

THE SUITABILITY OF AVAILABLE INDUSTRIAL ARTS TEXTBOOKS  
FOR THE SUBJECT AREA OF WOODWORKING

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FOR THE SUBJECT AREA OF WOODWORKING

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TABLE OF CONTENTS

	Page
LIST OF TABLES . . . . .	iv
LIST OF ILLUSTRATIONS . . . . .	v
Chapter	
I. INTRODUCTION . . . . .	1
Statement of the Problem	
Hypothesis of the Study	
Background and Significance of Study	
Definition of Terms	
Limitations of the Study	
Procedures	
Organization of the Study	
II. THE SELECTION AND CLASSIFICATION OF TEXTBOOKS FOR THE SUBJECT AREA OF WOODWORKING ACCORDING TO GRADE LEVEL . . . . .	18
Selection of Textbooks	
Classification of Textbooks	
III. DEVELOPMENT OF CRITERIA FOR EVALUATING THE SUBJECT MATTER CONTENT FOR WOODWORKING . . . . .	25
Function of Instruments	
Mechanics of Instruments	
IV. THE DEGREE OF SUITABILITY OF THE TEXTBOOKS . . . . .	31
Grade Level III Woodworking Textbooks	
Grade Level IV Woodworking Textbooks	
V. SUMMARY, FINDINGS, AND CONCLUSIONS . . . . .	46
Summary	
Findings	
Conclusions	
APPENDIXES A, B, and C . . . . .	50
BIBLIOGRAPHY . . . . .	71

LIST OF TABLES

Table	Page
I. Classification of Woodworking Textbooks for Industrial Arts . . . . .	23
II. Percentage Rating Scores of Level III Woodworking Textbooks . . . . .	32
III. Average Rating of Subject Matter of Each Major Area Included in Instrument I for Each Textbook . . . . .	34
IV. Percentage Rating Scores of Level IV Woodworking Textbooks . . . . .	40
V. Average Rating of Subject Matter of Each Major Area Included in Instrument II for Each Textbook . . . . .	41

LIST OF ILLUSTRATIONS

Figure	Page
1. A Partial Sample of Instrument I Used to Ascertain the Extent of Treatment of Subject Matter Items as Found in the Woodworking Textbooks for Grade Level III . . . . .	27

## CHAPTER I

### INTRODUCTION

The inception of this problem was through a need, or lack of data, concerning textbooks of woodworking. From a previous study, criteria were developed for use in evaluating industrial arts textbooks for several subject areas in the field of industrial arts (7). This particular study is primarily concerned with those textbooks published for the subject area of woodworking. It is recognized that there are many books available to both industrial arts teachers and textbook committees. What these books are and how suitable they are provides the basis of this study. Almost all of the states in the United States provide ways and means of examining available textbooks for state adoption. This is particularly true in the area of industrial arts and, with respect to Texas, textbook committees are appointed annually for the purpose of examining potential textbooks that the publishers might suggest for adoption.

It is assumed to be sound that some research encompassing certain of the responsibilities of the textbook committee members, with respect to evaluating textbooks, could be of value. A large part of the textbook committee members' work

must be done during the summer months. In order to allow ample time for the examination of the textbooks under consideration, sample books to be considered for adoption are required to be in the hands of the committee members from one to two months prior to a scheduled hearing with publisher representatives.

The State Director of the Textbook Division of Texas and, the textbook committee members of Texas, could be helped greatly with their responsibilities by having available advanced textbook data concerning specific subject areas and grade levels.

It is granted that most states are in possession of some criteria for the appraisal of textbooks. In an effort to standardize to a certain extent, the reactions of committee members concerning the relative merits of the many textbooks submitted for adoption, a set of criteria has been developed for use by the Texas Education Agency (10, 9). However, these criteria, or similar standards for the appraisal of textbooks, are only suggestions through which it might be possible for the textbook committee members to use as a common device in arriving at a final decision concerning the merits of textbooks. It is assumed that more specific criteria could provide more usable data.

#### Statement of the Problem

The problem of this study was to determine the degree of suitability of the available industrial arts textbooks for

classroom use in the subject area of woodworking. In order to arrive at satisfactory conclusions relative to the problem, it was necessary to seek answers to the following questions.

1. What textbooks are available for teachers of industrial arts for the subject area of woodworking?

2. How can the textbooks be classified according to subject area and grade level?

3. Are criteria available for use in determining the suitability of woodworking textbooks for a sound industrial arts program?

4. Are the available textbooks suitable for classroom use in the area of woodworking?

#### Hypothesis of the Study

It is the general belief of textbook publishers that their textbooks are sound and suitable for use for classroom instructional purposes. Concurrently, it is the hypothesis of this study that available textbooks for industrial arts, in the subject area of woodworking, are suitable for instructional purposes in a sound industrial arts program.

#### Background and Significance of Study

In this age of scientific discovery and mechanical ingenuity, the textbook is more or less taken for granted by the general school population. According to the early history of education, this condition did not prevail. The concept



for free textbooks for public school children was introduced more than a century ago in the city school systems located mostly along the Atlantic seaboard. Among the first cities to make provisions for free textbooks was Philadelphia in 1817; and the first state to furnish free textbooks for the schools was Massachusetts in 1884 (4, p. 43).

The free textbook concept has progressed and has remained active up to the present time. Free textbooks are mandatory for some or all grades in thirty states and are permissive in the other eighteen states (2, p. 257). Many students are required to rent or purchase textbooks; however, the majority of the students are furnished free textbooks.

Several methods are used for the adoption of textbooks. Twenty-four states adopt textbooks on a statewide basis; twenty-four states permit the adoption to be made locally. Five of the state-uniformity states follow a local-adoption plan for high school textbooks and eight others permit the larger, or first class school districts, to individually adopt texts for all grades. The trend today appears to be moving toward more freedom for local school districts to select their own textbooks (2, p. 257).

King's (5, p. 254) survey illustrated that the furnishing of free textbooks for schools requires a great sum of money to be expended. His survey showed that for the year 1950 an expenditure of \$96,350,000 was made for textbooks within the

continental United States. Five years later, for the school year 1954-1955, a disbursement of \$72,660,000 was made for the same purpose (12, p. 16). For the school year 1960-1961, Texas allocated \$9,405,620 for textbooks for an expected enrollment of 2,123,967 students (11, Sec. I, p. 12). This amount averages approximately \$4.00 per student enrolled in the public schools. From the aforementioned expenditures, one can readily understand that the furnishing of free textbooks for the schools is an expensive operation. However, it can be assumed that the textbook is a means to an end in education, and its selection is made wisely by approved criteria. The cost of the textbooks can be considered to be small as related to a great wealth of knowledge and understanding the students receive from this expenditure. The value of the textbook might be increased if one thinks of its usefulness as Harris pointed out sixty years ago, ". . . you can take your book where you please, but you cannot select the time for hearing the great teacher talk as you can for reading a book. Nearly all the great teachers have embodied their ideas in books" (2, p. 241).

As a classroom tool, the textbook might be assumed to be one of the best available aids the industrial arts teacher has at his disposal. With this thought in mind, the assumption can also be made that the textbook should be selected with the aid of an approved method of evaluation. It has been

implied that many industrial arts teachers are not acquainted with the number of textbooks that are available for their use when Young (14, p. 122) stated that except for a few bibliographical compilations upon special subjects, industrial arts teaching personnel have not taken an inventory of the textbook tools available to their profession. According to Young (14), in a recent statewide meeting of industrial arts teachers, two statements were made illustrating the state of confusion which exists concerning industrial arts textbooks. One statement was to the effect that an adequate supply of textbooks is available for industrial arts use. Later, an equally positive statement was made that there are few textbooks available which are suited to industrial arts instruction (14, p. 122). This statement seems to imply that either the teaching personnel did not take enough time to study the availability of industrial arts textbooks, or that not enough time was available for them to adequately survey fully the potential that is available in the form of textbook materials. With the aforementioned assumptions in mind, it might be assumed further that if adequate analyses of each field of study in the program of industrial arts were made available to the teaching personnel they could take advantage of the opportunity to better acquaint themselves with the available textbooks. Thus, they would make a wiser selection from those textbooks that are available. This should help them to enrich their programs in industrial arts.

It would seem appropriate at this point to review a few of the recent studies made for the purpose of analyzing industrial arts textbooks. Several of these studies will be briefly presented in the following discussion.

Young conducted a study in 1953 entitled "An Analysis of Textbook Emphasis in Industrial Arts Education" (14). His study was made for the purpose of determining the status of industrial arts textbooks and their availability to the public schools. Data used in Young's (14, pp. 199-200) study were taken from 152 textbooks prescribed and submitted, various publications, periodicals, and correspondence with publishers. The findings of the study indicate the textbook situation was as follows: (1) the essentials for the purpose of carrying on a sound industrial arts program were lacking in many areas; (2) in several subject areas it was found that two or more textbooks would be needed to adequately cover all objectives within the subject area; (3) the lack of classificatory and selective criteria make intelligent selection of textbooks very difficult; (4) only qualified individuals should be encouraged to write textbooks needed by the profession; (5) in some instances textbooks used in industrial arts were written for other purposes and the comprehensive textbook is non-existent. According to Young (14, pp. 199-200) research should be carried on and an inventory of all available textbooks should be established and continuously reviewed to insure

proper guidance to authors and publishers in the field of industrial arts (14, pp. 199-200).

