

A STUDY OF INDUSTRIAL ARTS SUPERVISION
IN SCHOOLS NOT EMPLOYING
SPECIAL SUPERVISORS

by

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CHAPTER I

INTRODUCTION

Little has been written concerning the supervision of industrial arts in the small junior and senior high school where special supervision is not, as a rule, provided. It is the writer's opinion that this field of education has been sadly neglected as far as supervision is concerned.

The purpose of the study of industrial arts as defined by Bonser "is clearly for the development of such knowledge, habits, attitudes, and appreciations as will be of the greatest value in helping individuals to use the material supplies of life in the most efficient and satisfactory ways."¹ School subjects included in the industrial arts classification include woodwork, mechanical drawing, sheet metal work, electricity, and other related studies.

Throughout this thesis the principal is considered the supervisor in the small high schools with which this study deals. This point of view is supported by Douglass and Boardman, who say:

"The trend has been, in recent years, constantly toward more adequate recognition of the high school

1 Burton and Others. The Supervision of Elementary Subjects. p. 585.

principal as responsible for instruction and supervision within the high school. He is held responsible by the superintendent for instructional results, and must therefore be clothed with authority if he is to accept this responsibility. Growing evidence of this tendency is found in educational literature throughout the last thirty years, and the practices in school systems are in this direction."²

With the above principle in mind the writer formulated a questionnaire which covered most of the duties of supervision of industrial arts that could be expected of a principal in the small school, considering the limited amount of time available for such. The questionnaire was sent to a number of industrial arts teachers in various parts of the country to determine how much and what kind of supervision is being given industrial arts classes in the various schools. The returned questionnaires have been tabulated and the answers to each individual question analyzed to determine the existing conditions, from which implications of desired improvements may be drawn.

Many principals feel at a loss when attempting to supervise industrial arts classes. With this in mind, and as a result of a need for such helps brought out by the returns from the questionnaire, the writer has recommended certain techniques that the principal might use in supervising industrial arts. These techniques

2. Douglass and Boardman. Supervision in Secondary Schools. p. 69.

are in no way complete nor can they be applied to every school, except in a general way.

With the newer trends in the philosophy of industrial education stressing the informational side of the subject as well as the skill obtained in the use of tools and materials, the writer is of the opinion that the principles of supervision used in other subjects should also apply to the subjects commonly termed "industrial-arts". Such being the case, teachers of the industrial arts subjects need the same amount of assistance in the improvement of instruction as teachers of other subjects.

Statement of the Problem

The problem selected by the writer includes the following:

1. To determine how much supervision is being given industrial arts teachers in small schools where specially trained supervisors are not employed.

2. To formulate certain aids or suggestions that may be used by either the superintendent or the principal in giving a measure of supervision to the industrial arts teacher.

The Limitations of the Study

This study is limited to the supervision of industrial arts subjects, which may also be termed "practical

arts", or "manual training", and which are usually defined as non-vocational in character. It is limited to schools where the principal or superintendent is the only supervising officer.

The results of the study were taken only from the reports of teachers actually engaged in the field of industrial arts at the present time, and in schools commonly classified as junior or senior high schools.

The Selection of Schools

The schools selected for the study include only those where some form of industrial arts work is actively carried on at the present time, and where the principal or the superintendent is considered the supervising officer.

Schools in the state of Arizona (the author's home state) were selected from the 1937 Arizona Educational Directory, the list including all junior and senior high schools offering industrial arts work. Since the Arizona list was limited (38 schools) additional schools were selected from the listed teaching appointments of industrial arts students attending the 1937 Summer Session at Oregon State College, as compiled by the Department of Industrial Arts, including only those schools meeting the limitations of this study as previously defined.

The states represented include Arizona, California, Oregon, Washington, Idaho, Iowa, Illinois, Kansas, and Utah.

Schools were selected from the Oregon State College student teaching appointments because the writer felt the teachers would be interested in the study, respond better to the questionnaire, and be well qualified to answer the questions asked, particularly because of their recent contacts with new developments in the educational field.

Questionnaire and Letter of Transmittal

The letter of transmittal and the questionnaire follow.

Nogales Public Schools

ADMINISTRATIVE OFFICES

NOGALES, ARIZONA

Within recent years the great importance of the principal's work in the supervision of instruction and the development of better teaching techniques in the small high school has come to be recognized, in addition to other duties heretofore recognized.

It is but natural that this service should be rendered by the principal. He is much closer to the staff members than any other administrative officer, especially in the small school system, and is therefore in the best position to give real assistance in the general supervision of all branches of work.

Because of an interest in the improvement of supervision, and because of a sincere belief that a study of these problems will be helpful to both the teachers and the administrative staffs of small school systems, it is my purpose to gather pertinent data concerning the supervision, specialized or unspecialized, given by principals of a number of the typical small high school systems. The study will concern itself specifically with the supervision given industrial arts. This particular phase of the school program has been chosen for the following reasons:

- 1) From observation, the practical arts subjects in general have been given less supervision than other subjects, probably because the principals are often not qualified for anything more than a minimum of "unspecialized" supervision in these fields.
- 2) It is thought that if, as a result of this study, there may be developed some definite techniques or devices that can be used in the limited time available for supervision of Industrial Arts, principals may be aided in giving to the new phases of Industrial Arts the same supervision they are able to give other subjects with which they are more familiar.

It will be appreciated if you will record on the enclosed questionnaire your reaction to the situation as it exists in your school. There is a duplicate copy of the questionnaire for your files, and a return envelope for the copy to be used in this study. A SUMMARY OF THE RESULTS WILL BE MADE AVAILABLE TO ALL WHO COOPERATE IN THE STUDY.

Every response will be treated in strict confidence. The questionnaire need not be signed if you prefer to remain anonymous, but your name will be needed in case you want a copy of the report when completed. Neither you nor your school will be identified in the tabulation of results.

Very truly yours,

H. L. Stiles, Coordinator

SURVEY OF SUPERVISION OF INDUSTRIAL ARTS CLASSES
IN SCHOOLS WHERE SPECIAL SUPERVISION
IS NOT PROVIDED

Please check or fill in the desired information.
Substitute the word "superintendent" for "principal" if
the superintendent is the supervisor in your school.

