought during a school term. It is of equal importance to designate whether the purchase is to be charged to the student fee account or the school fee account. This can be done by checking the column to the left of the amount column.

As some firms give school discounts the exact cost of the items bought is not always given to the instructor upon making a purchase; for this reason, the cost of supplies may be recorded upon receiving the bills from the school's business office. By the use of this form the instructor can obtain a quick and accurate total of the money spent in each fee account at any time during the school term.

Money handled.--All money received should be immediately recorded. Duplicate receipts (see Fig. 6, page 28) should be made, one of which is given to the student. Each set of duplicate receipts should be numerically numbered. This is a must, since these numbers will be posted, along with the amount of cash received, to the ledger. The numerical number

		No. _____
		Date _____ 19__
Received of _____		

Amount \$	_____	
\$	_____	
		Instructor _____

Fig. 6.--An illustration of a cash receipt which is used to record money collected from the student.

of the cash receipt will serve as a substitution for the page number that is ordinarily posted. This is of value to the instructor in that it affords him a quick check on all issued receipts during the term should an error occur in posting to the individual ledger account.

Where the instructor is expected to pay for all expendable supplies used in the industrial arts shop with the student fees and project money, it is necessary that the instructor keep an accurate record of all materials used by the student. Written orders containing estimated costs may be used for this purpose. A card file (see Fig. 7, page 29) can be used to advantage as a record for materials used by the student. This card file can be used instead of the simple

Name _____		Grade _____		Period _____		Home Room _____		Ledger No. _____		Bench No. _____																															
Shop Fees:																																									
<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 10%;">1. Craft</td> <td style="width: 20%;">Cost</td> <td style="width: 20%;">Amt.</td> <td style="width: 20%;">Pd.</td> <td style="width: 30%;">Receipt Number</td> </tr> <tr> <td>2. Drawing</td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>3. Electricity</td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>4. Foundry</td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>5. Metal Work</td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>6. Woodworking</td> <td></td> <td></td> <td></td> <td></td> </tr> </table>												1. Craft	Cost	Amt.	Pd.	Receipt Number	2. Drawing					3. Electricity					4. Foundry					5. Metal Work					6. Woodworking				
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1.		Begun	Finished																																						
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4.																																									
Extra Materials																																									
Date	Materials	Pieces	Thick- ness	Width	Length																																				
Total of Extra Materials																																									

Fig. 7.--Individual student's record card.

requisition blank ordinarily used by students in making out bills of material. This form can also serve as a journal or day book. All information posted to the individual ledger accounts will come from this card file. By using this card file, the instructor can keep his posting to a minimum and make possible easy tabulation and reference.

A student office clerk may be taught how to record and post from this card file, but the instructor should supervise the transactions closely. To make a quick and accurate check of all money handled in the industrial arts shop, the cash receipts number and the amount of the receipt should be recorded on the card file and posted to the ledger.

Deposits made by the industrial arts instructor to the school's business office should balance exactly with the amount received from the students. Here, again, a duplicate receipt, one copy of which is kept by the office and the other by the instructor, is an effective record of the transaction. As a rule, it is necessary to keep a petty cash fund for the purpose of making change. Deposits made to the school plus petty cash on hand should always equal money received from the student.

Inventories.--Because the industrial arts teacher is responsible for the equipment, tools, and supplies assigned to the shop, it is essential that an accurate record be kept of tools and equipment on hand. At the beginning of each school year the wise teacher will obtain copies of inventories

and lists of supplies to see for himself that all items listed are actually in his industrial arts shop. There is a possibility that some of the equipment may have been used by janitors and other workmen during the summer months; often during the rush of the closing days of school an inventory may have been carelessly compiled. A careful check by the instructor will protect not only himself but the school as well.

A complete inventory should contain the following information: (1) the name and number of tools on hand, (2) the condition each tool is in, (3) the tools that are in need of repair, (4) the tools that are to be replaced, (5) the tools that have been lost, and (6) the new tools received. Methods and forms used to keep a continuous inventory of supplies vary widely and should so vary because of the wide differences existing among schools of different size and school systems having different schemes of accounting.⁴ Although these methods and forms might vary, a complete inventory should meet the following basic requisites:

It has a column for listing the name of the article, another for the amount on hand; the third column is for the name of the unit of measure, such as feet, dozens, gallons, etc.; the fourth column is for the unit value at shop prices; the last column is for the total value of the stock on hand.⁵

⁴A. B. Mays and C. H. Casberg, School-Shop Administration, p. 109.

⁵Kenison, op. cit., p. 342.

It is also necessary to have an accurate up-to-date inventory in case of fire in order to collect insurance on those tools and materials lost.

Maintenance.--Maintenance, in relation to the school shop, is "the keeping of tools, shop rooms, furniture, machines, benches, charts, blueprints, instructional material, supplies, and all other devices, materials and facilities needed in effective instruction in a high state of usefulness."⁶ The alert instructor will make frequent inspections of his shop in regard to needed repairs. Enlisting the aid of his pupils in this industrial arts shop appraisal will not only be helpful to the teacher but will tend to develop in the pupil a high standard of upkeep.

It is of the utmost importance to keep the industrial arts shops, finishing rooms, and any other work space clean and in order at all times. Disorder in such rooms is not only unsightly and annoying to those who have to use them, but it makes for waste of supplies and may involve safety in handling supplies as well.⁷

Industrial Arts Accounting and Bookkeeping as
Related to Administration and
Supervision

Administration has been defined as "the direction, control, and management of all matters pertaining to school

⁵Kenison, op. cit., p. 342.