Cartier made a study in 1953 in which he made a survey concerning the methods of selection of textbooks for industrial arts for the state-adopted list with emphasis upon proposing a "best method." The data were obtained for his study by submitting questionnaires to each director of textbooks of the forty-eight states (3). The findings and conclusions of his study were:

The textbook committee should be made up of representative industrial arts teachers, school administrators and state department officials. The committee should select several books in one area or subject and the teacher should have the opportunity to select one of these books (2, p. 14).

A recent survey and analysis of industrial arts textbooks most closely related to this particular study was made by McCain and entitled "Textbook Suitability for the Industrial Arts Program in Texas" (7). In McCain's study criteria for the analysis of the current Texas state-adopted textbooks for 1958-1959, to be used in the industrial arts program of public secondary schools in Texas, were developed. Textbooks for courses at grade levels III and IV were analyzed and evaluated through the aid of a jury. The jury was composed of experienced teachers of the various subject matter areas of industrial arts recommended by ten supervisors and ten directors of industrial arts programs in Texas. The tentative

criteria were organized and presented to the jury for constructive criticism. These reports by the jury pertinent to the criteria were tabulated and formulated into instruments. These instruments were to be used to evaluate the 1958-1959 state-adopted textbooks, that were available for each of the two grade levels, and on the basis of the degree of suitability of the subject matter contained in each textbook. "Suitability" (7, p. 6) was defined as the state of quality of being adequate for the purpose and the extent to which requirements were met. After the instruments were developed, each of the textbooks was sent to the jurors to be scored by the specific instrument related to each book's subject area and grade level. As each book was evaluated, it was given a percentage rating to determine its degree of suitability with which it fulfilled the requirements of a sound industrial arts program. The results of this study indicated that the state-adopted textbooks for the industrial arts program had a low degree of suitability. In some areas, in order to carry on a sound industrial arts program, teachers would have to rely on supplementary texts and other materials in classroom instruction because of the low levels of suitability of the state-adopted textbooks. It was pointed out that there is a need for more comprehensive textbooks in all subject areas of the industrial arts program. In this study McCain (7, pp. 72-75) recommended that more

consideration be given other books, which might be submitted for study, by the textbook committee members and advisors.

This particular study differs from the aforementioned studies and surveys in that all available woodworking textbooks are evaluated according to their subject matter content. It is assumed that this study is significant in that its findings might help publishers in the selection of textbooks that are better suited for the woodworking areas of the industrial arts program. The findings of this study could be of some benefit to state agencies or schools in their selection of textbooks for state adoption or for the selection of supplementary texts to replace some of the inadequacies found in textbooks by Young (14, pp. 199-200).

The criteria developed by McCain (7, pp. 54-60) and used in this study were selected for the following reasons: They were developed, with the aid of a jury of experienced industrial arts teachers, for the purpose of checking the suitability of textbooks for the industrial arts program in Texas. They were developed to comply with the objectives of a sound industrial arts program, and to evaluate the state-adopted textbooks of Texas according to the degree of their suitability toward satisfying the needs of a sound industrial arts program in this state. McCain's criteria are easy to use and to understand, yet they are comprehensive in context. It was assumed that these criteria are the most currently developed instruments by which industrial arts textbooks may be evaluated.

### Definition of Terms

For the purpose of this study it was necessary to establish specific meanings for the use of certain terms and phrases. They are as follows:

1. The terms Level III and Level IV as used in this study were defined as follows:

a. Level III pertained to general courses in the industrial arts program which are taught for a period of thirty-six weeks. Such courses as general woodworking and general metalworking taught in grades nine through twelve are examples of this level (9, p. 41).

b. Level IV referred to advanced industrial arts courses taught in grades ten through twelve. Courses such as machine woodworking, welding and electrical drafting are examples of courses taught on this level (9, p. 57).

2. Subject Matter Content was defined as those educational experiences or activities that contribute to the attainment of the objectives of the industrial arts program in Texas.

3. Textbook was defined as a book containing a presentation of all subject matter pertaining to the subject area being taught.

4. Suitability was defined as being suited to fulfill the needs or being adequate for a purpose. It was used in this study to mean the extent to which the content of the textbooks met the criteria requirements (13).



### Limitations of the Study

The following limitations were utilized and are presented as listed:

1. This study was limited to a select group of available textbooks published in the United States.
2. The textbooks under study were limited to the subject area of woodworking in the industrial arts program.
3. Criteria for evaluating the woodworking textbooks were confined to criteria developed in McCain's study and adopted for the purposes of this study.
4. No attempt was made to treat the aspects of textbooks other than the subject matter content.

### Procedures

The procedures used in the collection and treatment of data for the problem were logical steps toward the answering of the questions relative to the statement of the problem. The following procedures were used:

In selecting the available textbooks for use in this study in the subject area of woodworking, several sources of textbook listings were employed.

1. Book catalogs from publishers of textbooks were collected and a list of approximately 100 textbooks was compiled.
2. The Subject Guide to Books in Print, 1959 (8), was reviewed for possible publications of textbooks not found in the publishers' catalogs.

3. From these sources an annotated bibliography was compiled for further study.

4. A set of criteria was developed and employed for the purpose of determining which of the books would be used in the study.

5. The books were obtained from several sources. Some were available in the North Texas State College library, some were found in the private libraries of the North Texas State College Industrial Arts faculty, and others were obtained directly from the publishers. A more comprehensive treatment of the selection of the textbooks is presented in Chapter II.

6. After the woodworking textbooks were determined, they were classified according to their grade level with respect to the subject matter content.

7. The grade levels, as described by the Texas Education Agency (9, pp. 20-21), were adopted. A more comprehensive treatment of the procedure used in the placement of woodworking textbooks is presented in Chapter II.

8. The criteria used in determining the suitability of the woodworking textbooks were selected from research to correspond with the grade level of the books to be evaluated. The criteria which were already available in instrument form for use in determining the suitability of the textbooks are presented in Chapter III.

9. The suitability of the woodworking textbooks was determined through the application of the criteria to the content of the textbooks.

10. The level or degree of suitability of each book under study was expressed in terms of percents with respect to subject matter content of the woodworking area of a sound industrial arts program.

11. The selection, classification, and evaluation of the woodworking textbooks concerned were done by the person who conducted this study.

The findings are presented in Chapter V.

#### Organization of the Study

Chapter I presents a statement of the problem, the hypothesis, the background and significance of the problem, the limitations of the study and the procedures and methods of securing and treating the data. A brief over-view of the content of the remaining chapters follows.

The classification of the woodworking textbooks under study is presented in Chapter II. The conflicting titles of the industrial arts woodworking textbooks, in relation to their subject area placement, required treatment.

In Chapter III, the criteria used for the study are discussed in relation to their development. The procedure for evaluating the subject content of the textbooks is explained in detail along with the grade level selection of criteria.

In Chapter IV, the degree of suitability of the woodwork-  
ing textbooks for grade Levels III and IV was determined by  
treating the content of the textbooks with the criteria.  
The resulting data gathered through the use of the instruments  
were used as determinants in testing the hypothesis of the  
study.

Chapter V contains a summary, findings, and conclusions.

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## CHAPTER II

### THE SELECTION AND CLASSIFICATION OF TEXTBOOKS FOR THE SUBJECT AREA OF WOODWORKING ACCORDING TO GRADE LEVEL

This chapter pertains to the selection and classification of the available books pertinent to the subject area of woodworking. It is common knowledge that the title of a textbook generally indicates or categorizes the book according to its subject area. However, the selection and classification of textbooks for industrial arts appear to be difficult tasks under present conditions. It was found that textbook titles dealing with woodworking were not always indicative of the contents of the textbook (8, p. 144). Some of the woodworking books appeared to be more suitable as supplementary texts. Some examples are: Wood Finishing (10), Fundamental Wood Turning (2), and Woodworking Projects and Planning Guide (3). These books would appear to be valuable in assisting in the learning process by stimulating interest and allowing the student to avail himself with added information not treated extensively in the adopted textbook. However, as the title might suggest, they probably would not cover a majority of the units that make up a sound program of woodworking in the field of industrial arts. Consequently,

these books were not included in this study. Other textbook titles imply certain types of work which involve learning, but would not necessarily be in keeping with an industrial arts program of instruction. Examples of such books are: Making Things of Wood (4), Creative Crafts in Wood (5), and Puzzles in Wood (6). Some textbooks are being used which appear to be sound in title, according to the industrial arts program and grade level. Examples are as follows: Industrial Arts Woodworking (7), a Level III textbook and Advanced Woodwork and Furniture Making (8), a Level IV textbook. According to Young's findings (9, p. 144), the publishers could not be depended upon to select textbooks for the industrial arts program. In Young's investigation, publishers were requested to send textbooks for industrial arts without naming either title or subject area. When the books were classified, it was found that only 24.4 per cent of the textbooks received were especially designed for use in the industrial arts program.

