

379  
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No. 4757

A STUDY OF THE DRAFTING CURRICULUM  
IN THE FORT WORTH PUBLIC HIGH  
SCHOOLS, FORT WORTH, TEXAS

THESIS

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

For the Degree of

MASTER OF SCIENCE

By

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Denton, Texas

December, 1973

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## CHAPTER I

### INTRODUCTION

The curriculum as man views it in the public schools is a vastly complicated design. It is brought about and changed very deliberately and painstakingly. Curriculum developments are established through the consideration of society, home, vocations, and education, by parents, teachers, administrators and students. The final results are prepared and presented by a committee of these people to be used as a guideline in the education of students. The more difficult job in education is not how the students are to be taught, but making decisions as to what should be taught.

The world today is one of a very advanced and technological nature. It is so rapidly changing that researchers have stated that since the birth of Christ, knowledge has doubled four times until the year 1960, and the last doubling was from 1950 to 1960 (7). Therefore, it is assumed that every ten years, at a minimum, man's knowledge once again doubles. This presents an even greater challenge to curriculum authors to maintain this torrid pace, for the ignition of the knowledge explosion should be within our educational systems.

The need for constant observation and research in education is apparent if the high standards already in progress are to be maintained. Hornbake states, "The fundamental concern of any people or nation is the continual evaluation of its educational effort; no other consideration is of equal magnitude since survival and progress depend upon the appropriateness and the effectiveness of the educational effort" (5, p. 6). Another expression of concern over curriculum updating comes from Olsen, who states, "... it appears that we had better discard the guides we have been using for half a century. The old ones have been leading us in circles and as a result, we now have essentially the same curriculum with which we started" (8, p. 23).

The Fort Worth Public Schools (FWPS) contain thirteen senior high schools, all of which offer industrial arts drafting. The present curriculum guides for industrial arts in the Fort Worth public high schools are Industrial Arts: A Handbook For Teachers Grades 7-9, Bulletin 210.1, 1962 (2); and Industrial Arts: A Handbook For Teachers Grades 10-12, Bulletin 211.1, 1963 (3).

The curriculum monograph printed by the Texas Education Agency (TEA) is Drafting, Grades 7-12, 1964 (14). This monograph is a supplement to the TEA Bulletin 615, 1961 (13), and its revision, Bulletin 560, 1970 (12).



Beginning with the 1970 school year there was a complete change in the state adopted textbooks in the drafting courses in the Fort Worth public high schools. No revisions have been made to the Fort Worth handbook to update the curriculum since the 1963 publication.

#### Statement of the Problem

This is a study of the drafting curriculum in the Fort Worth public high schools, Fort Worth, Texas.

#### Purpose of the Study

The specific purposes of the study were as follows:

1. To review and compare the courses and content of the drafting curriculums listed in the bulletins of the TEA and the Fort Worth Public Schools.
2. To study drafting scheduling procedures in each of the Fort Worth public high schools.
3. To study the courses and contents of the drafting curriculums offered in each of the Fort Worth public high schools.
4. To determine if there are variations from school to school in curriculum content of the drafting courses in each of the Fort Worth public high schools.
5. To offer suggestions and recommendations for improving the program, if weaknesses were evident, when the program was evaluated by acceptable criteria (12, 13, and 14).

### Significance of the Study

The following opinions were believed to warrant the study:

1. If no joint outlines for the use of the new textbooks adopted by the Fort Worth Public Schools are drawn up as a supplement to or a revision of the present handbook for teachers, it would be possible for each high school to conduct courses of the same name in many different ways.

2. If the courses are given the same name but not the same content, students transferring from one high school to another could encounter difficulty in their studies.

3. If it is the desire of the Fort Worth Public Schools to provide an equality of educational opportunities in all schools, guaranteeing each student in the system the same equality and quantity of education, it will be necessary to augment the new textbooks with a new teachers' handbook.

### Sources of Data

Data for the study were obtained from the following sources:

1. From literature in the field pertaining to the recommended objectives of industrial arts intended to represent and interpret industrial arts from a national level.

2. From literature in the field pertaining to the objectives of industrial arts as recommended by individuals, organizations, agencies, and associations representing the state of Texas.

3. From literature that has been written pertaining to the objectives of industrial arts as a curriculum in the Fort Worth Public Schools.

4. From the instructors of drafting in the Fort Worth public high schools who completed the research instrument designed to secure data on the present curriculum in use within the drafting classes of the Fort Worth public high schools.

5. From textbooks in the field of drafting.

6. From personal interviews with the instructors and with the supervisor of industrial arts for the Fort Worth Public Schools.