⁶Mays and Casberg, op. cit., p. 64. ⁷Ibid., p. 65.

affairs."⁸ Supervision of industrial arts is generally of two separate types; namely, (1) departmental supervision and (2) general supervision of a field work. Departmental supervision refers to a department in one school. It may involve all the shop work offered in that school, or may be confined to a group of subjects, such as metalworking department, woodworking department, and so on.⁹ City-wide supervision of industrial-arts work is included under general supervision.

School finance is the inherent duty of the school administration.

Since public education costs more than two billion dollars annually, it is obvious that adequate accounting systems are essential to its fiscal administration. . . . Every state in the Union requires a periodic audit of school funds and most states require an audit at least every other year.

One of the most neglected phases of school accounting is the so-called "internal school accounting. . . ." Although many schools handle hundreds of thousands of dollars annually, there is no adequate accounting system in many school systems.¹⁰

Financial accounting is essential to meet state auditing requirements as well as determining the efficiency of a school system.

⁸T. L. Reller, "Direction and Management," Encyclopedia of Educational Research, edited by Walter S. Monroe, Vol. V (1950).

⁹E. E. Ericson, Teaching the Industrial Arts, p. 374.

¹⁰Arnold E. Joyal and Chris A. DeYoung, Encyclopedia of Modern Education, edited by Harry N. Rivlin, Vol. V (1943).

The problems of administration and supervision in industrial education embrace the constituent elements of general education with an addition of numerous technical duties.

Among the duties commonly falling to the industrial education director are: preparation of budgets; selection, purchase, installation, and maintenance of equipment; selection, purchase, storage, and issuance of materials and supplies; cost accounting, records and reports, course and curriculum organization; and coordination of school and industrial work of pupils in part time programs. . . .¹¹

It is clear from the study that the position of an administrator is not an easy one to hold. Yet it has been found that "quantitative research in industrial education has, to the present, played a minor part in the formulation of administrative policies, the development of methods of teaching, and the procedures in curriculum construction."¹²

The designing of any record system should be planned so that the least possible burden is placed on the industrial arts teacher. There is a tendency in many schools to multiply the number of record forms used as the school grows and the need for additional items of information becomes apparent.¹³ Any record that is not of primary importance

¹¹A. B. Mays, "Administration and Supervision," Encyclopedia of Educational Research, edited by Walter S. Monroe, Vol. V (1950).

¹²Ibid., p. 572.

¹³Mays and Casberg, op. cit., p. 102.

for purposes of administration and protection of the teacher should be discarded. There is a need for research to be done "in the areas of method, physical equipment, teacher selection and training, testing, curriculum and course planning, finance and administration."¹⁴

Purchase of Supplies

Schools differ widely in their budgetary and purchasing procedures.¹⁵ In large schools all purchases are often made through the purchasing department, while in a small school the shop teacher may make all purchases for his shop with the approval of the principal or superintendent. Other schools may authorize the superintendent or head of the industrial arts department to make all purchases.

The quantity of purchases will depend upon the storage facilities in each respective industrial arts shop. Unfortunately, for the inexperienced teacher, there are no standards or even generally accepted practices of storage found among shop departments.¹⁶ Consequently, the purchasing agent for one shop may be able to buy in large quantities once or twice a year, whereas another purchasing agent may have to buy at frequent intervals.

¹⁴Ibid., p. 586.

¹⁵Mays and Casberg, op. cit., p. 74.

¹⁶Ibid., p. 75.

When the instructor keeps a continuous inventory of supplies on hand, a quick check will enable him to know exactly what supplies are needed at all times. Regardless of whether the administrator or the teacher is authorized to purchase supplies, this information is needed to avoid over-stocking the shop in any one thing or a delay in instruction for lack of supplies.

Annual Inventory

The administrator needs permanent inventory records, because they give valuable information concerning the growth and management of the industrial arts department. Furthermore, it is impossible to know when the need for certain data will arise. The administrator who cannot quickly refer to dependable records is almost helpless when making decisions involving the welfare of his department.¹⁷

A complete inventory should be kept, listing all tools and equipment. The information therein should show the number of tools and equipment on hand, the working condition of each tool, parts needed for repair, tools that may have been lost, and additions. The inventory of supplies should reveal the name of supplies on hand, the quantity, and the estimated value of these supplies.

¹⁷Mays and Casberg, op. cit., p. 98.

Maintenance

Successful maintenance involves much planning, foresight, and persistence on the part of both executives and teachers.¹⁸ While most teachers are diligent in maintaining high standards of up-keep in their school shop, there are those who are indifferent to the working conditions found in their shops. For this reason, it is important for school authorities to provide written standards in detailed form and to insist upon rigid enforcement of regulations based upon such standards.

¹⁸Ibid., p. 64.

CHAPTER IV

OPINIONS AND RECOMMENDATIONS OF TWENTY-SIX INDUSTRIAL ARTS INSTRUCTORS, SEVEN SUPERVISORS, AND EIGHTEEN ADMINISTRATORS CONCERNING ACCOUNTING AND BOOKKEEPING IN THE INDUSTRIAL ARTS SHOP

The data for this chapter were obtained from the replies of the twenty-six instructors of industrial arts in the Fort Worth Public Schools who answered the questionnaires concerning the system of accounting and bookkeeping being currently used by each instructor. Additional data were obtained from the replies of seven supervisors of industrial arts in the State of Texas on the systems of accounting and bookkeeping used by the instructors of industrial arts teaching under their direction. Opinions and recommendations were obtained in personal interviews with administrators of secondary schools in Fort Worth, Texas, concerning accounting and bookkeeping in the industrial arts shop in relation to administration.