1. Does the principal assist you in working out definite objectives for your courses?.....(yes) (no)
2. Are you required to follow a course of study?.....(yes) (no)
3. Does the principal assist you in adjusting your class-work plans to the state course of study?.....(yes) (no)
4. Does the principal check your plans for your teaching procedures?.....(yes) (no)
5. Did the principal assist you in selecting your printed instructional material, textbooks, reference material, etc.?.....(yes) (no)
6. Are you required to have outlines for your demonstrations?.....(yes) (no)
7. Does the principal offer suggestions for improving your demonstrations?.....(yes) (no)
8. Does the principal require that you give tests in your industrial arts classes?.....(yes) (no)
9. Does the principal suggest ways in which you might improve your shop?.....(yes) (no)
10. Does the principal hold individual conferences with you in regard to your work?.....(yes) (no)
11. Does the principal suggest certain periodical articles for you to read in regard to your work?.....(yes) (no)
12. Does the principal aid or suggest methods to be used in handling your extra-instructional activities, such

keeping records of supplies,
inventories, etc.?.....(yes) (no)

13. Does the principal encourage you to
write articles for magazines or read
papers at local, county, and state
teachers' meetings?.....(yes) (no)

14. Does the principal use the teachers'
bulletins for supervisory purposes?.....(yes) (no)

15. How much time does the principal have
which he might devote to supervision
in the school? Check one:

()	()	()	()
1 period	2 periods	3 periods	4 or more
daily	daily	daily	periods daily

16. How many teachers does your principal have
under his supervision?.....()

17. How many teachers' meetings each year are
devoted to problems of general supervision?.....()

18. How often does the principal visit your classes
during the year for supervisory purposes?

Check one

Daily?.....	()
Twice a week?.....	()
Once a week?.....	()
Once a month?.....	()
Once a semester?....	()

19. List the books your principal has asked you to read in
connection with your school work during the past year.

Please complete the answers and mail to
Mr. H. L. Stiles
Nogales High School
Nogales, Arizona

CHAPTER II

RESULTS AND INTERPRETATIONS
OF THE QUESTIONNAIRE STUDYNumber of Returns from the Questionnaire

Of the one hundred questionnaires sent to industrial arts teachers in various sections of the country, seventy-eight were checked and returned. Teachers responded from the following states:

<u>State</u>	<u>No. Sent</u>	<u>No. Returned</u>	<u>% Returned</u>
Arizona.....	38	29	76
Oregon.....	30	21	70
California.....	12	11	91
Washington.....	9	7	77
Iowa.....	4	3	75
Minnesota.....	1	1	100
Idaho.....	2	2	100
Illinois.....	2	2	100
Utah.....	2	1	50
Kansas.....	1	1	100
Total.....	100	78	78

Two questionnaires were returned with the notation that they could not be answered satisfactorily. One teacher stated he was under the supervision of a special city supervisor, which eliminated his response to the questionnaire.

Detailed Analysis of Results of Questionnaire

A detailed study of the replies to the questionnaire and the interpretations of the replies is given herewith.

In the instructions accompanying the questionnaire

the teacher was asked to substitute the word "superintendent" for "principal" if the superintendent was considered the supervisor in his school. Eight replies substituted the word "superintendent" in some questions, so the returns seem to indicate the principal is considered to be in charge of supervision in most of the schools from which responses were received.

The questions follow in order, with responses and interpretations accompanying.

1. Does the principal assist you in working out definite objectives for your courses?

Replies: yes, 17; no, 60; not checked, 1.

The large percentage of teachers not receiving assistance in formulating objectives for their courses seems to indicate that if educational objectives are set up in these schools they are left entirely to the teachers. The ability of many teachers to do this may be doubted. Referring to such a condition, Douglass and Boardman say:

"A large proportion of experienced teachers have not thought through the objectives of their subject in a thorough way on a practical plane. They are not for the most part, familiar with modern investigations and expert opinions as to the relative value of the various items, topics, or units of their field."³

3 Douglass and Boardman. Supervision in Secondary Education. p. 320.

It appears from the previous statement that industrial arts teachers, like any other teachers, need some assistance in formulating their objectives, and the questionnaire replies show that they are not getting that assistance from their principals.

2. Are you required to follow a course of study?

Replies: yes, 21; no, 57.

The preponderance of negative replies paints a poor picture of the position industrial arts holds in relation to other organized school subjects. The inference is that the subject is looked upon as a space filler, rather than as a regular subject aimed at definite accomplishment in these schools. Lack of knowledge of the subject on the part of the principal may account for some of this condition. Uhl has this to say in regard to content:

"Although general supervisors are not proficient in all the departments of their schools, they can prepare themselves as expert counselors in the selection and organization of content in all departments."⁴

Courses of study need not be elaborate affairs but only a general outline of the work to be carried on during the year.

3. Does the principal assist you in adjusting your classwork plans to the state course of study?

4 Uhl, Willis L. The Supervision of Secondary Subjects. p. 11.

Replies: yes, 14; no, 65; not checked, 1.

In speaking of this problem, Douglass and Boardman have this to say:

"In the matter of curriculum adjustment the supervisor has an important part to play. It is extremely doubtful that within the present professional generation the level of the rank and file of teachers in professional training, insight, and background, can be sufficiently elevated to insure that, without guidance by better qualified teachers, they will make the most desirable readjustments in the materials which they teach."⁵

The necessity for curriculum adjustments, and help in making those adjustments is further emphasized by the following quotation from the "Research Bulletin of the National Educational Association":

"The revision of the curriculum in progressive school systems is no longer a scissors-and-paste activity. Nor are school authorities satisfied with courses of study devised entirely by theorists and experts. The current plan is to enlist teachers, principals, supervisors and experts in a co-operative revision project. Here is where the principal has an opportunity for active and creative leadership."⁶

4. Does the principal check your plans for your teaching procedures?

Replies: yes, 20; no, 58.

It is not expected that the principal will have time to check all the teaching plans, but occasionally he should require a copy of the daily lesson plan, for

5 Douglass and Boardman. Supervision in Secondary Schools. p. 315.

6 Research Bulletin of the National Educational Association. The Principal as a Supervisor. Vol. VII, No. 5, November 1929. p. 299.

several reasons. As stated by Douglass and Boardman:

"They serve as a source of information relative to the ideas of each teacher as to what constitutes a good organization of subject matter and an effective classroom procedure, in view of the obligations of the course."⁷

"Such plans will serve to picture to him not only many meritorious procedures, deserving of expression of interest and admiration on his part, but they will enable him also to discover weaknesses in individual teachers, which he may keep in mind that he may render assistance where it will do the most good when favorable opportunities present themselves."⁸

In view of the quotations from Douglass and Boardman, it would seem that more principals should pay more attention to lesson planning as an important technique of classroom procedure. Ericson says, in regard to teaching industrial arts:

"No lesson or demonstration can be presented with the greatest measure of success unless the instructor has first developed a plan."⁹

5. Did the principal assist you in selecting your printed instructional material, textbooks, reference material, etc.?

Replies: yes, 19; no, 59.

Apparently more than three-fourths of the teachers interrogated have a completely free hand in the choice of printed material to be used, without benefit of advice from the principal. It is only within recent years that

7, 8 Douglass and Boardman. Supervision in Secondary Schools. p. 302.

9 Ericson, E. E. Teaching Problems in Industrial Arts. p. 81.

much of the printed material relating to industrial arts has appeared on the market. With this influx of new material, teachers of industrial arts are using more books in their classes. It seems reasonable that principals should assist in selecting this material for industrial arts work as well as in other subjects.

