THE SUITABILITY OF AVAILABLE INDUSTRIAL ARTS
TEXTBOOKS FOR THE SUBJECT AREA
OF POWER MECHANICS

THESIS

Presented to the Graduate Council of the
North Texas State University in Partial
Fulfillment of the Requirements

For the Degree of

MASTER OF SCIENCE

By

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The problem of this study was to determine the suitability of available industrial arts textbooks for classroom use in the subject area of power mechanics. Criteria used in determining the subject matter content and format suitability of the textbooks were selected from previous research and applied to the textbooks by five jurors.

Only one of the eight textbooks evaluated for subject matter content was found suitable for use in courses in power mechanics, while all of the textbooks were found suitable when evaluated for format. In order to conduct a comprehensive industrial arts power mechanics program, teachers must rely on supplementary materials in classroom instruction because of the low levels of subject matter suitability of the textbooks.
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CHAPTER I

INTRODUCTION

Man has long been interested in the use of power devices. When he began to implement the energy source of nature to work for him in the form of machines, the study of the mechanics of power was born. Man has now harnessed solar, chemical, nuclear and other power sources in his quest for labor saving devices. The power industry now employs large numbers of workers and directly or indirectly affects the day-to-day lives of most of our citizens. Therefore, power mechanics should be an important part of the education of our youth.

This study was conducted for the purpose of improving power mechanics education by providing more information concerning the suitability of textbooks for the subject area of power mechanics of the industrial arts curriculum. There are obviously many books published in the field of industrial arts each year. It is apparent that conclusive data concerning the suitability of the various books would be beneficial to selection and adoption committees. Then choices could be based on objective evidence to justify the use of these textbooks in school classrooms. Previous studies have developed criteria for effectively evaluating
textbook content in several subject areas of industrial arts. The textbooks used in this study were evaluated with respect to content and the extent they serve the specific educational criteria as developed by White in a study now in progress (23). These criteria were evaluated for White by a group of experienced Texas power mechanics teachers. The formats of the various textbooks were evaluated according to criteria developed from recommendations made by the American Library Association (6).

Statement of the Problem

The problem of this study was to determine the suitability of textbooks available for the subject area of power mechanics pertaining to the industrial arts curriculum. In order to attain findings 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 power mechanics?

2. Are criteria available for use in ascertaining the suitability of subject matter content of power mechanics textbooks for a sound industrial arts program?

3. Are criteria available for use in ascertaining the suitability of the format of power mechanics for a comprehensive industrial arts program?

4. Is the subject matter content of the available textbooks suitable for classroom use in the area of power mechanics?
5. Is the format of the available textbooks suitable for classroom use in the area of power mechanics?

6. Which of the available power mechanics textbooks can be ranked as most suitable?

**Background and Significance of the Study**

Textbooks for use in public schools in America have been provided for a long time. Through the years the methods of selecting and adopting these textbooks have changed considerably. A recent survey by McCloud of fifty state superintendents to learn more about current textbook adoption practices reported the following (10, pp. 438-439):

1. Twenty-six states have state funded textbook programs.

2. Twenty-four states adopt a standard list of textbooks from which local schools must make their selection.

3. Ten states limit the number of titles that may be listed. The number varied from three to seven, with five the median.

4. Twenty-one states set the number of years of adoption for textbooks. The terms ranged from three to eight years, with five years the median.

This survey pointed out several deficiencies of the state adopted textbook system. It found that putting a limit on the number of books that are recommended to school system selection committees handicapped efforts toward
individualization. Listed as another deficiency was the practice of limiting for a fixed period the term of adoption for textbooks. This practice in many cases does not allow new materials to be given to students while it is still new (10).

State supported free textbooks have not always been present in Texas schools. In 1891, the Texas Congress passed the first bill creating uniform textbooks and it became law in 1897. Then in 1918 after the people of Texas approved a constitutional amendment providing for state-purchased textbooks, the free textbook laws were enacted by the legislature (20, p. 206).

In 1929 the newly created Texas State Board of Education appointed the first State Textbook Committee. The committee was made up of five members, each member to be "an experienced and active educator engaged in teaching in the public schools of Texas" (16, p. 34). The membership of the committee remained at five until 1945 when the committee was increased to nine.

The State Textbook Committee was again enlarged by the Gilmer-Aikin Laws (18, p. 15). In addition to increased membership the requirements for membership changed. Presently, fifteen actively engaged educators serve on the committee and no two members can come from the same Congressional District. The members, who are nominated by the Commissioner of Education and appointed by the State Board
of Education, serve one year terms. The majority of the members must be classroom teachers.

Each year the State Board of Education issues a call for bids on textbooks that are up for adoption that particular year. Publishers wishing to submit books to be reviewed may do so in response to this call for bids. The State Textbook Committee compiles a list of all books offered for adoption (16, p. 34).

In order to review this list, the committee schedules its meeting for hearing from publisher representatives. Then it reviews the books, listens to concerned individuals' views about textbooks and then recommends not more than five books for each subject area to the Commissioner of Education (16, pp. 34-35).

The list of textbooks recommended for adoption is examined by the Commissioner of Education. He may delete books from this list so long as he does not limit the selection to just one.

The State Board of Education accepts for study the recommended textbook list from the Commissioner of Education. The board may again remove books, but not add to the list so long as they do not reduce the list to a single selection. Usually at its November meeting the State Board of Education makes its annual adoptions and awards contracts for books. These contracts may vary from one to six years (14, p. 36).
Even though there have been advances in technology to help the learning environment become more effective, it is still the textbook that remains the basic instructional tool (21, p. 7). Recently the National Education Association Project on Instruction surveyed 1,442 school principals. When asked what materials were most useful in developing a teaching program they all responded that it was the textbook (12, p. 1).

The State of Texas apparently agrees with the publishers and educators. In *Expenditures for Financing Public Education in Texas* it is estimated that the state will spend $20,268,000 in the 1974-75 school year on textbooks (15, p. 25). Of this amount, $11,858,549 will be spent on acquisition of new materials, $6.5 million on new copies of books currently under adoption, and the rest for such things as Braille and large-type books, kindergarten materials, administration, and for emergencies (13, p. 5).

In a recent article prepared by some members of the Detroit Public Schools staff, the importance of textbooks to today's education was emphasized by the following:

Textbooks and other curriculum materials constitute highly consequential elements in the total educational environment. They affect the life and learning of our young people in critical ways. All text material—whether intended or not—affects knowledge, attitudes, and skills (2, p. 13).

With the emphasis that is placed on textbooks and with the total cost in mind, it would be desirable to use the best available methods for selecting suitable textbooks.
Yet Feirer in a recent article about instructional media stated:

Too little effort is made to evaluate the content to make sure that it meets the needs of the students. We believe that validity ought to be the first and foremost criterion. Next accuracy, and finally nonbias and interracial approach (5, p. 21).

Feirer noted what he believed were the important goals of textbook selection, but Klein best stated the problem in attaining these goals when she said, "Many school districts, when faced with the problem of text or materials selection, have a curriculum supervisor or a selected committee of teachers reach a decision on some unexplicated, inner-subjective basis" (7, p. 743). She pointed out that if schools would gather data and base their choices on objective evidence, they would be in a better position to justify their choices (7, p. 746).

It was stated by Representative Nelson Cowles in the report of the Texas Legislature's House Textbook Investigating Committee that "It is apparent that due to lack of time and the number of books involved, most selections are made strictly as spur-of-the-moment decisions based on general impressions" (20, p. 36).

It was assumed that this study could be of benefit to state and local textbook selection committees. It provides information that could be of significant use to improve textbook selection in the area of power mechanics. This study could possibly be of use to publishers for improvement of future editions of their textbooks.
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. **Level III** pertained to general courses in the industrial arts program usually offered in grades 9 and 10, and are limited to activities within a group of related industries (17, pp. 140-41).

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 (9, p. 11).

3. **Textbook** was defined as a book giving instructions in the principles of a subject of study (22).

4. **Suitability** was defined as the quality of being suitable, fit, appropriate, harmonious (22).

5. **Juror** was an experienced industrial arts teacher who examined the books for subject matter and format content on power mechanics.

6. **Format Content** was defined as the shape, size, binding, type, paper, and general make-up or arrangement of a book (22).

7. **Power Mechanics** was defined as that discipline which concerns itself with various energy forms and the conversion of these energy forms into useful power.
Limitations of the Study

The following limitations of the study were applied and are presented as listed:

1. The study was limited to a select group of available textbooks for power mechanics published in the United States.

2. The textbooks under study were confined to the subject area of power mechanics of the industrial arts program, Level III only.

3. Criteria for evaluating the selected textbooks were limited to the criteria developed for content evaluation from a study now in progress by White (23) and criteria developed for format evaluation by McEntee (11) and adopted for the purpose of this study.

Related Studies

In a review of industrial arts research material, several significant studies were found concerning the selection and analysis of industrial arts textbooks.

A study in 1953 by Young, entitled "An Analysis of Textbook Emphasis in Industrial Arts Education" (24) was conducted to determine the status of the industrial arts textbook and its availability to the public schools. Among the conclusions reached in this study were that the lack of adequate criteria for textbook content, for classification and for selection, presents a serious problem in the field
of industrial arts education, and that to achieve an ade-
quate coverage of all industrial arts objectives, it is
necessary to use two or more books in many of the subject
areas (24, p. 200).

