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PROPOSED CRITERIA FOR TEXTBOOK ADOPTION IN SELECTED DRAFTING AREAS

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PROPOSED CRITERIA FOR TEXTBOOK ADOPTION IN SELECTED DRAFTING AREAS

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By

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ABSTRACT

The problem was to determine a systematic way way to evaluate industrial arts drafting textbooks in selected areas.

This study uses basic background material and proposes criteria for adoption of drafting textbooks in industrial arts education. The two major devices used in developing criteria were content analysis and objectives of industrial arts.

This instrument is not complicated and may be learned easily, making it useful as an aid to select drafting textbooks. It also lends itself to the selection of supplementary textbooks.

The conclusion of this study is the result of the data assembled in the study. Given a chance, this instrument should work, and should provide satisfying results in the area of drafting.

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CHAPTER I

INTRODUCTION

In this age of the specialist, the industrial arts teacher must be a general practitioner. While teachers in other fields may specialize in one subject area, industrial arts teachers should be familiar with at least four subject areas of industrial arts to be certified.[1] Although these subject areas are related, they often contain diverse elements, and some of them are further subdivided into related material or trade categories. A strong background in general education and in professional teaching methods is also expected of the industrial arts teacher. If he teaches drafting, which is the language of all industry, he must be familiar with all phases of industry and understand the tools, machines, materials, etcetera, of the drafting room situation. It is only through effective organization and constant study that the industrial arts teacher may successfully operate his program. Probably one of the best available sources of aid is the textbook; yet the proper and appropriate use of textbooks may be one of the most neglected phases of teacher-education. An inquiry among teachers will seldom reveal any one who has made a study of the use of textbooks as a part of his undergraduate education.

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[1]"Degree Requirements," The Kansas State Teachers College Bulletin, 1955-1956. (Topeka, Kansas: Ferd Voiland, Jr., State Printer, 1955), p. 172.

The textbook is a tool for teaching, just like the saw is a tool for the carpenter, each of which serves a specific function. Industrial arts teacher-education develops skill in the use of hand tools. Frequently, however, it would appear that the proper use of textbooks is assumed to be an inherited trait among teachers. William H. Cartwright makes the following comment concerning the textbook:

> As a classroom tool the textbook serves three principal functions; to provide organization for the course, to supply a basic content, and to furnish common materials for learning. The organization is necessary and welcome to most teachers. To the alert teachers, however, it is not a limiting feature. Using the textbook only as a frame work, he will expand portions or insert whole units in areas where he is particularly competent, where the local community can be utilized most effectively, where students express unusual interest, or where library materials are richest.[2]

The Problem

In order to determine the status of textbooks for drafting use, a systematic approach must be made to the evaluation of status. Criteria must be established for the study to obtain an orderly and thorough analysis of textbook availability and to determine points of adequacy and weakness. This study is made with the following guiding purposes:

1. To determine adequacy of existing textbooks to meet the accepted emphasis placed on drafting.

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[2]William H. Cartwright, How To Use A Textbook, How To Do It Series, Number 2, pp. 1-2. Washington: National Counsel for the Social Studies, 1947.

2. To estimate adequacy of coverage of the subject areas taught under the classification of drafting in industrial arts.

3. To discover which textbooks best meet the over-all objectives of industrial arts in each area of drafting.

4. To find the content analysis which may exist in coverage of subject matter in drafting.

5. To develop criteria for classifying drafting textbooks.

6. To develop criteria for evaluating new textbooks, which are being published and seem very attractive.

7. To provide a suitable framework for appropriate content for drafting textbooks.

8. To discover good reference books or supplementary textbooks.

Books were selected at random from publishers who widely advertise industrial arts textbooks in industrial arts periodicals and professional literature.

Procedure

In order to provide a clear statement of the conditions existing in the industrial arts drafting textbook field, the following steps must be completed:

1. To develop appropriate classification categories in the light of a clear statement of position regarding the relationship of the objectives of industrial arts to those of industrial-vocational education.

2. To evolve definitive criteria for determining classification of textbooks.

3. To examine textbooks available for school use in the area of drafting to determine:
   a. The emphasis outlined by the aims of the author.
   b. Subject-matter materials presented in each textbook.

4. To tabulate the data for analytical purposes.

5. To provide an analysis of the tabulated data.

6. To interpret the data and draw pertinent implications and conclusions.

Definition of Terms

Industrial Arts. A commonly accepted definition is one used by Wilbur which defines industrial arts as, "those phases of general education which deal with industry - its organization, materials, occupations, processes and products - and with the problems resulting from the industrial and technological nature of society."[3] It is felt that Wilbur's definition is satisfactory for the purpose of this study.

Industrial-vocational education as used in this study is synonymous with "specialized education," defined by Good as follows: "Education that seeks to prepare individuals for specific types of occupations."[4]

Textbook as used in this study is defined as "any manual of instruction."[5]

Specialization is used to denote "education that seeks to prepare individuals for specific types of occupation,"[6] and is used synonymously with industrial-vocational education.

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[3]Gordon O. Wilber, Industrial Arts in General Education (Scranton: International Textbook Company, 1948), p. 2.

[4]Carter V. Good, Editor, Dictionary of Education (New York: McGraw-Hill Book Company, Inc., 1945), p. 216.

[5]Ibid., p. 423.

[6]Ibid., p. 383.

Limitations of the Study

This study is not intended as an exhaustive study of the drafting textbook. Format, readability, and construction of the textbook are not considered. Similar general details have been treated in previous textbook research. This study does not cover all textbooks used in the field because to do so would involve many more books than could be accurately appraised in one study. Only those books are covered which are now in current supply during the academic year 1954-1955, in order to limit the study to the currently available books which may best meet the requirements for industrial arts.

This study is further limited because of the dearth of data in the drafting field. No sources of comparative data were found. Inability to secure outside validation may open the data to some criticism, especially when the data are subjective. The data used have been carefully examined in an effort to have accurate information.

One of the major tasks in this study is to develop appropriate evaluative criteria and procedures. The development of these tools necessarily limits the scope of the study if reasonable bounds are to be maintained.

Other Studies

As far as can be determined, this is the first study of its kind in the field of drafting. A study by

Cartier[7] indicates that ten states have a state adoption plan to select their textbooks in Industrial Arts. Out of these ten states, seven select their textbooks on the merits of the content. Kansas and Mississippi consider the author's reputation and the cost of the textbooks along with the merits of the content. Two states believed that the textbooks should be selected on the basis of whether or not they meet the needs for which they were selected. In a study by Young[8] it was recommended that a study of this type be done in each subject area of industrial arts.

Sources of Data

Data used in this study are taken from: (1) a selection of twenty six drafting textbooks, which in the preface have reference to industrial arts drafting or elementary drawing, (2) the United States Office of Education, The Biennial Survey of Education in the United States,[9] and (3) various periodicals and publications listed in the bibliography.

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[7]Warren L. Cartier, "An Analysis of the Methods of Textbook Selection for Industrial Arts Courses in Use Throughout the Forty-Eight States," Raleigh, North Carolina, 1952. Obtained from D. H. Hill Library, North Carolina State College. (An unpublished study, not a thesis.) p. 10.

[8]Talmage Brian Young, "An Analysis of Textbook Emphases in Industrial Arts Education," (Unpublished Doctor's Dissertation, University of Florida, Gainsville, Florida.)

[9]U. S. Office of Education, "Offerings and Enrollments in High School Subjects," The Biennial Survey of Education In The United States, 1948-1950, Chapter 5. Washington: Government Printing Office, 1951, 118 pp.

CHAPTER II

THE FUNCTION OF THE TEXTBOOK

The textbook has been compared to a tool. The skill with which a tool is used determines the quality of the product. The way the textbook is used determines to a large extent the quality of the educational product of the school. It is not a simple tool to use efficiently. Method teachers in teacher education institutions frequently spend their time with other matters, or emphasize methods of teaching without the use of textbooks. The teacher should be as skilled in the use of textbooks as a painter is in the use of a paint brush.

The chief values of textbooks are:

1. They are working tools
2. They provide for a definite scope of work.
3. Students assume responsibility in connection with them.
4. Class standards can be maintained more effectively.
5. Progress and achievement can be measured more effectively.[1]

Most of the literature on textbooks is concerned with criticism of textbooks, defense of textbooks, and with evaluation of textbooks. There are, however, a few articles and reports dealing with their use.

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[1]Maris Proffitt, Industrial Arts Its Interpretation in American Schools, Bulletin 1937, No. 34, (Washington: Government Printing Office, 1938), p. 122.

The Purpose of the Textbook

Caswell gives the following purposes of the textbook:

Textbooks should serve as an aid to teaching. They should provide the common body of source material most needed by pupils studying specified fields of problems. They should be organized in a form that facilitates their use by teachers with various levels of skill--those who are incapable of planning the broad outlines of a program and those who do not have competent curriculum leadership available to help them to do so, and those who are able to sense the needs of a particular group of children so fully, and who know the fields upon which they draw so well, that they can tailormake the program for each class, giving them what they most need.[2]

Paul R. Hanna, Professor of Education at Stanford, cites two main purposes of textbooks:

(1) It is an organized presentation of some core of knowledge; and (2) it is an instrument by which the reader is helped to observe his own experiences in the world about him and from such observation to organize his own system of ideas and to shape his own attitudes about the subject at hand....Modern psychology has finally convinced most educators that, unless a textbook simultaneously carries both

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[2]"What are Textbooks For?", A Symposium, Phi Delta Kappan, Vol. XXXIII, No. 5 (January, 1952), p. 243.

purposes forward, for the great majority of learners at least, little change in behavior will result from the use of the textbook.[3]

The Use of the Textbook

The textbook must be used intelligently if it is to serve the purposes for which it is intended. The textbook should not be followed slavishly; neither should it be discarded. The textbook is an aid to learning, a support for the course of study. Criticism aimed at textbooks have come largely as a result of the overuse of the textbook. The course of study is an organized plan for coordinating all of the learning activities which go into the learning processes. Other activities may includedfield trips, motion pictures, recordings, surveys, demonstrations, problems, dramatizations and other aids to learning. The textbook is one of the more important sources of information, yet it is not a substitute for other activities, and in no case is it a substitute for the course of study.

The teacher's responsibility in textbook use does not end with the delivery of the textbook to the pupil. The teacher should be thoroughly familiar with the content. He should know something about the publishers and the author, how the

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[3]Gilbert Loveland, Editor, The American Textbook Publishers Institute, Textbooks in Education. (New York: The American Textbook Publishers Institute, 1949), pp. 298-299.

book is intended to be used, what the materials of the book are, how it is written, the teaching aids which are provided, and whether or not the book is one of a series. If the book is a series edition, something should be known about the other books in the series. The reading level of the text should be known. Reading and concept difficulties are frequently the keys to poor learning. Appropriate word level will not compensate for concepts which are foreign to the children using the book.

The teacher should do more than know the nature of the textbook; he should take time to make the child aware of the needs met by the book and of the study aids provided. Special attention should be given to appropriate ways for studying the book, and to the use of review and testing aids when they are provided. The child should also be taught to interpret and use materials in graphic forms. Much of the information provided in books is often presented through these aids.