The selection of printed instructional material is one of the most important phases of teaching. In speaking of the ability of teachers to choose such material wisely, Douglass and Boardman conclude:

"Those who are to participate intelligently in course-of-study reorganization or textbook selection should be made familiar with the broad aspects of educational theory, science, and practice.... A large proportion of experienced teachers, though well versed in their subject matter, have never taken the time to orient themselves thoroughly in the literature relating to the points just mentioned."¹⁰

6. Are you required to have outlines for your demonstrations?

Replies: yes, 10; no, 67; not checked, 1.

The demonstration is the most commonly used method of teaching pupils the proper use of tools and materials in industrial arts classes. Therefore, in order to do an effective job of demonstrating, it must be planned in advance. Ericson recognizes this in the following statement:

¹⁰ Douglass and Boardman. Supervision in Secondary Schools. pp. 319-320.

"Ability to demonstrate, however, comes only from analysis of the problem, and organization of the problem, and organization of teaching procedure, plus an intimate knowledge of those who are to learn from the presentation."¹¹

A well organized demonstration cannot be made unless the teacher first sets down the steps to be covered and the tools and materials which are to be used. Principals should require outlines, particularly for the "key" demonstrations, in order to better judge the teacher's preparation of the subject-matter and his ability as an organizer of essential elements of instruction.

7. Does the principal offer suggestions for improving your demonstrations?

Replies: yes, 15; no, 62; not checked, 1.

The quality of shop work depends almost entirely on the effectiveness of the demonstration. It should be within the interest of the principal to study the effectiveness of the demonstration in terms of pupil interests and responses. Although the principal may not be able to check the accuracy with which the teacher handles the tools and materials, his knowledge of the psychology of learning and teaching principles should enable him to assist the teacher in making his demonstrations more effective.

8. Does the principal require that you give tests in

11 Ericson, E. E. Teaching Problems in Industrial Arts. pp. 58-59.

your industrial arts classes?

Replies: yes, 23; no, 55.

Until recently very little has been done in the field of testing in industrial arts work, although, as Douglass and Boardman say: "In fact, measurement has always been of fundamental importance in education."¹² With the newer philosophy of industrial arts stressing the informational side of the subject as much as the skill side the principal should insist that tests be given which cover that side of the work. The need for measurement in this subject is well expressed by Ericson who says:

"It should be needless to point out, however, that teachers who teach from the beginning of the year to the end without attempting to check at regular intervals their progress and advancement are failing in one of their important functions."¹³

The importance of checking on student progress is also brought out in the following quotation:

"The important person in the school is the student. Whatever checking up is done should be in terms of the student - what he is doing, what he is getting, what he is becoming. The public has a right to expect in terms of student development, a fair return on its huge expenditures for education. We ought to be more desirous of checking the progress of our students than the most critical parent. The supervisor should help by means of objective observation, tests and other means at his disposal to check up on the progress of the pupils so that the teacher

12 Douglass and Boardman. Supervision in Secondary Schools. p. 371.

13 Ericson, E. E. Teaching Problems in Industrial Arts. p. 239.

can better see the direction in which improvement lies."¹⁴

The importance of testing in industrial arts work is undoubtedly not realized by many principals because they are not aware of the new instructional trend in that work. They feel at a loss in dealing with a subject not familiar to them.

9. Does the principal suggest ways in which you might improve your shop?

Replies: yes, 40; no, 38.

This question covers a number of things, such as general appearance, cleanliness, heating, lighting, and arrangement of tools and materials. Such items may be neglected by the teacher, due to large classes, and to the fact that he may tend to overlook them unless they are called to his attention. Through constant association the teacher may become so accustomed to certain poor conditions that they do not attract his attention. An outsider will immediately notice items often overlooked by the teacher. Therefore, the principal on his round of visits should be on the lookout for such things and call them to the attention of the teacher. Judging from the replies to this question, the principal more

14 Let's Talk About Supervision, Howard G. Spalding. Junior Senior High School Clearing House. Vol. VI, No. 7. March, 1932. p. 434.

often helps in this matter than with many other problems, perhaps because it is more obvious.

10. Does the principal hold individual conferences with you in regard to your work?

Replies: yes, 36; no, 42.

The value of the individual conference is well expressed in the following paragraph:

"Conference between teacher and principal cultivate mutual understanding. The teacher has an opportunity to explain her techniques, to describe difficulties, and to ask for aid. Upon these immediate problems many successful principals build their supervisory programs."¹⁵

The returns from the questionnaire indicate nearly fifty per cent of the principals use the individual conference in their supervisory program. Many more would undoubtedly do so if they felt equipped to deal with supervision of industrial arts.

11. Does the principal suggest certain periodical articles for you to read in regard to your work?

Replies: yes, 23; no, 55.

Principals who suggest magazine articles for their teachers to read are using a very effective means of educating their teachers in the newer trends in education. Also, it indicates to the teacher that the principal is interested in his teaching and is keeping

¹⁵ The Principal as a Supervisor. Research Bulletin of the National Educational Ass'n. Vol. VII, No. 5.

up with the literature in his field. Douglass and Boardman say:

"The supervisor should be on the constant lookout for good reading materials for his staff. He should at all times make it easy for them to find stimulating articles, books, and materials which relate to their problems and immediate projects."¹⁶

12. Does the principal aid or suggest methods to be used in handling extra-instructional activities, such as keeping records of supplies, inventories, etc.?

Replies: yes, 27; no, 51.

The industrial arts teacher probably has more extra work along this line than most teachers in other departments. The nature of his work makes it necessary for him to do a great deal of book work which takes a large amount of time if the work is done accurately and efficiently. The principal who assists the teacher by offering suggestions for better methods of record keeping which are not so time consuming and elaborate will be helping to increase the amount of time the teacher has for lesson preparation and instruction. Many principals are much better equipped to organize record keeping than are industrial arts teachers, due to differences in training, and can be a very real help to the teachers in this respect.

13. Does the principal encourage you to write

¹⁶ Douglass and Boardman. Supervision in Secondary Schools. p. 305.

articles for magazines or read papers at local, county, and state teachers' meetings?

Replies: yes, 27; no, 51.

The greatest value gained from writing articles is the study and research which usually is necessary in their completion. Principals who encourage writing will find the teachers will not only broaden their knowledge with respect to their special fields but with respect to the whole field of education. It will also encourage them to try out new methods in their teaching procedures.

14. Does the principal use the teachers' bulletins for supervisory purposes?

Replies: yes, 27; no, 46; not checked, 5.

In the smaller school systems the bulletin is not generally used as much as in the larger schools where the supervisor does not come in contact with his teachers quite so often. The main value derived from the teachers' bulletin is that it furnishes a record for the teacher's files--a record of new books, magazine articles, and outlines of important discussions or reports presented in various teachers' meetings. The results of the questionnaire seem to show that what supervision is done in the small school by the principal is done personally, rather than by the impersonal bulletin.

15. How much time does the principal have which he

might devote to supervision in the school?