#### Selection of Textbooks

In order to adequately select seventeen textbooks from the approximately 100 titles obtained, it was necessary to develop and use a set of criteria. The criteria consisted of a list of major categories of the materials and operations that should be presented in a textbook in order for it to be considered useful as a woodworking textbook. The criteria were not intended to be comprehensive in content but merely a means



of determining the textbooks for use in this study as compared with books that might be considered as supplementary textbooks only, or more suitable for other uses, such as those previously mentioned in this chapter. The following items were utilized in selecting the textbooks that were used in this study.

1. The content should show some relationship of being an industrial arts textbook.
2. The text should be in the subject area of woodworking.
3. The book should appear by title to be in keeping with the industrial arts program.
4. The book should indicate the grade level by its title.
5. The date of publication of the textbook should be reasonably recent--approximately fifteen years.

The textbooks which did not meet at least one half of the criteria were omitted from the list of books evaluated. In order that the study be as sound as possible, the textbooks used in this study were selected and equated according to title and content as accurately as possible.

#### Classification of Textbooks

Through the use of the above criteria, seventeen textbooks were selected that had similar or some commonalties of fulfilling the requirements of a woodworking textbook. These seventeen textbooks required further study in order to determine

if they were more suited for grade Level III, or grade Level IV. These textbooks which were classified as Level III were classified as follows: Level III refers to general courses in industrial arts, such as general woodworking and general drafting which are organized and taught for a period of thirty-six weeks. Such courses may be taught in grades nine through twelve, and should be offered only when the student has completed at least one year of exploratory industrial arts in grades seven through nine (5, p. 41). Level IV refers to advanced industrial arts courses such as machine drafting, machine woodworking and welding. Advanced courses may be offered only in schools where exploratory and/or general courses are offered and required as prerequisites and taught in grades ten through twelve (5, p. 57).

If the general contents of the textbook met with the following criteria, the book was classified as Level III.

1. Subject matter is in the area of woodworking.
2. The title denotes or implies that the book is for general woodworking.
3. The content is general in coverage and predominates toward handtool operations, and presents a light treatment of machines used in woodworking.
4. The book should pertain to exploratory, beginning, hand or basic woodworking.

Of all the woodworking books examined, only thirteen were selected and classified as grade Level III textbooks.

Grade Level IV textbooks selected for use in this study met the following requirements.

1. The subject matter is in the area of woodworking.
2. The title denotes or implies that the book is for advanced or unit shop type of instruction in woodworking.
3. The content is comprehensive in coverage and includes machines and their operation.
4. The book content includes the maintenance of equipment as well as fundamental job shop and production operations.

Table I lists the textbooks selected for this study. They are grouped according to their grade level classification and are numbered for future identification purposes.

The appropriate instrument was applied to the content of each of the textbooks. Treatment of the data obtained is presented in Chapter IV.

In summary, a list of textbooks for the subject area of woodworking was compiled. A set of criteria was developed and applied to the textbooks in order to determine which textbooks would be satisfactory for use in this study. The purpose of this was to determine their suitability for use as woodworking textbooks for a sound woodworking course in the industrial arts program. Further treatment of the textbooks, which were selected for application of the criteria, was

TABLE I  
 CLASSIFICATION OF WOODWORKING TEXTBOOKS  
 FOR INDUSTRIAL ARTS

Level	Number	Author and Title
III	1	Douglas and Roberts, <u>Units in Hand Woodworking</u>
III	2	Feirer, <u>Industrial Arts Woodworking</u>
III	3	Fryklund, <u>General Shop Woodworking</u>
III	4	Fryklund, <u>General Shop Bench Woodworking</u>
III	5	Griffith, <u>Essentials of Woodworking</u>
III	6	Groneman, <u>General Woodworking</u>
III	7	Hjorth, <u>Basic Woodworking Processes</u>
III	8	Hjorth, <u>Principles of Woodworking</u>
III	9	Johnson, <u>General Woodworking</u>
III	10	Madden, <u>Woodworking for Industrial Arts</u>
III	11	Tusison, <u>Instructional Units in Hand Woodworking</u>
III	12	Olson, <u>Wood and Woodworking for Industrial Arts</u>
III	13	Vernon, <u>Modern Woodwork</u>
IV	14	Douglass, <u>Woodworking With Machines</u>
IV	15	Feirer, <u>Advanced Woodworking and Furniture Making</u>
IV	16	Griffith, <u>Woodworking for Secondary Schools</u>
IV	17	Smith, <u>Machine Woodworking</u>

necessary to establish their grade level placement. This procedure placed thirteen woodworking textbooks in the Level III classification and four woodworking textbooks in the Level IV classification.

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## CHAPTER III

### DEVELOPMENT OF CRITERIA FOR EVALUATING THE SUBJECT MATTER CONTENT FOR WOODWORKING

This chapter presents the background pertaining to the development of the criteria used in the study. A discussion will be given to explain their functions and mechanics; also their application to the subject matter content of the wood-working textbooks, that were analyzed in this study, will be given.

In McCain's study, entitled "Textbook Suitability for the Industrial Arts Program in Texas" (1), criteria were developed and utilized in the study. The criteria were developed with the aid of experienced industrial arts teachers in Texas who served as jurors. The function of the jury was to accept, reject, or make additions to the subject matter content that McCain proposed to represent as a sound industrial arts program in Texas for grade Levels III and IV. The grade levels were defined in the Texas Education Agency's Bulletin Number 565 (2, p. 57). The criteria were formulated as "instrument I" and "instrument II". "Instrument I" was developed and utilized to evaluate grade Level III textbooks and "instrument II" was developed and utilized to evaluate the textbooks which were

classified as Level IV textbooks. The criteria were developed to treat only the subject matter content of the textbook in relation to its suitability for fulfilling the standards set forth in Bulletin 565 of the Texas Education Agency.

In McCain's study, criteria were developed for use in several subject areas of the industrial arts program. They were as follows: woodworking, metalworking, crafts, printing, auto mechanics, electricity, and electronics. The instruments which were developed for woodworking textbooks for grade Levels III and IV, in McCain's study, were adopted for the purpose of this study.

#### Function of Instruments

The function of the instruments was to determine the degree of treatment of the subject matter content of woodworking textbooks to be evaluated. To establish the degree of treatment of the subject matter content of the textbooks, the following rating scale was used: (1) "superior," (2) "satisfactory," (3) "weak," (4) "no treatment". An explanation of these terms follows:

1. Superior treatment. This term was interpreted to mean a thorough, comprehensive and extensive treatment of the subject matter. It pertained to the highest ranking treatment of the subject matter content of a sound industrial arts program.

2. Satisfactory treatment. This term was construed to mean the meeting of the requirements of expectations for teaching the recommended subject matter content, but not thorough enough treatment to be classified as being "superior" yet not "weak" or mere inclusion.

3. Weak treatment. This term was construed to mean a mere inclusion or bare mention of the items by the author and insufficient information concerning the recommended subject matter content for a sound industrial arts program.

4. No treatment. The subject matter content was not presented in any form in the textbook (1, pp. 57-58).

Each of the levels of content treatment was assigned a numerical value: three for "superior" treatment, two for "satisfactory" treatment, one for "weak" treatment, and zero for "no treatment" (1, p. 58). A partial sample of the subject matter content for the area of woodworking and the four-level rating scale used in Instrument I follows (1).

Subject Matter Content for the Following Areas of Industrial Arts	Extent of Treatment of Subject Matter			
	Superior	Satisfactory	Weak	No Treatment (absent)
Possible Score _____				
Rating Score _____ Per Cent Score _____				
Textbook Number _____				
<b>WOODWORKING</b>				
1. Occupational information				
A. Field of woodworking opportunities . . . . .				
B. Number and kinds of workers . . . . .				
C. Types of jobs . . . . .				
D. Kinds of manufacturing concerns. . . . .				
E. Job opportunities . . . . .				
F. Wages and working conditions . . . . .				
G. Role of woodworking in the industrial environment . . . . .				

Fig. 1--A partial sample of Instrument I used to ascertain the extent of treatment of subject matter items as found in the woodworking textbooks for grade Level III.



A complete sample of Instruments I and II is presented in Appendix A.

### Mechanics of Instruments

The major headings of the subject matter content for the woodworking area of industrial arts were subdivided and in some instances a sub-division was further broken down into minor parts. Only the sub-divisions and their minor parts were checked in the order of their levels of content treatment. For instance, in the partial sample previously presented, it is noted that the major heading "Occupational information" is sub-divided into seven parts, "A" through "G". Check ( ) marks were placed in the spaces opposite the sub-division and under the most appropriate column representing the extent of treatment of the subject matter content as found in each textbook under consideration.

The use of the above techniques aided in the scoring of textbook content treatment of each book used in this study. The instrument used on each book was determined by the previous classification given it as explained in Chapter II. An actual rating score was determined by totaling the values of the assigned ratings. In order to determine the per cent of suitability of each textbook, the total value of the checked rating of each book was divided by the possible score of the instrument used. For example, if a grade Level III textbook was measured by Instrument I, and it received a "rating score"

of 104 points with a possible score of 196 points, it would receive a rating score of 53 per cent of the subject matter requirements.