From data presented in previous chapters, it can readily be seen that various methods of recording financial transactions in the industrial arts shop were employed by the instructors of industrial arts in Fort Worth, Texas. Twenty-four, or 92.3 per cent, of the instructors questioned

expressed the opinion that a systematic way of keeping industrial arts records was important. It was suggested that "teacher training institutions should include a course in shop accounting and bookkeeping."¹ This would indeed be advantageous, because out of twenty-six instructors questioned only eleven, or 42.3 per cent, had received any training in accounting and bookkeeping.

J. H. Musick recommended a system of recording expendable supplies used by the students in the industrial arts shops. The recommendation was as follows:

If the administration would issue a statement saying that it would not be necessary to itemize certain fee accounts, much time would be saved for the teacher. Example:

(1) Junior High Drawing Fee--If itemized, teachers must list that pencils, drawing paper, instruments . . . are paid for by fees. This list must be entered in ledger for each student's name.

(2) Electricity Fee, 50¢--This could be covered completely by a statement that this fee covers expendable supplies such as . . . bell wire, batteries, buzzers, transformers, extension wire which must be cut for wiring exercises. . . . This matter of itemizing each fee for each student . . . takes many hours of labor which could be used to advantage doing something else required of a teacher.²

Much time could be saved in recording expendable supplies used by the student if such supplies were catalogued under

¹Letter from Orville Rothhold, Instructor of Industrial Arts, Fort Worth Public Schools, May 18, 1950.

²Letter from J. H. Musick, Instructor of Industrial Arts, Fort Worth Public Schools, May 22, 1950.

one heading and recorded as a unit, rather than recording each item separately.

In regard to project money collected from the student by the instructor, the following recommendation was made by J. D. Cody:

I recommend that students pay money direct to the respective school's business office. The student will bring receipt to the shop and receive credit. This would relieve shop teachers the tiring and time-taking job of collecting money, writing receipts etc.³

By referring the student to the school's business office for payment of project money, the industrial arts instructor would be relieved of handling money in the industrial arts shop and the recording of such transactions. This would enable the instructor to devote more time to instruction.

M. D. King also suggested that project money should not be handled by the industrial arts instructor. He stated as follows:

That shop fees or money for materials used by the student be turned in at principal's clerk desk. If a record is kept on material account sheets or the like, why is the ledger necessary?⁴

Money collected from the student for the use of expendable supplies should be handled through the principal's office.

Data obtained from the replies to questionnaires sent to industrial arts supervisors in the State of Texas indicate

³Letter from J. D. Cody, Instructor of Industrial Arts, Fort Worth Public Schools, May 18, 1950.

⁴Letter from M. D. King, Instructor of Industrial Arts, Fort Worth Public Schools, May 18, 1950.

that most industrial arts instructors need further instruction in the keeping of accurate financial records. Glen Fletcher stated that most of the industrial arts instructors teaching under his direction needed further instruction in keeping a good set of records "for student accounting, shop organization . . ." ⁵ He added:

We oft' times spin our wheels in Industrial Arts shops by trying to make our "Books Balance" on finances and let the real objective aspects of the program go to naught. I don't think any particular system nor method is best for all. The important thing is, I think, that each of us should have a system (individual largely) that works. ⁶

The industrial arts instructor often finds himself so enmeshed in the task of record-keeping that instruction is neglected. A system of bookkeeping and accounting is needed, but it should be fitted to meet the individual problems confronting the different departments of industrial arts.

It was found that a majority of industrial arts supervisors in the State of Texas deemed a standard system of accounting and bookkeeping should be adopted in industrial arts departments. At the time the survey was made, however, records in the majority of industrial arts departments were not kept according to a standard system.

⁵Letter from Glenn Fletcher, Supervisor of Industrial Arts Vocational Education, Houston Public Schools, June 29, 1950.

⁶Ibid., personal letter.

Table 6 shows the number of industrial arts departments in the State of Texas under the direction of a supervisor that use a standard system in keeping industrial arts financial records.

TABLE 6
OPINIONS OF SEVEN INDUSTRIAL ARTS SUPERVISORS IN THE
STATE OF TEXAS CONCERNING FINANCIAL RECORDS

Question	Yes	Per Cent	No	Per Cent
Do you have a standard bookkeeping system for your instructors to use?	3	42.9	4	57.1
Do all instructors keep books according to a standard system?	3	100	0	....
Do you think that a standard system should be used?	6	85.7	1	14.3
In your opinion, do most of your industrial arts instructors need further instructions as to how a good set of records should be kept?	6	85.7	1	14.3

Four, or 57.1 per cent, of the supervisors questioned, did not have a standard bookkeeping system set up for the industrial arts departments under their respective supervision, although six, or 85.7 per cent, of the supervisors indicated that a standard system should be used. In the three school systems where a standard bookkeeping plan was incepted, all instructors

kept industrial arts financial records according to the prescribed method of each respective school system. Six, or 85.7 per cent, of the supervisors expressed their belief that most industrial arts instructors teaching under their direction needed further instruction as to how to keep a good set of records.