Replies: 1 period daily	6
2 periods daily	14
3 periods daily	13
4 or more periods daily	41
not checked	4

According to the "Research Bulletin of the National Education Association" published in November 1929, teaching principals should devote thirty-five per cent of their time to supervision.¹⁷ This would mean that in the average school schedule a principal must have at least two periods a day to devote to supervision to be efficient in that branch of his work. Of the replies to the questionnaire, six stated the principal has less than two periods a day for supervision and four did not answer the question. Sixty-eight of the 78 principals had two or more periods a day for supervision. In other words, about 85 per cent of the principals had adequate time at their disposal. The conclusion then must be that it is not lack of time which accounts for inadequate supervision of the teachers in these schools by their principals.

The time allotment of the principal is usually in-

17 The Principal as a Supervisor. Research Bulletin of the National Educational Association. Vol. VII, No. 5. November 1929. p. 289.

fluenced by local conditions and personal factors. However, much of this may be adjusted. The "Research Bulletin" quoted above says:

"But these local and personal factors are poor excuses for not giving a fair share of the day to supervision. Every principal owes it to his school to avoid time-consuming, routine tasks. Administrative procedures should be used to free him for study and research of classroom instruction. The initiative for undertaking such a program lies chiefly with the individual principal."¹⁸

16. How many teachers does your principal have under his supervision?

Replies:	3 to 10 teachers.....	24 schools
	11 to 20 teachers.....	23 schools
	21 to 30 teachers.....	17 schools
	31 to 40 teachers.....	10 schools
	41 to 50 teachers.....	0 schools
	51 to 60 teachers.....	3 schools
	reply not checked.....	1 school

The comparative relationship of the number of teachers under each principal to the amount of supervision done by each principal in amount of room visiting, and amount of supervisory time is dealt with under "General Conclusions Drawn as a Result of this Study".

17. How many teachers' meetings each year are devoted to problems of general supervision?

18 The Principal as a Supervisor. Research Bulletin of the National Educational Association. Vol. VII, No. 5. November 1929. p. 289.

Replies:	no meetings per year	15
	1 to 5 meetings per year	24
	6 to 10 meetings per year	21
	11 to 20 meetings per year	3
	21 to 30 meetings per year	1
	31 to 36 meetings per year	3
	answer not checked	11

It can be seen plainly by these tabulated results that the average principal devotes comparatively few teachers meetings to matters other than routine administrative problems. Fifteen principals, or 19 per cent, do not devote any meetings to supervision. Twenty-one principals or about 25 per cent, devote six to ten meetings per year to supervision. Only six, or seven per cent, use more time than that. There being 36 weeks in the average school year, and, in many schools, a teachers' meeting once a week, it would seem that more principals should devote more meeting time to supervisory problems if a good piece of work is to be done by principals and teachers, especially in the schools with fairly large staffs and limited time at the disposal of the principal.

Many writers recommend that teachers' meetings be held on a regular schedule so that teachers can adjust their programs accordingly. Two meetings a month for general meetings has been suggested by several writers.

Douglass and Boardman quote Cubberly as suggesting "a short meeting possibly at lunch on alternate weeks for administrative matters, so that two meetings a month may be guaranteed to supervision".¹⁹ With the above quotation in mind, the principals covered in this study devote too little meeting time to problems in supervision.

18. How often does the principal visit your classes during the year for supervisory purposes?

Replies:	Daily.....	2	2.9 %
	Twice a week.....	8	11.7 %
	Once a week.....	8	11.7 %
	Once a month.....	21	30.8 %
	Once a semester...	19	27.9 %
	Never.....	10	14.7 %
	Answer not checked	10	

The number of classroom visitations will naturally vary with the amount of time the principal has to devote to supervision. Local conditions, such as amount of administrative duties, size of teaching load, and number of teachers in the school are factors which influence the number of visits made by principals. Therefore, determining a set number of visits per semester per teacher would be impossible. Some teachers may be called on oftener than others, due to lack of teaching experience, and the need for more help, while others may be neglected by the principal because of an antag-

19 Douglass and Boardman. Supervision in Secondary Schools. p. 198.

onistic attitude by the teacher toward supervision. In a study made by Hughes, it was shown that the average number of visits made by the principal in a given semester as reported by 451 high school teachers was 5.8.²⁰ That would be an average of 1.2 visits per month. This study shows that only slightly more than 57 per cent make classroom visits once a month or oftener. These figures indicate there should be more classroom visits by principals, for supervisory purposes, in order to see that the work in the industrial arts shop is meeting the same standards, educationally, as those in other subjects.

19. List the books your principal has asked you to read in connection with your school work during the past year.

Replies: 65 did not answer this question at all.
 7 stated they were never asked to read.
 6 listed books they were asked to read.
 3 mentioned one book.
 1 mentioned two books.
 1 mentioned three books.
 1 mentioned four books.

The returns from this question seem to indicate the principals are not encouraging the industrial arts teachers to further their progressional growth through reading. These principals are missing an opportunity of showing their interest in shop work and encouraging the teachers to broaden their educational knowledge. The

20 Douglass and Boardman. Supervision in Secondary Schools. p. 126.

principal should be on the lookout for good reading material in the field of education, whether the books deal directly with the teacher's field or not. "He should select carefully, with the immediate needs and interests of his staff as a group and as individuals, in view."²¹

21 Douglass and Boardman. Supervision in Secondary Schools. p. 306.

CHAPTER III

CONCLUSIONS AND RECOMMENDATIONS

The results of this study show that very few of the teachers of industrial arts included in the study receive much supervision from their principals. The principals seem to leave this part of the educational program almost entirely in the hands of their teachers.

The questionnaire, which was used to determine the amount of supervision given industrial arts teachers, consisted of nineteen questions. Fourteen of the questions were so stated that they could be answered either positively or negatively. The answers to these fourteen questions are used as one basis for determining the amount of supervision accorded teachers of industrial arts.

The returns on these fourteen questions seem to indicate a few of the principals regard the duties covered by the questions as a part of their supervisory program. This is verified by the fact that the average number of positive replies was 4.05 against 9.9 negative replies.

For the purpose of further study, the number of teachers under each principal was divided into four groups as follows:

3 to 10 teachers

11 to 20 teachers

21 to 30 teachers

31 to 60 teachers

This grouping is used as a basis for comparisons and conclusions. Under this grouping the average number of negative and positive replies is shown by the following table. The amount of supervisory helps is indicated by the number of positive replies.

TABLE I

Average number of negative and positive replies to the first fourteen questions in the questionnaire.

No. of teachers under each principal	3 to 10	11 to 20	21 to 30	31 to 60
Average number of positive replies	4.5	3.6	5.0	3.1
Average number of negative replies	9.2	10.3	8.8	10.8
No. of teachers in each group	24	23	17	14

The teachers receiving the most help were in schools where the number of teachers range from 21 to 30. The average number of positive replies in this group is five while the lowest number is found in the group of teachers which range from 31 to 60. The average number of positive replies in this latter group is 3.1. The second highest number of positive replies is in the schools where principals have the smallest

number of teachers (3 to 10) under their supervision. The average number in this group is 4.5 positive replies. Results here show that industrial arts teachers receive more help from their principals in schools where the number of teachers range from 21 to 30 than in schools where the number of teachers is above 30, or below 20, as indicated by the number of negative and positive replies to the questionnaire.