Berkebile in a 1966 study examined seven industrial
arts electricity textbooks written for the junior high
school level for their contents and their readability. He
concluded that the content of the books was satisfactory
but the reading level of most was above that of the junior
high student. The technical vocabulary of the field of
electricity was a factor in raising the readability level
of the books. Berkebile discovered that when the technical
vocabulary was taught, the students were more able to
comprehend the material (1).

A study of the suitability of woodworking textbooks for
use in a sound industrial arts program was conducted in 1961
by Ludeman (8). He concluded that there was a wide range
in the suitability among available woodworking textbooks
and they were found to be unsuitable for a sound industrial
arts program.

A closely related study was conducted by Dunn in 1967.
This study dealt with the suitability of metalworking text-
books for a sound industrial arts program. He concluded
that there was not a comprehensive textbook available for
the general metalworking or machine metalworking classes.
Although some textbooks were found to satisfactorily cover
some of the major areas of work, it was recommended that supplementary material and books be used for a sound industrial program (3).

"The Suitability of Available Industrial Arts Textbooks for the Subject Area of Drafting" by McEntee in 1970 found that two of the nine books studied were suitable for use as textbooks for general drafting. Additional books and materials would be needed in a sound industrial arts program in general drafting. This study proposed that similar studies be made of textbooks prior to their adoption and that adopted textbooks be revised at frequent intervals (11).

The American Library Association's criteria (6) for evaluating the format of books were adapted to textbook evaluation by McEntee. These criteria were found suitable for power mechanics textbook evaluation and were used in this study.

The criteria used for evaluation of textbooks in Dunn, Ludeman, and McEntee studies (3, 8, 11) were developed in a 1959 study by McCain (9). McCain's developed criteria were presented to experienced industrial arts teachers in Texas who were to reject, accept or augment the criteria. He found the textbooks adopted by the state for industrial arts programs had a low degree of suitability when evaluated with these criteria. The study concluded that supplementary texts and other materials were needed for a sound
industrial arts program, and there was a need for more comprehensive textbooks in all subject matter areas.

The criteria used as a basis for the evaluation of the textbooks in this study were developed in a study now in progress by White (23). A curriculum based on available literature, research studies, state bulletins, and textbook publishing companies' recommendations was developed by the researcher. This curriculum was submitted to experienced industrial arts teachers for revision and additions. The revised curriculum was obtained directly from White. White's well-defined curriculum (23) was assumed to be the best available and was adopted as a basis for evaluating power mechanics textbooks in this study.

Procedures

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

1. Textbooks for the subject area of power mechanics used in the study were selected from several sources. They were as follows:

   a. Publishers of industrial arts textbooks were contacted by letter and asked to submit titles of books published by their company that are best suited to fill the needs of a comprehensive industrial arts power mechanics program.
b. Publishers' book catalogs were reviewed and all books pertaining to power mechanics were listed.

c. The Texas *Current-Adoption Textbooks 1974-75* (14) and *El-Hi Textbooks in Print 1974* (4) were reviewed for possible publications of textbooks not found in previous sources.

2. A bibliography was drawn up from this list for further study.

3. To determine the books to be used in the study, criteria were developed and used for this purpose.

4. The books used in this study were obtained from libraries and directly from the publishers.

5. The criteria used in determining the suitability of the power mechanics textbooks were selected from previous research and research now in progress to correspond with the books to be evaluated.

6. The suitability of power mechanics textbooks was determined through the application of the criteria to the content and format of the textbooks.

7. The level of suitability of each book under study was expressed in terms of per cents with respect to subject matter content and subject matter format of the power mechanics area of a comprehensive industrial arts program.

8. The selection of the power mechanics textbooks concerned was made by the person who conducted this study with criteria developed for this purpose.
9. The evaluation of the power mechanics textbooks concerned was conducted in cooperation with a jury of five industrial arts teachers.

10. The selection of the jurors involved the use of the following procedures:

   a. The names of area power mechanics teachers were taken from *Texas Schools Having Industrial Arts Teachers During 1973-74* (19).

   b. This list was submitted to five members of the North Texas State University industrial arts faculty. Each member of the group was asked to nominate several prospective jurors whom they believed were outstanding power mechanics teachers.

   c. The names of prospective jurors were listed.

   d. A questionnaire sent to the prospective jurors was used to identify the most suitable jurors. A complete copy of the questionnaire is presented in Appendix C.

11. Each juror met the following requirements:

   a. Hold an industrial arts degree from an accredited college or university.

   b. Be certified to teach industrial arts in Texas public schools.

   c. Be currently teaching industrial arts power mechanics in Texas public schools.
d. Have a minimum of two consecutive years of experience teaching power mechanics.

12. The function of the jury was to apply the evaluative criteria to the content and format of the textbooks under consideration in order to ascertain the suitability of the textbooks for use in a sound industrial arts program.

Organization of the Study

Chapter I presents a statement of the problem, the background and significance of the problem, the limitations of the study, related studies, procedures and methods of securing and treating the data, and the organization of the study.

Chapter II deals with the selection of the textbooks for the subject area of power mechanics.

The treatment of the evaluative criteria of subject matter content and subject matter format is explained in Chapter III.

In Chapter IV, the degree of suitability of the power mechanics textbooks was ascertained by evaluating the content and format of the textbooks with the criteria. The resulting data gathered through the use of the instrument are presented in this chapter.

Chapter V contains a summary, findings, conclusions, and recommendations.
CHAPTER BIBLIOGRAPHY


17. Texas Education Agency, Principles and Standards for Accrediting Elementary and Secondary Schools and Description of Approved Courses, Grade 7-12, Bulletin No. 615, Austin, Texas, 1961.


CHAPTER II

THE SELECTION OF TEXTBOOKS FOR THE
SUBJECT AREA OF POWER MECHANICS

This chapter deals with the selection of the available books pertinent to the area of power mechanics. The subject area that a book covers is usually indicated by its title. However, the selection of textbooks for industrial arts appears to be a complex enterprise under present conditions. It is generally assumed that textbook titles dealing with general power mechanics are not always indicative of the content of the textbook. Most of the books selected for use in this study bore titles that appeared pertinent to the recognized courses in industrial arts power mechanics. Some examples of these books are Power Mechanics (1) and Exploring Power Mechanics (3).

Two books were included in this study because it was believed that they could offer relevant information on general power mechanics. These books bore titles that appeared to be related to only some areas of the whole industrial arts power mechanics program but were believed to be comprehensive enough to be incorporated. The two books were Small Gasoline Engines Training Manual (4) and Small Gasoline Engines (5). Since these two books bordered on the
acceptance for evaluation level for selection of books it was believed that they should be included in the study. Although they were included, it was generally assumed that they would not rate high according to the criteria as set forth for examining and determining the suitability of the content for use as a text in the area of industrial arts power mechanics.

Selection of Textbooks

In order to insure as complete coverage as possible, textbook titles were obtained from several sources. Names of industrial arts textbook publishers were taken from El-Hi Textbooks in Print 1974 (2) and a list of twenty publishers was composed from that source. Each publisher on the list was contacted by letter and was asked to submit titles of books published by their company that they believed best suited a comprehensive industrial arts power mechanics program. Of the twenty publishers contacted, thirteen, or sixty-five per cent, replied. Three of the twenty had no titles to submit in the area of power mechanics. The others recommended over fifty-five textbook titles in the areas of power mechanics, automotive mechanics, and tune-up.

To supplement the list of textbook titles submitted by publishers, three other sources were used. Publishers' book catalogs, Current-Adoption Textbooks 1974-75 (6) and El-Hi Textbooks in Print 1974 (2) were reviewed for possible publications of textbooks not presented by the publishers. A
A composite list of the titles drawn from these four sources was put together for further study.

A set of criteria was developed and used for the purpose of selecting the textbooks that were to be utilized in this study. They are as follows:

1. The content should show evidence of being an industrial arts book.

2. The textbook should be in the subject area of power mechanics.

3. The textbook should appear by title to be in keeping with the industrial arts program.

4. The date of publication of the textbook should be reasonably recent--since 1964.

In order to be retained for study, the textbooks had to meet a majority of the criteria or they were excluded from the study. Presented in Table I are the eight books selected for evaluation in this study. They are arranged alphabetically by author and are numbered for identification purposes in later chapters.
TABLE I

NUMBER ASSIGNED SELECTED POWER MECHANICS TEXTBOOKS FOR INDUSTRIAL ARTS

<table>
<thead>
<tr>
<th>Number</th>
<th>Author</th>
<th>Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Atteberry</td>
<td>Power Mechanics</td>
</tr>
<tr>
<td>2</td>
<td>Bohn &amp; MacDonald</td>
<td>Power: Mechanics of Energy Control</td>
</tr>
<tr>
<td>3</td>
<td>Duffy</td>
<td>Power--Prime Mover of Technology</td>
</tr>
<tr>
<td>4</td>
<td>Glenn</td>
<td>Exploring Power Mechanics</td>
</tr>
<tr>
<td>5</td>
<td>Pipe</td>
<td>Small Gasoline Engines Training Manual</td>
</tr>
<tr>
<td>6</td>
<td>Stephenson</td>
<td>Power Technology</td>
</tr>
<tr>
<td>7</td>
<td>Stephenson</td>
<td>Small Gasoline Engines</td>
</tr>
<tr>
<td>8</td>
<td>Worthington, Margules, &amp; Couse</td>
<td>General Power Mechanics</td>
</tr>
</tbody>
</table>

In summary, a list of textbooks for the subject area of power mechanics was compiled from four sources. 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. Two books were included in the study because it was believed that they could offer relevant information on general power mechanics. Following this procedure, eight power mechanics books were listed for further study.
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CHAPTER III

DEVELOPMENT OF CRITERIA FOR EVALUATING
POWER MECHANICS TEXTBOOKS

This chapter consists of the background concerning the development of the criteria used in the study. An examination of the functions and mechanics of the criteria and their application to the subject matter content and format of the power mechanics textbooks that were evaluated in this study are also presented.