Sam Martin supports the foregoing opinion that most instructors of industrial arts need further instruction in the keeping of financial records. Of industrial arts instructors teaching under his direction, he stated:

They all need training of this kind even though the system used seems to be flawless so far as we are concerned. Records seem to be a thing that all teachers try to avoid as much as possible. We try to keep our record keeping to a minimum and still obtain the desired results, and a system that can be audited in a short period of time.⁷

A good system of accounting and bookkeeping is one that can be kept without consuming too much of the instructor's time, one that can be quickly audited, and yet, a system that will supply the information needed.

Table 7, page 44, presents various ways supplies are purchased by industrial arts departments in seven secondary school systems in the State of Texas under the direction of supervisors.

⁷Letter from Sam Martin, Supervisor of Industrial Arts, Austin Public Schools, June 28, 1950.

TABLE 7

HOW SUPPLIES ARE PURCHASED IN INDUSTRIAL ARTS DEPARTMENTS
UNDER THE DIRECTION OF SUPERVISORS IN SEVEN
SECONDARY SCHOOL SYSTEMS IN
THE STATE OF TEXAS*

Question	Yes	In Part	Per Cent	No	Per Cent
Do your instructors obtain all supplies from a central warehouse?	1	...	14.3	6	85.7
Does the school furnish materials free to students?	...	2	28.6	5	71.4
Do your instructors purchase supplies from retail dealers?	...	4	57.1	3	42.9
If so, do you issue order numbers for the purchasing of these supplies?	3	...	75	1	25

*The Fort Worth Industrial Arts Department is not included.

Only one school system had a central warehouse from which all supplies were purchased by the instructor of industrial arts. Materials were furnished free in two of the school systems under consideration; this material, however, was only furnished free in part. It was found that a majority of school systems, or 71.4 per cent, did not furnish free materials to students. Materials were purchased in part from retail dealers in four, or 57.1 per cent, of the school systems under study. Of this number, three, or 75

per cent, of the school systems used the order number in purchasing of supplies from retail stores.

The method for recording the collections of money in the industrial arts departments in the seven secondary school systems under the direction of a supervisor in the State of Texas is presented in Table 8. In seven, or 100 per cent, of

TABLE 8

HOW MONEY IS HANDLED IN INDUSTRIAL ARTS DEPARTMENTS
IN THE SEVEN SECONDARY SCHOOL SYSTEMS UNDER THE
DIRECTION OF SUPERVISORS IN THE
STATE OF TEXAS*

Question	Yes	Per Cent	No	Per Cent
Do your instructors collect money from their students?	7	100	0	....
Do your instructors use a receipt book?	5	71.4	2	28.6
Do your instructors give duplicate receipts?	5	71.4	2	28.6
Do your instructors give receipts at the time the money is received?	5	71.4	2	28.6
Do your instructors numerically number these receipts?	2	28.6	5	71.4
Do you request all instructors to turn in their receipt books and ledgers at the end of the school year?	5	71.4	2	28.6
Are these books audited?	5	71.4	2	28.6

*The Fort Worth Industrial Arts Department is not included in the table.

the industrial arts departments studied, instructors are required to collect money from students for materials used in the shop. Cash receipts books were used by instructors in five schools, or 71.4 per cent, of the industrial arts departments under consideration. Duplicate receipts were given in five, or 71.4 per cent, of the industrial arts departments investigated. These receipts were given to the student at the time the money was received by the instructor in 71.4 per cent of the industrial arts departments studied. In two industrial arts departments, or 28.6 per cent, instructors were required to numerically number cash receipts. Cash receipts books and ledgers were turned in to the industrial arts supervisors at the end of the school year in five, or 71.4 per cent, of the school systems under consideration. Five, or 71.4 per cent, of the school systems required an audit of industrial arts financial records.

Personal interviews with administrators of secondary schools of Fort Worth, Texas, revealed slight differences in administrative practices in the various secondary schools in the City of Fort Worth. These differences, however, were minor and affected the schedule of deposits made by the instructors of industrial arts and not the recording of industrial arts transactions.

In Table 9 data are given concerning administrative regulations for the instructor of industrial arts to follow when making deposits. In seventeen, or 94.4 per cent, of the

TABLE 9

HOW DEPOSITS ARE HANDLED BY THE INDUSTRIAL ARTS INSTRUCTOR
IN THE PRINCIPAL'S OFFICE IN THE SECONDARY
SCHOOLS OF FORT WORTH, TEXAS

Question	: Yes	Per Cent	No	Per Cent
May the industrial arts instructors in your school turn into your office money that is collected each day, regardless of the amount?	17	94.4	1	5.6
Do you request that all money be turned into your office by a certain time during the school day?	3	16.7	15	83.3
If the above answer is yes, will you accept money from the instructor after this time?	..	....	3	100
If you will not accept money after a certain time during the school day, do you have an available vault in which the instructor may place the money he collects?	..	....	3	100

secondary schools in Fort Worth, Texas, instructors may make deposits in the principal's office regardless of the amount of the deposit. Three, or 16.7 per cent, of secondary school administrators requested that deposits be made by the instructors by a certain time during the school day. Fifteen, or 83.3 per cent, of the administrators of secondary schools interviewed accepted deposits regardless of the time the deposit was made during the school day. In the three schools

where deposits had to be made by a certain time during the school day, there were no available vaults in which the instructor could place money collected from the student after the designated time for making deposits.