Limitations of Textbooks

The intelligent teacher does not use the textbook as a substitute for teaching or for organized classwork. Textbooks are most often written for use on a national scale and may not meet some of the local needs. Teachers should be alert to these needs and should make provisions for them by supplementing the text with other written materials, with field trips, and with visual aids. Textbooks often contain

sections that are not particularly suited for use in the class which the teacher has planned. The teacher should omit these sections or provide supplements from other sources. Books are often not up-to-date in content and must be supplemented with more recent materials from periodicals or more recent books. The teacher must also be alert to the differences in children's reading and comprehension abilities and should provide other books appropriate to the educational level of the child.

Choosing a Textbook

The literature on the textbook is rich with materials telling how to choose a textbook for use and for adoption by schools. These suggestions range from the ridiculous to well developed methods. In choosing a book, the method is comparable to the method of choosing any other consumer item. The final choice depends largely upon personal needs and comparative qualities. The American Textbook Publishers Institute gives the following suggestions:

1. Look for books whose teaching aims are in harmony with your own.
2. Be sure the book does well what it claims to do.
3. If a compromise must be made, select the book that does the job that it claims to do.
4. Try the book on yourself. "Take the course" or at least enough of it to see how it works.
   a. How good is the author's teaching program?
   b. How well does he visualize the classroom scene?
   c. Does he visualize the classroom scene?
   d. Does each step in the book drive toward the goals you would like to achieve?

e. Does the author give materials appropriate to the learners who will be in your class?
   (1) Will the child understand the language used?
   (2) Has he anticipated the children's reactions?

f. Does the author make the materials personal for the child? Does he "talk down" or over simplify?

g. What about the use of visual aids--pictures, cartoons, diagrams, maps, graphs, charts? Do they really teach? Are they just added on?

h. Does he provide for frequent breathing spells? For discussions? Does he make suggestions that take the class completely out of the books? Are suggestions made for outside readings? For dramatizations? For research? Are the activities practical for the class and for you?

i. Does the author provide for individual differences?

5. Try out the book on your class in the way that the author intended it to be used. This will give you the final proof for selection. To give it a fair trial you should:
   a.
   a. Read the directions for use.
   b. Follow the directions carefully.[4]

Ivan R. Waterman in an article entitled, "When You Choose a Textbook," gives the following four steps in choosing a textbook:

1. Formulate a set of criteria or standards by which the textbook under consideration may be judged.

2. Construct a score card assigning numerical values to the several items of the criteria in accordance with their relative values.

3. Conduct comparative studies, objective in nature so far as possible, to determine the relative merits of the several books on each item of the criteria.

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[4]The American Textbook Publishers Institute, op. cit. Textbook Selection, Some Typical Procedures for Selecting Textbooks in California School Districts, California Teachers Association, San Francisco, Calif, 1954. p. 21.

4. Rate the books.[5]

The following six points for judging textbooks appears in the book, Public Education Under Criticism:

1. Date of copyright--books reflect the climate of opinion at the time they are written.
2. Fair criticism--material should be considered in terms of subject matter and author's intent.
3. Context--materials should not be criticized out of context. Materials should be considered as a whole.
4. Effect on the pupil--materials should be considered in terms of producing insight and understanding in the student.
5. Intended use--materials should be considered in terms of its use for authoritative or evaluative purposes in the school.
6. Bias--materials should be considered in terms of the bias of the whole book.[6]

Choosing Supplementary Textbooks

Cartwright makes the following comments concerning the choice and use of supplementary textbooks:

> Most teachers use a single book as a text, but some prefer to use several textbooks, believing that in this way the student is exposed to different viewpoints and emphasis. There is some question as to whether more is not lost than gained by the latter practice. The similarities among textbooks are more important than the differences. This is necessarily so because competing books are intended to serve the same purposes for the same readers. It is little wonder that the student who is required to reread the same account several times, whether in one textbook or many, soon learns to

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[5]Ivan R. Waterman, "When You Choose a Textbook," Phi Delta Kappan, Vol. XXXIII, No. 5 (January, 1952), p. 267.

[6]Scott C. Winfield and Clyde M. Hill, Public Education Under Criticism (New York: Prentice-Hall, Inc., 1954), p. 336.

> hate subject matter....Another argument against the "multi-able-textbook method" is that, to a considerable extent, it defeats the organization purpose of the textbook.[7]

Supplementary texts should be chosen in the light of need and not to secure a large variety of materials. Textbooks for supplementary use should:

1. Contain emphasis not included in the textbook chosen.
2. Meet different reading and concept levels.
3. Contain reference materials not available in other books.
4. Contain up-to-date materials that is not included in the textbook used.
5. Contain different methods for comparative purposes.
6. Meet individual needs of superior and subnormal children.

In summary, the primary value of the supplementary textbook is to give a complete treatment of subject matter and to aid in achieving all pertinent objectives of the courses. It should be considered as additional material to be organized in the "course of study" outline and not as a second course of study or a duplicate textbook. Supplementary textbooks should be used in the same way that the reference library is used and not as core materials.

Trends in Textbooks

Elaine Exton has listed the following trends adapted from a statement by Lloyd W. King, Executive Secretary of the

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[7]Cartwright, op. cit., p. 6.

American Textbook Publishers Institute.

1. The style of writing is improved.
2. Design and format is improved.
3. Use of color is included.
4. Books are built upon research.
5. Books are related to child interest.
6. Books contain more materials.
7. Texts have been developed for special levels of ability.
8. Books are designed with enrichment materials and self instructional aids.
9. Stress is upon democracy, individual worth, and dignity.
10. Distinctions are made between enrichment materials and basic texts.
11. Stress is upon world affairs and national understanding.
12. Textbooks reflect the thinking of modern educators.
13. Adult education textbooks are beginning to be produced.[8]

Significant Trends of the Drafting Textbook

Little has been written concerning the textbook for drafting. Most authors have been concerned with projects, procedures, organization charts, job analysis, shop and tool room management, shop safety, the personnel system, and other techniques and practices. Probably one of the reasons for

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[8]Elaine Exton, "Views on Textbook Trends," American School Board Journal, Vol. 119 (October, 1949), p. 534.

emphasis upon techniques and practices has been the dearth of textbook materials suitable for industrial arts. Wilber, in discussing the organization of subject matter for a study of industry in industrial arts, makes the following statement:

> The average teacher may hesitate to initiate such a study because there is little precedent on which to rely. This is an area, however, where every teacher may help to blaze the trail toward a more defensible program of industrial arts. Sooner or later a body of experience will be developed which can be incorporated into suitable texts and workbooks; and these, in turn, will make the path easier for the teachers who follow. In the meantime, pioneers are needed to show the way.[9]

Notable progress has been made in providing content for the study of related materials during the past five years. Materials have been developed by the state of New York which provide related materials for limited general shop courses in all of the major areas of industrial arts. These materials are available for general use through Delmar Publishers, Albany, New York, and are one of the most promising new developments in the field of industrial arts literature. The textbooks are study guides and do not provide complete materials but they are thoroughly referenced and contain some of the basic materials to be presented or used in the laboratory.

Several authors now include interpretive and correlative materials in textbooks. The practice of correlating

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[9]Wilber, op. cit., pp. 96-97.

general education materials with technical information is comparatively new. Most of the books containing these materials have copyrights less than six years old. One exception is a drawing textbook dating back to 1930,[10] which has done a good job of correlation of information with technical subject matter. Many of the textbooks available are characterized by an "added on" approach to general information and are attempts to meet this need in a rather crude way. The prospect for good textbooks, meeting all of the objectives of industrial arts, seems rather promising when recent publications are examined.

Most of the drafting textbooks which were developed prior to 1948 seem to be books developed for specialization or for a combined use by industrial arts and industrial-vocational education. The particularly significant feature of these books, when examined for industrial arts use, is their neglect of the general educational values.

The Production of Textbooks

In order to understand some of the implications of the textbook, it is necessary to understand something of what goes into the production of a textbook. The following brief description of the process is adapted from Textbooks in Education.[11]

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[10] R. A. McGee, and W. W. Sturtevant, General Mechanical Drawings (Milwaukee: The Bruce Publishing Company, 1930), p. 192.

[11] Textbook in Education, op. cit., pp. 93-121.

The production of a textbook today is a far cry from the methods of the eighteen-hundreds. The modern publisher performs a service to education that is practically indispensable.

The first step in the production of the textbook is locating the need. The publisher maintains a staff of editors, specialists, and sales representatives to interpret educational needs, translate them into textbooks, sell as many books as possible and demonstrate the use of the books in order to insure their success and continued popularity. The need originates in the classroom. Demonstrators and salesmen, in their contact with school personnel, discover future needs which should be met by testbooks. It should be understood that many of these demonstrators are former school teachers with many years of experience and are therefore able to evaluate needs intelligently.

The second step is the decision to publish. This decision generally calls for several types of evidence. The demand must be assured, cost must be estimated, expected sales must be estimated, and all must add up to a profitable venture.

The third step is selecting the author. Few books are published from unsolicited manuscripts. Leads to prospective authors are usually provided by the publisher's representatives in the field. Professional writers also help to produce many of the textbooks. They work under the direction of

the publisher in putting books into final form. Ideas may be supplied by the teacher-author, but many good teachers do not have the ability to write effectively.

The editor has a basic function in the process. More often than not the author is selected and is under contract before the manuscript is begun. The editor works with the author in planning the publication. Planning requires considerable time. All of the details are worked out in advance in much the same manner that an architect plans a structure, adapting materials and structural features to functions. When details are complete the author makes a first draft. This draft is examined by the editor and may be examined and read by other editors. Other persons not under contract by the publisher may be asked to read the manuscript in order to get the views of a good cross section of textbook specialists and users. The viewpoints of the readers are used as guides for modification of the text in an effort to produce the best product possible. At this point the designer may be asked to help in establishing the proper format and physical makeup of a book. The manuscript is then given to the author to revise. Differences of opinion between author and editor are generally resolved; or the editor has the last word because the publisher will have more money involved in the venture than the author. It may be decided that the materials should be tested before they are published, but since this is an expensive process and rather involved, it is not often done. A specialist in the field covered by the manuscript

may be asked to evaluate the revised manuscript for use in the field and to advise the publisher concerning probable sales and popularity of the treatment. When the manuscript is ready (the publisher determines whether materials are ready or not), the manuscript is sent to the printer, who takes the process through the galley-proof stage. The proofs are sent back and corrections noted by the author and editor. Frequently extra proofs are run and sent to various people in school work for suggestions. When all suggestions are in and corrections made, the proofs are marked for page make-up according to the approved format of the book. Page proofs which have the illustrative materials included are printed and proofread. Plates are prepared and the book goes to the printer for the final stage.

While this is only a brief description of the process, the amount of work that goes into a textbook is shown. It is also evident that the product is often as much the work of the editor as of the author. A fact that should not be missed is that the textbook publisher virtually controls the textbook field and the quality of the textbook. The major contributions of teachers and others is to make needs known and to choose suitable textbooks. The professional attitude of the publisher and competition are the two chief factors in textbook quality and in textbook improvement. Teacher demands for textbooks serve as a control when the competitive market is operating.