Table II shows the average percentage of supervisory time each principal has available. The number of teachers under his supervision is shown in the same groups as in Table I.

TABLE II

The amount of supervisory time available to the principals in the various groups, expressed in percentages.

No. of teachers under each principal	3 to 10	11 to 20	21 to 30	31 to 60	average
1 period per day	12.4%	8.6%	0	9.0%	8.1%
2 periods per day	29.1%	13.0%	12.5%	18.1%	18.1%
3 periods per day	16.6%	30.4%	12.5%	0	17.7%
4 or more periods per day	41.7%	47.6%	75.0%	72.9%	56.1%
Average number of periods in each group	1½	3+	3+	3+	
Number of replies in each group	24	23	16	11	

Replies not checked: 4.

Principals grouped as to amount of supervisory time:

1 period.....	6
2 periods.....	14
3 periods.....	13
4 or more.....	41

The results of this question show that principals who had from 21 to 30 teachers under their supervision have the most time to devote to supervision; 75% of them

had four or more periods per day; 12.5% had three periods; 12.5% had two periods; and there were none having one period per day. The next highest group were the principals who had between 31 and 60 teachers under their supervision. The results show that 72.9% had four or more periods per day; there were none who had three periods, but 18.1% had two periods, and 9% had only one period per day. The next highest amount of supervisory time is in the group of teachers between 11 and 20. The principal's supervisory time in this group ranged as follows: 47.6% had four or more periods, 30.4% had three periods, 13% had two periods, and 8.6% had one period. The percentage of supervisory time in the group of principals having the least amount of time, the schools having 3 to 10 teachers, ranged as follows: 41.7% had four or more periods, 16.6% had three periods, 29.1% had two periods, and 12.4% had only one period per day to devote to supervision. The results of this question indicate that 56.1% of all the principals reported have four or more periods, 17.7% have three periods, 19.1% have two periods, and 8.1% had only one period a day to devote to supervision. Using a six period day as an ordinary school day, only 8.1% of the principals covered in this study have less than 30% of the school day to devote to supervision. On the basis of the standard set by the research by the National

Educational Association, teaching principals should divide their time so as to have 35% of the teaching day to devote to supervision.²² Such being the case, about 73.8% of the principals in this study have ample time for supervision. Therefore, the lack of supervision in industrial arts must not be due to lack of time in most of the cases in this study.

Comparing the amounts of supervisory time in Table II with the numbers of positive and negative replies tabulated in Table I, the group of principals having the most positive replies also are the principals who have the most supervisory time. These results show that the amount of supervisory time a principal has bears a relationship to the amount of supervisory assistance given industrial arts teachers, although in Table I the second highest number of positive replies is found in the group of principals having the least amount of supervisory time as shown by Table II.

In determining the amount of supervision being given industrial arts teachers, the number of teachers' meetings is also used as a basis for forming conclusions. This information is tabulated in the following table.

22 The Principal as a Supervisor. Research Bulletin of the National Educational Association. Vol. VII, No. 5, November, 1929. p. 289.

TABLE III

The average number of teachers' meetings each principal devoted to problems of general supervision per year.

No. of teachers under each principal	3 to 10	11 to 20	21 to 30	31 to 60	average for all groups
Average number of teachers' meetings per year	5.2	5.5	5.2	11.3	6.8
No. of principals not holding meetings	6	2	3	4	
No. of principals in each group	22	18	14	13	

Questionnaires not checked: 11.

Per cent of principals not holding supervisory meetings:
22.3%.

The average number of teachers' meetings in the first three groups in Table III seems to be about the same--5⁺ per year. The group 31 to 60, representing the larger schools, holds slightly more than twice as many general supervisory meetings per year. The average number of teachers' meetings for the entire group of teachers is 6.8.

The principals included in this study hold about one-third as many teachers' meetings for supervision as is

recommended by Cubberly, who says that two meetings per month should be guaranteed for supervision.²³ The results of the questionnaire also show that 22.3% of the principals do not hold any teachers' meetings for general supervision. There seems to be no relationship between supervisory meetings and the amount of supervision as shown by the number of positive and negative replies in Table I. The group of principals having between 31 and 60 teachers in Table III hold twice as many teachers' meetings as the principals in the other three groups, but Table I shows the least number of positive replies in the same group. Results here show no relationship between the number of teachers' meetings and the amount of supervision given industrial arts teachers.

23 Douglass and Boardman. Supervision in Secondary Schools. p. 198.

TABLE IV

The number of classroom visits made by principals of the various schools, expressed in percentage.

No. of t teachers under each principal	3 to 10	11 to 20	21 to 30	31 to 60	average
% of prin- cipals not visiting the shop during the semester	30.0	9.5	6.6	18.1	14.7
% of prin- cipals making one visit per semester	20.0	19.0	33.3	36.3	27.9
% making 4.5 visits	20.0	23.7	26.6	45.5	30.8
% making 18 visits	15.0	19.0	20.0	0	11.7
% making 36 visits	10.0	19.0	13.3	0	11.7
% making 90 visits	5.0	9.5	0	0	2.9
No. of replies in each group	20	21	15	11	

Replies not checked: 10.

Table IV shows the number of times each principal visits his industrial arts teachers during a semester. In making the table, ninety days is taken as the average semester and the number of visits as expressed by the

questionnaire in percentages is as follows: daily or 90 visits, 2.9%; twice a week, or 36 visits, 11.7%; once a week, or 18 visits, 11.7%; once a month, or 4 visits, 30.8%; one visit per semester, 27.9%; no visits, 14.7%. The largest percentage of principals visit their industrial arts classes only once a month. A little more than one-fourth of the principals make only one visit per semester. These results indicate that principals as a whole spend very little time in industrial arts classes.

In comparing the number of visits in Table IV with the amount of supervisory time in Table II, the group of principals ranking third in amount of supervisory time visit their classes a greater number of times per semester than those in the groups having the most supervisory time. Results here indicate that the amount of supervisory time has little bearing on the number of classroom visits per semester.

In comparing Table IV with Table I there is an indication that the principals who visit the industrial arts classes more than once a month give more supervisory assistance as indicated by the number of positive replies.

Summary of Conclusions

1. In the medium-sized schools (21 to 30 teachers), principals give more supervisory assistance to the

industrial arts teachers than either the larger or smaller schools.

2. Principals who have the smallest number of teachers under their supervision ranked second in amount of supervision accorded industrial arts teachers.

3. 56.1% of the principals had an average of four or more periods per day to devote to supervision.

4. About 75% of the principals, having 21 or more teachers under their supervision, have four or more periods per day to devote to supervision.

5. Very few principals have less than two periods per day to devote to supervision. This study finds only 8.1% of the principals have one period per day.

6. Using six periods as the ordinary school day, 73.8% of the principals in the study have about one-half of the school day to devote to supervision.

7. 22.3% of the principals do not hold teachers' meetings for the purpose of discussing problems of general supervision.