#### Limitations of the Study

The study was limited to the industrial arts drafting programs conducted for students in grades nine, ten, eleven, and twelve by the drafting instructors in charge of these programs in the Fort Worth public high schools, Fort Worth, Texas, during the school year 1972-1973. The study was also limited to the areas concerning drafting found in the bulletins printed by the TEA and the Fort Worth Public Schools.

### Definition of Terms

Certain terms pertinent to the study are defined as follows:

1. Industrial Arts. Wilber defines industrial arts as, "including 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" (15, p. 2).

2. Drafting. In the study drafting deals with drawings, produced with the aid of mechanical instruments designed specifically for such purposes, completed by the students in the Fort Worth public high schools under the direction of their supervising instructors in the areas of general, machine, architectural, pre-engineering drafting, or pre-engineering descriptive geometry.

3. Curriculum. As defined by Good, the curriculum is a body of prescribed educational experiences designed to provide an individual with the best possible training and experiences to fit him for the society in which he lives or to qualify him for a trade or profession (4, p. 113).

4. High School. In the study high school is that part of public education offered to students in grades nine, ten, eleven, and twelve.

5. Administration. In the study administration refers to principals, vice-principals, and counselors who direct, control, and manage all matters pertaining to school affairs.

6. Instrument. In the study the instrument is the device used to gather and record the information from each of the participating members of the study; or it may also be referred to as a tool or device used in the processes of drafting.

7. Instructor. In the study an instructor refers to a person who teaches or educates students in the area of drafting.

8. Instruction. Webster defines instruction as, "knowledge and information given or taught, etc." (6, p. 758).

#### Related Studies

In 1970 Richards made a study of recent trends in teaching and program development throughout the industrial arts areas in the state of Texas (11). In 1968 Craghead made a study to identify the knowledge and skills required of draftsmen on the job in the Dallas and Fort Worth, Texas, areas (1). In 1950 Wright made a study of the methods, organization, and subject matter used in the Laboratory of Industries Plan for industrial arts in seventy-five schools of Texas during the 1948-1949 school year (16).

In 1959 Payne made a study of the organization and administration of the industrial arts programs in the junior high schools in Fort Worth, Texas, with a major emphasis on the curriculum of the programs. Some findings important to the previous study were that procedures of instruction and the time spent on various subjects and areas varied greatly from school to school with the greatest degree of variability being in the area of drafting. One conclusion stated that the industrial arts curriculum, where facilities permit, should be sufficiently similar to permit a student to transfer from one school to another without losing credits or being behind other students in the school (9).

In 1955 Pickett made a study of the industrial arts program of the Fort Worth Public Schools. Pickett's study is related to the present study in that it was concerned with the industrial arts program of the Fort Worth Public Schools which includes drafting. Pickett's study differs from the present study in that the programs of the junior high schools were studied, and different phases of the industrial arts program were evaluated. One of the recommendations of the Pickett study was that similar studies should be made at frequent intervals to ascertain the status of the industrial arts program and to determine what improvements, if any, were being made (10).

### Organization and Procedure of the Study

Chapter I of the study contains the introduction to the study, the statement of the problem, the purpose of the study, the significance of the study, the sources of data, the limitations of the study, definition of terms used in the study, related studies pertaining to the study, and the organization and procedure of the study.

Chapter II of the study compares the objectives, offerings and procedures considered by the TEA and the Fort Worth Public Schools to be necessary in offering the various courses of drafting in the public high schools. This information was obtained from the publications of the TEA (12, 13, and 14) and the Fort Worth Public Schools (2, 3) which list the subject of industrial arts drafting.

Chapter III of the study presents the data obtained by the instrument concerning the scheduling procedures and curriculum content actually in use in the high school drafting programs within the Fort Worth Public Schools. The data for this chapter were secured through the use of the instrument completed and returned by the drafting instructors. The instrument consisted of a checklist intended to obtain information on scheduling and specific phases of curriculum content under each course heading listed in the Fort Worth curriculum guides (2, 3).

In order to encourage participation by the instructors and to provide them with a rapid and convenient method of

responding, a letter of explanation and a return-addressed, stamped envelope were enclosed with each instrument. Also a follow-up letter was used to encourage participation from instructors who responded slowly. The responses indicated on the returned checklists were recorded on a master control sheet for tabulation and evaluation.

Chapter IV of the study includes the summary, findings, and recommendations based upon the findings.



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## CHAPTER II

### A COMPARISON OF HIGH SCHOOL DRAFTING CURRICULUMS AS PRESENTED BY BULLETINS OF THE TEXAS EDUCATION AGENCY AND THE FORT WORTH PUBLIC SCHOOLS

The principles and standards for accrediting the drafting curriculums in Texas high schools are outlined in the TEA Bulletin 615 (3). There are nine courses listed which are offered to students in the ninth through the twelfth grades.