The criteria utilized to evaluate the content of power mechanics books in this study were developed in a study now in progress by White entitled, "A Proposed Course of Study for Industrial Arts Power Technology for Ninth Grade in Texas Schools" (4). White's development of the criteria was aided by a number of experienced industrial arts power mechanics teachers in the state of Texas who served as jurors. The function of the individual juror was to accept, reject or make additions to the subject matter content that White proposed to represent as a comprehensive industrial arts power mechanics program. These criteria had been developed by White from available literature, research studies, state bulletins, and textbook publisher recommendations. This
revised curriculum was assumed to be the best available and was adapted to instrument form for use in this study.

The format of the power mechanics textbooks used in this study was evaluated with criteria developed by McEntee in the study entitled "The Suitability of Available Industrial Arts Textbooks for the Subject Area of Drafting" (3). These criteria were developed into instrument form from the American Library Association's (1) criteria for evaluating the format of books by the researcher.

The instrument structure or form was adapted from McCain's study entitled "Textbook Suitability for the Industrial Arts Program in Texas" (2). This instrument form is organized into a quick and valid way of presenting criteria for textbook evaluation.

Function of Instruments

The instruments functioned to determine the degree of suitability or treatment of the subject matter content of the power mechanics textbooks evaluated. To determine the degree of treatment the following scale was used: (1) "superior," (2) "satisfactory," (3) "weak," and (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
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 (2, pp. 57-58).

To facilitate evaluation of each textbook, the levels of content treatment were assigned a numerical value. The scale was **three** for "superior" treatment, **two** for "satisfactory treatment, **one** for "weak" treatment, and if no treatment was given, no numerical points were earned. A partial sample of the subject matter content for the area of power mechanics and the four level rating scale used in Instrument I follows:

<table>
<thead>
<tr>
<th>Subject Matter Content for the Following Area of Industrial Arts</th>
<th>Extent of Treatment of Subject Matter</th>
</tr>
</thead>
<tbody>
<tr>
<td>Textbook No. ____________________________________________________</td>
<td>Superior</td>
</tr>
<tr>
<td>Possible Score ___________</td>
<td></td>
</tr>
<tr>
<td>Rating Score ___________</td>
<td></td>
</tr>
<tr>
<td>Per Cent Score ___________</td>
<td></td>
</tr>
<tr>
<td>Title ___________________</td>
<td></td>
</tr>
</tbody>
</table>

**POWER MECHANICS**

1. **Internal Combustion Engines**
   A. **Principles of operation** (stroke principles) . . . .
   B. **Types and construction of engines** . . . . . . . . .

Fig. 1--A partial sample of Instrument I used to ascertain the extent of treatment of subject matter items as found in the power mechanics textbooks. Complete samples of Instrument I and II are presented in Appendices E and F.
Mechanics of Instruments

Each instrument's subject heading, sub-divisions, and in some cases minor parts of sub-divisions of the subject matter content and format were checked by jurors. A numerical value was placed on each subject heading. This technique helped in rating each textbook in this study. By totaling the values of the assigned ratings checked on each book, a rating score was determined. A per cent of suitability score for each textbook was determined by dividing the total value of the checked rating by the possible score of the instrument used. For example, if a textbook was measured by Instrument I, and it received a "rating score" of 83 points with a possible score of 153 points, it would receive a score of 54 per cent of the subject matter requirements.

The rating of the subject matter headings and format headings of each textbook was made in much the same way. By totaling the values of the assigned ratings a value was determined. These values were expressed as numbers one through three to correspond with the instrument rating scale of weak through superior.

In summary this chapter explains how the instruments were developed, and how they were used to determine the rating score of each of the textbooks. Chapter IV deals with the suitability of each of the textbooks used in this study.
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CHAPTER IV

THE SUITABILITY OF POWER MECHANICS TEXTBOOKS

In Chapter II the selection of power mechanics books for evaluation in this study was discussed. In order to effectively evaluate these books, criteria were chosen and applied to determine the value of each book. The purpose of this chapter is to present and interpret the data found in regard to the suitability of the various power mechanics textbooks.

The degree of suitability of each power mechanics textbook was determined by applying the appropriate instrument to the subject matter content and format of each book. In order to establish the extent of the suitability of each textbook, reference is made to Chapter I where the degree of suitability is defined as the quality of being suitable, fit, appropriate and harmonious (1). Chapter II presents in Table I the title and assigned number of the books that were evaluated. An interpretation of the data concerning the degree of suitability for each of the power mechanics textbooks follows.

Instrument I  Subject Matter Content

The following data shown in Table II represents the findings, in terms of per cent of the suitability for the
<table>
<thead>
<tr>
<th>Instrument I Jurors</th>
<th>Extent of Treatment in Power Mechanics Book Titles</th>
</tr>
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<tbody>
<tr>
<td>Juror number two</td>
<td>18.30</td>
</tr>
<tr>
<td>Juror number three</td>
<td>28.10</td>
</tr>
<tr>
<td>Juror number four</td>
<td>18.30</td>
</tr>
<tr>
<td>Juror number five</td>
<td>16.99</td>
</tr>
<tr>
<td>Average</td>
<td>19.99</td>
</tr>
</tbody>
</table>
power mechanics textbooks treated by Instrument I. Each textbook is rated by per cent of suitability by juror and then an average per cent of suitability is given.

The data presented in Table II show that book number six received the highest per cent score which was 53.98 per cent of suitability. The book that received the lowest per cent score of 19.99 per cent was book number one. This shows a differential of 33.99 per cent between the highest and lowest scores. This indicates that the degree of subject matter suitability varies greatly among the available power mechanics textbooks.

The data in Tables III through XII express the average rating of subject matter content and format received by each textbook according to the major headings of the appropriate instrument. These average ratings were arrived at by adding the numerical values which each major heading received from the jurors textbook evaluation. The sum of the evaluations was divided by the number of checks under each major heading or topic of the instruments. For example, in Table III textbook number two, Power: Mechanics of Energy Control, received five checks for heading number one. The numerical sum of the checks was ten, when divided by the number of the checks a suitability average of two was obtained. According to the rating scale used, a value of two was considered satisfactory. All the major headings of Instruments I and II were calculated and averaged using this procedure.
Table III presents information pertaining to the subject heading "Internal combustion engines" in power mechanics. The internal combustion engine and its function plays a vital part in industrial arts power mechanics programs and should be well covered in a good power mechanics textbook. The topic heading, "Principles of operation (stroke principles)," received weak coverage in book one and book six, while books two, three, four, five, seven and eight present satisfactory coverage of the subject. "Types and construction of engines" was mentioned in all eight books, but only books three, six, seven, and eight received a satisfactory rating. All but two books, numbers two and four, covered the topic "Engine components and their functions" satisfactorily. Good presentations of "Engine measurement and power production" were contained in books four and five, while all the other books contained weak presentations. Books three, seven, and eight scored the highest ratings under the subject heading "Internal combustion engines" and book two received the lowest rating.

In Table III six books received satisfactory or better ratings on the topics of "Principles of operation" and "Engine components and their functions," and four books received satisfactory or better ratings on the topic of "Types and construction of engines." These satisfactory ratings and the fact that none of the books acquired a less
<table>
<thead>
<tr>
<th>Subject Headings in Instrument I</th>
<th>Extent of Treatment in Power Mechanics Book Titles</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Principles of operation</td>
<td>1.2</td>
</tr>
<tr>
<td>(stroke principles)</td>
<td></td>
</tr>
<tr>
<td>2. Types and construction of</td>
<td>1.8</td>
</tr>
<tr>
<td>engines</td>
<td></td>
</tr>
<tr>
<td>3. Engine components and their</td>
<td>2.2</td>
</tr>
<tr>
<td>functions</td>
<td></td>
</tr>
<tr>
<td>4. Engine measurement and power</td>
<td>1.8</td>
</tr>
<tr>
<td>production</td>
<td></td>
</tr>
</tbody>
</table>
than weak rating indicates good coverage of internal combustion engines by all of the books.

The data concerning the treatment of the subject heading "Engine fuel systems" are presented in Table IV. "Carburetion fundamentals" was treated adequately in all books, with the exception of books number one, two, and four, which received weak ratings overall. A less than weak rating was received by book two for its coverage of "Types of carburetors," while books three, five, and seven obtained a satisfactory rating on this topic. "Other fuel system components" received weak to satisfactory coverage in all books with the exception of book number four which did not receive a weak rating. A satisfactory rating was received by book number three concerning the topic "Engine fuels and refining processes," and two books, numbers two and four received a less than weak rating.