CHAPTER III

CLASSIFICATION OF DRAFTING TEXTBOOKS

The classification of textbooks for drafting is at present a very difficult task for several reasons. Probably the most confusing element of the task is the nature of drafting subject matter. Drafting includes a complex of many trades and industrial-related subjects. An examination of The Biennial Report of the United States Office of Education, 1948, 1949 reveals the following facts:

> Industrial arts as reported consists of eight different major categories. These are (in order of popularity)---general shop, woodworking, mechanical drawing, metalwork, printing, electrical work, handicrafts and auto mechanics.[1]

It can be said that drafting is very closely related to all of these fields. The textbooks selected for this study also serve to illustrate the complexity of subject matter which consists of freehand sketching, blueprint reading, geometric construction, multi-view projection, sectioning, auxiliary views, sheet metal development, pictorial drawing, map drawing, intersections, making blueprints, planning a home, care and use of tools, lettering, making charts and graphs, and others.

In selection of content no basic textbook can give more than a treatment of details that seem to be most important. Therefore, before examining one, the teacher

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[1]Biennial Survey of Education, op. cit., p. 18.

> should decide in advance what topics should receive fuller treatment in order to make the accomplishment of objectives easier.[2]

In addition to the multiplicity of subject matter, subject matter in the junior high will be somewhat different than that in the senior high, also the complexity of the task is compounded by the lack of standard classification categories. In one situation it may be "transfer by squares," in another "enlarging project," all meaning the same thing. The third confusing element is the relationship between the different areas, such as industrial arts, specialization, and crafts. These elements have been defined on page 4 of Chapter I. A fourth element is the lack of agreement within the rank of industrial arts teachers with the subject matter or content of the drafting textbooks. The fifth element is the way in which textbooks are classified by the publishers. Another confusing element is the lack of textbooks prepared specifically for industrial arts use. An example of this may be a "borrowed book" such as the textbook for Engineering Drawing, by French, which is used particularly in college work.

The foregoing statements and illustrations are given as a background to show the complexity of the problem and to show the need for a systematic way in which to classify drafting textbooks so that an intelligent selection of textbooks suitable for each particular use may be made.

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[2]Clarence D. Samford, Social Studies in the Secondary School (New York: McGraw-Hill Book Company, Inc., 1952), p. 102.

According to Ericson, industrial arts in the junior high school level is taught in its most diversified form and without the restrictions of occupational training bias or highly technical empasis. In the senior high school, a more extended approach is made to develop skills, working habits, independent and cooperative efforts, to reach more advanced stages at this age.[3]

Industrial arts should take different forms at different levels. In junior high school the program should be exploratory in nature and should be taught as a general shop course which provides experiences in several areas. The subject areas should be related to guidance, consumer values, interpretation of technological implications in the American culture, develop vocational interests, general personal development, and be related to other subject areas. Manipulative activities should require general and technical information for their performance, projects should be presented as problems to be solved, and evaluations should be made by both students and teachers as cooperative activities. The democratic process should be used throughout.

Drafting Textbooks in the Selected Areas

Differences become more pronounced as industrial material developed for junior high school use are examined. The

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[3]Emanuel E. Ericson, Teaching the Industrial Arts (Peoria, Illinois: The Manual Arts Press, 1946), pp. 255-256.

popularity of industrial arts courses in junior high schools throughout the United States is a result of the need of exploratory experiences at the junior high school level and has caused material to be developed for industrial arts which is exploratory or orientational in nature. These broad areas represent a large part of all industrial arts work in the schools.

At the high school level, industrial arts should have characteristics of junior high school industrial arts except that it may be taught as a unit shop specializing in one subject area such as machine drawing in high school drafting. Orientation is the purpose of the activities provided, but the work should be semi-specialized in order to provide for the development of conceptions of the more advanced processes used in solving technological problems in industry. Students should be concerned with tryout experiences for vocational choice or for further orientation in choices previously made as a result of junior high school experiences. Perhaps one way to approach this situation is a thorough study of the objectives and to analyze the content of drafting textbooks.

Objectives of Industrial Arts

Nine categories are used to designate the objectives of industrial arts which textbooks may be expected to achieve if the materials are used as the textbook directs. This may seem to imply that good method and teaching organized around

a textbook are synonymous. This is not the intent of the statement. The assumption is that judgement must be made in terms of intended use and not by a preconceived standard of classroom method.

A second assumption is made that all competent teachers and textbook writers should be concerned with the achievement of over-all objectives of industrial arts. These assumptions may not seem compatible to the careful reader, because in one case the viewpoint of the author is considered as very pertinent and in the next, an outside criterion is used.

Fifteen statements of objectives taken from the professional literature[4] were recorded on cards. These statements

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[4]Supporting material on objectives:

Gordon O. Wilber, Industrial Arts in General Education (Scranton: International Textbook Company, 1948), pp. 45-85.

A. B. Mays and C. H. Casberg, School-Shop Administration (Milwaukee, Wisconsin: The Bruce Publishing Company, 1948), pp. 114-129.

F. Theodore Struck, Creative Teaching (New York: John Wiley and Sons, Inc., 1938), p. 16.

G. Harold Silvius, and Estell H. Curry, Teaching Successfully The Industrial Arts and Vocational Subjects (Bloomington, Illinois: McKnight & McKnight Publishing Company, 1953), p. 61.

Improving Instruction in Industrial Arts, (Washington: American Vocational Association, Inc., 1946), Part V.

Industrial Arts Handbook, Bulletin 7B, Revised 1945 (Jefferson City, Missouri: Missouri State Department of Education). Chapter I.

R. W. Selvidge and V. C. Fryklund, Principles of Trade and Industrial Teaching Peoria, Illinois: Charles A. Bennett Company, Inc., 1946), pp. 33-59.

William T. Bawden and others, Industrial Arts in Modern Education, Peoria, Illinois: The Manual Arts Press, 1934), pp. 28-49.

were then reduced to nine brief objectives as follows. Statements of objectives were divided into single factors or objectives and each placed upon a card. The cards were then arranged in trial groupings for homogeneous emphasis. Each group was summarized into a composite objective stating the particular single emphasis of the group. Statements which were not in harmony with the single objectives were removed and placed in new groupings to achieve a complete set of unique objectives. By trial and error, process overlappings and incongruences were eliminated. The final result was then checked against a statement of objectives found in the Evaluating Criteria,[5] for both completeness and intent. Definitions of the objectives were obtained by an examination of the original statements used in forming the composites, and by analyses of the factors which are found in textbooks for achieving objectives. These factors were derived by deduction, but they were tested by trials upon various textbooks to ascertain whether the factors could be identified in textbooks, whether these factors were consistently found in books, and whether overlappings and ambiguities were present. By a process of trial and error the following definitive factors emerged:

Objectives	Definitive Factors
A. Manipulation	1. Tool descriptions 2. Operations and procedures 3. Material descriptions 4. Projects and problems

[5] Cooperative Study of Secondary-School Standards, Evaluative Criteria, Section D-9 (Washington: Cooperative Study of Secondary-School Standards, 1950), pp. 123-127.

Objectives, (continued)	Definitive factors, (continued)
B. Technical Skill and Knowledge	The content analysis contained in the objective of manipulation plus-- 5. General information 6. Technical information 7. Design and planning information
C. Consumer Skill and Information	All of the content analysis in the two objectives above, plus-- 8. Consumer information
D. Orientation to Technology	All of the above content analysis plus-- 9. Interpretative information
E. Guidance	All of the content analysis previously listed, plus-- 10. Occupational information
F. Personal Safety	All content analysis listed above through number 7, plus-- 11. Safety information
G. Specialization	All content analysis listed above excepting numbers 8, 9, and 10. These three may or may not be included. 12. Specialization emphasis
H. Avocation	All content analysis through number 4, plus-- 13. Avocational emphasis
I. Personal Development	Practically any combination of content analysis listed, plus-- 14. Values and attitudinal statements.

The objectives and content analysis have been arranged in an order which facilitates a recombination into objectives. The relationship of content analysis and objectives are more easily seen in Table I, page 28, which uses the idea of the progress chart to express these relationships.

TABLE I

COMPARISON OF CONTENT ANALYSIS TO OBJECTIVES OF INDUSTRIAL ARTS

CODE NO.	CONTENT ANALYSIS	Code Letter Objectives	A. Manipulation	B. Technical Skill and Knowledge	C. Consumer Skill and Knowledge	D. Orientation to Technology	E. Guidance	F. Personal Safety	G. Specialization	H. Avocation	I. Personal Development
1.	Tool Description		X	XX	X	X	X	X	X	X	X
2.	Operations and Procedures		X	XX	X	X	X	X	X	X	X
3.	Material Description		X	XX	XX	X	X	X	X	X	X
4.	Problems		X	XX	X	X	X	X	X	X	X
5.	General Information			XX	X	X			X	X	X
6.	Technical Information			XX	X	X	X	X	X	X	X
7.	Design and Planning Information			X	X	X	X	X	X	X	X
8.	Consumer Information			X	X		X	X	X		X
9.	Interpretative Information				X	X			X		X
10.	Occupational Information					X			X		X
11.	Safety Information							X	X	X	X
12.	Specialization Emphasis								X		X
13.	Avocational Emphasis									X	X
14.	Values and Attitudinal Information										X

X - designates inclusion of content analysis in the objectives

Each of the content analyses are defined below:

Definition of Content Analysis:

1. Tool description--Descriptive materials concerning tools, either written or pictorial, with accompaning explanatory notes.

2. Operations and procedures--Statements of "how to do" or how to perform jobs.

3. Material Description--Description of physical characteristics, technical specifications for use, chemical properties, relationships to uses made, et cetera.

4. Projects and problems--Exercises, jobs, experiments, articles to be constructed for purpose of developing understanding and skills.

5. General information--Informational treatment which is not directly connected with tools, operations, materials, the production of a project, or solution of a problem. Information of a non-technical nature dealing with the production of materials or products and their uses, transportation, how sold, et cetera.

6. Technical Information--Information of a technical nature. Information pertinent to the performance and planning of operations and to design. Physical qualities, chemical analysis, working characteristics, dimension, formula, calculations, constants, et cetera.

7. Design and Planning information--Information on how to plan a project, general problem solution, or the elements of design as applied to the particular problems and projects contained in the subject matter.

8. Consumer information--Evaluative information and procedures relative to the selection and use of products and services by the individual consumer. Instructional materials in the use, care, adjustment and repair of products used in the home and in the care and general maintenance of the home itself.

9. Interpretive information--Explanations and discussions of relationships among individuals and discussions of the relationship between factors connected with the production and use of industrial products, and factors connected with living in a technological democracy, and the economic and historical development of American institutions as influenced by technology.

10. Occupational information--Information relative to working conditions, personal-physical requirements, educational requirements, opportunities and disadvantages, employment trends, obtaining employment, et cetera.

11. Safety information--Statements of rules and principles of safe working practices.

12. Specialization emphasis--Emphasis upon speed and accuracy to meet skill demands for entering a trade. Projects and procedures taken directly from industry. Narrow subject field. Related information pertinent to trade only.