The Fort Worth Public Schools have published two bulletins (1, 2) containing the drafting curriculums offered within the Fort Worth Public Schools. The two Fort Worth bulletins (1, 2) are modeled after the TEA Bulletin 615 (3) and list seven of the nine state courses as offerings within the Fort Worth public high schools.

Shown in Table I are the approved course names and numbers listed by the TEA and the Fort Worth Public Schools, the grade placement of each course, the credit received from each course, and the prerequisites of each course, if any.

Each course which is listed in Table I for the TEA compares to the Fort Worth Public Schools' course in its curriculum content. The grade placement, credit received

TABLE I  
APPROVED COURSES LISTED BY THE TEA AND  
THE FORT WORTH PUBLIC SCHOOLS

Approved Course Names	TEA Course Number	FWPS Course Number	Grade Placement	Credit Received	Pre-requisite(s)
General Drafting	.....	1-2	9-12	$\frac{1}{2}$ -1	none
Machine Drafting	I-II	3-6	10-12	$\frac{1}{2}$ -2	Gen. or Pre-Engr. Dftng.
Architectural Drafting	I-II	3-6	10-12	$\frac{1}{2}$ -2	Gen. or Pre-Engr. Dftng.
Pre-Engineering Drafting	....	1-2	10-12	$\frac{1}{2}$ -1	Geometry (may be taken concurrently)
Pre-Engineering Descriptive Geometry	....	1-2	12	$\frac{1}{2}$ -1	Geometry and Algebra II (Alg. II may be taken concurrently)
Technical Drafting	I-II	Not Listed	10-12	$\frac{1}{2}$ -1	Gen. or Pre-Engr. Dftng.

and prerequisites are the same for the TEA and the Fort Worth Public Schools. The approved names of the courses are also shown to be identical; however, a slight difference occurs in the numbers following the course names. The main difference in the numbering is the use of a single number or no number by the TEA, and the use of two numbers by the Fort Worth Public Schools. The TEA courses represent two reporting periods of one-half credit each. The Fort Worth

Public Schools have given each reporting period a single number equaling the same one-half credit per reporting period and the same one credit total per course.

The courses of Technical Drafting I and Technical Drafting II are the only courses listed by the TEA which are not listed by the Fort Worth Public Schools.

The Fort Worth Public Schools' bulletins (1, 2) follow each course description with a complete curriculum outline. This is not a feature of the TEA Bulletin 615 (3).

In June of 1964 a study of high school drafting curriculums was made to determine guidelines for the nine drafting courses listed in the TEA Bulletin 615 (3). This study was completed by a committee consisting of fourteen members of the Texas Industrial Arts Association and was submitted in the form of a monograph to the TEA for publication (4). The drafting curriculums listed were to be used as the basic principles to be studied in each course.

In order to better display and compare the curriculum content of the TEA with that of the Fort Worth Public Schools, eight tables have been prepared, one for each of the courses listed in Table I.

#### General Drafting

Compared in Table II are the curriculum contents of General Drafting listed by the TEA and General Drafting One and Two listed by the Fort Worth Public Schools. The

TABLE II

CURRICULUM CONTENT FOR THE GENERAL DRAFTING  
COURSES LISTED BY THE TEA AND THE  
FORT WORTH PUBLIC SCHOOLS

Curriculum Content	Listed by TEA	Listed by FWPS
1. Freehand Multiview Drawing	Yes	Yes
2. Freehand Pictorial Drawing	Yes	Yes
3. Mechanical Layout & Construction	Yes	Yes
4. Alphabet of Lines	Yes	Yes
5. Lettering	Yes	Yes
6. Dimensioning	Yes	Yes
7. Simple Working Drawings	Yes	Yes
8. Oblique Projection	Yes	Yes
9. Cavalier Projection	Yes	Yes
10. Cabinet Projection	Yes	Yes
11. Isometric Projection	Yes	Yes
12. Circles, Arcs, and Ellipses	Yes	Yes
13. Sectioning	Yes	Yes
14. Auxilliary Views (simple)	Yes	Yes
15. Pencil Tracings	No	Yes
16. Drawing Reproduction	Yes	Yes
17. American Standards	No	Yes
18. Geometric Construction	Yes	Yes
19. Sheetmetal Development	No	Yes
20. Skill with Advanced Equipment	No	Yes
21. Posters, Charts, & Graphs	No	Yes
22. Machines of Industry	Yes	Yes
23. Conventional Machining Representations	Yes	Yes
24. Symbols of Common Metals	Yes	Yes
25. Primary Auxilliary Drawings	Yes	Yes
26. Standard Notes & Processes	Yes	Yes
27. Detail Drawings	Yes	Yes
28. Assembly Drawings	Yes	Yes
29. Standard Building Materials	Yes	Yes
30. Foundations and Footings	Yes	Yes
31. Balloon Framing	Yes	Yes
32. Roofs	Yes	Yes
33. Windows	Yes	Yes
34. Entrances	Yes	Yes
35. Plumbing	Yes	Yes
36. Electrical	Yes	Yes
37. Heating	Yes	Yes
38. Hardware	Yes	Yes
39. Common Fixtures	Yes	Yes
40. Architectural Symbols	Yes	Yes