Overall, the subject heading "Engine fuel systems" was best treated by book number three, Power-Prime Mover of Technology, with its satisfactory ratings on all the topics. The book that ranked the lowest in this subject was book number four Exploring Power Mechanics, which received less than weak ratings from the jurors on the topics "Other fuel system components" and "Engine fuels and refining processes."
<table>
<thead>
<tr>
<th>Subject Headings in Instrument I</th>
<th>Extent of Treatment in Power Mechanics Book Titles</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Carburetion fundamentals</td>
<td>1.2</td>
</tr>
<tr>
<td>2. Types of carburetors</td>
<td>1.2</td>
</tr>
<tr>
<td>3. Other fuel system components</td>
<td>1.8</td>
</tr>
<tr>
<td>4. Engine fuels and refining</td>
<td>1.2</td>
</tr>
<tr>
<td>processes</td>
<td></td>
</tr>
</tbody>
</table>
Presented in Table V are data gathered for three subject headings. These subject headings are "Engine electrical systems," "Engine cooling systems," and "Engine lubrication systems." "Engine electrical systems" and "Engine cooling systems" were broken down into two topics each, and "Engine lubrication systems" was treated as one topic.

Under the subject heading "Engine electrical systems" the topic "Magneto systems" was mentioned in all eight books. Books five, seven, and eight covered this topic satisfactorily, while the other five books received a weak rating. For the most part "Magneto systems" contained better coverage in the books than did the topic "Battery systems." This topic received low ratings in two books, numbers two and four, and only one book received a satisfactory rating, which was number eight. The subject heading "Engine electrical systems" contained overall two books that received satisfactory ratings, five books received weak ratings, and one book received a below weak rating by the jurors.

Books one, three, and five received a satisfactory rating on their coverage of the topic "Air cooled systems" under the subject heading "Engine cooling systems." This topic contained only one low rating which was received by book number four. It also received the lowest rating given for the topic of "Liquid cooled systems." All other books received weak to satisfactory coverage of the topic. Overall, the subject heading "Engine cooling systems" was
<table>
<thead>
<tr>
<th>Subject Headings in Instrument I</th>
<th>Extent of Treatment in Power Mechanics Book Titles</th>
</tr>
</thead>
<tbody>
<tr>
<td>Engine electrical systems</td>
<td></td>
</tr>
<tr>
<td>1. Magneto systems</td>
<td>1.2</td>
</tr>
<tr>
<td>2. Battery systems</td>
<td>1.2</td>
</tr>
<tr>
<td>Engine cooling systems</td>
<td></td>
</tr>
<tr>
<td>1. Air cooled</td>
<td>2.0</td>
</tr>
<tr>
<td>2. Liquid cooled</td>
<td>2.0</td>
</tr>
<tr>
<td>Engine lubrication systems</td>
<td>2.2</td>
</tr>
</tbody>
</table>

TABLE V

DATA CONCERNING SUBJECT MATTER TREATMENT OF ENGINE ELECTRICAL SYSTEMS, COOLING SYSTEMS, AND LUBRICATION SYSTEMS IN POWER MECHANICS TEXTBOOKS
covered well in all books with the exception of book number four.

The subject heading of "Engine lubrication systems" received satisfactory ratings in all but two books. The books which received weak ratings were numbers two and four. The number of satisfactory ratings in this subject heading indicates that it was covered well.

Book number two, *Power: Mechanics of Energy Control*, received its highest rating under the subject heading "Power transmission" as presented in Table VI. Books one, three, six, and eight also received satisfactory ratings under this heading. The only book to receive a low rating was book number four.

The data treating the subject heading "General service and operation of engines" indicate that books seven and eight received satisfactory ratings and books one, two, four, five, and six received weak ratings. Book three received a less than weak rating.

Books seven and eight received a satisfactory rating on the subject heading "Trouble shooting and maintenance of engines." Book three received a value of less than weak and the other five books received weak ratings.

Data concerning subject matter treatment of "Engine performance by dynamometer or other instrument" revealed a poor rating in all eight books. The best rating was that of weak in book four, while the other seven books only
<table>
<thead>
<tr>
<th>Subject Headings in Instrument I</th>
<th>Extent of Treatment in Power Mechanics Book Titles</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Power transmission (pulleys, gears and clutches)</td>
<td>2.2</td>
</tr>
<tr>
<td>2. General service and operation of engines</td>
<td>1.2</td>
</tr>
<tr>
<td>3. Trouble shooting and maintenance of engines</td>
<td>1.2</td>
</tr>
<tr>
<td>4. Engine performance by dynamometer or other instrument</td>
<td>0.0</td>
</tr>
<tr>
<td>5. Diesel engine principles</td>
<td>1.2</td>
</tr>
</tbody>
</table>
mentioned the subject or contained no treatment. Since engine performance is a part of most power mechanics courses, there is clearly a need for textbook improvement in this area.

Due to the fact that the subject matter in books five and seven is directed principally at the small gasoline engine, no mention of diesel engine principles was made in these books. As the ratings indicate, books one, two, and four contained weak coverage of the subject. The ratings also indicate that satisfactory coverage of "Diesel engine principles" was contained in books three, six, and eight, with books three and eight receiving the highest ratings.

Of the five subject headings included in Table VI, the book that received the highest rating overall was book number eight. The books that received the lowest rating overall were numbers five and seven.

"Repair procedures and operations" of internal combustion engines receive considerable attention in most industrial arts power mechanics laboratory courses. While power mechanics textbooks are not to be considered as shop manuals, it is reasonable to assume that they should contain a discussion of the common repair procedures involving internal combustion engines.

Three of the eight books contained little or no mention of the nine repair procedures listed in Table VII. These books were numbers one, two, and three. Book five just
<table>
<thead>
<tr>
<th>Subject Headings in Instrument I</th>
<th>Extent of Treatment in Power Mechanics Book Titles</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Cylinder honing</td>
<td>0.0</td>
</tr>
<tr>
<td>2. Cylinder resizing</td>
<td>0.0</td>
</tr>
<tr>
<td>3. Piston ring replacement</td>
<td>0.0</td>
</tr>
<tr>
<td>4. Valve grinding</td>
<td>0.0</td>
</tr>
<tr>
<td>5. Valve seat grinding</td>
<td>0.0</td>
</tr>
<tr>
<td>6. Valve lapping</td>
<td>0.0</td>
</tr>
<tr>
<td>7. Bearing replacement</td>
<td>0.0</td>
</tr>
<tr>
<td>8. Carburetor repair</td>
<td>0.0</td>
</tr>
<tr>
<td>9. Ignition tune-up</td>
<td>0.0</td>
</tr>
</tbody>
</table>
mentioned the procedures in its coverage. Books four, six, seven, and eight received weak ratings on most of the nine topics. The two satisfactory ratings were received by book four for the topic of "Cylinder honing" and book six for the topic "Valve lapping." These data seem to indicate a need for power mechanics textbooks to give more consideration to the role of repair procedures and operations in industrial arts power mechanics laboratory courses by improving their coverage of the subject.

Data collected concerning the subject matter treatment of "Power topics" in power mechanics textbooks are presented in Table VIII. The twelve topics were rated individually by the jurors for each book.

Each "Power topic" received a wide range of coverage within the eight textbooks. Three of the books contained little or no treatment of all twelve topics. Books two, four, and eight received weak ratings overall for the "Power topics" subject heading. Book number eight received satisfactory ratings on five topics, "Natural power," "Steam engines," "Atomic power," "Airstream reaction engines," and "Rocket engines," but was still rated weak overall for its coverage of the power topics listed.

The two books that obtained the best ratings listed in Table VIII were books three and six. Book number six received satisfactory ratings on all topics except "Natural power" and "Steam generators." On these two topics book six
## TABLE VIII
DATA CONCERNING SUBJECT MATTER TREATMENT OF OTHER POWER TOPICS IN POWER MECHANICS TEXTBOOKS

<table>
<thead>
<tr>
<th>Subject Headings in Instrument I</th>
<th>Extent of Treatment in Power Mechanics Book Titles</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Natural power (simple machines, water, wind)</td>
<td>0.0</td>
</tr>
<tr>
<td>2. Steam engines (external combustion)</td>
<td>0.0</td>
</tr>
<tr>
<td>3. Steam turbines</td>
<td>0.0</td>
</tr>
<tr>
<td>4. Steam generators</td>
<td>0.0</td>
</tr>
<tr>
<td>5. Atomic power (reactors)</td>
<td>0.0</td>
</tr>
<tr>
<td>6. Gas turbines</td>
<td>0.0</td>
</tr>
<tr>
<td>7. Airstream reaction engines (turbojet, pulsejet, ramjet)</td>
<td>.8</td>
</tr>
<tr>
<td>8. Rocket engines</td>
<td>.2</td>
</tr>
<tr>
<td>9. Hydraulics</td>
<td>.2</td>
</tr>
<tr>
<td>10. Pneumatics</td>
<td>0.0</td>
</tr>
<tr>
<td>11. Fluidics</td>
<td>.2</td>
</tr>
<tr>
<td>12. Electrical power sources</td>
<td>.4</td>
</tr>
</tbody>
</table>
received a weak rating of 1.8. *Power-Prime Mover of Technology*, book number three, received the best ratings of all the books for the twelve "Power topics." It received satisfactory ratings on all topics.