13. Avocational emphasis--Emphasis upon development of recreational skills, hobbies, or crafts. Emphasis upon the use of skills as a recreational medium. Projects and procedures of hobby or recreational nature.

14. Attitudinal and values information or statements--Statements or discussion of values, morality, ethics, et cetera. Statements dealing with good workmanship, honesty, cooperation, responsibility, et cetera. Statements concerning social justice, working relationships, trade union and management relationships, race-color relationships, et cetera.

Recording Data

All data for this study were recorded upon 8½" by 11" evaluation sheets. In recording the information, the bibliographic information was recorded first, followed by a two or three line description of the book. (See Appendix A for form used.) The approach to subject matter was next recorded. Textbook subject content was taken from the table of contents. In some cases special features were also recorded. Recording these materials proved helpful in becoming orientated to each book.

After the above items had been recorded, the author's preface and the first two chapters were read to determine the style and content of the chapters. The remaining materials were scanned to discover any change in plan or content of the chapters.

After the book had been examined the content analyses were recorded, using symbols as explained under "Symbols used in Recording Data," page, 32. Both content analysis and objectives were recorded. It should be pointed out that content analysis make up objectives.[6] Recording of both is unnecessary except to provide a check upon the objectivity of the analysis. The time required to complete each book varied. Some books required more than three hours while others required less than thirty minutes. The average time required was one hour and fifteen minutes. Re-examination of several of the books examined first was necessary in order to offset discrepancies produced through differences in levels of examination experience. A second examination was also required in some cases where content analysis and objectives recorded were not consistent.

The next step in recording data was to place on a single sheet of paper the content analysis from each evaluation sheet in a particular drafting area. (See Table II, page 40, III and IV, page 41.) These Tables give a graphic indication of the coverage and treatment of the subject matter area.

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[6] Supra., p. 28.

Only numbers and symbols were used to record these data. Arranging individual book evaluation sheets in order of the number of included content analyses helps to visualize results. Numerical sequence can be determined easily by assigning numbers to content analysis strengths. "Weak content" should be assigned a value of one; "acceptable" should be assigned two units, and "superior" a value of three. This process tends to put industrial arts textbooks at the top of the combined list and to place supplementary materials, such as reference books at the bottom of the group. This arrangement results from the definition of industrial arts materials as having the content analysis common to industrial arts, industrial-vocational education, and crafts, with general education emphasis added. Crafts and industrial-vocational educational textbooks will not be placed in any definite arrangement by this system, since each may have the same number of content analyses.

Symbols Used in Recording Data

Symbols are very useful in recording data of the type used in this study. The symbols used are taken from the outline of objectives and definitive content analysis given earlier in this chapter. Alphabetical symbols are used for objectives and numerical symbols are used for content analysis. The letter "A" is used for the "manipulation" objective, the letter "B" is used for "technical skill and knowledge," et cetera. The numeral "1" is used for "tool

descriptions," "2" is used for "operations and procedures," et cetera. The asterisk is used to designate strength of the content analysis, plain numerals or letters designate acceptable strength, and enclosure in parenthesis is used to designate a weak category.

Interpretation of Content Analysis Patterns

The system of content analysis provides a method for interpreting the appropriate use of textbooks in terms of orientation, specialization and avocational emphases. The system also provides a means for differentiating between books written for general education purposes and those written for specialization and avocational purposes. Other interpretations are also possible for mixed categories of use.

Specialization Pattern

The specialization pattern has the following characteristics:

1. Inclusion of specialization emphases
2. Strong inclusion of operations and procedures
3. Strong technical information content
4. General information generally, but not always, weak
5. Avocational emphasis nearly always absent
6. Consumer information weak or not included
7. Interpretive information weak or not included
8. Values and attitudinal statements not included
9. Material descriptions may be prominent
10. Tool descriptions may or may not show content strength
11. Projects are often omitted.

In terms of symbols used in this study three major cues are used for identification purposes. The general pattern

is indicated by content analyses 1, 2*, 3, 4, 5, 6*, 7, and 12. The first cue is content analysis 12; if present it is usually indicative of the author's direction in the book. If content analyses 2 and 6 are strong, the entire content is nearly always specialization. In this pattern, content analysis 1, 3, and 4 will sometimes be missing and 5 may sometimes be weak. Inclusion of other content analysis make the text suitable for both industrial arts and industrial-vocational education. Weakness in factors 2 and 6 should be considered as disqualification for this category.

Industrial Arts Pattern

The orientation pattern is recognized by the following characteristics:

1. Include nearly all of the content analysis
2. Strength shown in general information, interpretive information, occupational information, avocational emphasis and sometimes in values and attitudinal statements
3. Inclusion of technical information and manipulative analysis, tool description, operations and procedures, material descriptions, and projects. Does not preclude orientational emphases.

Industrial arts patterns have certain characteristics which are easily seen. The content analyses that may be found are 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 13, 14, and sometimes 12. Content analysis 11 does not materially affect the pattern. The first indication of content for industrial arts use is content analysis 14. However, its absence does

not preclude industrial arts use. The cues are more easily picked from the goup and may serve as a first indication. The specific determiners are content analysis number 5, 6, 7, 8, 9, and 10. Not more than one of these content analyses should be missing for good industrial arts use. Content analysis 7, will be missing in some cases and occasionally content analysis 8. Superior 5, 8, 9, and 10 factors are highly indicative of industrial arts utility. Content analysis 1 and 4 are sometimes weak or missing, but these content analysis should not be given much weight in determining whether the industrial arts pattern is present.

Industrial Arts and Specialization Pattern

In some cases there will be no definite pattern. These books provide for strong general education courses and at the same time are suitable for specialization. It should be thoroughly understood that the liberal industrial-vocational school of thought is practically the same as that held by industrial arts personnel who do not believe in the weak treatment of subject matter. Beginning industrial-vocational work is conceived as exploratory but thoroughgoing bt these educators. The two branches of industrial education use the same material for class work in this closely correlated concept without detriment to either.

Selecting the Drafting Textbook

Drafting textbook selection is the primary purpose of this study. By experimenting with the content descriptive system it was discovered that it is possible to arrange textbooks in a rank order within each selected area. This system also is found to place textbooks which authors write for industrial arts purposes high in the order, and specialization books low in the order. One exception to this rule is found in the fact that books specifically written for both fields tend to rank higher than books written for either industrial arts or industrial-vocational use, and in a few exceptional cases to rank high, books that are not directed to either field. As a general rule, books written for both branches of industrial education whose authors do not direct to either field will be found to rank near the center of the group.

The ranking system does not serve as a criterion for final selection of textbooks, but it may serve as a screening device to narrow the number of textbooks that should receive further study by the individuals or groups concerned with selection.

The procedure for ranking is as follows:

1. Using the symbols for content analysis, rate the content as follows: 1 for weak content, 2 for average acceptable content, 3 for superior content.
2. Add the total of the factors, using the numbers assigned for degree of strength.
3. Rank high totals high, and low totals low. Arrange in the order of the totals.

4. Differences in scores of less than two units should not be considered as highly significant.

This system is not suitable for ranking groups in which books treating narrow subjects are not separated from those treating broad subject areas. As an example, books dealing with machine drawing should not be ranked with books for general drafting. The high ranking books will be found to contain suitable materials for industrial arts use, but final selection of the textbooks should be on the merit of the individual book and adapted to the course of study.

In selection of textbooks for specific purposes the following suggestions are offered:

1. Agreements should be made upon the objectives of the drafting area in which the book is to be used. These objectives should be stated in terms of content analysis. Using symbols facilitates the search if books have been examined previously and have been rated for content analysis.

2. The specified content analysis resulting from the agreement upon objectives should be compared with the content of books which have been examined for content analysis. Selection of one or two books which seem to have the content analysis desired should be made.

3. A more thorough study of the books selected should be made in order to make comparisons of each content analysis. If a jury system is used in selection, this procedure will be found to be useful in securing objectively, because content is defined in the light of objectives, all textbooks are judged upon the same content analysis by each judge, and final judgments are made in the light of evidence and not from purely subjective content analysis and personal bias.

Selection Reference Books for Drafting

Frequently, under present conditions, those who select textbooks will not be able to select single books which meet all of the objectives of a good industrial arts program. The content analysis system described in this study provides a solution to this problem in that two or more books are needed to provide the correct content analysis for the subject being taught. In some instances two books will not provide all of the content analysis, and a third reference book may be needed; however, an examination of the textbooks selected for this study indicates that the books will be found sufficient for most of the courses taught in drafting, and in some cases one book provides good coverage of all of the pertinent industrial arts objectives in drafting.

The importance of selecting one book for organization and others for reference must be understood. Selection of two similar textbooks will not solve the problem of complete treatment since both books will cover the same content. analysis. Textbooks written for different purposes will contain different analysis content but will also have differing organizations. If two textbooks are selected for content coverage, both cannot be used for organization because to do so would result in confusion and disorganization. The only practical solution is to select one basic text for organization and to treat other books as references to be integrated through the course of study.

The procedure of following a textbook has been severely criticized by some and defended by others. The suggestions given are not for those who are strong in organizational technique, but for those who find it useful to adapt rather than to initiate. It is better to adapt wisely than to organize poor materials just for the sake of being different. Many of the courses of study used in drafting are not unique but are built upon the strengths of good textbooks. Emphasis should be upon strong courses rather than upon the use of diverse materials.

CHAPTER IV

DATA FROM DRAFTING TEXTBOOKS

Twenty-six books were selected in the field of drafting which are classified as textbooks in general drafting. The offerings of textbooks in drafting show considerable uniformity of content. The major differences are found in the comprehensiveness of coverage. As a general statement, all these books cover the general drafting area well.

TABLE II

EVALUATION OF GENERAL DRAFTING TEXTBOOKS FOR JUNIOR AND SENIOR HIGH SCHOOL AREA[1]

Book No.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	No. of points	Drafting Area
1.	X*	X*	X	X*	X*	X*	X*	X	X	X*	X*	X	X	X*	37	Ind. Arts & Spec.
2.	(X)	X*	X	X*	X*	X	X	X	X	(X)					21	Ind. Arts
3.	X*	X*	X*	X	X*	X*	X*	X*	X*	X*		X	X	X	35	Ind. Arts - Spec.
4.	X*	X	(X)	X*	X	X	X*	X	(X)	X*		(X)	X*	(X)	27	Ind. Arts
5.	X*	X	X	X*	X*	X*	X*	X*	X*	(X)				X*	29	Ind Arts
6.		X		X	X	(X)									7	Spec.
7.	X	X*	(X)	X*	X*	X	X	(X)				(X)	X	(X)	21	Ind. Arts - Spec.
8.	X	X	(X)	X*	X*	X*	X*	X*	X*					(X)	30	Ind. Arts
9.	X	X	(X)	X	X*	(X)		(X)	X	(X)					15	Ind. Arts (weak)
10.	X*	X*	X	X	X	X*	X		(X)			(X)			19	Spec.
11.	X	X	X	X	X	X	X	X	X	X*				X	23	Ind. Arts
12.	(X)	X*		X		(X)						(X)			8	No pattern
13.	(X)	(X)		X		(X)									5	No pattern

[1](X) = 1 point; X = 2 points; X* = 3 points.