8. Results of the study indicate that principals in the larger schools regard teachers' meetings as important in the supervisory program. In schools with more than thirty teachers, principals hold twice as many meetings as in the smaller schools.

Recommendations

In view of the findings of this study, it is recommended that the principal:

1. Devise objective techniques which will assist them in supervising industrial arts subjects.
2. "Encourage initiative, originality, and experimentation on the part of individuals"²⁴ teaching industrial arts.
3. Keep a record of the number of visits made, approximate length of each visit, and the reason for making each visit to the shop classes.
4. Establish a frank relationship of mutual cooperation with the teachers.
5. Use the same principles of supervision in shop subjects as recommended for other subjects.
6. Hold conferences with teachers to acquaint themselves with the industrial arts work and to assist in the formulation of methods for improving instruction.

24 Alberty and Thayer. Supervision in the Secondary School, p. 86.

CHAPTER IV

SUGGESTED AIDS FOR SUPERVISING
INDUSTRIAL ARTS SUBJECTS

1. Classroom visits.
2. The use of printed instruction material in industrial arts classes--text, references, periodicals, etc.
3. Tests and measurements in industrial arts.
4. Form for checking preparations for opening school in industrial arts shops.
5. Form for the observer.
6. Form for observing classroom atmosphere in industrial arts shops.
7. Form for recording data and facts concerning the general appearance of industrial arts shops.
8. Form for observing safety precautions in industrial arts shops.
9. Form for checking preparations for closing school in industrial arts shops.
10. Industrial arts supplies form for preliminary budget estimates.
11. Financial statement for industrial arts shops.

Suggestions for forming objectives, building courses of study, holding teachers' meetings, conducting individual conferences, making teacher ratings, and doing re-

search work in industrial arts are not dealt with in this list of aids as they are very ably dealt with in the various books on education.

Classroom Visits

Classroom visitation is the only way in which a principal can secure first hand information relating to the activities carried on in the industrial arts shops. Although classroom visiting consumes more time than other methods of supervision, it is the only method whereby he can secure first hand information concerning the work done in the shop. In order to maintain a sympathetic understanding of the general problems involved in the teaching of industrial arts, the principal must keep in close contact with both teacher and pupil under typical classroom conditions.

Douglass and Boardman have this to say in regard to classroom visits: "Visitation has, unfortunately, drifted in the direction of becoming inspectional in nature and purpose."²⁵ Inspectional visits should be carried on to determine general appearance of the shop, lighting, heating, shop organization, pupil discipline, and similar routine details, but that should not be the purpose of all classroom visiting. Supervisory visits

25 Douglass and Boardman. Supervision in Secondary Schools. p. 120.

should be made both for the purpose of improving instruction and checking on the physical condition of the shop. To keep classroom visits from becoming entirely inspectional in nature, they should be followed up with conferences in which both the strength and weakness of the teacher are discussed, and plans made to overcome these weaknesses by developing specific methods of classroom procedure.

"The principal should observe often and long enough to form reliable judgments."²⁶ The frequency and length of visits also depend upon the attitude of the principal toward supervision and the amount of time he has to devote to it. Supervisory visits should be spread rather evenly among the teachers. Industrial arts teachers should be given, on the average, as much time as teachers of other subjects. They have just as many teaching problems and as much need for helpful suggestion as have the teachers of other subjects. The length of the visit will depend on the nature of the visit. For general supervisory purposes at least 20 to 30 minutes should be spent in the classroom, or better yet, a full period.

The frequency of the visit will depend on the length of each visit. Douglass and Boardman report that "The average number of visits made in a given semester as re-

26 The Principal as a Supervisor. Research Bulletin of the National Educational Association. Vol. VII, No. 5, November, 1929. p. 299.

ported by 451 high school teachers to Hughes, was 3.8 by the superintendent, and 5.8 by the principals."²⁷ More visits would be made if the teachers would request them, although such visits might not be profitable to either the principal or the teacher. Poor teachers will issue few invitations and shrewd teachers will make a special effort to show off work which may not be representative of their ordinary daily work. Call visits should be encouraged as they will tend to make the teacher feel at ease when being observed. Douglass and Boardman say:

"Visiting only upon call will restrict very greatly the opportunities of the supervisor to see how various supervisory projects are faring in their execution, inasmuch as that plan does not permit him to direct his own observation."²⁸

In small schools where the principal has only a limited amount of time, visits need to be carefully planned beforehand. This is especially true of shop classes, inasmuch as principals as a rule are not trained in that line of supervision. A previous conference with the teacher concerning the work may aid the principal in determining his visiting program. As a rule, recitations and demonstrations are not carried on through regular daily schedules in most industrial arts classes, so the principal will save time by obtaining a teaching schedule concerning the work carried on in the shop. Each visit

27, 28 Douglass and Boardman. Supervision in Secondary Schools. pp. 126-127.

should be made with a definite purpose in mind. Special notes concerning certain phases of the work will aid the principal in sticking to that particular purpose and also provide him with a record of each visit for future references. Such records will provide him with discussion material when holding an individual conference with the teacher. Special forms are included in this thesis for checking various phases of industrial arts work. These forms have been prepared for the purpose of saving time, making the visit objective, and to provide a permanent record for the supervisor's files. These forms include the object of the visit or type of work being observed, the time of visit, date, and the length of the visit. Although these forms will not exactly fit the work carried on in every school, they will serve as a guide when preparing for the visit.

Following each visit the principal needs to evaluate and diagnose the results of his visit as Douglass and Boardman point out: "classroom visitation is merely getting ready to supervise."²⁹

The Use of Printed Instruction Material in Industrial Arts Classes

The use of textbooks in industrial arts classes is

29 Douglass and Boardman. Supervision in Secondary Schools. p. 142.

a relatively recent development. This has been brought about by an increase in the size of classes and the newer trends in industrial arts, which stress related information even more than a high degree of skill. Also as Ericson says:

"Within recent years there have appeared, --- well written books upon practically all mechanical subjects that are offered in schools, as well as upon methods of using the books and teaching the work. And these books have been developed because of an existing need for strengthening the arm of the instructor and making his time and efforts of greater benefit to his students."³⁰

These books are classified as textbooks, project books, and work books. The use of printed instructional material tends to increase the amount of knowledge acquired by the students, concerning both technical and related information. They also help most teachers to organize their work in a more efficient manner. The use of textbooks and other types of printed instructional material tends to standardize shop work in all schools as far as method and content are concerned.

Many teachers have objected to the use of books in their classes because of the nature of the work and the lack of classroom space for recitations and study. However, principals who require the use of objective tests in their shop classes can hardly expect the best results

30 Ericson, E. E. Teaching Problems in Industrial Arts. p. 143.

unless some form of printed material is put in the hands of the students to study. In cases where printed material cannot be had because of cost or lack of material in that field, typewritten, printed, or mimeographed material in the form of instruction sheets can be used. Instruction sheets are defined by Struck as "all of the various forms of individual loose-leaf sheets that are commonly referred to under such designations as: operation sheets, project sheets, information sheets, and assignment sheets."³¹ The construction and use of the various types of instruction sheets may be found in the various books and magazines dealing with industrial arts work.