In summary, this chapter explains how the instruments, used in this study, were developed, how they were used to determine the rating score of each of the textbooks, and the method by which the degree of content treatment was calculated for tabulation. The per cent rating score of each of the textbooks under consideration will be presented in Chapter IV.

### CHAPTER III BIBLIOGRAPHY

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2. Texas Education Agency, Industrial Arts in Texas Schools, Bulletin Number 565, Austin, Texas, Texas Education Agency, 1955.

## CHAPTER IV

### THE DEGREE OF SUITABILITY OF THE TEXTBOOKS

The previous chapter pertained to the selection and classification of woodworking textbooks, which were evaluated in the study. The criteria were adopted to evaluate the woodworking textbooks, in order to determine their degree of suitability to fulfill the requirements of a sound woodworking course in industrial arts (1, p. 6). The purpose of this chapter was to present and interpret the data found in determining the degree of suitability of the woodworking textbooks. In order to establish the degree of suitability of the woodworking textbooks for industrial arts, reference is made to Chapter I in which the term suitability was defined as the state or quality of being adequate for the purpose and the extent to which requirements were met (1, p. 6). The degree of suitability of each woodworking textbook was determined by the application of an instrument to the subject matter content of each woodworking textbook, and according to its grade level classification. Reference is made to Appendix A for a complete listing of woodworking textbooks and the number assigned to each book, which was evaluated. An interpretation of the data concerning the degree of suitability for each of the woodworking textbooks for each grade level follows.

There were seventeen woodworking textbooks, numbered consecutively one through seventeen, under consideration. Woodworking textbooks one through thirteen were classified as grade Level III and fourteen through seventeen were classified as grade Level IV woodworking textbooks.

#### Grade Level III Woodworking Textbooks

The following data in Table II represent the findings, in terms of per cent of the suitability, for the grade Level III woodworking textbooks treated by Instrument I.

TABLE II

#### PERCENTAGE RATING SCORE OF LEVEL III WOODWORKING TEXTBOOKS

Book Title	Per Cent Score
1. <u>Units in Hand Woodworking</u> . . . . .	26.96
2. <u>Industrial Arts Woodworking</u> . . . . .	51.85
3. <u>General Shop Woodworking</u> . . . . .	40.91
4. <u>General Shop Bench Woodworking</u> . . . . .	31.74
5. <u>Essentials of Woodworking</u> . . . . .	17.10
6. <u>General Woodworking</u> . . . . .	41.44
7. <u>Basic Woodworking Processes</u> . . . . .	24.87
8. <u>Principles of Woodworking</u> . . . . .	39.50
9. <u>General Woodworking</u> . . . . .	30.86
10. <u>Woodworking for Industrial Arts</u> . . . . .	29.43
11. <u>Instructional Units in Hand Woodworking</u> .	20.88
12. <u>Wood and Woodworking for Industrial Arts.</u>	30.51
13. <u>Modern Woodworking</u> . . . . .	31.39

It is noted in Table II that book number two received the highest per cent score which was 51.85 per cent of suitability. The lowest per cent score received was by book number five, which was a score of 17.10 per cent. This shows a differential of 34.77 per cent between the highest and lowest scores attained among the books under study. The data clearly indicate that there is a considerable amount of difference in the suitability of the textbooks available for the subject area of woodworking. A complete sample of Instrument I is shown in Appendix B.

The data in Table III indicate the average rating of subject matter content received by each book according to the major headings of Instrument I. The average rating was calculated by adding the numerical values which each major heading received from the textbook evaluation. The sum of the evaluations was divided by the number of checks under each major heading of the instrument. For example, major heading one received seven checks, its numerical sum was fourteen, for textbook number two, Industrial Arts Woodworking, this would give an average of two for the level of suitability for major heading one. According to the rating scale used, the level of suitability that had a value of two was satisfactory. The symbol for satisfactory was expressed as (S) in Table III. Under major heading one of Table III, (S) was placed under the title of book number two. In this manner, all of the

TABLE III

AVERAGE RATING OF SUBJECT MATTER OF EACH MAJOR AREA INCLUDED IN INSTRUMENT I FOR EACH TEXTBOOK

Grade Level III Book Titles	
1. Units in Hand Wood-working	0 0 0 0 0
2. Industrial Arts Woodworking	0 0 0 0 0
3. General Shop Wood-working	0 0 0 0 0
4. General Shop Bench Woodworking	0 0 0 0 0
5. Essentials of Wood-working	0 0 0 0 0
6. General Woodworking	0 0 0 0 0
7. Basic Woodworking Processes	0 0 0 0 0
8. Principles of Wood-working	0 0 0 0 0
9. General Woodworking	0 0 0 0 0
10. Woodworking for Industrial Arts	0 0 0 0 0
11. Instructional Units in Hand Woodworking	0 0 0 0 0
12. Wood and Woodworking for Industrial Arts	0 0 0 0 0
13. Modern Woodwork	0 0 0 0 0

Major Headings of Instrument I

1. Occupational information
2. Consumer knowledge
3. Health and safety in school shop
4. Human relations and social effects
5. Design in industrial arts

6. Habitat and uses of native and foreign woods	S	W	S-	W	O	W	O	O	W-	O	O	O	S-
7. Purchasing and measuring lumber	W	S-	W	W	O+	S	O+	O+	W	O+	O	O+	W+
8. Production of lumber	W	S	W	S-	W	S	O	W-	W	W-	O	W-	S
9. Uses of forest products	O+	S	W	W	O	S	O	O+	O+	O	O	O+	O+
10. Planning and drawing	W	W+	S	S	O	S-	W	O	W-	S	S-	O+	W
11. The uses of tools for woodworking	S	S-	X-	S	S	S-	S+	S-	S	S	S	W	W+
12. Machine tools, their uses and operation	O	S-	O	O+	O	S-	O+	W+	W-	W-	O	W-	W
13. Wood lathes and turning	O	S-	O	O	O	S-	O	X-	S	W-	O	W	W+
14. Wood fasteners and assembling	S	S	X-	S-	W	S-	S	S	W	W-	W	S-	W+
15. Common wood joints	S+	S	S	S	S-	S	X-	S	S	W+	S-	W+	S
16. Preparation of wood surfaces for finishing	S	S	S+	S	S	S	S-	S	S	S	S	S	S
17. Types and chemical composition of wood finishes	S	S+	X-	S	S	S+	S	S	S	W+	O	S	S
18. Home workshop information	O	O	O	O	O	O	O	O	O	O	O	O	O

Symbols: X= Superior; S = Satisfactory; W = Weak; O = No treatment.



major headings of Instrument I were calculated and averaged individually. They were tabulated in Table III by use of symbols (X) "superior treatment," (S) "satisfactory treatment," (W) "weak treatment," and (O) "no treatment."

The data presented in Table III show how each textbook rated according to the major headings of the criteria as used in Instrument I.

Textbook number one, entitled Units in Hand Woodworking, had an over-all rating of 26.98 per cent when evaluated by Instrument I. The subject matter content was found to meet the criteria to a satisfactory degree in six of the eighteen areas. Nine areas of work were not treated in this particular book, and the remaining three areas received a weak treatment.

Textbook number two, entitled Industrial Arts Woodworking, had an over-all rating of 51.85 per cent when evaluated by Instrument I. The subject matter content was found to meet the criteria to a satisfactory degree in eleven of the eighteen areas; two areas of work were not treated in this particular book and the remaining six areas received a weak treatment.

Number three textbook, entitled General Shop Woodworking, had an over-all rating of 40.91 per cent when evaluated by Instrument I. The subject matter content was found to meet the criteria to a superior degree in two of the eighteen areas; four of the areas received a rating of satisfactory; five

areas of work were not treated and six areas received a weak treatment.

Textbook number four, titled General Shop Bench Woodworking, had an over-all rating of 31.74 per cent when evaluated by Instrument I. The subject matter content was found to meet the criteria to a satisfactory degree in seven of the eighteen areas; six areas of work were not treated in this particular book and the remaining five areas received a weak treatment.

The fifth textbook, entitled Essentials of Woodworking, had an over-all rating of 17.10 per cent when evaluated by Instrument I. The subject matter content was found to meet the criteria to a satisfactory degree in four of the eighteen areas; eleven areas of work were not treated in this particular book and the remaining three areas received a weak treatment.

The sixth textbook, entitled General Woodworking, had an over-all rating of 14.44 per cent when evaluated by Instrument I. The subject matter content was found to meet the criteria to a satisfactory degree in twelve of the eighteen areas; two areas of work were not treated in this particular book and the remaining four areas received a weak treatment.

Textbook number seven, entitled Basic Woodworking Processes, had an over-all rating of 24.87 per cent when evaluated by Instrument I. The subject matter content was found to meet the criteria to a superior degree in one of the eighteen

areas; four of the areas received a rating of satisfactory; twelve areas of work were not treated and one area received a weak treatment in this particular book.