TABLE III

EVALUATION OF MACHINE DRAWING TEXTBOOKS
FOR SENIOR HIGH SCHOOL AREA

Book No.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	No. of Points	Pattern Used
1.	X*	X*	X	X	X	X*		(X)	(X)			(X)			18	Spec.
2.	X	X	X	X	X	X									12	Spec.
3.	X	X*	X	X	(X)	X*	(X)					X			16	Spec.
4.	X*	X*	(X)	X	(X)							X			14	Spec.
5.	X	X*	X	X	X*	X*	X	(X)	(X)			X			21	Spec.
6.	X*	X*	X	X*	X	X*	X		(X)						19	Spec

TABLE IV

EVALUATION OF ARCHITECTURAL DRAFTING TEXTBOOKS
FOR SENIOR HIGH SCHOOL AREA

Book No.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	No. of Points	Pattern Used
1.	(X)	(X)	(X)		X	X	X*		(X)			X			13	Spec.
2.	X*	X	X*	X	X*	X*	(X)	X	X	(X)		X*			25	Spec.
3.		X	X*	X*	X*	X	X*	X	(X)	(X)		(X)	(X)	(X)	23	Ind.Arts
4.	X	X	(X)	(X)		(X)						(X)			7	Spec. (weak)
5.		X*	X	X	(X)	X*	X	X	X			X*			22	Spec.
6.	X*	X*		X	(X)	(X)	X*					X			15	Spec.
7.		X	X*		X	X*	X*	X*	X			X*		(X)	22	Spec.

There is a lack of specialization books for architecture drafting and machine drafting. Nine of these textbooks are fairly strong in content for industrial arts. Some weaknesses are present in nearly every book but they are minor. Four textbooks are outstanding in industrial arts content. With this number of textbooks showing strength, it is safe to conclude that textbooks provisions for drafting is sufficiently well made.

There are certain content analyses which are either omitted or dealt with very lightly. Safety shows up in only one book. Nine books deal with consumer uses of drafting. Eleven books are strong in interpretive information, while only three are outstanding. Seven other books made some attempt at interpretive information. Only four books have treatment of occupational information. One book emphasises the avocational use of drafting. Two books deal with attitudes and values very well, while seven deal with this rather vaguely.

Textbook Content Pattern

Drafting is one of the areas in which industrial arts and specialization seem to be almost identical. This may indicate a semi-specialization approach to subject matter. Fourteen books fell in a combination of two patterns, both industrial arts and specialization. Seven books were in

the industrial arts pattern which gives rather good coverage. Two books fell into the "no pattern" category.

There are ten textbooks in this study which show industrial arts indications; of these ten books, six were published or copyrighted during 1950 to 1955, which therefore shows a trend for future industrial arts textbooks in drafting to be very favorable.

According to the data tabulated on Table VI, page 45, only seven books were found to be particularly for industrial arts alone. This is approximately one-fourth of the books examined. The remaining nineteen books are for specialization, industrial arts and specialization and no pattern purposes, and contain little general education content and general education objectives.

Publishers Represented

There are ten publishers represented in this study with three of these publishers representing fifty-seven per cent of the books used. The remaining forty-three per cent of the books represent seven publishing companies.

TABLE V

PUBLISHERS REPRESENTED

Publishing Company	Number of Books Represented
American Technical Society	5
Bruce Publishing Company	6
Delmar Publishing Company	1
International Textbook Company	3
John Wiley & Sons	1
Macmillan Publishing Company	1
Manual Arts Press	2
McGraw-Hill Book Company	4
McKnight & McKnight Publishing Company	2
Prentice-Hall, Inc., ...	1

Six books with industrial arts indications were published by the three publishers representing the fifty-seven per cent of the books used.

TABLE VI

FREQUENCIES OF PATTERNS USED

Book No.	Patterns Used				
	Ind. Arts	Spec.	Ind. Arts and Spec.	No Pattern	Totals
General Drafting Area					
1.			X		
2.	X				
3.			X		
4.	X				
5.	X				
6.		X			
7.			X		
8.	X				
9.	X				
10.		X			
11.	X				
12.				X	
13.				X	
Machine Drafting					
1.		X			
2.		X			
3.		X			
4.		X			
5.		X			
6.		X			
Architectural Drafting					
1.		X			
2.		X			
3.	X				
4.		X			
5.		X			
6.		X			
7.		X			
No. in Totals	7	14	3	2	26 Books
Per Cent of Totals	27	54	11	8	100 Per Cent

TABLE VII

GENERAL SUMMARY OF TEXTBOOKS

Book No.	Copy-right	Price	Binding	Size	No. Pages	App. or Index	Illus-trations
General Drafting							
1.	1954	3.96	Cloth	7⅞ x 10	377	Index	Yes
2.	1950	2.00	Paper	8½ x 10½	150	None	Yes
3.	1949r	1.25	Paper	7⅞ x 10	161	Index	Yes
4.	1954	3.80	Cloth	6 x 9	243	Both	Yes
5.	1945	1.56	Paper	7½ x 10	175	Index	Yes
6.	1952	.80	Paper	6 x 9	80	None	Yes
7.	1954	1.75	Paper	8½ x 11	194	Index	Yes
8.	1950	2.75	Cloth	6 x 9	285	Index	Yes
9.	1944	3.20	Cloth	8 x 11	194	Index	Yes
10.	1940	1.60	Cloth	6 x 9	238	Index	Yes
11.	1935r	2.20	Cloth	6 x 9	192	Index	Yes
12.	1943r	1.48	Paper	6 x 9	111	None	Yes
13.	1946	.96	Paper	6½ x 10	88	Index	Yes
Machine Drafting							
1.	1948r	2.56	Cloth	7 x 10	207	Both	Yes
2.	1924r	1.45	Paper	6 x 8	200	Index	Yes
3.	1948r	3.48	Cloth	6 x 9	437	Both	Yes
4.	1952	3.24	Cloth	6 x 9	305	Index	Yes
5.	1940	1.75	Cloth	6 x 9	238	Index	Yes
6.	1950	5.00	Cloth	8 x 10⅜	391	Index	Yes
Architectural Drafting							
1.	1931	2.35	Cloth	7 x 10½	156	None	Yes
2.	1946	5.00	Cloth	8½ x 11	258	Index	Yes
3.	1938	3.00	Cloth	8 x 11	131	Index	Yes
4.	1943r	5.00	Cloth	8½ x 11	243	Index	Weak
5.	1954r	4.50	Cloth	8½ x 11	153	Index	Yes
6.	1949	4.80	Cloth	9 x 12	128	Index	Yes
7.	1952r	6.95	Cloth	6 x 8½	584	Index	Yes

The Evaluation Device

The score sheet in Table VIII, page 47, will help in evaluating the drafting textbooks under consideration. The strength of the content analysis have numerical value.[2]

[2] Supra, pp. 31-32.

After the values are recorded on the score sheet, add them for total points. Highest totals indicate the best books.

TABLE VIII

SCORE SHEET

Author _____

Name of Book _____

Content Analysis	Points	NONE 0	WEAK 1	ACCEPTABLE 2	SUPERIOR 3	RATING
1. Tool description						
2. Operation and procedure						
3. Material description						
4. Problems						
5. General information						
6. Technical information						
7. Design and planning information						
8. Consumer information						
9. Interpretative information						
10. Occupational information						
11. Safety information						
12. Specialization emphasis						
13. Avocational emphasis						
14. Values and attitudinal information						
	Total Points					

Definition of Content Analysis Used on the Score Sheet.*

1. Tool Description--Descriptive materials concerning tools, either written or pictorial, with accompaning explanatory notes.

2. Operations and Procedures--Statements of "how to do" or how to perform jobs.

3. Material Description--Description of physical characteristics, technical specifications for use, chemical properties, relationships to uses made, et cetera.

4. Projects and Problems--Exercises, jobs, experiments, articles to be constructed for purpose of developing understanding and skills.

5. General Information--Informational treatment which is not directly connected with tools, operations, materials, the production of a project, or solution of a problem. Information of a non-technical nature dealing with the production of materials or products and their uses, transportation, how sold, et cetera.

6. Technical Information--Information of a technical nature. Information pertinent to the performance and planning of operations and to design. Physical qualities, chemical analysis, working characteristics, dimension, formula, Calculations, constants, et cetera.

7. Design and Planning Information--Information on how to plan a project, general problem solution, or the elements of design as applied to the particular problems and projects contained in the subject matter.

8. Consumer Information--Evaluative information and procedures relative to the selection and use of products and services by the individual consumer. Instructional materials in the use, care, adjustment and repair of products used in the home and in the care and general maintenance of the home itself.

9. Interpretive information--Explanations and discussions of relationships among individuals and discussions of the relationship between factors connected with the production and use of industrial products, and factors connected with living in a technological democracy, and the economic and historical development of American institutions as influenced by technology.

10. Occupational Information--Information relative to working conditions, personal-physical requirements, educational requirements, opportunities and disadvantages, employment trends, obtaining employment, et cetera.

11. Safety Information--Statements of rules and principles of safe working practices.

12. Specialization Emphases--Emphases upon speed and accuracy to meet skill demands for entering a trade. Projects and procedures taken directly from industry. Narrow subject field. Related information pertinent to trade only.

13. Avocational emphases--Emphases upon development of recreational skills, hobbies, or crafts. Emphases upon the use of skills as a recreational medium. Projects and procedures of hobby or recreational nature.

14. Attitudinal and Values Information or Statements--Statements or discussion of values, morality, ethics, et cetera. Statements dealing with good workmanship, honesty, cooperation, responsibility, et cetera. Statements concerning social justice, working relationships, trade union and management relationships, race-color relationships, et cetera.

*Supra, pp. 29-30. (Definitions have been repeated as an aid to the score sheet.)

CHAPTER V

CONCLUSIONS

Initially, the major purpose of this study was to evaluate the drafting textbook as a means of determining need and adequacy in drafting textbooks. Basic background material has been presented, criteria developed, and data compiled and interpreted in order to determine the status of twenty-six selected drafting textbooks that are used in industrial arts education. As a result of findings made in the process of developing criteria, other implications have developed. The method of content analysis seems to be applicable to use as a selective criterion in choosing textbooks for use in the classroom and as a screening device for state, municipal and individual selection. The device seems particularly well adapted for use by committees seeking objective data concerning textbook content applicable to industrial arts. The instrument is also useful in describing textbooks, as it describes the content and basic approach of a textbook in one or two typewritten lines. The system is not complicated and may be easily learned for selective purposes, making its use as a classification tool feasible. It is possible to select complementary textbooks that will insure good industrial arts coverage in almost any subject matter area with reference to the desired objectives of industrial arts. Further, the system dis-

criminates between industrial arts and specialization or industrial-vocational textbooks.

To summarize the above statements: (1) the data have important implications for industrial arts personnel concerned with textbook selection and production. (2) The classification system seems to meet a need for selecting textbooks for complementary purposes which have heretofore been purely subjective. The classification system may prove to have more immediate application in the field than the data collected through its use in this study.