TABLE II Continued

Curriculum Content	Listed by TEA	Listed by FWPS
41. Building Codes	No	Yes
42. Plot Planning	Yes	Yes
43. Conventional Lines	Yes	Yes
44. Architectural Lettering	Yes	Yes
45. ASA Standards	No	Yes
46. Dimensioning	Yes	Yes
47. Sketching and Shading	No	Yes
48. Arrangement of Views	Yes	Yes
49. Detailing	Yes	Yes
50. One-Point Perspective	Yes	Yes
51. Two-Point Perspective	Yes	Yes
52. Rendering	Yes	Yes
53. Architectural Styles	No	Yes

bulletins of the TEA and the Fort Worth Public Schools both state that general drafting should develop the student's drafting skills and understanding of the basic principles of orthographic, multiview, isometric, oblique and perspective projections (1, p. 29; 2, p. 5; 3, p. 143).

Forty-four curriculum content areas are listed by the TEA. The Fort Worth Public Schools list the same forty-four areas plus the nine additional areas of pencil tracing, American standards, sheetmetal development, advanced equipment use, posters, charts and graphs, building codes, ASA standards, sketching and shading, and architectural styles.

#### Machine Drafting

Compared in Table III are the curriculums of Machine Drafting I listed by the TEA and Machine Drafting Three and

TABLE III  
 CURRICULUM CONTENT FOR THE FIRST CREDIT OF  
 MACHINE DRAFTING COURSES LISTED BY THE  
 TEA AND THE FORT WORTH  
 PUBLIC SCHOOLS

Curriculum Content	Listed by TEA	Listed by FWPS
1. Instrument Skills	Yes	Yes
2. Lettering	Yes	Yes
3. Machine Drafting Symbols	Yes	Yes
4. Screw Threads	Yes	Yes
5. Pipe Threads	Yes	Yes
6. Fasteners	Yes	Yes
7. Structural Steel	No	Yes
8. Aeronautical Drafting	No	Yes
9. Working Drawing	Yes	Yes
10. Detail Drawings	Yes	Yes
11. Assembly Drawings	Yes	Yes
12. Tracings	Yes	Yes
13. Reproduction	Yes	Yes

Four listed by the Fort Worth Public Schools. The bulletins of the TEA and the Fort Worth Public Schools both state that the first credit of machine drafting should include advanced studies of machines, machine parts, jigs and fixtures.

Drawings are to be in multiview, and pictorial projections. Standard machinery handbooks are to be studied along with fabrication methods. Talented students are expected to attempt elementary machine design (2, p. 69; 3, p. 146).

Eleven curriculum content areas are listed by the TEA. The same eleven plus the two additional areas of structural steel and aeronautical drafting are listed by the Fort Worth Public Schools.



Compared in Table IV are the curriculums of Machine Drafting II listed by the TEA and Machine Drafting Five and Six listed by the Fort Worth Public Schools. The bulletins

TABLE IV

CURRICULUM CONTENT FOR THE SECOND CREDIT OF  
MACHINE DRAFTING COURSES LISTED BY THE  
TEA AND THE FORT WORTH PUBLIC SCHOOLS

Curriculum Content	Listed by TEA	Listed by FWPS
1. Advanced Details	Yes	Yes
2. Advanced Assemblies	Yes	Yes
3. Advanced Multiview	Yes	Yes
4. Advanced Pictorials	Yes	Yes
5. Study Standard Machine Handbooks	Yes	Yes
6. Elementary Machine Design	Yes	Yes
7. Tolerances	Yes	Yes
8. Shop Processes	Yes	Yes
9. Machine Measuring Tools	Yes	Yes

of the TEA and the Fort Worth Public Schools both state that the second credit of machine drafting is a study of machine drawing and design, the manufacturing processes, and standard office and drafting room procedures. Students are to draft complex machines in multiview and pictorial projection, studying standard machinery handbooks and fabrication methods (2, p. 75; 4, p. 24).

Nine curriculum content areas are listed by the TEA; the same nine are listed by the Fort Worth Public Schools.