It is not intended that the use of textbooks and instruction sheets in industrial arts should decrease the responsibility of the teacher in imparting the information to the students, but only to teach his subjects in a more efficient manner by supplementing his personal time and effort.

Tests and Measurements in Industrial Arts

The common method of judging the work of industrial arts students is by the completed project. This method of measuring is, and probably always will be, a subjective method. Such a method rests entirely upon what the

31 Struck, Theo. A. Methods and Teaching Problems in Industrial Education. pp. 61-68.

instructor has set up as standards of attainment.

This method of measuring the work in industrial arts shops has been used by many teachers because there has been very little attempt to measure the work objectively. The work has not been standardized as to content and desirable outcome, or pupil attainment. "The work has been manipulative in character, and effort has been mistaken for accomplishment."³²

The types of work offered vary in different schools, as well as does the amount of credit given for the work. Since such conditions exist, it has been practically impossible to set up a standardized testing program. However, an attempt has been made, under the direction of R. W. Selvidge³³ to analyze trade and industrial subjects in relation to learning or teaching units. The units are divided into three principal groups: "What you should be able to do; what you should know; and what you should be."

The first group involves manipulative skill, knowledge of procedure, and construction processes. The second group involves information concerning qualities, and characteristics of materials, and other matters of

32 Ericson, E. E. Teaching Problems in Industrial Arts. p. 239.

33 Selvidge, R. W. Co-operative Analysis of Trade and Industrial Arts Subjects. Industrial Arts Magazine, June, 1931. p. 395.

general interest in the field. The third group involves attitudes and habits which affect the success of individuals. This study has recently been completed and standardized by the American Vocational Association, New York City. Such studies as this, which set up standards of attainment in the field of manual arts, enable the teachers of such subjects to base their measurements entirely upon objective principles of testing.

Since this analysis has been made there have appeared in the "Industrial Arts and Vocational Education Magazine" tests in industrial arts subjects worked out by teachers of those subjects. Most of these tests are objective in nature and are very helpful in formulating a testing program for the various subjects in industrial arts. Inasmuch as such tests are accessible to principals and to teachers of industrial arts subjects, it is not necessary to include in this list of supervisory aids samples of such tests. There are also a number of commercial tests now on the market which can be purchased at very reasonable prices. These tests are not all standardized, but are being used in many schools to determine the progress of students in the various subjects in industrial arts.

The following tests have come under the writer's observation:

I. General.

Industrial Arts Test I, Nash and Van Duzee.

Scale A--Achievement, Scale B--Performance.

Bruce Publishing Company, Milwaukee, Wis.

Newkirk--Stoddard Tests of Home Mechanics.

Forms A and B.

Bureau of Educational Research and Service,
State University of Iowa, Iowa City, Iowa.

Every Pupil Scholarship Test (Industrial Arts),
Paul Ridgway, Superintendent of Schools,
Lincolnville, Kan.

Bureau of Educational Measurements, Kansas
State Teachers College, Emporia, Kan.

II. Auto Mechanics.

Automobile Mechanics Test (multiple-choice).

Manual Arts Press, Peoria, Ill.

Automobile Parts Test, Hunter.

Manual Arts Press, Peoria, Ill.

III. Electricity.

Electrical Shop Objective Test, Hunter.

Manual Arts Press, Peoria, Ill.

Electrical Shop Symbols Test, Hunter.

Manual Arts Press, Peoria, Ill.

IV. Mechanical Drawing.

Achievement Test in Mechanical Drawing, Wright.

Public School Publishing Company, Bloomington, Ill.

Free-hand Lettering Scales (ink and pencil,
inclined and Gothic), John Faber.

Bruce Publishing Company, Milwaukee, Wis.
Industrial Arts Test II (mechanical drawing),
Nash and Van Duzee.

Bruce Publishing Company, Milwaukee, Wis.
Mechanical Drawing Test (pencil and inking),
Castle.

Manual Arts Press, Peoria, Ill.
Mechanical Drawing Test, Wells and Laubach.

Manual Arts Press, Peoria, Ill.
Mechanical Drawing Tests, F. A. P. Fischer.

Bruce Publishing Company, Milwaukee, Wis.
Mechanical Drawing Tests (reading, missing-line,
lettering, true-false), William Hunter.

Manual Arts Press, Peoria, Ill.
Standard Test in Fundamental Mechanical Drawing,
A. J. Badger.

1. Use of tools, line-work, dimensioning,
lettering.
2. Projection (including sections and
auxiliary).
3. Pictorial drawing (isometric-cabinet-
oblique).

Public School Publishing Company, Bloomington,
Ill.

Tests for Mechanical Drawing Aptitude, E. G.
Stoy.

1937:6, pp. 93-101. Additional tests,
1928:6, pp. 261-366.

Personnell Publishing Company, Washington,
D. C.

V. Metalwork.

Examination in Machine Shop Practice, H. G.
Belbis.

Specimen Objective Examinations, Ruth and Rice, pp. 307-317.

Scott, Foresman and Company, Chicago, Ill.

Fowler Foundry Test, R. W. Fowler.

Lafayette Printing Company, Lafayette, Ind.

Machine Shop Test, Wells.

Manual Arts Press, Peoria, Ill.

Machine Shop Tests: Tool, Comprehension, True-False, Micrometer, Multiple-Choice, William L. Hunter.

Manual Arts Press, Peoria, Ill.

VI. Printing.

Completion Test in Printing, Hunter.

Manual Arts Press, Peoria, Ill.

Industrial Arts Tests (Printing), Wells and Laubach.

Manual Arts Press, Peoria, Ill.

VII. Woodwork.

Objective Examination in Cabinet Making.

Specimen Objective Examinations, Ruth and Rice.

Scott, Foresman and Company, Chicago, Ill.

Woodwork Shop Tests, William L. Hunter.

Manual Arts Press, Peoria, Ill.

Woodwork Test, Wells.

Manual Arts Press, Peoria, Ill.

Form for Checking Preparations for Opening School
in Industrial Arts Shops

Teacher _____

Class observed _____

Date _____

Length of visit _____

Points observed:

1. Is there a definite set of projects worked out in advance?.....
2. Are there samples of work on exhibit?.....
3. Is there plenty of material on hand to take care of the needs of the pupils?.....
4. Have the broken tools been repaired or replaced?.....
5. Is all the machinery in good working order?
6. Are the lockers and drawers for student projects clean and ready for use?.....
7. Are the windows, floors, and desks clean?...
8. Does the teacher have a definite set of objectives for each course worked out?....
9. Does the teacher have an outline of the work he expects to cover during the year worked out for each course?.....
10. Have the pictures, wall charts, and wall exhibits been changed or rearranged since the last semester?.....
11. Has the teacher worked out any new projects for the coming year?.....
12. Does the teacher have an outline of the demonstrations he wishes to use?.....
13. Does the instructor have a sufficient supply of instruction sheets, job sheets and information sheets on hand?....
14. Are the textbooks and reference books on hand for the opening day?.....
15. Does the instructor have definite plans for each class on the opening day?.....