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BIBLIOGRAPHY

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APPENDIX A

FORM FOR RECORDING DATA FROM BOOKS

The annotations in Appendixes B, C, and D are organized as follows:

A. Bibliography entry:
   1. Author's name
   2. Title of book
   3. Publisher
   4. Copyright date

B. Book Descriptions:
   1. Price
   2. Binding
   3. Size
   4. Numbers of pages
   5. Special aids index--appendix
   6. Illustrations
   7. Glossary
   Others

C. Approach to subject matter:

D. Table of Content (by topics):

E. Symbols for content analysis:

F. Symbols for objectives of industrial arts:

G. Pattern used:

H. Subject classification:

I. Other features:

Symbols for Content Analysis

Sym.		Sym.	
1.	Tool description	8.	Consumer information
2.	Operations and procedures	9.	Interpretative information
3.	Material description	10.	Occupational information
4.	Problems	11.	Safety information
5.	General information	12.	Specialization emphases
6.	Technical information	13.	Avocational emphases
7.	Design and planning information	14.	Values and attitudinal information

Symbols for Objectives

Sym.

A. Manipulation
B. Technical Skill and Knowledge
C. Consumer Skill and Knowledge
D. Orientation to Technology
E. Guidance
F. Personal Safety
G. Specialization
H. Avocation
I. Personal Development

Strength of content analysis and objectives are designated as follows:

X*--Superior treatment is shown by the asterisk.
X---Adequate treatment is shown by the symbol only.
(X)--Weak treatment is shown by enclosure in parenthesis.

APPENDIX B

GENERAL DRAFTING TEXTBOOKS

Evaluation Sheet

Book Number 1

A. Bibliography entry:
   1. Author's name: Coover, Shriver L.
   2. Title of book: Drawing, Sketching and Blueprint Reading
   3. Publisher: New York: McGraw-Hill Book Company
   4. Copyright date: 1954

B. Book Descriptions:
   1. Price: $3.96
   2. Binding: cloth
   3. Size: 7½ x 10
   4. Number of pages: 377
   5. Special aids index
   6. Illustrations: Yes
   7. Glossary: Yes
   Others--good cover design

C. Approach to subject matter: instructional unit organization, logical text, appropriate number of headings.

D. Table of content (by topics): introduction to drawing; interpreting blueprints and making drawings, basic information, lettering, dimensioning, etc; putting drawings to work--application of drawings, pictorial drawing, charts, graphs, working drawings, ink and pencil tracing, reproducing; occupational information in drafting; useful information for the draftsman.

E. Symbols for content analysis: 1* 2* 3 4* 5* 6* 7* 8 9 10* 11* 12 13 14*

F. Symbols for objectives of industrial arts: A* B* C D* E* G H* I

G. Pattern Used: Industrial Arts and specialization

H. Subject Classification: General drafting, junior and senior high school

I. Other features: Tables and American standards: correlated list of visual aids

Evaluation Sheet

Book Number 2

A. Bibliography entry:
   1. Author's name: Fleming, Joseph W., Barich, Dewey F., and Smith, Leonard C.
   2. Title of book: Applied Drawing and Sketching
   3. Publisher: Chicago, Ill: American Technical Society
   4. Copyright date: 1950r

B. Book Descriptions:
   1. Price: $2.00
   2. Binding: paper
   3. Size 8½ x 10½
   4. Number of pages: 150
   5. Special aids, (index) none
   6. Illustrations: Yes
   7. Glossary: None

C. Approach to subject matter: instructional unit organization, workbook approach, questions for review.

D. Table of content (by topics): Development of the principles of drawing as a language through sketching and reading drawings. Where drawings can be used; reading drawings; making pictorial drawings; lettering; working drawings; graphs; maps; reading machine shop blueprints; reading trade blueprints and planning. No instruments of special equipment required.

E. Symbols for content analysis: (1) 2* 3 4* 5* 6 7 8 9 (10)

F. Symbols for objectives of industrial arts: A B C* D*

G. Pattern Used: Industrial Arts

H. Subject Classification: General Drafting, Junior and senior high school

I. Other features: Tables, application of material. Cloth Binding: $3.50

Evaluation Sheet

Book Number 3

A. Bibliography entry:
   1. Author's name: Fryklund, Verne C., and Kepler, Frank R.
   2. Title of book: General Drafting
   3. Publisher: Bloomington: McKnight & McKnight
   4. Copyright date: 1938, Rev. 1949

B. Book Descriptions:
   1. Price: $1.25
   2. Binding: paper
   3. Size: 7½ x 10
   4. Number of pages: 161
   5. Special aids index
   6. Illustrations: Yes
   7. Glossary:
      Others--cover design not suitable

C. Approach to subject matter: instructional unit organization, questions for review, general education

D. Table of content (by topics): Each unit gives instruction and problems illustrating each fundamental element and technique of shape and size description; lettering; inking, etc.; sketching; general mechanical drawing; use and care of instruments; geometric constructions; pictorial drawing; tracings; blueprint making; development of sheet metal patterns; electrical drawings, graphs and charts maping; and architectural drawing.

E. Symbols for content analysis: 1* 2* 3* 4 5* 6* 7* 8* 9* 10* 12 13 14

F. Symbols for objectives of industrial arts: A B C D* E G I

G. Pattern Used: Industrial arts and specialization

H. Subject classification: General drafting, junior and senior high school

I. Other features: None

Evaluation Sheet

Book Number 4

A. Bibliography entry:
   1. Author's name: Giachino, J. W., Beuhema, Henry J.
   2. Title of book: Drafting
   3. Publisher: Chicago, Ill.: American Technical Society
   4. Copyright date: 1954

B. Book Descriptions:
   1. Price: $3.80
   2. Binding: cloth
   3. Size: 6 x 9
   4. Number of pages: 243
   5. Special aids appendix and index
   6. Illustrations: Yes
   7. Glossary:
   Others--good cover design

C. Approach to Subject matter: instructional unit organization, questions for review, logical text, general education.

D. Table of content (by topics): What is drafting, occupational opportunities in drafting, learning to draw, making a layout drawing, lettering a drawing, making a working drawing, sections and auxiliary views, assembly drawing and fasteners, pattern drawing, pictorial drawing, drawing without instruments, planning a house, laying out systematic drawings, drawing graphs and charts, making prints and reproductions.

E. Symbols for content analysis: 1* 2 (3) 4* 5 6 7* 8 (9) 10* (12) 13* (14)

F. Symbols for objectives of industrial arts: A B (C) (C) E* H I

G. Pattern Used: Industrial Arts

H. Subject Classification: General Drafting, junior and senior high school

I. Other features: American standards, good problems, interesting hobby projects

Book Number 5

A. Bibliography entry:
   1. Author's name: Green, Daniel
   2. Title of book: Drawing for Life and Industry
   3. Publisher: Milwaukee: The Bruce Publishing Company
   4. Copyright:date: 1945

B. Book Descriptions:
   1. Price: $1.56
   2. Binding: paper
   3. Size: 7½ x 10
   4. Number of pages: 175
   5. Special aids Index
   6. Illustrations: Yes
   7. Glossary:
      Others--bibliography

C. Approach to subject matter: instructional unit organization, general education

D. Table of content (by topics): Drawing in the American way of life; the social and economic gackground of drawing; the ingredients of drawing; showing how things look in pictorial drawing, sketching planning to make something; learning, organizing and explaining through drawings; planning to build or remodel a home; sample maps; and duplicating.

E. Symbols for content analysis: 1* 2 3 4* 5* 6* 7* 8* 9* (10) 14*

F. Symbols for objectives of industrial arts: A* B C* D* E H I

G. Pattern Used: Industrial Arts

H. Subject Classification: general drafting, junior and senior high school

I. Other features: Teacher manual

Evaluation Sheet

Book Number 6

A. Bibliography entry:
   1. Author's name: Hale, E. M., McGinnis, Harry, and Hill, Carl L.
   2. Title of book: Introduction to Applied Drawing
   3. Publisher: Bloomington, Illinois: McKnight & McKnight
   4. Copyright date: 1952

B. Book Descriptions:
   1. Price: $ .80
   2. Binding: paper
   3. Size: 6 x 9
   4. Number of pages: 80
   5. Special aids
   6. Illustrations: None
   7. Glossary: None
      Others--none

C. Approach to subject matter: questions for review

D. Table of content (by topic): General directions for drawing exercises, plates. Sketching; isometric to orthographic, orthographic to isometric; use of mechanical aids; horizontal and vertical lines, oblique lines; incline surfaces, circles and arcs, tangents; drawing to to scale; sections; freehand orthographic sketching; reading and interpreting drawings, graphs, developments; electrical layouts. Problems related to actual objects.

E. Symbols for content analysis: 2 4 5 (6)

F. Symbols for objectives of industrial arts: A B D

G. Pattern Used: Specialization

H. Subject classification: general drafting, junior and senior high school

I. Other features: Exercise and problems

Evaluation Sheet

Book Number 7

A. Bibliography entry:
   1. Author's name: Harrison, Oval S.
   2. Title of book: Creative Mechanical Drawing (Basic)
   3. Publisher: Chicago, Ill.: American Technical Society
   4. Copyright date: 1954

B. Book Descriptions:
   1. Price: $1.75
   2. Binding: paper
   3. Size: 8½ x 11
   4. Number of pages: 92
   5. Special aids index
   6. Illustrations: Yes
   7. Glossary:
      Others--Illustrations, good projects, good cover design

C. Approach to subject matter: Instructional unit organization, psychological approach, illustrations, discussions.

D. Table of content (by topics): Each unit gives instructions and problems illustrating each; with projects; the language of industry; lettering dimensions; geometry to work; the use of symbols; orthographic projection; photo-like drawings; hidden parts into view, sections; slanting surfaces, auxiliary views; sheet metal projects; putting your knowledge and skills to work

E. Symbols for content analysis: 1 2* (3) 4* 5* 6 7 (8) (12) 13 (14)

F. Symbols for objectives of industrial arts: (A) B C D* H

G. Pattern Used: Industrial Arts and specialization

H. Subject classification: General drafting, junior and senior high school

I. Other features: Meets local need, meets grade level and suggestions for teacher help.

Evaluation Sheet

Book Number 8

A. Bibliography entry:
   1. Author's name: Jervis, William
   2. Title of book: General Mechanical Drawing
   3. Publisher: Scranton: International Textbook Company
   4. Copyright date: 1950

B. Book Descriptions:
   1. Price: $2.75
   2. Binding: cloth
   3. Size: 6 x 9
   4. Number of pages: 285
   5. Special aids index
   6. Illustrations: Yes
   7. Glossary:
      Others--projects

C. Approach to subject matter: instructional unit organization, questions for review, psychological approach

D. Table of content (by topics): Objective, discussion followed by problems, questions and projects. Scale drawing; styles of lettering; floor plans; maps and topographic drawings; graphs; orthographic projection; working drawings; assembly drawings; pictorial drawing; developments; geometry; mechanical drawing.