Table IX deals with the subject matter treatment of six subject headings. The first subject heading presented is entitled "Tools." This particular subject heading was covered satisfactorily in books four and eight, but the other six books received very weak ratings or made no mention of the subject.

The next subject heading presents the data collected concerning "Safety" coverage in the power mechanics textbooks. Safety is an important part of any industrial arts laboratory experience, yet four of the eight books received a less than weak treatment on the subject. Books four, six, and eight received satisfactory ratings dealing with "Safety."

The data collected pertaining to "Careers" in power mechanics in the textbooks indicate no coverage in books five, seven, and eight and the subject was just mentioned in books three and four. Book one and six received weak coverage and book two received a satisfactory rating concerning careers.

The subject heading "Rotary engines and other new developments" was well covered in books four and five while books three, six, seven, and eight received weak ratings.
### TABLE IX

**DATA CONCERNING SUBJECT MATTER TREATMENT OF TOOLS, SAFETY, CAREER, ROTARY ENGINES AND OTHER NEW DEVELOPMENTS, POLLUTION CONTROL DEVICES, AND READ AND USE MANUALS IN POWER MECHANICS TEXTBOOKS**

<table>
<thead>
<tr>
<th>Subject Headings in Instrument I</th>
<th>Extent of Treatment in Power Mechanics Book Titles</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Tools</td>
<td>0.0</td>
</tr>
<tr>
<td>2. Safety</td>
<td>0.8</td>
</tr>
<tr>
<td>3. Career</td>
<td>1.0</td>
</tr>
<tr>
<td>4. Rotary engines and other new developments</td>
<td>0.0</td>
</tr>
<tr>
<td>5. Pollution control devices</td>
<td>0.0</td>
</tr>
<tr>
<td>6. Read and use manuals</td>
<td>0.2</td>
</tr>
</tbody>
</table>
Books one and two contained little or no mention of the subject.

The subject headings, "Pollution control devices" and "Read and use manuals," received poor treatment in all books with little or no mention in six of them. A weak rating was received by books four and six for their coverage of the subjects.

The subject matter listed in Table X, as a whole, did not receive satisfactory coverage. This table indicates that books four and eight contained the best treatment of the subject heading "Use precision instruments." The other six books contained little or no coverage of the subject.

The subject heading "Welding" was not treated in any of the eight power mechanics textbooks. It was the only subject heading not discussed and apparently there is some obvious reason for the lack of treatment.

"History and future of power devices" received satisfactory treatment in books two, three, and eight and weak treatment in books four, five, and six. Little or no coverage of the subject was presented in books one and seven.

The subject headings, "Test equipment," "Large engine overhaul," and "Automotive systems" received poor treatment in all books. "Test equipment" received weak ratings in books four and eight, and "Automotive systems" received weak ratings in books three and six. A satisfactory rating was received by book eight for its coverage of "Automotive systems."
TABLE X
DATA CONCERNING SUBJECT MATTER TREATMENT OF USE OF PRECISION INSTRUMENTS, WELDING, HISTORY AND FUTURE OF POWER DEVICES TEST EQUIPMENT, LARGE ENGINE OVERHAUL, AND AUTOMOTIVE SYSTEMS IN POWER MECHANICS TEXTBOOKS

<table>
<thead>
<tr>
<th>Subject Headings in Instrument I</th>
<th>Extent of Treatment in Power Mechanics Book Titles</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Use precision instruments</td>
<td>0.0</td>
</tr>
<tr>
<td>2. Welding</td>
<td>0.0</td>
</tr>
<tr>
<td>3. History and future of power devices</td>
<td>0.0</td>
</tr>
<tr>
<td>4. Test equipment</td>
<td>0.0</td>
</tr>
<tr>
<td>5. Large engine overhaul</td>
<td>0.0</td>
</tr>
<tr>
<td>6. Automotive systems</td>
<td>0.0</td>
</tr>
</tbody>
</table>
Instrument II Format Suitability

The format suitability of each textbook was checked by the jurors with Instrument II. This instrument was adapted for use in this study from previous research and was applied to the format of each book to determine a suitability rating.

The data shown in Table XI represent the findings in terms of per cent of suitability for the power mechanics textbooks treated by Instrument II. Each textbook is rated by per cent of suitability by the jurors and then an average per cent of suitability was calculated.

The data show that book number six received the highest per cent score of 61.76 per cent as to suitability. The book that received the lowest per cent score of 52.65 per cent was book number two. This shows a differential of only 9.1 per cent between the highest and lowest scores. These figures indicate that the format suitability of the available power mechanics textbooks does not vary greatly.

Table XII presents data on subject headings pertaining to format in power mechanics textbooks. The values were arrived at by adding the numerical values which each major heading received from the jurors' textbook evaluation. The sum of the evaluations was divided by the number of checks under each major heading of the instruments.

Under the subject heading "Aims and objectives," one half of the eight textbooks received satisfactory ratings
### TABLE XI

FORMAT SUITABILITY PERCENTAGE RATING SCORE OF
POWER MECHANICS TEXTBOOKS

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<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Juror number one</td>
<td>59.18</td>
<td>58.50</td>
<td>65.30</td>
<td>53.06</td>
<td>61.22</td>
<td>62.58</td>
<td>64.62</td>
<td>62.58</td>
</tr>
<tr>
<td>Juror number two</td>
<td>56.46</td>
<td>61.90</td>
<td>60.54</td>
<td>63.26</td>
<td>65.30</td>
<td>63.26</td>
<td>64.62</td>
<td>61.22</td>
</tr>
<tr>
<td>Juror number three</td>
<td>63.26</td>
<td>53.74</td>
<td>57.82</td>
<td>65.98</td>
<td>68.02</td>
<td>63.26</td>
<td>64.62</td>
<td>61.22</td>
</tr>
<tr>
<td>Juror number four</td>
<td>40.81</td>
<td>34.01</td>
<td>47.61</td>
<td>48.29</td>
<td>31.97</td>
<td>59.86</td>
<td>49.65</td>
<td>48.97</td>
</tr>
<tr>
<td>Juror number five</td>
<td>50.34</td>
<td>55.10</td>
<td>62.58</td>
<td>55.78</td>
<td>62.58</td>
<td>59.86</td>
<td>61.22</td>
<td>53.74</td>
</tr>
<tr>
<td>Average</td>
<td>54.01</td>
<td>52.65</td>
<td>58.77</td>
<td>57.27</td>
<td>57.82</td>
<td>61.76</td>
<td>60.95</td>
<td>57.55</td>
</tr>
</tbody>
</table>
and the other one half received weak ratings. The highest rating received was 2.6 for book eight. Books five, six, and seven followed with ratings of 2.2, 2.0, and 2.0, respectively.

Authors, publishers, and contributors of the textbooks were treated under the subject heading, "Authority." The jurors rated seven of the eight textbooks almost the same. Books two through eight had only .2 of a point variance in their numerical ratings. Book two received a 2.1 rating; books three, four, and eight received a 2.0 rating; and books five, six, and seven obtained a 1.9 rating. Book one had a 1.2 rating.

"Accuracy" was the title of the subject heading employed to determine if the textbooks were accurate, to a reasonable degree, in presentation of facts and interpretations for a comprehensive power mechanics program as prescribed by Instrument I. The ratings indicate that the textbooks were reasonably accurate and books two through seven received a satisfactory rating. Books one and eight received ratings of 1.9 each.

Under the subject heading "Objectivity" all books were rated as satisfactory. This indicates that the books were free of bias and/or omitted controversial subjects.

The subject heading "Up-to-dateness" was used to determine if the textbooks were reasonably current and if they reflected change. Books two, three, five, and seven were
TABLE XII
DATA CONCERNING FORMAT TREATMENT FOR EACH
POWER MECHANICS TEXTBOOK