Number eight textbook, entitled Principles of Woodworking, had an over-all rating of 39.50 per cent when evaluated by Instrument I. The subject matter content was found to meet the criteria to a superior degree in one of the eighteen areas in this particular book; five of the areas received a rating of satisfactory; nine areas of work were not treated and three received a weak treatment.

Textbook number nine, entitled General Woodworking, had an over-all rating of 30.85 per cent when evaluated by Instrument I. The subject matter content was found to meet the criteria to a satisfactory degree in five of the eighteen areas; six areas of work were not treated in this particular book and the remaining seven areas received a weak treatment.

Textbook number ten, entitled Woodworking for Industrial Arts, had an over-all rating of 24.43 per cent when evaluated by Instrument I. The subject matter content was found to meet the criteria to a satisfactory degree in three of the eighteen areas; seven areas of work were not treated in this particular book and the remaining eight areas received a weak treatment.

Textbook number eleven, entitled Instructional Units in Hand Woodworking, had an over-all rating of 20.88 per cent when evaluated by Instrument I. The subject matter content

was found to meet the criteria to a satisfactory degree in four of the eighteen areas; thirteen areas of work were not treated in this particular book and the remaining one area received a weak treatment.

Textbook number twelve, entitled Wood and Woodworking for Industrial Arts, had an over-all rating of 30.51 per cent when evaluated by Instrument I. The subject matter content was found to meet the criteria to a satisfactory degree in four of the eighteen areas; seven areas of work were not treated in this particular book and the remaining seven areas received a weak treatment.

Textbook number thirteen, entitled Modern Woodwork, had an over-all rating of 31.39 per cent when evaluated by Instrument I. The subject matter content was found to meet the criteria to a satisfactory degree in seven of the eighteen areas; five of the areas of work were not treated in this particular book and the remaining six areas received a weak treatment.

In summary of the ratings of grade Level III woodworking textbooks, it is noted that all textbooks, which were treated, scored "no treatment" in subject matter areas three, "Health Relations and Social Effects," and eighteen, "Home Workshop Information." All of the textbooks evaluated showed either superior, satisfactory, or weak treatment in major areas eleven, "The Use of Tools for Woodworking," fourteen, "Wood

Fasteners and Assembling Common Wood Joints," and sixteen, "Preparation of Wood Surfaces for Finishing."

#### Grade Level IV Woodworking Textbooks

In order to present the results of the treatment of Instrument II pertinent to grade Level IV textbooks, Table IV indicates the data in terms of per cents of suitability of each of the textbooks evaluated.

TABLE IV

#### PERCENTAGE RATING SCORES OF LEVEL IV WOODWORKING TEXTBOOKS

Book Title	Per Cent Scores
14. <u>Woodworking With Machines</u> . . . . .	40.96
15. <u>Advanced Woodworking and Furniture</u> . . .	50.07
16. <u>Woodworking for Secondary Schools</u> . . .	32.50
17. <u>Machine Woodworking</u> . . . . .	19.91

Table IV shows the woodworking textbook that received the highest percentage of suitability to be textbook number fifteen, which was a score of 50.07 per cent. Textbook number seventeen received the lowest score of 19.91 per cent. Thus, there is a differential of 30.16 per cent between the two books which represent the highest and the lowest rated woodworking textbooks in grade Level IV in terms of suitability.

The following table presents the average findings in terms of superior, satisfactory, weak, or no treatment as they were calculated and tabulated by the use of Instrument II concerning

the contents of woodworking textbooks for grade Level IV. The data presented in Table V were calculated by the same method employed in determining the data presented in Table IV.

TABLE V

AVERAGE RATING OF SUBJECT MATTER OF EACH MAJOR AREA INCLUDED IN INSTRUMENT II FOR EACH TEXTBOOK

Major Headings of Instrument II	Grade Level IV Book Titles			
	<u>14. Woodworking with Machines</u>	<u>15. Advanced Woodworking and Furniture</u>	<u>16. Woodworking for Secondary Schools</u>	<u>17. Machine Woodworking</u>
1. Occupational information	W	O	O	O
2. Consumer knowledge	W+	W	O	O
3. Health and safety in school shop	W-	W	O	W
4. Human relations and social effects	O	O	O	O
5. Design in industrial arts	S-	W+	W-	O
6. Habitat and uses of native and foreign woods	S-	W-	S-	O
7. Purchasing and measuring of lumber	S-	W	S	O
8. Production of lumber	S	W	S-	O

TABLE V--Continued

Major Headings of Instrument II	Grade Level IV Book Titles			
	14. <u>Woodworking with Machines</u>	15. <u>Advanced Wood- working and Furniture</u>	16. <u>Woodworking for Secondary Schools</u>	17. <u>Machine Woodworking</u>
9. Uses of forest products	S-	O	W	O
10. The use of tools for wood- working	O	W-	W-	O
11. Machine tools, their uses and operations	S-	S-	W	S-
12. Planning and drawing	W	S-	O	O
13. Wood lathes and turning	W+	S	S	X
14. Wood fasteners and assembling	W-	S-	O+	O
15. Common wood joints	W	X	S	O
16. Preparation of wood sur- faces for finishing	S-	S-	O+	O+
17. Types and chemical compo- sition of woods	W	S-	O	O+
18. Methods of applying wood finishes	W	W	O+	O
19. Home workshop information	W	O	O	O

Symbols: X= superior; S = Satisfactory; W= Weak; O= No treatment

In summary of the ratings of grade Level IV woodworking textbooks, it is noted that all books scored no treatment in areas four, "Human Relations and Social Effects." Areas in which all books scored superior, satisfactory, or weak rating were in area eleven, "Machine Tools, Their Uses and Operation" and area thirteen, "Wood Lathes and Turning."

Textbook number fourteen, entitled Woodworking with Machines, had an over-all rating of 40.96 per cent when evaluated by Instrument II. The subject matter content was found to meet the criteria to a satisfactory degree in seven of the nineteen areas; two areas of work were not treated in this particular book and the remaining ten areas received a weak treatment.

The fifteenth textbook, entitled Advanced Woodworking and Furniture, had an over-all rating of 50.07 per cent when evaluated by Instrument II. The subject matter content was found to meet the criteria to a superior degree in one of the nineteen areas; six of the areas received a rating of satisfactory; four areas of work were not treated and eight areas in this particular book received a weak treatment,

Number sixteen textbook, entitled Woodworking for Secondary Schools, had an over-all rating of 32.50 per cent when evaluated by Instrument II. The subject matter content was found to meet the criteria to a satisfactory degree in five of the nineteen areas; ten of the areas were not treated



in this particular book, and the remaining four areas received a weak treatment.

Textbook number seventeen, entitled Machine Woodworking, received an over-all rating of 19.91 per cent when evaluated by Instrument II. The subject matter content was found to meet the criteria to a superior degree in one of the nineteen areas; one of the areas received a rating of satisfactory; one of the areas received a weak treatment, and the remaining sixteen areas received no treatment in this particular book.

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## CHAPTER V

### SUMMARY, FINDINGS, AND CONCLUSIONS

#### Summary

It was the purpose throughout this study to determine the degree of suitability of certain woodworking textbooks, which are available to industrial arts programs. The degree of suitability for each of the textbooks, under consideration, to fulfill the requirements in a sound industrial arts program of woodworking, was determined. The ratings of suitability of the textbooks were expressed in terms of per cents.

The instruments used were developed according to the required amount of subject matter content necessary to fulfill the needs for instructional purposes in a sound industrial arts program in the area of woodworking. If a woodworking textbook met 100 per cent of the requirements, it would be considered completely suitable for use for instructional purposes in a sound industrial arts program. Of the seventeen available woodworking textbooks under investigation, only two met as much as 50 per cent of the requirements.

The data concerning the contents of the woodworking textbooks were further analyzed according to the major headings of the subject matter content in order to determine their rating as being either "superior," "satisfactory," "weak," or "no treatment." All woodworking textbooks investigated

met some of the suitability requirements but not enough to be regarded as a high enough degree of suitability to fulfill the requirements of supporting a sound industrial arts program in the subject area of woodworking. The degree of suitability of each available woodworking textbook was determined.

The data, as determined in the study, provided the necessary bases for testing the hypothesis, which was rejected. Based upon the findings of the study, the hypothesis was changed to read as follows: The textbooks available for industrial arts in the subject area of woodworking, are not suitable for use in a sound industrial arts program.

#### Findings

In light of the data, the following findings are presented.

1. Of the seventeen woodworking textbooks evaluated according to their suitability for use in the industrial arts program, only two were found to have a degree of suitability which contained as much as 50 per cent of the total subject matter content as measured by the criteria.

2. One of the woodworking textbooks that fulfilled 50 per cent of the requirements of being suitable for use in classroom instructional programs, was a grade Level III book and the other one was a grade Level IV book.

3. The range between the highest and the lowest per cent rating score of suitability of the grade Level III woodworking textbooks, was found to be 34.75 per cent.

4. The range between the highest and the lowest per cent of suitability of the grade Level IV woodworking textbooks was found to be 30.16 per cent.