The opinions of administrators of secondary schools of Fort Worth, Texas, concerning the handling of money by the instructor in the industrial arts shop is presented in Table 10. Thirteen, or 72.2 per cent, of the administrators

TABLE 10

OPINIONS CONCERNING THE HANDLING OF MONEY IN THE INDUSTRIAL ARTS SHOP AS EXPRESSED BY ADMINISTRATORS IN THE SECONDARY SCHOOLS OF FORT WORTH, TEXAS

Question	Yes	Per Cent	No	Per Cent
Do you think it advisable that each instructor turn into your office all money collected each day?	13	72.2	5	27.8
In your opinion, could a satisfactory method be worked out in your school whereby the student would pay all fees and project money directly to your office rather than paying it to the industrial arts instructor?	..	....	18	100

interviewed thought it advisable that each instructor deposit each day all money collected from the students. Five, or 27.8 per cent, of the administrators did not believe it too important that instructors deposit all money collected

from the student each day. Eighteen, or 100 per cent, of the administrators interviewed were of the opinion that a satisfactory method could not be worked out whereby the student of industrial arts could pay all fees and project money directly to the office of the administrator in each respective school. A plan of this kind "is the ideal situation . . . however, under present administrative conditions, it would not work."⁸ The general attitude of all administrators concerning this question was that more clerical help would have to be employed for each secondary school thus costing the Fort Worth Public Schools more money to operate. New administrative policies would have to be formed involving administrators of secondary schools, the director of industrial arts, and the Business Office of the Fort Worth Public Schools. The instructor would still have material cards to check, and it would be his responsibility in the final analysis to see that each student had paid for supplies used in the industrial arts shop. The expense of money and time this plan would involve would excel the time and effort saved the instructor should such a proposal be drafted.

⁸ Statement made by Hurbert Cherry, Vice-principal, Fort Worth Public Schools, personal interview, July 8, 1950.

CHAPTER V

SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS

Summary

A comparison of the data contributed by instructors and supervisors of industrial arts and opinions and recommendations as expressed by administrators of the secondary schools of Fort Worth, Texas, constitutes the following summary:

1. The keeping of accurate and clear records is important as a protection for the industrial arts instructor.
2. The keeping of industrial arts records is a task most industrial arts instructors try to avoid.
3. Financial records were not kept according to a standard system by a majority of the industrial arts instructors in the secondary schools of Fort Worth, Texas.
4. Most industrial arts instructors, according to 85.7 per cent of the supervisors questioned, need further preparation in the principles of accounting and bookkeeping in relation to the industrial arts shop.
5. Only 11 per cent of the industrial arts instructors in the secondary schools of Fort Worth, Texas, have taken a course of study in accounting and bookkeeping.

6. The need and desire was indicated by 92.3 per cent of the instructors of industrial arts in the secondary schools of Fort Worth, Texas, for a standard system of industrial arts financial accounting and bookkeeping.

7. It was suggested by two industrial arts instructors in the secondary schools of Fort Worth, Texas, that money should not be collected by the instructor in the industrial arts shop but should be collected in the business office of each respective school.

8. Administrators of the secondary schools of Fort Worth, Texas, unanimously opposed this suggestion, averring that such a plan would be impossible to inaugurate under the present administrative policies governing the Fort Worth Public Schools.

9. Any system of accounting and bookkeeping will often vary according to the general administrative policies governing the particular school system.

10. A good system of accounting and bookkeeping for the industrial arts shop is one that will enable the instructor to record the desired information with a minimum of time and effort.

Conclusions

The study indicates that the industrial arts instructors in the secondary schools of Fort Worth, Texas, need and desire a standard system of accounting and bookkeeping to be

used in the industrial arts shops. Since the first duty of the industrial arts teacher is to instruct, the number of record forms as well as the number of items recorded should be kept to a minimum. Records which must be kept with an excessive expenditure of time and effort are likely to be ineffective and inaccurate. There are no standard record forms which can be effectively used in all schools, even of corresponding size and type. Consequently, local regulations and conditions should be thoroughly studied so as to design a system that fits the local situation.

Recommendations

Based on the findings in the study the following recommendations are made:

1. Teacher preparation institutions should offer a course in accounting and bookkeeping that is especially designed to meet the needs of the industrial arts instructor.
2. Administrators should enlist the aid of their teaching staff in planning any system of accounting and bookkeeping.
3. Only those records that are essential for the protection of the instructor and those necessary for administrative purposes should be kept by the industrial arts instructor.

APPENDIX I

The following record forms and descriptive material have been developed upon the completion of the study concerning various methods of accounting and bookkeeping in relation to the industrial arts shop. The particular needs and opinions of the industrial arts instructors of the Fort Worth Public Schools were given careful consideration before the following accounting and bookkeeping system was developed and proposed. This system will involve the utilization of four distinct record books or forms, namely: (1) the cash receipts book, (2) the card file, (3) the ledger, and (4) inventory blanks.