E. Symbols for content analysis: 1 2 (3) 4* 5* 6* 7* 8 9* (14)

F. Symbols for objectives of industrial arts: A* B C D (I)

G. Pattern Used: Industrial Arts

H. Subject Classification: General drafting, junior and senior high school

I. Other features: Offers good discussion material.

Evaluation Sheet

Book Number 9

A. Bibliography entry:
   1. Author's name: Johnson, William H., and Newkirk, Lewis V
   2. Title of book: Modern Drafting
   3. Publisher: New York: The Macmillan Company
   4. Copyright date: 1944

B. Book Descriptions:
   1. Price: $3.20
   2. Binding: cloth
   3. Size: 8 x 11
   4. Number of pages: 194
   5. Special aids index
   6. Illustrations: Yes
   7. Glossary:
      Other--Bibliography

C. Approach to subject matter: instructional unit organization, summaries, questions for review, discussions

D. Table of content (by topic): The draftsman's language and tools; lettering and techniques; freehand sketching; geometry; construction; sheet metal drafting and surface development; machine drafting; aircraft drafting; architectural drafting; graphs and maps, tracings, blueprinting and duplicating.

E. Symbols for content analysis: 1 2 (3) 4 5* (6) (8) 9 (10)

F. Symbols for objectives of industrial arts: A (B) (C) D

G. Pattern Used: Industrial Arts (weak)

H. Subject Classification: General drafting, junior and senior high school

I. Other features: descriptive material

Evaluation Sheet

Book Number 10

A. Bibliography entry:
   1. Author's name: Klenke, William W., and Hayes, Charles J.
   2. Title of book: Elementary Mechanical Drawing
   3. Publisher: Scranton: International Textbook Company
   4. Copyright date: 1940

B. Book Descriptions:
   1. Price: $1.60
   2. Binding: cloth
   3. Size: 6 x 9
   4. Number of pages: 238
   5. Special aids index
   6. Illustrations: Yes
   7. Glossary: Yes
      Others--None

C. Approach to subject matter: instructional unit organization, questions for review

D. Table of content (by topics): Related information course outline for two semesters work. First semester: Introduction; orthographic projection; method for dimensioning; working drawing; sectional views; turned objects; drawing to scale; pictorial drawing; care of instruments and equipment; technical and freehand drawing. Second term; introduction; revolutions; auxiliary plans.

E. Symbols for content analysis: 1* 2* 3 4 5 6* 7 (9) (12)

F. Symbols for objectives of industrial arts: A* B* (D) (G)

G. Pattern Used: specialization

H. Subject Classification: General drafting, junior and senior high school

I. Other features: none

Evaluation Sheet

Book Number 11

A. Bibliography entry:
   1. Author's name: McGee, R. A., and Sturtevant, W. W.
   2. Title of book: General Mechanical Drawing
   3. Publisher: Milwaukee: Bruce Publishing Company
   4. Copyright date: 1930, Rev. 1935

B. Book Descriptions:
   1. Price: $2.20
   2. Binding: cloth
   3. Size: 6 x 9
   4. Number of pages: 192
   5. Special aids index
   6. Illustrations: Yes
   7. Glossary:
      Others--None

C. Approach to subject matter: instructional unit organization

D. Table of content (by topics): Three levels of difficulty provided through graded plates. Orthographic and instrument drawing; pictorial mechanical drawing; freehand sketching; machine drawing; surface development and sheet metal drawing; structural steel drawing; reinforced concrete; principles of design; furniture drawing; architectural drawing; map drawing; electrical drawing; statistical charts, graphs and diagrams.

E. Symbols for content analysis: 1 2 3 4 5 6 7 8 9 10* 14

F. Symbols for objectives of industrial arts: A* B C D* E

G. Pattern Used: Industrial Arts

H. Subject Classification: General drafting, junior and senior high school

I. Other features: None

Evaluation Sheet

Book Number 12

A. Bibliography entry:
   1. Author's name: Roberts, William E.
   2. Title of book: Beginning Mechanical Drawing
   3. Publisher: Peoria, Illinois: The Manual Arts Press
   4. Copyright date: 1936-43

B. Book Descriptions:
   1. Price: $1.48
   2. Binding: paper
   3. Size: 6 x 9
   4. Number of pages:
   5. Special aids
   6. Illustrations:
   7. Glossary:
      Others--none

C. Approach to subject matter: Instructional unit organization, operations and procedures problems, questions for review

D. Table of content (by topic): Simple views and working drawings all edges visible; simple views and working drawings with edges invisible; simple views and working drawings involving incline lines; simple working drawings involving circles; shop and other problems involving principles developed in the other units.

E. Symbols for content analysis: (1) 2* 4 (6) (12)

F. Symbols for objectives of industrial arts: (A) C

G. Pattern Used: No pattern

H. Subject Classification: General drafting, junior and senior high school

I. Other features: A list of thirty-nine operations followed by problems inssix units.

Evaluation Sheet

Book Number 13

A. Bibliography entry:
   1. Author's name: Shaeffer, Glenn N.
   2. Title of Book: Basic Mechanical Drawing
   3. Publisher: Milwaukee: The Bruce Publishing Company
   4. Copyright date: 1946

B. Book Descriptions:
   1. Price: $ .96
   2. Binding: paper
   3. Size: 6½ x 10
   4. Number of pages: 88
   5. Special aids Index
   6. Illustrations: None
   7. Glossary:
      Others--instructional book accompanied and supplementary problems

C. Approach to subject matter:

D. Table of content (by topics): An introductiory treatment of general drawing through sketching practice over a special guide sheet. Layout of sheet; lettering; lines and other conventions of drawing; size descriptions; drawing for reproduction.

E. Symbols for content analysis: (1) (2) 4 (6)

F. Symbols for objectives of industrial arts: A (B)

G. Pattern Used: No pattern

H. Subject Classification: General drafting, junior and senior high school

I. Other features: organized for developing skill

APPENDIX C

MACHINE DRAWING TEXTBOOKS

Evaluation Sheet

Book Number 1

A. Bibliography entry:
   1. Authro's name: Berg, Edward
   2. Title of book: Mechanical Drawing, Book I, Book II
   3. Publisher: Milwaukee: The Bruce Publishing Company
   4. Copyright date: 1942, Rev. 1948

B. Book Descriptions:
   1. Price: $2.56
   2. Binding: cloth
   3. Size: 7 x 10
   4. Number of pages:
      Book I: 120, Book II: 87
   5. Special aids index and appendix
   6. Illustrations: Yes
   7. Glossary:
      Others--extra problems

C. Approach to subject matter: instructional unit organization

D. Table of content (by topics): Book I, definition and use of mechanical drawing; materials and instructions and their use; graphic construction; American standard projection; lettering; lines and line work; dimensions and notes; working drawings; projections aids; sections; auxiliary views; appendix of useful information and extra problems. Book II, introduction; pattern development, pictorial drawing; appendix of useful information and extra problems.

E. Symbols for content analysis: 1* 2* 3 4 5 6* (8) (9) (12)

F. Symbols for objectives of industrial arts: A* B* D G

G. Pattern Used; specialization

H. Subject Classification: Machine drawing, senior high school

I. Other features: Application of material--suggestive outline
Paper Binding: $1.80: Books I and II can be purchased separately in paper bindings.

Evaluation Sheet

Book Number 2

A. Bibliography entry:
1. Author's name: Ermeling, Willard W., Fisther, F. A. P. and Greene, George G.
2. Title of book: Mechanical Drawing, First year, second year
3. Publisher: Milwaukee: The Bruce Publishing Company
4. Copyright date: 1921, Rev. 1922-1924, first year book, 1928, second year book

B. Book Descriptions:
1. Price: 1st year, $.55
2nd year, $.90
2. Binding: paper
3. Size: 6 x 8, tablet opening
4. Number of pages: 200
(Book I, 80 pp, Book II, 120)
5. Special aids index
6. Illustrations: Yes
7. Glossary:
Others--

C. Approach to subject matter:

D. Table of content (by topics): First year: (two semesters) First semester--orthographic projection; second semester--isometric drawing, course outline; materials and tools, lettering; definition of terms; introduction to orthographic projection; inking; dimensioning; geometric construction; isometrics; sections; auxiliary planes, developments; sheet metal drawings; fundamentals of machine drafting; threads, tolerance, taper and taper pins, classes of machine drawings; tracing and blueprinting; architectural drawing, lettering, window and door detail, material and specifications.

E. Symbols for content analysis: 1 2 3 4 5 6

F. Symbols for objectives of industrial arts: A B

G. Pattern Used: specialization

H. Subject Classification: Machine drawing, senior high school

I. Other features: Application of material

Evaluation Sheet

Book Number 3

A. Bibliography entry:
   1. Author's name: French, Thomas E., and Sevensen, Carl L.
   2. Title of book: Mechanical Drawing
   3. Publisher: New York: McGraw-Hill Book Company, Inc.
   4. Copyright date: Revised, 1948, 5th Edition

B. Book Descriptions:
   1. Price: $3.48
   2. Binding: cloth
   3. Size: 6 x 9
   4. Number of pages: 437
   5. Special aids index, appendix
   6. Illustrations: Yes
   7. Glossary:
      Others--author's purpose stated in preface, projects

C. Approach to subject matter: instructional unit organization, logical text

D. Table of content (by topics): The language of industry, learning to draw, lettering, theory of shape description, sketching, sections, auxiliary views and revolutions, principles of size description, technique of finished drawings, bolts, screws, and others; fastenings, mechanical drafting, pictorial drawing, production illustration, aircraft drafting, welding drawings, graphic solutions, cams and gears, sheet-metal drafting, architectural drafting, structural drafting, map drafting, problems

E. Symbols for content analysis: 1 2* 3 4 (5) 6* (7) 12

F. Symbols for objectives of industrial arts: A B D (G)

G. Pattern Used; specialization

H. Subject classification: Machine drawing, senior high school

I. Other features: Text-films for teacher help

Evaluation Sheet

Book Number 4

A. Bibliography entry:
   1. Author's name: Hollscher, Randolph P., Mays, Arthur B.
   2. Title of book: Basic Units in Mechanical Drawing
   3. Publisher: New York: John Wiley & Sons, Inc.
   4. Copyright date: Second Edition, 1952

B. Book Descriptions:
   1. Price: $3.24
   2. Binding: cloth
   3. Size: 6 x 9
   4. Number of pages: 305
   5. Special aids Index
   6. Illustrations: Profusely
   7. Glossary:
      Other--

C. Approach to subject matter: instructional unit organization, review questions

D. Table of content (by topics): Content, use and care of tools, lettering, orthographic projection working drawings, dimensions, sketching, drawing, blueprinting, geometric construction, auxiliary views, shop drawings, screw thread forms, sections, order of work in making shop drawings, map drawing, building construction, floorplans put into thirty-four units with sub-headings.