5. Subject matter content of the textbooks for major headings, numbers four, "Human Relations and Social Effects," and eight, "Production of Lumber" received no treatment in all of the grade Level III woodworking textbooks evaluated. In nine of the grade Level III books it was found that "Occupational Information," received no treatment.

6. The subject matter content was found to be weak in the major heading pertaining to "Consumer Knowledge" in the Level III woodworking textbooks.

7. The strongest treatment of subject matter content, in the Level III woodworking textbooks, pertained to the major headings as follows: "The Use of Tools for Woodworking," "Wood Fasteners and Assembling," "Common Wood Joints," and "Types of Chemical Composition Wood Finishes."

8. The major headings of subject matter content in Level IV textbooks, which were absent in all the woodworking books evaluated, were "Occupational Information," "Human Relations and Social Effect" and "Home Workshop Information."

9. The woodworking textbooks for grade Level IV had weak or no treatment given to the following major headings: "Health and Safety in School Shop," "Uses of Forest Products," "The Use of Tools for Woodworking," and "Methods of Applying Wood Finishes."

### Conclusions

The conclusions, based on the data gathered, are presented in this study as follows:

1. Because of the relatively low per cent of suitability found in grade Levels III and IV woodworking textbooks it was concluded that supplementary books of other materials would be necessary for instructional purposes in a sound woodworking course in the industrial arts program.

2. At present a "comprehensive" textbook is not available for use in the woodworking area of the industrial arts program.

3. According to the findings, it was concluded that some of the textbooks are suitable for use in certain of the major headings of the subject matter content, and unsuitable for use in other major headings.

## APPENDIX A

### CLASSIFICATION OF WOODWORKING TEXTBOOKS FOR INDUSTRIAL ARTS

#### Grade Level III

1. Douglas and Roberts, Units in Hand Woodworking
2. Feirer, Industrial Arts Woodworking
3. Fryklund, General Shop Woodworking
4. Fryklund, General Shop Bench Woodworking
5. Griffith, Essentials of Woodworking
6. Groneman, General Woodworking
7. Hjorth, Basic Woodworking Processes
8. Hjorth, Principles of Woodworking
9. Johnson, General Woodworking?
10. Madden, Woodworking for Industrial Arts
11. Tustison, Instructional Units in Hand Woodworking
12. Olsen, Wood and Woodworking for Industrial Arts
13. Vernon, Modern Woodwork

#### Grade Level IV

14. Douglass, Woodworking with Machines
15. Feirer, Advanced Woodworking and Furniture
16. Griffith, Woodworking for Secondary Schools
17. Smith, Machine Woodworking

APPENDIX B

INSTRUMENT I: SUITABILITY OF GRADE LEVEL III  
TEXTBOOKS FOR WOODWORKING

Instrument set up for the purpose of checking the suitability of current textbooks in the subject area of wood-working in the field of industrial arts.

Subject Matter Content for the Following Areas of Industrial Arts	Extent of Treatment of Subject Matter			
	Superior	Satisfactory	Weak	No Treatment (absent)
Possible Score _____				
Rating Score _____				
Textbook No. _____				
Per Cent Score _____				
<b>WOODWORKING</b>				
1. Occupational information . . . . .				
A. Field of woodworking opportunities . . . . .				
B. Numbers and kinds of workers . . . . .				
C. Types of jobs . . . . .				
D. Kinds of manufacturing concerns . . . . .				
E. Job opportunities . . . . .				
F. Wages and working conditions . . . . .				
G. Role of woodworking in the industrial environment . . . . .				
2. Consumer knowledge				
A. Materials used in wood construction . . . . .				
B. The qualities of woods . . . . .				
C. Construction used in Furniture manufacturing . . . . .				
D. Care of products made of wood. . . . .				
E. Cost of products . . . . .				



APPENDIX B--Continued

Subject Matter Content for the Following Areas of Industrial Arts  Possible Score _____ Rating Score _____ Textbook No. _____ Per Cent Score _____	Extent of Treatment of Subject Matter			
	Superior	Satisfactory	Weak	No Treatment (absent)
3. Health and safety in school shop				
A. Safety rules for each hand tool.				
B. Safety rules for each machine and for each shop . . . . .				
C. Health rules observed in each shop . . . . .				
4. Human relations and social effects				
A. Relationship between labor and management . . . . .				
B. Relationship between foreman and supervisor . . . . .				
C. Relationship between supervisor and top management . . . . .				
D. Employer-employee recreational relationship . . . . .				
5. Design in industrial arts				
A. Responsibility placed upon the industrial designer . . . . .				
B. Skills involved in designing projects . . . . .				
C. Reading and understanding working drawings and sketches. . . . .				
D. Rules of design . . . . .				
E. Periods of distinctive furniture				
F. Different designs of distinctive furniture . . . . .				
G. Outstanding characteristics of the various period furniture . . . . .				

APPENDIX B--Continued

Subject Matter Content for the Following Areas of Industrial Arts	Extent of Treatment of Subject Matter			
	Superior	Satisfactory	Weak	No Treatment (absent)
Possible Score _____				
Rating Score _____				
Textbook No. _____				
Per Cent Score _____				
6. Habitat and uses of native and foreign woods				
A. Where each type of wood is grown				
B. What each type of wood is suited for in construction of furniture				
C. Moisture content areas throughout the United States . . . . .				
D. The effect of moisture constant on growth of lumber . . . . .				
7. Purchasing and measuring of lumber				
A. Purchasing lumber (National Hardwood Association). . . . .				
B. Symbols				
(1) "S4S" . . . . .				
(2) "S2S" . . . . .				
(3) "RWL" . . . . .				
(4) "FAS" . . . . .				
(5) "KD" . . . . .				
(6) "AD" . . . . .				
C. Terms used in purchasing hardwoods				
(1) Yard lumber . . . . .				
(2) Mill lumber . . . . .				
(3) Cabinet lumber . . . . .				
(4) Lumber in the rough . . . . .				
(5) Common lumber . . . . .				
(6) Select lumber . . . . .				
(7) First and seconds. . . . .				
D. Measurements of lumber				
(1) Board foot . . . . .				
(2) Square foot . . . . .				
(3) Linear foot. . . . .				

APPENDIX B--Continued

Subject Matter Content for the Following Areas of Industrial Arts	Extent of Treatment of Subject Matter			
	Superior	Satisfactory	Weak	No Treatment (absent)
Possible Score _____				
Rating Score _____				
Textbook No. _____				
Per Cent Score _____				
8. Production of lumber				
A. Cutting of lumber . . . . .				
B. Milling of lumber . . . . .				
C. Cutting of veneer . . . . .				
D. Making plywood . . . . .				
9. Uses for forest products				
A. Manufactured products from the forest . . . . .				
B. By-products from trees . . . . .				
(1) Insulation . . . . .				
(2) Rayon . . . . .				
(3) Sugar . . . . .				
(4) Paper . . . . .				
(5) Plastics . . . . .				
(6) Turpentine . . . . .				
(7) Alcohol . . . . .				
C. Conservation of forest and forest products . . . . .				
10. Planning and drawing				
A. Bill of materials . . . . .				
B. Plan of procedures . . . . .				
C. Layout templet . . . . .				
D. Working drawing . . . . .				
E. Blueprints . . . . .				
11. The use of tools for woodworking				
A. Cutting				
(1) Planes . . . . .				
(2) Saws . . . . .				
(3) Chisels and gouges . . . . .				

APPENDIX B--Continued

Subject Matter Content for the Following Areas of Industrial Arts	Extent of Treatment of Subject Matter			
	Superior	Satisfactory	Weak	No Treatment (absent)
Possible Score _____				
Rating Score _____				
Textbook No. _____				
Per Cent Score _____				
<b>B. Measuring</b>				
(1) Rules . . . . .				
(2) Squares . . . . .				
(3) Levels . . . . .				
(4) Marking tools . . . . .				
<b>C. Layout</b>				
(1) Curves . . . . .				
(2) Transfer of patterns . . . . .				
(3) Circles and arcs . . . . .				
(4) Irregular shaped forms . . . . .				
(5) Enlargements . . . . .				
<b>D. Care and maintenance . . . . .</b>				
<b>E. Sharpening . . . . .</b>				
<b>12. Machine tools, their uses and operations</b>				
<b>A. Drill press</b>				
(1) Drills . . . . .				
(2) Basic parts . . . . .				
(3) Sizes and kinds . . . . .				
(4) Drilling holes . . . . .				
(5) Boring holes . . . . .				
(6) Mortising . . . . .				
<b>B. Jig saw</b>				
(1) Cutting curves . . . . .				
(2) Saber sawing . . . . .				
(3) External cuts . . . . .				
<b>C. Band saw</b>				
(1) Basic parts . . . . .				
(2) Cutting curves . . . . .				
(3) Resawing . . . . .				
(4) Straight cutting . . . . .				
(5) External cuts . . . . .				
(6) Internal cuts . . . . .				