<table>
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<tr>
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<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Aims and objectives</td>
<td>1.6</td>
<td>1.2</td>
<td>1.8</td>
<td>2.2</td>
<td>2.0</td>
<td>2.0</td>
<td>2.0</td>
<td>2.6</td>
</tr>
<tr>
<td>2. Authority</td>
<td>1.2</td>
<td>2.1</td>
<td>2.0</td>
<td>1.9</td>
<td>1.9</td>
<td>1.9</td>
<td>1.9</td>
<td>2.0</td>
</tr>
<tr>
<td>3. Accuracy</td>
<td>1.9</td>
<td>2.0</td>
<td>2.2</td>
<td>2.2</td>
<td>2.0</td>
<td>2.0</td>
<td>2.0</td>
<td>1.9</td>
</tr>
<tr>
<td>4. Objectivity</td>
<td>2.2</td>
<td>2.0</td>
<td>2.2</td>
<td>2.2</td>
<td>2.0</td>
<td>2.0</td>
<td>2.0</td>
<td>2.2</td>
</tr>
<tr>
<td>5. Up-to-dateness</td>
<td>1.4</td>
<td>2.0</td>
<td>2.2</td>
<td>2.6</td>
<td>2.0</td>
<td>2.0</td>
<td>2.0</td>
<td>1.8</td>
</tr>
<tr>
<td>6. Organization and arrangement</td>
<td>2.2</td>
<td>2.0</td>
<td>2.4</td>
<td>1.8</td>
<td>2.0</td>
<td>1.8</td>
<td>2.0</td>
<td>2.0</td>
</tr>
<tr>
<td>7. Understandable</td>
<td>1.6</td>
<td>1.8</td>
<td>1.7</td>
<td>1.8</td>
<td>2.0</td>
<td>2.0</td>
<td>1.8</td>
<td>1.8</td>
</tr>
<tr>
<td>8. Aids in Use</td>
<td>1.7</td>
<td>1.4</td>
<td>1.6</td>
<td>1.2</td>
<td>1.0</td>
<td>1.5</td>
<td>1.5</td>
<td>1.1</td>
</tr>
<tr>
<td>9. Illustrations</td>
<td>1.5</td>
<td>1.9</td>
<td>1.6</td>
<td>1.8</td>
<td>2.0</td>
<td>1.5</td>
<td>1.5</td>
<td>1.9</td>
</tr>
<tr>
<td>10. Physical format</td>
<td>1.9</td>
<td>1.8</td>
<td>1.9</td>
<td>1.8</td>
<td>1.9</td>
<td>2.0</td>
<td>2.0</td>
<td>2.0</td>
</tr>
<tr>
<td>11. Use</td>
<td>1.2</td>
<td>1.6</td>
<td>1.5</td>
<td>1.8</td>
<td>2.0</td>
<td>1.8</td>
<td>2.0</td>
<td>1.8</td>
</tr>
</tbody>
</table>
rated as satisfactory under this subject heading with book five receiving the highest rating of 2.6. Books one, four, six, and eight received weak ratings.

The "Organization and arrangement" of a textbook is an important factor in its overall efficiency. It determines if material can be retrieved quickly and effectively. Under this subject heading books four and six were rated as weak, while the other six books were rated as satisfactory. Book three received the highest rating of 2.4 which is satisfactory.

The subject heading "Understandable" was applied to all the textbooks to determine if they were within the comprehension of students and if new words were introduced in each assignment. It also dealt with the treatment of topics in proportion to their importance and with consistency. All textbooks were rated weak under this subject heading except one, book five, which received a 2.0 rating which is satisfactory.

All the textbooks received weak ratings under the subject heading "Aids in use." This was due in part to the poor or nonexistant glossary and/or bibliography in most of the textbooks. The index, table of contents, and references were also considered under this subject heading.

"Illustrations" was another subject heading receiving weak ratings in most of the textbooks. Only book number five obtained a satisfactory rating. The books were checked
to determine if they included black-and-white and/or color illustrations. Consideration was also given to the illustrations to ascertain if they were well selected and placed to add understanding to the written material.

When the subject heading "Physical format" was applied to the textbooks, some of the things that were taken into consideration were the size, shape, and number of pages, the binding, the kind of type and spacing used, and if the paper was of suitable quality. All books received ratings of between 1.8 through 2.0. Books six and eight received the two satisfactory ratings under this subject heading.

Under the subject heading of "Use" books five and seven were rated as satisfactory. The other six books were rated as weak with books four, six, and eight receiving a rating of 1.8.

Level III Power Mechanics Textbooks

Table XIII data show the rank order rating of each textbook. This rating was determined by combining the subject matter per cent rating and format per cent rating to obtain a composite per cent rating. This composite per cent rating was used to rank each textbook. The book with the highest composite per cent rating received rank order rating number one and the book with the lowest composite per cent rating received rank order rating number eight.
<table>
<thead>
<tr>
<th>Title of Book</th>
<th>Subject Matter Per Cent Rating</th>
<th>Format Per Cent Rating</th>
<th>Composite Per Cent Rating</th>
<th>Rank Order of Suitability</th>
</tr>
</thead>
<tbody>
<tr>
<td>Power Mechanics</td>
<td>19.99</td>
<td>54.01</td>
<td>74.00</td>
<td>8</td>
</tr>
<tr>
<td>Power: Mechanics of Energy Control</td>
<td>29.53</td>
<td>52.65</td>
<td>82.18</td>
<td>7</td>
</tr>
<tr>
<td>Power-Prime Mover of Technology</td>
<td>45.74</td>
<td>58.77</td>
<td>104.51</td>
<td>3</td>
</tr>
<tr>
<td>Exploring Power Mechanics</td>
<td>41.95</td>
<td>57.27</td>
<td>99.22</td>
<td>4</td>
</tr>
<tr>
<td>Small Gasoline Engines Training Manual</td>
<td>27.96</td>
<td>57.82</td>
<td>85.78</td>
<td>6</td>
</tr>
<tr>
<td>Power Technology</td>
<td>53.98</td>
<td>61.76</td>
<td>115.74</td>
<td>1</td>
</tr>
<tr>
<td>Small Gasoline Engines</td>
<td>28.09</td>
<td>60.95</td>
<td>89.04</td>
<td>5</td>
</tr>
<tr>
<td>General Power Mechanics</td>
<td>49.80</td>
<td>57.55</td>
<td>107.35</td>
<td>2</td>
</tr>
</tbody>
</table>
A brief summary of the ratings received by each of the textbooks with respect to suitability is presented as follows:

Textbook number one, *Power Mechanics*, received an overall subject matter rating of 19.99 per cent when checked by the jurors with Instrument I and an overall format suitability rating of 54.01 per cent when checked with Instrument II. There were three subject headings in Instrument I that received satisfactory ratings according to the criteria. Seven subject headings were treated weakly and fourteen areas were not treated at all. When the format was checked with Instrument II, two subject headings received satisfactory treatment and nine received weak treatment. This textbook received the lowest rank order rating as to suitability which was number eight.

*Power: Mechanics of Energy Control*, textbook number two, received an overall rating of 29.53 per cent by Instrument I and an overall rating of 52.65 per cent by Instrument II. Three of the twenty-four subject headings concerned with subject matter were rated satisfactory, nine were rated weak, and twelve received no treatment. Five of the eleven format subject headings were rated as satisfactory and six were rated weak. This textbook received the next to the lowest rank order rating of number seven.

Textbook number three, *Power--Prime Mover of Technology*, received an overall subject matter rating of 45.74 per cent
and an overall suitability content rating of 58.77 per cent. When the subject matter was checked with Instrument I, eight subject headings received satisfactory ratings, three received weak ratings and thirteen were not treated at all. When the format suitability was checked with Instrument II, five subject headings received satisfactory ratings, and six received weak ratings. This textbook was ranked as number three.

Textbook number four, titled Exploring Power Mechanics, received an overall subject matter rating of 41.95 per cent when checked by the jurors with Instrument I and an overall format suitability rating of 57.27 per cent when checked with Instrument II. The subject matter content was found to meet the criteria to a satisfactory degree in four of the twenty-four subject headings. Twelve of the subject headings were rated as weak and the remaining eight areas received little or no treatment. The format was treated satisfactorily in three of the eleven subject headings and eight were rated as weak. This textbook was ranked fourth.

When checked by the jurors with Instrument I, the fifth textbook, entitled Small Gasoline Engines Training Manual, obtained a 27.96 per cent rating. It received a 57.82 per cent rating when checked with Instrument II. Fourteen of the subject headings on subject matter received little or no treatment; seven contained a weak treatment and three were
rated as satisfactory. Eight of the format subject headings were rated as satisfactory and three were rated as weak. This book was ranked as number six.

Number six textbook, entitled *Power Technology*, received an overall subject matter rating of 53.98 per cent when evaluated by the jurors with Instrument I. It received an overall format rating of 61.76 per cent when evaluated by the jurors with Instrument II. Five subject headings of subject matter content were rated as satisfactory, twelve were rated as weak and seven subject headings received little or no treatment. The format contained four subject headings rated as satisfactory and seven as weak. This textbook received the highest rank order rating.

*Small Gasoline Engines*, textbook number seven, received an overall subject matter rating of 28.09 per cent when checked by the jurors with Instrument I and a rating of 60.95 per cent when checked with format suitability with Instrument II. This textbook received satisfactory ratings on five of the subject headings concerned with subject matter of Instrument I. Fourteen of the subject headings dealing with subject matter received little or no treatment and five received weak treatment. When the format was checked by the jurors with Instrument II, six subject headings received satisfactory ratings and five received weak ratings. This textbook was ranked as number five.
Textbook number eight, entitled General Power Mechanics, received an overall subject matter suitability rating of 49.80 per cent when evaluated by the jurors with Instrument I and an overall format suitability rating of 57.55 per cent when evaluated by the jurors with Instrument II. Eleven of the twenty-four subject headings concerned with subject matter of Instrument I were rated as satisfactory, seven were rated as weak, and six contained little or no treatment. Five of the eleven format subject headings were rated as satisfactory and six were rated as weak. This textbook was ranked second.

To summarize, textbook number six, entitled Power Technology, was ranked highest. It was followed by textbook number eight, entitled General Power Mechanics, which was ranked as second. The textbook to receive the lowest overall ranking was textbook number eight, entitled Power Mechanics.

The data indicate that, with the exception of one book, the textbooks under study were found to be unsatisfactory for use with respect to "subject matter content." By the same token, each of the textbooks were found to be satisfactory for use as far as "format" is concerned. This is based upon the fact that the evaluation score of the books under study must attain a minimum score of fifty (50) per cent of content treatment and format coverage.
CHAPTER BIBLIOGRAPHY

CHAPTER V

SUMMARY, FINDINGS, CONCLUSIONS,
AND RECOMMENDATIONS

Summary

The purpose of this study was to determine the suitability of available power mechanics books for use as textbooks in a comprehensive industrial arts power mechanics program at the secondary level. The overall suitability ratings of the various textbooks were expressed in terms of per cents.