### Architectural Drafting

Compared in Table V are the curriculums of Architectural Drafting I listed by the TEA and Architectural Drafting Three and Four listed by the Fort Worth Public Schools. The bulletins of the TEA and the Fort Worth Public Schools

TABLE V

**CURRICULUM CONTENT FOR THE FIRST CREDIT OF  
ARCHITECTURAL DRAFTING COURSES LISTED  
BY THE TEA AND THE FORT WORTH  
PUBLIC SCHOOLS**

Curriculum Content	Listed by TEA	Listed by FWPS
1. Drafting Tools & Instruments	Yes	Yes
2. Develop Lettering Style	Yes	Yes
3. Architecture Symbols	Yes	Yes
4. Representation of Doors & Windows	Yes	Yes
5. Construction Materials	Yes	Yes
6. Foundations and Footings	Yes	Yes
7. Wall Sections	Yes	Yes
8. Framing	Yes	Yes
9. Cornice Details	Yes	Yes
10. Roof Construction	Yes	Yes
11. Stair Construction	No	Yes
12. Fireplace Construction	No	Yes
13. Cabinet Construction	Yes	Yes
14. Residence Building	Yes	Yes
a. Floor Plans	Yes	Yes
b. Foundation Plans	Yes	Yes
c. Roof Plans	Yes	Yes
d. Elevations	Yes	Yes
e. Tracings & Blueprints	Yes	Yes
f. Rendering Techniques	No	Yes
g. Perspective	Yes	Yes
h. Material Estimates	Yes	Yes

both state that the first credit of architectural drafting should cover fabrication methods and materials used in

residential construction. Common symbols, materials, and electrical, plumbing, heating, and ventilating components should be assigned for use in the instruction of building construction fundamentals. The goal of each student would be to draft a complete set of working drawings for a small building (2, p. 47; 3, p. 145).

Nineteen curriculum content areas are listed by the TEA. The Fort Worth Public Schools list the same nineteen plus the three additional areas of stair and fireplace construction and rendering techniques.

Compared in Table VI are the curriculums of Architectural Drafting II listed by the TEA and Architectural Drafting Five and Six listed by the Fort Worth Public Schools. The bulletins of the TEA and the Fort Worth Public Schools both state that the second credit of architectural drafting should include work with more complicated building structures, custom detailing, standard building components, modular drawings rendered in pencil, ink wash, and water color. Scale models should be constructed along with written specifications and cost estimates. The expected drafting skill should compare with professionals (2, p. 55; 3, p. 145).

Both the TEA and the Fort Worth Public Schools list the same thirty curriculum content areas.

TABLE VI

CURRICULUM CONTENT FOR THE SECOND CREDIT OF  
ARCHITECTURAL DRAFTING COURSES LISTED  
BY THE TEA AND THE FORT WORTH  
PUBLIC SCHOOLS

Curriculum Content	Listed by TEA	Listed by FWPS
1. Architecture Terms & Symbols	Yes	Yes
2. Architecture Principles	Yes	Yes
3. Mechanics of Construction	Yes	Yes
4. Principles of Design	Yes	Yes
5. Knowledge of Arch. Order	Yes	Yes
6. Develop Philosophy of Design & Workmanship	Yes	Yes
7. Study Differences in Residential & Commercial Construction	Yes	Yes
8. Study Laws Relating to Architecture	Yes	Yes
9. Study Current Construction	Yes	Yes
10. Small Business	Yes	Yes
a. Floor Plan Sketches	Yes	Yes
b. Elevation Sketches	Yes	Yes
c. Perspective Sketches	Yes	Yes
d. Floor Plan First & Second Floors	Yes	Yes
e. Wall Section	Yes	Yes
f. Stair Details	Yes	Yes
g. Elevations	Yes	Yes
h. Specifications	Yes	Yes
i. Cost	Yes	Yes
j. Perspective One-Point	Yes	Yes
k. Perspective Two-Point	Yes	Yes
11. Public Bldg. in Planning Stage	Yes	Yes
a. Floor Plan Sketch	Yes	Yes
b. Elevations Sketches	Yes	Yes
c. Perspective Sketch	Yes	Yes
d. Wall Section	Yes	Yes
e. Detail Sheets	Yes	Yes
f. Perspective Two-Point	Yes	Yes
g. Foundation Plan	Yes	Yes
12. Model to Scale with Landscape	Yes	Yes

### Pre-Engineering Drafting

Compared in Table VII are the curriculums of Pre-Engineering Drafting listed by the TEA and Pre-Engineering Drafting One and Two listed by the Fort Worth Public Schools. The bulletins of the TEA and the Fort Worth Public Schools both state that pre-engineering drafting students should be