APPENDIX B--Continued

Subject Matter Content for the Following Areas of Industrial Arts	Extent of Treatment of Subject Matter			
	Superior	Satisfactory	Weak	No Treatment (absent)
Possible Score _____				
Rating Score _____				
Textbook No. _____				
Per Cent Score _____				
D. Table or bench saw				
(1) Ripping . . . . .				
(2) Crosscutting . . . . .				
(3) Dado cutting . . . . .				
(4) Taper cutting . . . . .				
(5) Tenon cutting . . . . .				
(6) Resawing . . . . .				
E. Radial saw				
(1) Cutting out stock . . . . .				
(2) Ripping . . . . .				
(3) Cross cutting . . . . .				
(4) Dado cutting . . . . .				
F. Jointer				
(1) Jointing . . . . .				
(2) Facing . . . . .				
(3) Rabbeting . . . . .				
(4) Tapering . . . . .				
G. Planner				
(1) Sizes . . . . .				
(2) Parts . . . . .				
H. Shaper and router				
(1) Fence shaping and routing. . . . .				
(2) Templet or patterns . . . . .				
(3) Special operation . . . . .				
I. Belt sander				
(1) Face . . . . .				
(2) End . . . . .				
(3) Edge . . . . .				
J. Disc-sander				
(1) Edges . . . . .				
(2) Ends . . . . .				
(3) Bevels . . . . .				
(4) Contours . . . . .				

APPENDIX B--Continued

Subject Matter Content for the Following Areas of Industrial Arts	Extent of Treatment of Subject Matter			
	Superior	Satisfactory	Weak	No Treatment (absent)
Possible Score _____				
Rating Score _____				
Textbook No. _____				
Per Cent Score _____				
<b>K. Grinders</b>				
(1) General grinder . . . . .				
(2) Tool grinder . . . . .				
<b>L. Care and maintenance of machine tools</b>				
(1) Oiling and lubricating . . .				
(2) Adjusting . . . . .				
(3) Sharpening . . . . .				
(4) Cleaning . . . . .				
<b>13. Wood lathes and turning</b>				
A. Turning tools . . . . .				
B. Accessories . . . . .				
C. Sharpening . . . . .				
D. Methods of turning				
(1) Between centers . . . . .				
(2) Face plate . . . . .				
(3) Chucks . . . . .				
E. Various cutting methods . . . .				
F. Finishing surfaces				
(1) Preparation with abrasives .				
(2) Methods . . . . .				
<b>14. Wood fasteners and assembling</b>				
A. Glues and their uses				
(1) Types of wood glues . . . . .				
(2) Their applications . . . . .				
(3) Effects of moisture on glued wood joints . . . . .				
B. Nails				
(1) Kinds of nails . . . . .				
(2) Sizes of nails . . . . .				
(3) Finish of nails . . . . .				

APPENDIX B--Continued

Subject Matter Content for the Following Areas of Industrial Arts	Extent of Treatment of Subject Matter			
	Superior	Satisfactory	Weak	No Treatment (absent)
Possible Score _____				
Rating Score _____				
Textbook No. _____				
Per Cent Score _____				
(4) Driving of nails . . . . .				
(5) Selection of proper type nails . . . . .				
(6) Tools for nailing . . . . .				
C. Screws				
(1) Kinds . . . . .				
(2) Sizes . . . . .				
(3) Shapes . . . . .				
(4) Types of metal . . . . .				
(5) Methods of driving screws .				
(6) Pilot and anchor drills . .				
(7) Types of finish on screws .				
(8) Counter sink and counterbore				
(9) Screw plugs . . . . .				
D. Assembling				
(1) Clamps . . . . .				
(2) Jigs . . . . .				
(3) Fixtures . . . . .				
E. Hardware				
(1) Hinges . . . . .				
(2) Latches . . . . .				
(3) Locks . . . . .				
(4) Knobs and pulls . . . . .				
(5) Casters . . . . .				
(6) Special types of hardware. .				
F. Dowels				
(1) Kinds . . . . .				
(2) Sizes . . . . .				
15. Common wood joints				
A. Joint layout . . . . .				
B. Type wood joints				
(1) Dowel . . . . .				
(2) Glue . . . . .				

APPENDIX B--Continued

Subject Matter Content for the Following Areas of Industrial Arts	Extent of Treatment of Subject Matter			
	Superior	Satisfactory	Weak	No Treatment (absent)
Possible Score _____				
Rating Score _____				
Textbook No. _____				
Per Cent Score _____				
(3) Rabbet . . . . .				
(4) Dado . . . . .				
(5) Lap . . . . .				
(6) Miter . . . . .				
(7) Mortise and tenon . . . . .				
(8) Butt . . . . .				
(9) Dovetail . . . . .				
C. Rules and procedures . . . . .				
D. Methods of cutting . . . . .				
E. Fitting joints . . . . .				
F. Assembling joints				
(1) Clamps, bar . . . . .				
(2) Parallel-hand screw . . . . .				
(3) "C" clamp . . . . .				
16. Preparation of wood surfaces for finishing				
A. Planing . . . . .				
B. Scraping . . . . .				
C. Sanding . . . . .				
D. Staining . . . . .				
E. Filling . . . . .				
17. Types and chemical composition of wood finishes				
A. Oil . . . . .				
B. Shellac . . . . .				
C. Varnish . . . . .				
E. Lacquer . . . . .				
F. Rub-on . . . . .				



APPENDIX B--Continued

Subject Matter Content for the Following Areas of Industrial Arts	Extent of Treatment of Subject Matter			
	Superior	Satisfactory	Weak	No Treatment (absent)
Possible Score _____				
Rating Score _____				
Textbook No. _____				
Per Cent Score _____				
18. Home workshop information				
A. Basic hand tools . . . . .				
B. Basic machine tools . . . . .				
C. Selection and care of tools and machines . . . . .				
D. Layout . . . . .				
E. Home repairs . . . . .				
F. Hobby or vocational activities . . . . .				

APPENDIX C

INSTRUMENT II: SUITABILITY OF GRADE LEVEL IV  
TEXTBOOKS FOR WOODWORKING

Instrument adopted for the purpose of checking the suitability of current textbooks in the subject area of woodworking in the field of industrial arts.

Subject Matter Content for the Following Areas of Industrial Arts	Extent of Treatment of Subject Matter			
	Superior	Satisfactory	Weak	No Treatment (absent)
Possible Score _____				
Rating Score _____				
Textbook No. _____				
Per Cent Score _____				
<b>WOODWORKING</b>				
1. Occupational information				
A. Field of woodworking opportunities . . . . .				
B. Number of kinds of workers . . . . .				
C. Types of jobs . . . . .				
D. Kinds of manufacturing concerns.				
E. Job opportunities . . . . .				
F. Wages and working conditions . . . . .				
G. Role of woodworking in the industrial environment . . . . .				
2. Consumer knowledge				
A. Material used in wood construction . . . . .				
B. The qualities of woods . . . . .				
C. Construction used in furniture manufacture . . . . .				
D. Care of products made of wood. . . . .				
E. Costs of products . . . . .				

APPENDIX C--Continued

Subject Matter Content for the Following Areas of Industrial Arts  Possible Score _____ Rating Score _____ Textbook No. _____ Per Cent Score _____	Extent of Treatment of Subject Matter			
	Superior	Satisfactory	Weak	No Treatment (absent)
3. Health and safety in school shop				
A. Safety rules for each hand tool.				
B. Safety rules for each machine and for each shop . . . . .				
C. Health rules observed in each shop . . . . .				
D. Safety rules and practices set up by safety engineers in industry . . . . .				
4. Human relations and social effects				
A. Relationship between labor and management . . . . .				
B. Relationship between foreman and supervisor . . . . .				
C. Relationship between supervisor and top management . . . . .				
D. Employer-employee recreational relationship . . . . .				
5. Design in industrial arts				
A. Responsibility placed upon the industrial designer . . . . .				
B. Skills involved in designing projects . . . . .				
C. Reading and understanding working drawings and sketches. . . . .				
D. Rules of design . . . . .				
E. Periods of distinctive furniture				
F. Different designs of distinctive furniture . . . . .				
G. Outstanding characteristics of the various period furnitures . . . . .				

APPENDIX C--Continued

Subject Matter Content for the Following Areas of Industrial Arts  Possible Score _____ Rating Score _____ Textbook No. _____ Per Cent Score _____	Extent of Treatment of Subject Matter			
	Superior	Satisfactory	Weak	No Treatment (absent)
6. Habitat and uses of native and foreign woods				
A. Where each type of wood is grown				
B. What each type of wood is suited for in construction of furniture				
C. Moisture content areas throughout the United States . . . . .				
D. The effect of moisture constant on growth of lumber . . . . .				
7. Purchasing and measuring of lumber				
A. Purchasing lumber (National Hardwood Lumber Association) . .				
B. Symbols . . . . .				
(1) "S4S" . . . . .				
(2) "S2S" . . . . .				
(3) "RWL" . . . . .				
(4) "FAS" . . . . .				
(5) "KD" . . . . .				
(6) "AD" . . . . .				
C. Terms used in purchasing hardwood				
(1) Yard lumber . . . . .				
(2) Mill lumber . . . . .				
(3) Cabinet lumber . . . . .				
(4) Lumber in the rough . . . . .				
(5) Common lumber . . . . .				
(6) Select lumber . . . . .				
(7) First and seconds . . . . .				
D. Measurements of lumber				
(1) Board foot . . . . .				
(2) Square foot . . . . .				
(3) Linear foot . . . . .				