How to Record Purchases

Purchases will be made by each industrial arts instructor and charged to the industrial arts department on an order number furnished through that office. Record of such purchases should be made in the ledger which every instructor will receive at the beginning of each new school term. There are usually twelve or more pages at the beginning of the ledger that are unruled; this space will be suitable for the record of purchases and should be ruled by the instructor as shown in Fig. 8, page 54. This record will show each order number issued to the instructor, the date, the

Order Number	Date	Name of Firm	Student		School	
			Fee	Amount	Fee	Amount
3001	9/ 7/49	National Lumber Co.	x	\$21.00		
3002	9/15/49	Brown's Paint Co.	x	10.00		
3003	9/30/49	Sharp's Machine Shop			x	\$ 3.50
3025	1/ 3/50					
Total				\$150.00		\$25.00

Fig. 8.--A proposed record of purchases of materials to be used by students in the industrial arts shop.

name of the firm where the purchase is made, and the cost of the item or items purchased. In some instances the instructor does not know the exact cost of a purchase at the time it is made as some firms give school discounts. These discounts are usually made in the firm's business office and not by the sales clerk. In this case, the instructor cannot complete the recording of the purchase record until a complete invoice is received from the supervisor's office. The amount of the invoice should be entered under the proper fee account. The instructor should place a check mark by the proper fee account at the time of the purchase in order for the amount of the invoice to be recorded in the proper account.

When more than one page is used in recording purchases, the purchase cost should be totaled and carried forward to each succeeding page. The total amount spent on purchases

should never exceed the total amount of money collected from the student.

Method of Accounting for Materials in the Industrial Arts Shop

In the Fort Worth Public Schools the Board of Education advances money to the industrial arts department for the purchase of materials and supplies used by the students in the industrial arts shops. The industrial arts supply fund is self-supporting. The student requisitions the materials to be used in making projects and pays the instructor for the materials. The instructor deposits all money collected to the secretary of each respective school. The secretary then turns the money over to the Business Office of the Fort Worth Public Schools. The amount of sales or deposits should equal or exceed the amount advanced by the Board of Education. To do this, it is necessary to have the following records:

1. A cash receipts book
2. Student material cards
3. A ledger
4. Record of deposits

The cash receipts book.--In the Fort Worth Public Schools the student will pay the instructor for supplies and materials used in the school shop. The instructor will be issued a cash receipts book at the beginning of the school term in which the instructor will write duplicate receipts for all money collected from the student (See Figure 9). This

Period 4	No. 1
September 8	1950
Received of	John Smith
One and no/100-----	Dollars
\$ 1.00	Sam Wade Instructor

Fig. 9.--A sample of how to write a cash receipt for money collected in the industrial arts shop.

receipt should be written at the time the money is collected and one receipt given to the pupil. The carbon copy of the receipt will be kept in the receipts book for reference. Each receipt should give the date, the name of the pupil, the amount paid, and the signature of the instructor. It is equally important that these receipts be numerically numbered. The instructor will find it a convenience in posting if the class period of the student is recorded on the receipt, although this is not absolutely necessary.

At the time the instructor writes the receipt for a student, the student should get his material card from the file and record the amount he has paid and the receipt number. The instructor can check the student's recording at a glance. Should any question arise as to the amount recorded

on the material card, the receipt number will provide the means for a quick check upon the original receipt.

The instructor will make a total of daily collections and write the total on the bottom of the last receipt written for that day. This should be done in colored pencil so that it can be easily seen. At the end of the term the instructor can take the daily totals and arrive at a grand total of receipts written for the school term. This will save the instructor the tiresome and time-consuming job of adding the entire receipts book when so many other records and duties are claiming the instructor's time.

Should it become necessary to refund any money to the student, a duplicate receipt should be written as for a collection. "Cash refund" should be written across the top of the receipt, preferably in red pencil. This receipt will show money "received of the instructor" and signed by the student as illustrated in Figure 10. The instructor will find it more convenient to reserve two or three pages in the back of the cash receipts book for the issuing of cash refunds. These refunds will be numerically numbered, beginning with the number "one." Cash refunds should not be recorded on the material cards nor posted to the ledger. They will be totaled, however, and subtracted from the total of cash receipts written. This figure will equal the amount deposited by the instructor.

<u>CASH REFUND</u>		No. _____
Period 4	<u>September 30</u>	<u>1950</u>
Received of <u>Sam Wade (Instructor)</u>		
One and no/100 -----Dollars		
<u>\$ 1.00</u>	<u>John Smith (Student)</u>	

Fig. 10.--An illustration of how to record a cash refund in the cash receipts book.

Student material cards.--The student material card (see Figure 11) is so designed that all information concerning projects made, materials used, fees, and project money paid to the instructor can be quickly recorded. These cards will be filed alphabetically according to class periods. The file will be so arranged that each class will have access to their individual cards. As materials are requisitioned, record can be made by the student on his card under the supervision of the instructor. This can be done with a minimum of effort and time on the instructor's part. The projects and estimated cost may be posted to the ledger at the instructor's convenience.

Name _____ Grade _____ Period _____ Home Room _____ Ledger _____ Bench No. _____

		Cost	Amt. Paid	Rec. No.
Shop fees:				
1.	_____			
2.	_____			
3.	_____			
4.	_____			
5.	_____			
6.	_____			
Projects:				
1.	_____			
2.	_____			
3.	_____			
4.	_____			

Extra Materials:

Date	Materials	No. of Pieces	Thickness	Width	Length	Cost	Amt. Paid	Rec. No.
Total								

Fig. 11.--A proposed material card to be used in the industrial arts shop for recording materials used by the student and money collected from the student.

Occasionally a student will ruin a piece of lumber that has been requisitioned to the student for making a project. Frequently, the project requires more material than the student originally figured in his requisition. To conform to these possibilities space is provided on the material card for the recording of extra materials. As a time saving element, the instructor need not post each separate piece of

extra material used by the student, but at the end of the semester the total of such materials will be posted.