E. Symbols for content analysis: 1* 2* (3) 4 (5) 9 12

F. Symnols for onjectives of industrial arts: A (B) D G

G. Pattern Used: specialization

H. Subject Classification: Machine drawing, senior high school

I. Other features: None

Evaluation Sheet

Book Number 5

A. Bibliography entry:
   1. Author's name: Klenke, William W., and Hayes, Charles J.
   2. Title of book: Advanced Mechanical Drawing
   3. Publisher: Scranton: International Textbook Company
   4. Copyright date: 1940

B. Book Descriptions:
   1. Price: $1.75
   2. Binding: cloth
   3. Size: 6 x 9
   4. Number of pages: 238
   5. Special aids index
   6. Illustrations: Yes
   7. Glossary: Yes
      Other--None

C. Approach to subject matter: instructional unit organization

D. Table of content (by topics): Third term: development of surfaces, triangulation, intersectioning, objects, exercises; in mathematical calculations, fourth term: fastenings used for machinery; various screws, bolts; locking devices, keys, rivets; tracing and inking; accuracy; tolerance and measurements; line shading, reducing and enlarging; architectural drawings; elements of perspective; photo-copying of drawings; drafting room equipment.

E. Symbols for content analysis: 1 2* 3 4 5* 6* 7 (8) (9) 12

F. Symbols for objectives of industrial arts: A* B* (C) D G

G. Pattern Used: specialization

H. Subject Classification: Machine drawing, senior high school

I. Other features: Correlation of drawing and mathematics

Evaluation Sheet

Book Number 6

A. Bibliography entry:
   1. Author's name: Rotmans, Elmer A.
   2. Title of book: Drafting Simplified
   3. Publisher: New York: Delmar Publishing Company
   4. Copyright date: 1950

B. Book Descriptions:
   1. Price: $5.00
   2. Binding: cloth
   3. Size: 8 x 10½
   4. Number of pages: 391
   5. Special aids index
   6. Illustrations: Yes
   7. Glossary:
      Others--None

C. Approach to subject matter: progressive instructional sheets

D. Table of content (by topics): Workbooks are available to accompany text with partial layout of problems. Introduction; the tools of drafting; layout of standard sheets; lettering; two-view working drawings; sections; auxiliary views; revolutions of solids; screw thread; bolts and screws; working drawings (machine details); geometric constructions; developments and intersections; developments by triangulations; isometric drawing; oblique drawing; perspective; sketching.

E. Symbols for content analysis: 1* 2* 3 4* 5 6* 7 (9)

F. Symbols for objectives of industrial arts: A* B* D G

G. Pattern Used: specialization

H. Subject Classification: Machine drawing, senior high school

I. Other features: Tables of technical information; teacher's key, $1.60.

APPENDIX D

ARCHITECTURAL TEXTBOOKS

Evaluation Sheet

Book Number 1

A. Bibliography entry:
   1. Author's name: Abercrombie, Towne R.
   2. Title of book: Applied Architectural Drawing
   3. Publisher: Milwaukee: The Bruce Publishing Company
   4. Copyright date: 1931

B. Book Descriptions:
   1. Price: $2.35
   2. Binding: cloth
   3. Size: 7 x 10½
   4. Number of pages: 156
   5. Special aids:
   6. Illustrations: Yes
   7. Glossary: Yes
   Others--

C. Approach to subject matter:

D. Table of content (by topics): How to read the plans for a house; orientating the house; architectural design; procedure in drawing; popular types of houses; room planning; construction; excavation and masonry; construction; frame building; construction, brick; specifications, estimating.

E. Symbols for content analysis: (1) (2) (3) 5 6 7* (9) 12

F. Symbols for objectives of industrial arts: B G

G. Pattern Used: specialization

H. Subject Classification: Architectural drafting, senior high school

I. Other features: not adapted for grade level

Evaluation Sheet

Book Number 2

A. Bibliography entry:
   1. Author's name: Russ, Truman C.
   2. Title of book: Simplified Architectural Drawing
   3. Publisher: Chicago: American Technical Society
   4. Copyright date: 1946

B. Book Descriptions:
   1. Price: $5.00
   2. Binding: cloth
   3. Size: 8½ x 11
   4. Number of pages: 258
   5. Special aids: Index
   6. Illustrations: Yes
   7. Glossary: None
      Others--bibliography

C. Approach to subject matter: none

D. Table of content (by topics): Techniques: drafting equipment and supplies, lettering, graphic procedure and problems, history of architecture; working drawings and constructions; fundamentals of working drawings and details, types of sketches, plans, elevations, sections, details, F.S.D full size details, working drawings of alterations and additions, types of construction, use of manufactured materials and equipment, engineering, specifications, contracts and estimating display drawings; reproduction and display drawings, mechanical perspective drawing, freehand sketching, water-color rendering, pencil rendering, pen and ink rendering, smudge rendering.

E. Symbols for content analysis: 1* 2 3* 4 5* 6* (7) 8 9 (10) 12*

F. Symbols for objectives of industrial arts: A* B* C D G*

G. Pattern Used: specialization

H. Subject Classification: Architectural drafting, senior high school

I. Other features: Supplementary reading material

Evaluation Sheet

Book Number 3

A. Bibliography entry:
   1. Author's name: Ericson, Emanuel E., and Soules, Roy L.
   2. Title of book: Planning Your Home
   3. Publisher: Peoria, Illinois: The Manual Arts Press
   4. Copyright date: 1938

B. Book Descriptions:
   1. Price: $3.00
   2. Binding: cloth
   3. Size: 8 x 11
   4. Number of pages: 131
   5. Special aids index
   6. Illustrations: Yes
   7. Glossary: None
      Others--bibliography

C. Approach to subject matter: instructional unit organization, logical text, illustrations

D. Table of content (by topics): Part I: fundamental considerations in home planning you and your home, help in your planning, the use of building materials, styles of domestic architecture, the location of the home, the language of the draftsman, fundamental considerations in planning floor space, analyzing the plan into units, fundamentals in treating exteriors, all sub-divided into ninety-one headings; Part II: suggested work units, twenty-five units, each with references to other books.

E. Symbols for content analysis: 2 3* 4* 5* 6 7* 8 (9) (10) (12) (13) (14)

F. Symbols for objectives of industrial arts: A B* C (E) (G) (H) I

G. Pattern Used: Industrial Arts

H. Subject Classification: architectural drafting, senior high school

I. Other features: Suggestions of the use of the text for the instructor; suggested outline for notebook

Evaluation Sheet

Book Number 4

A. Bibliography entry:
   1. Author's name: Field, Wooster Bard
   2. Title of book: An Introduction In Architectural Drawing
   3. Publisher: New York: McGraw-Hill Book Company
   4. Copyright date: 1932-1943, 2nd Edition

B. Book Descriptions:
   1. Price: $5.00
   2. Binding: cloth
   3. Size: 8½ x 11
   4. Number of pages: 245
   5. Special aids index
   6. Illustrations: None
   7. Glossary: None
   Other--fair cover design

C. Approach to subject matter: instructional unit organization

D. Table of content (by topics): Architecture, the drawing instruments, geometric method, draftsmanship, line drawing, types, architectural application of orthographic projections, classification and use of surfaces, lines and points, auxiliary views, architectural sections and symbols, revolutions, space problems of location and measurement, development of surfaces and model building, intersection of surfaces, pictorial drawing, shades and shadows, architectural working drawings, problems, architectural lettering

E. Symbols for content analysis: 1 2 (4) (6) (12)

F. Symbols for objectives of industrial arts: (A) (D) (G)

G. Pattern Used: specialization (weak)

H. Subject Classification: architectural drafting, senior high school

I. Other features: does not meet local need

Evaluation Sheet

Book Number 5

A. Bibliography entry:
   1. Author's name: Hornung, William J.
   2. Title of book: Architectural Drafting
   3. Publisher: New York: Prentice-Hall, Inc.
   4. Copyright date: 1949, 1954, 2nd Edition

B. Book Descriptions:
   1. Price: $4.50
   2. Binding: cloth
   3. Size: 8½ x 11
   4. Number of pages: 153
   5. Special aids index
   6. Illustrations: None
   7. Glossary: Yes, not in work-book form
      Other--projects, forty-four plates

C. Approach to subject matter: instructional unit organization, questions for review; also answers to test questions

D. Table of content (by topics): Divided into six divisions with sub-headings; construction principles, starting the house plans, heating the house, plumbing for a typical dwelling, electrical wiring for the house; the model house specifications; new addition, 1955, pages-220, $3.60 price--a new section was added to acquaint the reader with problems of planning that appear before the actual drafting takesplace. The new edition was not available for this study.

E. Symbols for content analysis: 2* 3 4 5* 6* 7 8* 9 12*

F. Symbols for objectives of industrial arts: (A) B* C (D) G*

G. Pattern Used: specialization

H. Subject Classification: architectural drafting, senior high school

I. Other features: none

Evaluation Sheet

Book Number 6

A. Bibliography entry:
   1. Author's name: Kenney, Joseph E., and McGrail, John P.
   2. Title of book: Architectural Drawing for the Building Trades
   3. Publisher: New York: McGraw-Hill Book Company, Inc.
   4. Copyright date: 1949

B. Book Descriptions:
   1. Price: $4.80
   2. Binding: cloth
   3. Size: 9 x 12
   4. Number of pages: 128
   5. Special aids index
   6. Illustrations:
   7. Glossary: Yes
      Other--good projects

C. Approach to subject matter: instructional unit organization, some instructional sheets

D. Table of content(by topics): Drawing instruments and how to use theory; principles of lettering, geometric construction, pictorial drawing, graphic presentation, orthographic projection, graphic representation, molding and cabinet making joints, symbols, schedules and conventions, concrete-walls indications, brick, veneer wall, framing details, four chapters on sill construction, three chapters on windows, two chapters on doors, four chapters on cornice details, corner windows, fireplace details, stair details, floor plans, elevations, a plywood house, a Mansfield house, brickwork, structure details, a modern corner store, department store fixture (a list of ninety-two plates-part progressive)

E. Symbols for content analysis: 1* 2* 4 (5) (6) 7* 12

F. Symbols for objectives of industrial arts: A B (G)

G. Pattern Used: specialization

H. Subject Classification: architectural drafting, senior high school

I. Other features: Notes on how to use the book for teacher help

Evaluation Sheet

Book Number 7

A. Bibliography entry:
   1. Author's name: Townsend, S. B., and Dalzell, J. Ralph
   2. Title of book: How to Plan a House
   3. Publisher: Chicago: American Technical Society
   4. Copyright date: First Edition, 1942
      Second Edition, 1952-53

B. Book Descriptions:
   1. Price: $6.95
   2. Binding: cloth
   3. Size: 6 x 8¾
   4. Number of pages: 584
   5. Special aid index
   6. Illustrations: Yes
   7. Glossary: None
      Other--None

C. Approach to subject matter: instructional unit organization, questions for review, illustrations

D. Table of content (by topics): Styles of house architecture, building lots, orientation, styling a house, foundations and footings, materials for walls, etc.; designing I beams, designing steel supports, strength of wood structures; standard size of materials and spacings; drawings required for a house, planning various rooms, planning floor plans, designing elevations, mechanical considerations, details, plan within financial budget, specifications, illustrative examples

E. Symbols for content analysis: 2 3* 5 6* 7* 8* 9 12* (14)

F. Symbols for objectives of industrial arts: (A) B* C (I)

G. Pattern Used: specialization

H. Subject Classification: architectural drafting, senior high school

I. Other features: Questions and answers, also questions for quiz for teacher's help. Study Guide, $1.25