The criteria used as a basis for subject matter evaluations of the various textbooks were developed by previous research. They were adapted to instrument form for this study and designated as Instrument I. The instrument used for evaluation of the format of the various textbooks by the jurors was developed in previous research from criteria published on format by the American Library Association (1). It was designated as Instrument II. These instruments were used to ascertain the suitability of the subject matter content and format of the various textbooks.

The textbooks were evaluated by a jury of five industrial arts teachers. Each juror was an experienced power mechanics teacher who was teaching in Texas.
An overall rating was determined for each textbook used in this study. This overall rating for suitability was obtained by adding the numerical values which each major heading received from the jurors' textbook evaluations. The sum of the evaluations, or rating score, was then divided by the highest possible score to arrive at the per cent score. If a textbook met 100 per cent of the requirements, it would be considered superior and completely suitable for use in a sound industrial arts power mechanics program. Of the eight power mechanics books under investigation, only one met as much as 50 per cent of the subject matter requirements, but all eight met more than 50 per cent of the format requirements.

The data collected on the textbooks were further examined by determining the degree of suitability rating of each division of each instrument. The values were determined by adding the ratings and dividing by the number rated. They were presented in numerical form: 0 represents "no treatment," 1 represents "weak treatment," 2 represents "satisfactory treatment," and 3 represents "superior treatment" in the tables presented. The range of suitability recorded was between the numerical averages of 0.0 to 2.6 for Instrument I and 1.0 to 2.6 for Instrument II. All of the textbooks evaluated met some of the subject matter requirements of being suitable; however, only one of them was regarded as being suitable for use in a sound industrial arts program in power mechanics.
Findings

In light of the data obtained in the content and format study of the power mechanics textbooks, the following findings are presented:

1. Only one of the eight textbooks evaluated according to their suitability for use in a power mechanics program was found to contain as much as 50 per cent of the total subject matter content as measured by the criteria.

2. All of the eight textbooks evaluated according to their suitability for use in a power mechanics program were found to contain as much as 50 per cent of the total format as measured by the criteria.

3. The range between the highest and lowest per cent rating score of subject matter suitability of the textbooks was found to be 33.99 per cent.

4. The range between the highest and lowest per cent rating score of format suitability of the textbooks was found to be 9.1 per cent.

5. Subject matter content was found to be weak or nonexistent for all of the power mechanics textbooks under the subject headings "Welding" and "Large engine overhaul."

6. In seven of the eight power mechanics textbooks it was found that the subject matter under the subject headings "Engine performance by dynamometer" and "Read and use manuals" were rated as weak or nonexistent.

7. Subject matter content of the textbooks for subject
headings "Pollution control devices," "Use precision instruments," and "Test Equipment" received little or no treatment in six of the textbooks evaluated.

8. Not all of the subject headings pertaining to subject matter were rated "satisfactory" in all books.

9. In six of the textbooks it was found that "Principles of operation," "Engine components and their functions," and "Engine lubrication systems" were covered satisfactorily.

10. Instrument II's table indicated several format subject headings that were not treated satisfactorily. These subject headings were "Understandable," "Aids in Use," "Illustrations," "Physical format," and "Use."

11. The format rating was found to be satisfactory for all the power mechanics textbooks under the subject heading "Objectivity."

Conclusions

The conclusions, based on the data obtained, are presented as follows:

1. Because of the rather low per cent of suitability ratings of the power mechanics textbooks, it was concluded that additional books and other materials would be needed to supplement the textbooks in a sound industrial arts power mechanics program.

2. It was concluded that at present there is not a comprehensive textbook available for use in an industrial arts power mechanics program.
3. According to the findings, it was concluded that some of the textbooks that were evaluated in this study would satisfactorily cover some of the major subject headings of the subject matter content and format, but would be unsuitable for use in other major subject headings.

Recommendations

The following recommendations are based upon the findings and conclusions of the study. They are as follows:

1. In the books included in this study there is a need for more extensive treatment of the following subject headings dealing with subject matter:
   a. Engine performance by dynamometer or other instrument
   b. Repair procedures and operations
   c. Other power topics
   d. Tools
   e. Safety
   f. Career
   g. Pollution control devices
   h. Read and use manuals
   i. Use precision instruments
   j. Welding
   k. Test equipment
   l. Automotive systems

2. In the books included in this study there is a need for more extensive treatment of the following subject
headings dealing with format:

a. Aids in use
b. Understandable
c. Illustrations
d. Physical format
e. Use

3. Additional books and other materials should be used to supplement these textbooks in a sound industrial arts power mechanics program.

4. Similar studies be made of books proposed prior to their adoption.

5. Adopted textbooks should be revised at frequent intervals.
APPENDICES
APPENDIX A

LETTER TO PUBLISHERS OF INDUSTRIAL ARTS TEXTBOOKS
Dear Sirs,

In the past few years there has been a movement in Texas schools to improve industrial arts curriculum. With this goal in mind, Jim White a North Texas State University graduate student conducted a study to develop a curriculum based on the course description offered by the Texas Education Agency. The emphasis of the study was to present an improved curriculum by using recommendations of outstanding power mechanics instructors from the state of Texas.

I am currently conducting a graduate study at North Texas State University to evaluate the suitability of power mechanics textbooks for classroom use by teachers and students in Texas. These textbooks will be evaluated using White's newly developed curriculum as a basis for the criteria in order to insure a current and significant study.

I am soliciting your help in recommending to me the power mechanics textbooks published by your company that you feel are best suited to fill the needs of a sound industrial arts power mechanics program. Textbooks nominated by publishers will be compiled into a list for further study, and it is essential that a complete and concise list be compiled. A return envelop is enclosed for your convenience and a prompt return shall be greatly appreciated.

Please be assured that your cooperation and assistance are fundamental to the success of this study.

Sincerely yours,

Joseph P. Hocker

Sponsor:
Dr. Jerry C. McCain
Professor of Industrial Arts
North Texas State University
APPENDIX B

LETTER TO PROSPECTIVE JURORS
Dear Sir,

In the past few years there has been a movement in Texas schools to improve industrial arts curriculum. With this goal in mind, Jim White a North Texas State University graduate student conducted a study to develop a curriculum based on the course description offered by the Texas Education Agency. The emphasis of the study was to present an improved curriculum by using recommendations of outstanding power mechanics instructors from the state of Texas.

I am currently conducting a graduate study at North Texas State University to determine the suitability of power mechanics textbooks for classroom use by teachers and students in Texas. These textbooks will be evaluated using White's newly developed curriculum as a basis for the criteria in order to insure a current and significant study.

It is believed that you will appreciate the importance of this study, and I am soliciting your help to serve as a juror. Each juror will be asked to assist in the study by making an evaluation of the various textbooks under consideration. The criteria used for evaluation will be presented in the form of an instrument that has been structured to take as little of your time as possible. As a juror your name will not appear in the study.

Please be assured that your cooperation and assistance are fundamental to the success of this study.

Sincerely yours,

Joseph P. Hocker

Sponsor:
Dr. Jerry C. McCain
Professor of Industrial Arts
North Texas State University
APPENDIX C

QUESTIONNAIRE FOR PROSPECTIVE JURORS
Jurors for Textbook Evaluation

Name __________________________

School __________________________ School Telephone Number _____

Home Address __________________________ Home Telephone Number _____

Subject(s) you are now teaching __________________________

Number of years experience teaching industrial arts: _____

Teaching power mechanics: ___.

Degrees held:  B.S. ___ B.A. ___ M.S. ___ M.A. ___ Other ___

Institution conferring degree(s): __________________________

Comments: __________________________
APPENDIX D

INSTRUCTIONS FOR CHECKING THE CRITERIA FOR USE IN EVALUATING INDUSTRIAL ARTS POWER MECHANICS TEXTBOOKS
INSTRUCTIONS FOR CHECKING THE CRITERIA FOR USE IN EVALUATING AVAILABLE INDUSTRIAL ARTS POWER MECHANICS TEXTBOOKS

This instrument consists of statements or items describing the subject matter content deemed essential for a sound industrial arts program as determined by a previous study. It is reasonable to assume that the subject matter content should be found in industrial arts textbooks to varying degrees. In order that this instrument will be more meaningful, it is necessary to define the various degrees of the treatment of the subject matter. For careful discriminating judgment of the subject matter, the instrument requires four terms which are defined as follows:

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

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

3. Weak treatment: This term will be 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 is not present in any form in the context of the textbook.
Sample

Subject Matter Content for the Following Area of Industrial Arts

<table>
<thead>
<tr>
<th>Textbook No.</th>
<th>Possible Score</th>
<th>Rating Score</th>
<th>Per Cent Score</th>
</tr>
</thead>
</table>

Title

POWER MECHANICS

1. Internal Combustion Engines

A. Principles of operation (stroke principles) . . . . .
B. Types and construction of engines . . . . . . .
C. Engine components and their functions . . . . . . .
D. Engine measurement and power production . . . . . . .