The instructor should keep all material cards up-to-date in regard to the money collected from students in payment of projects and fees. In so doing the instructor will be able to tell each pupil the exact amount the student owes whenever this information might be desired. Should any parent inquire as to how the record of student project money is handled, the instructor can quickly give the parent this information without any embarrassing delay.

It is essential that the instructor record the receipt number of each cash transaction on the material card as all posting of cash collections will come from this card and not the receipt book. Should any question arise as to the amount a student has paid on his shop bill, it is a simple matter to check the receipt number and the amount in question with the corresponding receipt number in the cash receipts book. It is more expedient to check by the receipt number than by date since sixty or more receipts may be written in the course of one day.

The ledger.--The ledger will contain an account of each boy who is taking an industrial arts course. The names should be alphabetically arranged according to class periods. This account will show a credit for each deposit and a debit for each purchase (see Fig. 12). These are posted from the

material cards. There is relatively little value in posting the date purchases were made, and much of the instructor's time would be expended therein. This may be omitted altogether. The date may also be omitted in posting deposits though the cash receipts number will be recorded as shown in the illustration below.

John Smith								
Shop Fee	:	1	00	:	Rec. # 3	:	1	00
Table		4	50		# 68		2	00
Lamp		2	00		# 150		2	50
Extra Material			30		# 180		2	00
					# 200		3	00
		7	80				7	80

Fig. 12.--A proposed illustration of how the individual student's account should be kept.

At the close of the school term, all accounts will show a balanced debit and credit. This will be sufficient to call the accounts closed.

Record of deposits.--As project money and fees are collected from the student, a deposit of the day's collection will be turned into the principal's office of each respective school. The school secretary will give the instructor a receipt which should be filed away in a safe place.

Record of this transaction should be made in the ledger giving the date, receipt number, and the amount. (See Fig. 13). This account will be most convenient if placed

Belmont High School		
Date	Receipt No.	Amount Deposited
Sept. 8, 1949	# 3	\$21 00
" 15	# 8	12 00
" 30	#10	15 00
Oct. 9	#13	6 00
June 2, 1950	#13	19 00
	Total Deposits	\$200 00

Fig. 13.--A proposed illustration of how to record deposits of collections made in the industrial arts shop.

after the purchase record but before the student accounts. The total deposits should equal the total cash receipts.

The Inventory

Each industrial arts shop has on hand a minimum amount of supplies necessary for the efficient operation of the shop. This inventory is maintained by carefully budgeting collections. The total purchases plus the supply inventory must not exceed the total collections. In view of this the instructor must be careful not to over-buy supplies, or the industrial

arts shop will be in the red. A complete inventory taken once a year will help in planning purchases for the succeeding school year.

The inventory of supplies will give the name of the material; quantity; description giving the size, number, or weight; the unit price; and the total price. Included on the form will be the school number (see Fig. 14), the date, and the name of the instructor. Two copies will be made; the principal's copy will be filed in the respective school's business office, and the superintendent's copy will be filed in the office of the supervisor of industrial arts.

School No. _____ Date _____ Instructor _____

Name of Material	Quantity	Size, Number Weight, etc.	Unit Cost	Total Cost

Fig. 14.--An illustration of a proposed form to be used in the industrial arts shop for recording the inventory of supplies.

The inventory of tools and equipment is made on printed forms that have all tools and equipment listed in alphabetical order. Ample space is provided for listing any tools or equipment that might not be on the original form. Columns

are provided with printed headings which show the following information: (1) the date of the inventory, (2) new tools or equipment received, (3) the transfer of any tool or equipment, (4) the loss of tools, and (5) needed repair of tools and equipment. These inventory forms are good for the space of three years. (See Fig. 15). Two copies will be made: one copy will be filed in the principal's office and be at the disposal of the instructor, if needed. The other copy is the superintendent's copy and will be filed in the office of the Supervisor of Industrial Arts.

School _____ Room _____

Name of Tools and Equipment	September, 1950					September, 1951					September, 1952					September, 1953				
	Received	Transferred	Lost	Need Repairs	June, 1951	Received	Transferred	Lost	Need Repairs	June, 1952	Received	Transferred	Lost	Need Repairs	June, 1953	Received	Transferred	Lost	Need Repairs	June, 1953
AWL																				
AX, hatch																				
BITS, drill, 8-32 in																				
BITS, drill, 9-32 in																				
BITS, drill, 10-32 in																				

Fig. 15.--An illustration of the form to be used in the industrial arts shop for recording the inventory of tools and equipment.

Maintenance

The industrial arts instructor will be responsible for the up-keep and minor repair of tools, shop rooms, and furniture in the industrial arts shop in which he teaches. It will be the instructor's duty to see that the shop is clean and in order at all times. The instructor should enlist the aid of the pupils in this work as it will not only be helpful to the instructor but will tend to develop in the pupil a high standard of up-keep.

Tools that are broken and in need of welding will be taken to Paschal High School and there repaired by an instructor of industrial arts. Major repairs of machines and equipment which cannot be repaired by the instructor at Paschal High School will be taken by the individual instructor to one of the machine shops in the City of Fort Worth. Order numbers will be issued for this service as for any purchase of supplies or materials and the business office billed for this work. This service will be paid from the school fee account and not from the student fee account.

APPENDIX II

(Form 1- Letter Sent to Instructors of Industrial Arts in
Fort Worth, Texas.)