TABLE VII

CURRICULUM CONTENT FOR THE PRE-ENGINEERING  
DRAFTING COURSES LISTED BY THE TEA AND  
THE FORT WORTH PUBLIC SCHOOLS

Curriculum Content	Listed by TEA	Listed by FWPS
1. Lettering	Yes	Yes
2. Drafting Machine	No	Yes
3. Instrument Drawing	Yes	Yes
4. Orthographic Projection	Yes	Yes
5. Auxilliary Views	Yes	Yes
6. Oblique Views (secondary aux.)	Yes	Yes
7. Revolutions	Yes	Yes
8. Sectional Views	Yes	Yes
9. Intersections	Yes	Yes
10. Developments	Yes	Yes
11. Isometric Projection	Yes	Yes
12. Diametric Projection	Yes	Yes
13. Trimetric Projection	Yes	Yes
14. Axonometric Projection	Yes	Yes
15. Assembly & Exploded View Dwng.	Yes	Yes
16. Pictorial Sketching	Yes	Yes
17. Pictorial Space Dwng. (explosion)	Yes	Yes
18. Oblique Projection	Yes	Yes
19. Cavalier Projection	Yes	Yes
20. Cabinet Projection	Yes	Yes
21. Perspective Drawing	Yes	Yes
22. Shading	No	Yes
23. Coloring	No	Yes
24. Detail Drawing	Yes	Yes
25. Dimensioning	Yes	Yes
26. Technical Sketching	Yes	Yes
27. Shop Processes	Yes	Yes
28. Materials	Yes	Yes

TABLE VII Continued

Curriculum Content	Listed by TEA	Listed by FWPS
29. Measuring Devices	Yes	Yes
30. Cam & Gear	No	Yes
31. Structural Steel Drafting	No	Yes
32. Topographic Drafting	No	Yes
33. Aeronautical Drafting	No	Yes
34. Electrical Drafting	No	Yes
35. Pipe Drafting	No	Yes
36. Patent Drafting	No	Yes
37. Welding Drafting	No	Yes
38. Sheet Metal Drafting	No	Yes
39. Architectural Drafting	No	Yes
40. Drawing Reproduction	No	Yes

carefully screened and that only talented students who plan careers as architects, engineers, or other related technical fields should be enrolled. The content should include the study of orthographic projection, pictorial projections, written specifications, sectioning, and primary and secondary auxiliary views (2, p. 25; 3, pp. 146-147).

Twenty-six curriculum content areas are listed by the TEA. The Fort Worth Public Schools list the same twenty-six areas plus the fourteen additional areas of drafting machine use, shading, coloring, cams and gears, structural steel, drawing reproduction, and architectural, topographical, aeronautical, electrical, pipe, patent, welding, and sheet metal drafting.

## Pre-Engineering Descriptive Geometry

Compared in Table VIII are the curriculums of Pre-Engineering Descriptive Geometry listed by the TEA and Pre-Engineering Descriptive Geometry One and Two listed by

TABLE VIII

CURRICULUM CONTENT FOR THE PRE-ENGINEERING DESCRIPTIVE  
GEOMETRY COURSES LISTED BY THE TEA AND THE  
FORT WORTH PUBLIC SCHOOLS

Curriculum Content	Listed by TEA	Listed by FWPS
1. Locating Points	Yes	Yes
2. Orthographic Projection	Yes	Yes
3. Principle Dimensions	Yes	Yes
4. Principle Planes	Yes	Yes
5. Principle Lines	Yes	Yes
6. Auxilliary Views (primary)	Yes	Yes
7. Reference Planes	Yes	Yes
8. Visibility of Lines	Yes	Yes
9. Normal Views Planes	Yes	Yes
10. Edge Views Planes	Yes	Yes
11. Oblique Views (see aux. sec.)	Yes	Yes
12. T.L. of Lines	Yes	Yes
13. End View of Lines	Yes	Yes
14. Oblique Lines	Yes	Yes
15. Intersecting Lines	Yes	Yes
16. Parallel Lines	Yes	Yes
17. Strike and Dip	Yes	Yes
18. Intersection of Line & Plane	Yes	Yes
19. Intersection of Two Planes	Yes	Yes
20. Cutting Planes	Yes	Yes
21. Parallel Planes	Yes	Yes
22. Perpendicularity	Yes	Yes
23. Angle Between Plane	Yes	Yes
24. Revolution	Yes	Yes
25. Intersection of Solids	Yes	Yes
26. Developments	Yes	Yes
27. Cuts and Fills	Yes	Yes
28. Slope of a Line	Yes	Yes
29. Bearing of a Line	Yes	Yes

the Fort Worth Public Schools. The bulletins of the TEA and the Fort Worth Public Schools both state that pre-engineering descriptive geometry students should be carefully screened and only talented students who plan careers as architects, engineers, or other related technical fields should be enrolled. The course content should center around the study of points, lines and planes in space, using college texts, workbooks and other advanced instructional materials (2, p. 39; 3, p. 147).