APPENDIX C--Continued

Subject Matter Content for the Following Areas of Industrial Arts	Extent of Treatment of Subject Matter			
	Superior	Satisfactory	Weak	No Treatment (absent)
Possible Score _____				
Rating Score _____				
Textbook No. _____				
Per Cent Score _____				
8. Production of lumber				
A. Cutting of lumber . . . . .				
B. Milling of lumber . . . . .				
C. Cutting veneer . . . . .				
D. Making plywood . . . . .				
9. Uses of forest products				
A. Manufactured products from the forest . . . . .				
B. By-products from trees				
(1) Insulation . . . . .				
(2) Rayon . . . . .				
(3) Sugar . . . . .				
(4) Paper . . . . .				
(5) Plastics . . . . .				
(6) Turpentine . . . . .				
(7) Alcohol . . . . .				
C. Conservation of forest and forest products . . . . .				
10. The use of tools for woodworking				
A. Layout				
(1) Curves . . . . .				
(2) Transfer of patterns . . . . .				
(3) Circles and arcs . . . . .				
(4) Irregular shaped forms . . . . .				
(5) Enlargements . . . . .				
B. Care and maintenance . . . . .				
C. Sharpening . . . . .				

APPENDIX C--Continued

Subject Matter Content for the Following Areas of Industrial Arts	Extent of Treatment of Subject Matter			
	Superior	Satisfactory	Weak	No Treatment (absent)
Possible Score _____				
Rating Score _____				
Textbook No. _____				
Per Cent Score _____				
<b>11. Machine tools, their uses and operations</b>				
<b>A. Drill press</b>				
(1) Drills . . . . .				
(2) Basic parts . . . . .				
(3) Sizes and kinds . . . . .				
(4) drilling holes . . . . .				
(5) Boring holes . . . . .				
(6) Mortising . . . . .				
<b>B. Jig saw</b>				
(1) Cutting curves . . . . .				
(2) Saber sawing . . . . .				
(3) External cuts . . . . .				
<b>C. Band saw</b>				
(1) Basic parts . . . . .				
(2) Cutting curves . . . . .				
(3) Resawing . . . . .				
(4) Straight cutting . . . . .				
(5) Internal cuts . . . . .				
(6) External cuts . . . . .				
<b>D. Table or bench saw</b>				
(1) Ripping . . . . .				
(2) Cross cutting . . . . .				
(3) Dado cutting . . . . .				
(4) Taper cutting . . . . .				
(5) Tenon cutting . . . . .				
(6) Resawing . . . . .				
<b>E. Radial saw</b>				
(1) Cutting out stock . . . . .				
(2) Ripping . . . . .				
(3) Cross cutting . . . . .				
(4) Dado cutting . . . . .				

APPENDIX C--Continued

Subject Matter Content for the Following Areas of Industrial Arts	Extent of Treatment of Subject Matter			
	Superior	Satisfactory	Weak	No Treatment (absent)
Possible Score _____				
Rating Score _____				
Textbook No. _____				
Per Cent Score _____				
<b>F. Jointer</b>				
(1) Jointing . . . . .				
(2) Facing . . . . .				
(3) Rabbeting . . . . .				
(4) Tapering . . . . .				
<b>G. Planer</b>				
(1) Sizes . . . . .				
(2) Parts . . . . .				
<b>H. Shaper and router</b>				
(1) Fence shaping and routing . . . . .				
(2) Templet or patterns . . . . .				
(3) Special operations . . . . .				
<b>I. Belt sander</b>				
(1) Face . . . . .				
(2) End . . . . .				
(3) Edge . . . . .				
<b>J. Disc-sander</b>				
(1) Edges . . . . .				
(2) Ends . . . . .				
(3) Bevels . . . . .				
(4) Contours . . . . .				
<b>K. Grinders</b>				
(1) General grinders . . . . .				
(2) Tool grinders . . . . .				
<b>L. Care and maintenance of machines</b>				
(1) Oiling and lubricating . . . . .				
(2) Adjusting . . . . .				
(3) Sharpening . . . . .				
(4) Cleaning . . . . .				

APPENDIX C--Continued

Subject Matter Content for the Following Areas of Industrial Arts	Extent of Treatment of Subject Matter			
	Superior	Satisfactory	Weak	No Treatment (absent)
Possible Score _____				
Rating Score _____				
Textbook No. _____				
Per Cent Score _____				
12. Planning and drawing				
A. Bill of materials . . . . .				
B. Plan of procedures . . . . .				
C. Layout templet . . . . .				
D. Working drawings . . . . .				
E. Blueprints . . . . .				
13. Wood lathes and turning				
A. Turning tools . . . . .				
B. Accessories . . . . .				
C. Sharpening turning chisels . . . . .				
D. Methods of turning				
(1) Between centers . . . . .				
(2) Face plate . . . . .				
(3) Chucks . . . . .				
E. Various cutting methods . . . . .				
F. Finishing surfaces				
(1) Preparation with abrasives . . . . .				
(2) Methods . . . . .				
14. Wood fasteners and assembling				
A. Glues and their uses				
(1) Types of wood glues . . . . .				
(2) Their applications . . . . .				
(3) Effects of moisture on glued wood joints . . . . .				
B. Nails				
(1) Kinds of nails . . . . .				
(2) Sizes of nails . . . . .				
(3) Finish of nails . . . . .				
(4) Driving of nails . . . . .				
(5) Selection of proper type nails . . . . .				
(6) Tools for nailing . . . . .				



APPENDIX C--Continued

Subject Matter Content for the Following Areas of Industrial Arts	Extent of Treatment of Subject Matter			
	Superior	Satisfactory	Weak	No Treatment (absent)
Possible Score _____				
Rating Score _____				
Textbook No. _____				
Per Cent Score _____				
<b>C. Screws</b>				
(1) Kinds . . . . .				
(2) Sizes . . . . .				
(3) Shapes . . . . .				
(4) Types of metal . . . . .				
(5) Type finish on screws . . . . .				
(6) Methods of driving screws . . . . .				
(7) Pilot and anchor drills . . . . .				
(8) Counter sink and counterbore . . . . .				
(9) Screw plugs . . . . .				
<b>D. Assembling</b>				
(1) Clamps . . . . .				
(2) Jags . . . . .				
(3) Fixtures . . . . .				
<b>E. Hardware</b>				
(1) Hinges . . . . .				
(2) Latches . . . . .				
(3) Locks . . . . .				
(4) Knobs and pulls . . . . .				
(5) Casters . . . . .				
(6) Special types of hardware . . . . .				
<b>F. Dowels</b>				
(1) Kinds . . . . .				
(2) Sizes . . . . .				
<b>15. Common wood joints</b>				
A. Joint layout . . . . .				
B. Type wood joints				
(1) Dowel . . . . .				
(2) Glue . . . . .				
(3) Rabbet . . . . .				
(4) Dado . . . . .				

APPENDIX C--Continued

Subject Matter Content for the Following Areas of Industrial Arts	Extent of Treatment of Subject Matter			
	Superior	Satisfactory	Weak	No Treatment (absent)
Possible Score _____				
Rating Score _____				
Textbook No. _____				
Per Cent Score _____				
(5) Lap . . . . .				
(6) Miter . . . . .				
(7) Mortise and tenon . . . . .				
(8) Butt . . . . .				
(9) Dovetail . . . . .				
C. Rules and procedures . . . . .				
D. Methods of cutting . . . . .				
E. Fitting joints . . . . .				
F. Assembling joints . . . . .				
(1) Clamps, bar . . . . .				
(2) Parallel-hand screws . . . . .				
(3) "C" clamps . . . . .				
G. Use of jigs for short cuts . . . . .				
16. Preparation of wood surfaces for finishing				
A. Planing . . . . .				
B. Scraping . . . . .				
C. Sanding . . . . .				
D. Filling . . . . .				
17. Types and chemical composition of woods				
A. Oil . . . . .				
B. Shellac . . . . .				
C. Varnish . . . . .				
D. Lacquer . . . . .				
E. Paint . . . . .				
F. Rub-on . . . . .				

APPENDIX C--Continued

Subject Matter Content for the Following Areas of Industrial Arts  Possible Score _____ Rating Score _____ Textbook No. _____ Per Cent Score _____	Extent of Treatment of Subject Matter			
	Superior	Satisfactory	Weak	No Treatment (absent)
18. Method of applying wood finishes				
A. Brushes . . . . .				
B. Spray gun . . . . .				
C. Pressure cans . . . . .				
D. Rub-on . . . . .				
E. Application of stains . . . . .				
(1) Oil . . . . .				
(2) Spirit . . . . .				
(3) Water . . . . .				
19. Home workshop information				
A. Basic hand tools . . . . .				
B. Basic machine tools . . . . .				
C. Selection and care of tools and machines . . . . .				
D. Layout . . . . .				
E. Home repairs . . . . .				
F. Hobby or vocational activities .				

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