<table>
<thead>
<tr>
<th>Extent of Treatment of Subject Matter</th>
</tr>
</thead>
<tbody>
<tr>
<td>Superior</td>
</tr>
</tbody>
</table>

APPENDIX E

INSTRUMENT I - FOR CHECKING SUBJECT MATTER CONTENT
The purpose of this instrument is to determine the degree of treatment of the following subject matter content, as found in the context of each of the textbooks for the area indicated. Please indicate with a check mark (✓), the degree of treatment of the subject matter content as found in the context of the textbook.

Subject Matter Content for the Following Area of Industrial Arts

<table>
<thead>
<tr>
<th>Textbook No.</th>
<th>Possible Score</th>
<th>Rating Score</th>
<th>Per Cent Score</th>
<th>Title</th>
</tr>
</thead>
</table>

POWER MECHANICS

1. Internal Combustion Engines
   A. Principles of operation (stroke principles) ........
   B. Types and construction of engines ............... .....
   C. Engine components and their functions ............. ...
   D. Engine measurement and power production ...........

2. Engine fuel systems
   A. Carburetion fundamentals .......................
   B. Types of carburetors .........................
   C. Other fuel system components .................
   D. Engine fuels and refining processes ...........

3. Engine electrical systems
   A. Magneto systems .............................
   B. Battery systems .............................
<table>
<thead>
<tr>
<th>Topic</th>
<th>Superior</th>
<th>Satisfactory</th>
<th>Weak</th>
<th>No Treatment (Absent)</th>
</tr>
</thead>
<tbody>
<tr>
<td>4. Engine cooling systems</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>A. Air cooled</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>B. Liquid cooled</td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>5. Engine lubrication systems</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6. Power transmission (pulleys, gears and clutches)</td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>7. General service and operation of engines</td>
<td></td>
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<tr>
<td>8. Trouble shooting and maintenance of engines</td>
<td></td>
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<td></td>
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<tr>
<td>9. Diesel engine principles</td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>10. Repair procedures and operations</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>A. Cylinder honing</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>B. Cylinder resizing</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>C. Piston ring replacement</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>D. Valve grinding</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>E. Valve seat grinding</td>
<td></td>
<td></td>
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<tr>
<td>F. Valve lapping</td>
<td></td>
<td></td>
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<tr>
<td>G. Bearing replacement</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>H. Carburetor repair</td>
<td></td>
<td></td>
<td></td>
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</tr>
<tr>
<td>I. Ignition tune-up</td>
<td></td>
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<tr>
<td>11. Engine performance by dynamometer or other instrument</td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>12. Other power topics</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>A. Natural power (simple machines, water, wind)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>B. Steam engines (external combustion)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>C. Steam turbines</td>
<td></td>
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</tr>
<tr>
<td>Extent of Treatment of Subject Matter</td>
<td></td>
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<td>--------------------------------------</td>
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</tr>
<tr>
<td>Superior</td>
<td>Satisfactory</td>
<td>Weak</td>
<td>No Treatment (Absent)</td>
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<tr>
<td>----------</td>
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<td></td>
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<tr>
<td>D. Steam generators .</td>
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<tr>
<td>E. Atomic power (reactors)</td>
<td></td>
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<tr>
<td>F. Gas turbines</td>
<td></td>
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<td></td>
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<tr>
<td>G. Airstream reaction engines</td>
<td></td>
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<tr>
<td>(turbojet, pulsejet, ramjet)</td>
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<tr>
<td>H. Rocket engines</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>I. Hydraulics</td>
<td></td>
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<tr>
<td>J. Pneumatics</td>
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<tr>
<td>K. Fluidics</td>
<td></td>
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<td></td>
</tr>
<tr>
<td>L. Electrical power sources</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>13. Tools</td>
<td></td>
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<tr>
<td>14. Safety</td>
<td></td>
<td></td>
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<tr>
<td>15. Career</td>
<td></td>
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<tr>
<td>16. Rotary engines and other new</td>
<td></td>
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<tr>
<td>developments</td>
<td></td>
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<tr>
<td>17. Pollution control devices</td>
<td></td>
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<tr>
<td>18. Read and use manuals</td>
<td></td>
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<td></td>
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<tr>
<td>19. Use precision instruments</td>
<td></td>
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<tr>
<td>20. Welding</td>
<td></td>
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<tr>
<td>21. History and future of power devices</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>22. Test Equipment</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>23. Large engine overhaul</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>24. Automotive systems</td>
<td></td>
<td></td>
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<td></td>
</tr>
</tbody>
</table>

Completed by: ____________________________
Address: ____________________________
Date: ____________________________
APPENDIX F

INSTRUMENT II - FOR CHECKING FORMAT
CONTENT
Instrument II

SUITABILITY OF AVAILABLE POWER MECHANICS TEXTBOOKS FOR USE IN A SOUND INDUSTRIAL ARTS PROGRAM

The purpose of this instrument is to determine the degree of treatment of the following format content, as found in each of the textbooks proposed for adoption, for the area indicated. Please indicate with a check mark (✓), the degree of treatment of the format content as found in the textbook.

<table>
<thead>
<tr>
<th>Format Content for the Following Area of Industrial Arts</th>
<th>Extent of Treatment of Format</th>
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<tbody>
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<td>Textbook No.</td>
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<tr>
<td>Power Mechanics</td>
<td>Superior</td>
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<tr>
<td>1. Aims and objectives</td>
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</tr>
<tr>
<td>2. Authority</td>
<td></td>
</tr>
<tr>
<td>A. Author</td>
<td></td>
</tr>
<tr>
<td>B. Publisher</td>
<td></td>
</tr>
<tr>
<td>C. Contributors</td>
<td></td>
</tr>
<tr>
<td>3. Accuracy</td>
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<tr>
<td>A. Facts</td>
<td></td>
</tr>
<tr>
<td>B. Interpretation</td>
<td></td>
</tr>
<tr>
<td>4. Objectivity</td>
<td></td>
</tr>
<tr>
<td>A. Free of bias</td>
<td></td>
</tr>
<tr>
<td>B. Omit controversial subjects</td>
<td></td>
</tr>
<tr>
<td>5. Up-to-dateness</td>
<td></td>
</tr>
<tr>
<td>A. Reasonably current</td>
<td></td>
</tr>
<tr>
<td>B. Reflects change</td>
<td></td>
</tr>
<tr>
<td>6. Organization and arrangement</td>
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</table>
### 7. Understandable

<table>
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<tr>
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<tbody>
<tr>
<td>A.</td>
<td>Within comprehension of students</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>B.</td>
<td>Many new words introduced in each assignment</td>
<td></td>
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<tr>
<td>C.</td>
<td>Treatment of topics in proportion to their importance</td>
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</tr>
<tr>
<td>D.</td>
<td>Consistent</td>
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### 8. Aids in use

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<tbody>
<tr>
<td>A.</td>
<td>Index</td>
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<tr>
<td>B.</td>
<td>Table of contents</td>
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</tr>
<tr>
<td>C.</td>
<td>Glossary</td>
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<tr>
<td>D.</td>
<td>References</td>
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<td></td>
<td>(1) Selection</td>
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<tr>
<td></td>
<td>(2) Representative</td>
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<tr>
<td></td>
<td>(3) Chosen without regard to value</td>
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</tr>
<tr>
<td>E.</td>
<td>Bibliography</td>
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### 9. Illustrations

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<tr>
<td>A.</td>
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<td>D.</td>
<td>Placed to clarify written material</td>
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### 10. Physical format

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<td>A.</td>
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<tr>
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</tr>
<tr>
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<td>(2) Number of pages</td>
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<tr>
<td>B.</td>
<td>Shape</td>
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### Extent of Treatment of Format

<table>
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<th>Satisfactory</th>
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<th>No Treatment (Absent)</th>
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</thead>
<tbody>
<tr>
<td>C. Binding</td>
<td><img src="image" alt="Binding" /></td>
<td><img src="image" alt="Binding" /></td>
<td><img src="image" alt="Binding" /></td>
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<tr>
<td>D. Type</td>
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</tr>
<tr>
<td>E. Spacing</td>
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<td><img src="image" alt="Spacing" /></td>
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<tr>
<td>F. Paper</td>
<td><img src="image" alt="Paper" /></td>
<td><img src="image" alt="Paper" /></td>
<td><img src="image" alt="Paper" /></td>
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</tr>
<tr>
<td>11. Use</td>
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<td><img src="image" alt="Use" /></td>
<td><img src="image" alt="Use" /></td>
</tr>
</tbody>
</table>

**C. Binding**

1. Attractive
2. Durable

**D. Type**

1. Kind
2. Size
3. Conform to the needs of different ages to avoid eyestrain

**E. Spacing**

1. Letters
2. Words
3. Lines
4. Paragraphs
5. Width of margins

**F. Paper**

1. Non-glare
2. Gloss
3. Desirable weight

**11. Use**

A. Grades to which best adapted
B. Adapted to course of study
C. Basic text
D. Supplementary text
E. Reference
F. Source material
G. Teacher's handbook

Completed by: 
Address: 
Date:
BIBLIOGRAPHY

Books


Bulletins


Articles


Reports


Texas House of Representatives, Report to Speaker Byron Tunnell and Members of the Texas House of Representatives of the 58th Legislature, Austin, Texas, 1963.

Unpublished Materials