The same twenty-nine curriculum content areas are listed by the TEA and the Fort Worth Public Schools.

#### Technical Drafting

The course of Technical Drafting I listed by the TEA but not offered in the Fort Worth Public Schools should contain these eight curriculum content areas: structural steel drafting, machine design and drafting, aircraft drafting, patent drafting, electrical drafting, plumbing and mechanical construction layout, topographic drafting, and jig and fixture design. Each of the eight curriculum areas listed in Technical Drafting I, except the area on jigs and fixtures, is listed in one or more of the following Fort Worth Public Schools' courses: Machine Drafting Three and Four, Machine Drafting Five and Six, or Pre-Engineering Drafting One and Two.



Table IX presents the curriculum content areas of Technical Drafting I offered by the TEA and indicates the Fort Worth Public Schools' course which lists the area in its curriculum content.

TABLE IX

CURRICULUM CONTENT AREAS FOR TECHNICAL DRAFTING I  
WHICH ARE COVERED BY MACHINE DRAFTING THREE  
AND FOUR, MACHINE DRAFTING FIVE AND SIX OR  
PRE-ENGINEERING DRAFTING ONE AND TWO

Content Areas of Technical Drafting I	Machine Drafting 3-4	Machine Drafting 5-6	Pre- Engineering Drafting 1-2
1. Structural Steel	X	...	X
2. Machine Design	...	X	...
3. Aircraft	X	...	X
4. Patent	...	...	X
5. Electrical	...	...	X
6. Plumbing	...	...	X
7. Topographic	...	...	X
8. Jigs and Fixtures	...	...	...

The content areas of structural steel drafting and aircraft drafting are listed within the curriculum of Machine Drafting Three and Four. The content area of machine design is listed within the curriculum of Machine Drafting Five and Six. The content areas of structural steel, aircraft, patent, electrical, plumbing and topographic drafting are listed within the curriculum of Pre-Engineering Drafting One and Two.

The course of Technical Drafting II listed by the TEA but not offered in the Fort Worth Public Schools should study in depth two or more areas covered by Technical Drafting I. Students are to obtain a degree of specialization in each chosen area and a high level of drafting skill is expected (3, p. 148; 3, pp. 47-52).

In this chapter a comparison of the high school drafting curriculums presented by the TEA and the Fort Worth Public Schools has been made. Chapter III presents data concerning what the Fort Worth drafting instructors are actually using for classroom instructional purposes.

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## CHAPTER III

### A PRESENTATION OF DATA CONCERNING DRAFTING COURSES ACTUALLY BEING TAUGHT IN THE FORT WORTH PUBLIC HIGH SCHOOLS

In this chapter data are presented which were collected from twelve of the thirteen high school instructors of industrial arts drafting in the Fort Worth Public Schools. These data are concerned with general information concerning each instructor's classes, his class scheduling procedures, and his courses and their curriculum content.

An instrument was designed and mailed to the thirteen Fort Worth high school drafting instructors whose names were obtained from a list of drafting instructors provided by the supervisor of industrial arts for the Fort Worth Public Schools. Twelve instructors, or 92 per cent, completed and returned usable instruments.

The data, collected by the instrument, are presented throughout this chapter with the use of tables prepared to show clearly the data requested, the response of each participating instructor as the data pertains to his high school, and the total number of responses. The percentages of the positive responses have been rounded off to the nearest whole per cent.

The instrument presented to the instructors contained three main groups of questions. The first group pertained to general questions, the second group pertained to scheduling procedures, and the third group pertained to the courses taught and their content.

#### General Data

Two general questions were asked of each instructor concerning his daily number of classes and students. This information was believed necessary to ascertain the validity of each participating instructor's answers to the whole group. Responses tended to vary when an instructor had a very large or a very small number of classes or students.

Contained in Table X are data concerning the number of drafting classes taught each day in each Fort Worth public high school by the twelve participating instructors.

TABLE X

THE NUMBER OF DRAFTING CLASSES TAUGHT EACH DAY  
IN EACH FORT WORTH PUBLIC HIGH SCHOOL

Classes Per Day	Surveyed High Schools												Total	%
	1	2	3	4	5	6	7	8	9	10	11	12		
2	..	..	..	..	..	..	..	..	..	..	Y*	..	1	8
3	..	Y	Y	Y	Y	..	..	..	..	..	..	..	4	33
4	..	..	..	..	..	Y	..	..	..	Y	..	..	2	17
5	Y	..	..	..	..	..	Y	Y	Y	..	..	Y	5	42

\*Y, yes.