3329 Wilbarger
Ft. Worth, Texas

Dear Sir:

Enclosed you will find a questionnaire concerning your present method of keeping records in the industrial arts department. It is the aim of this study to develop an accounting and bookkeeping system that will be effective and accurate, yet, one simple enough that it can be kept without an excessive expenditure of time and effort.

A self-addressed envelope is provided for your convenience in returning this information, and your cooperation will be greatly appreciated.

Yours very truly,

Richard L. Boyd

(Form 2- Questionnaire Sent to Industrial Arts Instructors
in the Secondary Schools of Fort Worth, Texas.)

1. How cash is handled in the school shop.
 - a. Do you give duplicate receipts? Yes___ No___.
 - b. Do you give the receipts at the time the money is received? Yes___ No___.
 - c. Are these receipts numerically numbered?
Yes___ No___.
 - d. Do you turn cash received into office at the end of each day? Yes___ No___.
 - e. Do you keep cash on hand (for purpose of making change) at all times? Yes___ No___.
2. Do you make cash refunds? Yes___ No___.
3. What kind of fees do you collect from the students?
 - a. Maintenance? Yes___ No___.
 - b. Books? Yes___ No___.
 - c. Shop? Yes___ No___.
 - d. Others_____.
4. Do you keep a ledger account for each boy?
Yes___ No___.
5. If a ledger account for each boy is kept do you:
 - a. Post all fees collected to respective boy's account?
Yes___ No___.
 - b. Post the numerical number of each student's cash receipt to each respective ledger account? Yes___
No___.

- c. Post the amount of money received to each respective ledger account? Yes___ No___.
 - d. Post refunds to ledger accounts? Yes___ No___.
 - e. Post amount of all material used by student to the individual student's account? Yes___ No___.
 - f. Do your students use material requisitions in checking out supplies? Yes___ No___.
6. Do you close the ledger at the end of the term?
Yes___ No___.
7. Do you keep a permanent record of all order numbers requested? Yes___ No___.
- a. Do you record the name of the firm from which the purchase was made? Yes___ No___.
 - b. Do you record the date the order number was issued?
Yes___ No___.
 - c. Do you designate whether the order number is school fee account or student fee account? Yes___ No___.
 - d. Do you keep on file your carbon copy of materials bought? Yes___ No___.
8. Do you use student help in keeping your books?
Yes___ No___.
9. Does this help prove to be satisfactory? Yes___ No___.
10. Do you feel that a standard method of keeping industrial arts books is of importance? Yes___ No___.
11. Have you ever taken a course in bookkeeping? Yes___ No___.
12. Do you have any suggestions or recommendations?

(Form 3- Letter Sent to Industrial Arts Supervisors in the State of Texas.)

3329 Wilbarger
Ft. Worth, Texas

Dear Sir:

A survey is being conducted among the supervisors of industrial arts in the State of Texas to determine if there is a need for a bookkeeping and accounting system for teachers of industrial arts. A system of accounting and bookkeeping is sought that will be effective and accurate, yet, one simple enough that it can be kept without an excessive expenditure of time and effort.

A self-addressed envelop is provided for your convenience in returning this information, and your cooperation will be greatly appreciated.

Very truly yours,

Richard L. Boyd

(Form 4- Questionnaire Sent to Industrial Arts Supervisors
in the State of Texas.)

1. Do you have a standard bookkeeping system for your instructors to use? Yes___ No___.
 - a. Do all instructors keep books according to a standard system? Yes___ No___.
 - b. Do you think that a standard system should be used? Yes___ No___.
 - c. Do you request all instructors to turn in their receipt books and ledgers at the end of the school year? Yes___ No___.
 - (1) Are these books audited? Yes___ No___.
 - (2) By whom are these books audited?_____.
2. Do your instructors collect money from their students? Yes___ No___.

Do your instructors:

 - a. Use a receipt book? Yes___ No___.
 - b. Give duplicate receipts? Yes___ No___.
 - c. Give receipts at the time the money is received? Yes___ No___.
 - d. Numerically number these receipts? Yes___ No___.
 3. If the instructor does not collect money directly from the student, to whom is it paid? _____.
 4. Do your instructors keep a ledger account for each student? Yes___ No___.

5. Do your instructors obtain all supplies from a central warehouse? Yes___ No___.
6. Does the school furnish materials free to students? Yes___ No___.
7. Do your instructors purchase supplies from retail dealers? Yes___ No___.
8. If so, do you issue order numbers for the purchasing of these supplies? Yes___ No___.
9. In your opinion do most of your industrial arts instructors need further instructions as to how a good set of records should be kept? Yes___ No___.

(Form 5- Questions Asked in Personal Interviews with Administrators of Secondary Schools in Fort Worth, Texas.)

1. May the industrial arts instructors in your school turn into your office money that is collected each day, regardless of the amount? Yes___ No___.
2. Do you request that all money be turned into your office by a certain time during the school day? Yes___ No___.
 - a. If the above answer is yes, will you accept money from the instructor after this time? Yes___ No___.
 - b. If you will not accept money after a certain time during the school day, do you have an available vault in which the instructor may place the money he collects? Yes___ No___.
3. Do you think it advisable that each instructor turn into your office all money collected each day? Yes___ No___.
4. In your opinion could a satisfactory method be worked out in your school whereby the student would pay all fees and project money directly to your office rather than paying it to the industrial arts instructor?
Yes___ No___.
5. Do you have any suggestions or recommendations?

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