Special notes: _____

Form for the Observer³⁴

Teacher _____

Class observed _____

Date _____

Type of class procedure _____ (demonstration)

Name of demonstration _____

Length of visit _____

Points observed:

I. Starting the class:

1. Was the teacher on time?.....
2. Was the class started on time?.....
3. Did the teacher take the time of the
class to call the roll?.....

II. Demonstration:

1. Were all the tools and materials ready?.....
2. Did the teacher proceed easily, skillfully,
and without loss of time?.....
3. Were all the students able to see what was
taking place?.....
4. Did the teacher have the attention of the
class?.....
5. Was the demonstration explained to the
satisfaction of all of the class?.....
6. How long did the demonstration take?.....
7. Were all the students interested?.....
8. Did the teacher secure the general parti-
cipation of the class in asking ques-
tions?.....
9. Was the questioning by the teacher
skillfully done?.....

34 Stiles, H. L. Form for the Observer. Industrial Arts and Vocational Education, Vol. 27, No. 3, March, 1938. p. 113.

III. Teacher personality:

1. Was the teacher sincere?.....
2. Was he well prepared?.....
3. Did he use good English?.....
4. Was the teacher enthusiastic?.....

Special notes

Form for Observing Classroom Atmosphere
in Industrial Arts Shops

Teacher _____

Class observed _____

Date _____

Length of visit _____

Points observed:

1. Is the teacher enthusiastic?.....
2. Are the students enthusiastic?.....
3. Are the students using their own initiative
under the guidance of the teacher?.....
4. Are the students working on worthwhile
projects?.....
5. Does the student go to the teacher freely
for advice?.....
6. Does the teacher point out and correct
mistakes in a tactful, kindly manner?.....
7. Are the disciplinary problems handled in
a professional manner?.....
8. Are the students courteous to each other?...
9. Are the students courteous to the teacher?..
10. Do the students discuss problems among
themselves without becoming boisterous?....
11. Do the students have a co-operative atti-
tude in regard to helping each other?.....
12. Do the students begin work as soon as
possible after entering the room?.....
13. Do the students take care of their tools
and materials when the class period is
over?.....
14. Are the students crowded around the door
waiting for the period to end?.....

Special notes: _____

Form for Recording Data and Facts Concerning
The General Appearance of Industrial Arts Shops

Teacher _____

Class observed _____

Date _____

Length of visit _____

Points observed:

1. Are the floors swept daily?.....
2. Are the benches, desks, shelves, casements,
etc. dusted frequently?.....
3. Are the blackboards cleaned regularly?.....
4. Are the windows cleaned regularly?.....
5. Are the tools arranged in an orderly
manner?.....
6. Are the supply cabinets and racks kept
clean and orderly?.....
7. Are the storage lockers cleaned fre-
quently?.....
8. Is there space provided for unfinished
projects?.....
9. Does the bulletin board present a neat
appearance?.....
10. Is the material on the bulletin boards
changed frequently?.....
11. Are the wall charts and exhibits clean and
free from dust?.....
12. Are the wall charts and exhibits changed
frequently?.....
13. Is the room well lighted?.....
14. Is the room well ventilated?.....
15. Are the books and magazines kept in an
orderly manner?.....
16. Does the teacher's desk present a neat
appearance?.....
17. Does the whole room present an appearance
of orderliness?.....

Special notes: _____

Form for Observing Safety Precautions
in Industrial Arts Shops

Teacher _____

Class observed _____

Date _____

Length of visit _____

Points observed:

General safety:

1. Are the cutting elements of all machines provided with guards?.....
2. Are guards provided for belts and pulleys within the reach of students?.....
3. Are the gears on all machines properly guarded?.....
4. Are the grinding wheels covered so as to protect against danger from flying particles?.....
5. Are the electrical switches covered?.....
6. Are there metal cans provided for oily waste and rags?.....
7. Is there any danger from sharp tools that may project or fall from the tool rack?.....
8. Is there danger of lumber falling from the lumber rack?.....
9. Are all acids stored in properly closed and labeled receptacles?.....
10. Are all inflammable fluids stored in properly closed and labeled containers?.....
11. Has precaution been taken to prevent a person's slipping around dangerous machines?.....
12. Have railings been placed around machines where they are situated close together?.....
13. Are the dangerous machines labeled?.....
14. Have "Safety first" signs been placed in conspicuous places?.....
15. Is there a master switch provided whereby the teacher can cut off all the power when he is not in the room?.....
16. Are the switches on the various machines within easy reach of the operator?.....

Personal safety:

1. Are the students properly dressed?
 - (a) Provided with aprons or shopcoats?...._____
 - (b) Free from dangling sleeves, loose sweaters, coats, and long ties?....._____
2. Are the students using the guards provided on each machine?....._____
3. Does the class seem to be free from any tendency toward scuffling and wrestling?....._____
4. Are the students using the edge tools, such as knives, chisels, etc., so as not to injure themselves?....._____
5. Are the students provided with instruction sheets on safety?....._____
6. Are students talking to the students who are operating machines?....._____

Special notes: _____

Form for Checking Preparations for Closing School
in Industrial Arts Shops

Teacher _____

Class observed _____

Date _____

Length of visit _____

Points observed:

1. Is there an inventory of tools and machines? _____
2. Is there an inventory of supplies?..... _____
3. Is there an inventory of reference books, magazines, pamphlets, which belong to the school?..... _____
4. Is there a list of tools broken or lost during the school year?..... _____
5. Are the hand tools stored in a safe place for the summer?..... _____
6. Have the tools that are subject to rust been cleaned and greased?..... _____
7. Are the unfinished projects stored in lockers?..... _____
8. Have all moneys been turned in?..... _____
9. Is there a statement showing accounts unpaid at the close of the year?..... _____
10. Are the supplies on hand stored in places where they will not be used by janitors and laborers during the summer?..... _____
11. Have there been measures taken to remove all fire hazards, such as scraps of wood, waste containers, oily rags, etc.? _____
12. Is there a provision made for placing some responsible person in charge of the tools and machines during the summer?..... _____

Special notes: _____

Industrial Arts Supplies Form
for Preliminary Budget Estimates

Teacher submitting _____

Date _____

[illegible]

List items you believe necessary for next year, principally supplies.
Please list information definitely so as not to delay compiling our office budget.

Financial Statement for Industrial Arts Shops

Teacher _____

Date _____

Type of shop _____

SHOP COSTS:

Supplies..... _____

Tools purchased..... _____

Tools to be replaced due to
breakage and loss..... _____

Printed instruction material.. _____

Total..... _____

SHOP CREDIT:

Supplies sold to students
for cash..... _____Supplies sold to students
and unpaid for..... _____School repairs by students
Estimated labor..... _____
Supplies used in
repairing..... _____School equipment made by
students (retail price).. _____

Total..... _____

Total cost of operating shop..... _____
(Shop cost minus shop credit)

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