A total of forty-three classes was taught by all the instructors. Instructors taught an average of 3.9 classes per day.

The majority of instructors indicated that they taught three or five classes per day. Two instructors, or 17 per cent, taught four classes, and one instructor, or 8 per cent, taught two classes. The instructor who taught only two classes also taught other industrial arts courses during his day.

Contained in Table XI are data concerning the average enrollment of drafting classes in each Fort Worth public high school of the eleven responding instructors. The

TABLE XI  
THE AVERAGE ENROLLMENT OF DRAFTING CLASSES  
IN EACH FORT WORTH PUBLIC HIGH SCHOOL

Average Enrollment	Surveyed High Schools												Total	%
	1	2	3	4	5	6	7	8	9	10	11	12		
18	..	..	..	..	..	..	..	..	..	..	Y*	..	1	8
25	..	Y	Y	..	Y	..	..	..	..	Y	..	Y	5	42
26	Y	..	..	Y	..	..	..	..	..	..	..	..	2	17
28	..	..	..	..	..	Y	..	Y	..	..	..	..	2	17
30	..	..	..	..	..	..	Y	..	Y	..	..	..	2	17

\*Y, yes.

average class size was twenty-six students. Five instructors, or 42 per cent, indicated that they had classes averaging twenty-five students. Two indicated enrollment of twenty-six, twenty-eight and thirty, or averages of 17 per cent each. Only one instructor was far below the average with only eighteen students per class, or 8 per cent. This was the same instructor who was below the average in classes taught each day. Only thirty-six students were

enrolled in drafting under this instructor in two periods each day.

The number of drafting classes taught each day and the average enrollment of drafting classes in each Fort Worth public high school were the two questions concerning general data sought; the following pertains to class scheduling.

#### Class Scheduling Data

Six questions pertaining to class scheduling were asked each instructor. This information was intended to show the different administration techniques used in each high school pertaining to the scheduling of drafting classes and the involvement of the instructors concerning their schedules.

Contained in Table XII are data in response to question one concerning how drafting courses were listed for scheduling purposes in each Fort Worth public high school. The seven courses listed by the Fort Worth Public Schools were on the list; however, five instructors, or 42 per cent, showed that their high school listed only the word "Drafting" in their scheduling procedure. Of the remaining seven high schools, seven, or 58 per cent, listed General Drafting One and Two, six, or 50 per cent, listed Architectural Drafting Three and Four. Only three, or 25 per cent, of the high schools listed Pre-Engineering Descriptive

TABLE XII

HOW DRAFTING COURSES WERE LISTED FOR SCHEDULING PURPOSES IN EACH FORT WORTH PUBLIC HIGH SCHOOL

List of Courses	Surveyed High Schools												Tot-als	%
	1	2	3	4	5	6	7	8	9	10	11	12		
Drafting	..	Y	..	Y	Y	..	..	..	..	Y	..	Y*	5	42
Begining Drafting	..	..	..	..	..	..	..	..	..	..	..	..	0	0
Advanced Drafting	..	..	..	..	..	..	..	..	..	..	..	..	0	0
Architectural Drafting	..	..	..	..	..	..	..	..	..	..	..	..	0	0
General Drafting 1-2	Y	..	Y	..	..	Y	Y	Y	Y	..	Y	..	7	58
Machine Drafting 3-4	Y	..	Y	..	..	..	Y	..	Y	..	..	..	4	33
Machine Drafting 5-6	Y	..	Y	..	..	..	Y	..	Y	..	..	..	4	33
Architectural Drafting 3-4	Y	..	Y	..	..	Y	Y	..	Y	..	Y	..	6	50
Architectural Drafting 5-6	Y	..	Y	..	..	Y	Y	..	..	..	..	..	4	33
Pre-Engineering Drafting	Y	..	Y	..	..	Y	Y	Y	..	..	..	..	5	42
Pre-Engineering Descriptive Geometry	..	..	Y	..	..	Y	Y	..	..	..	..	..	3	25

\*Y, yes.

Geometry. No high school listed drafting classes under the names of beginning, advanced or architectural drafting.

Contained in Table XIII are data in response to the remaining five questions which pertained to drafting scheduling procedures in each Fort Worth public high school. Ten instructors, or 83 per cent, had all their drafting courses mixed in each class period. Two instructors, or 17 per cent, stated only General Drafting One and Two were taught separately in one class period, and all of their advanced courses were mixed in other class periods.



TABLE XIII  
 DRAFTING SCHEDULING PROCEDURES IN EACH  
 FORT WORTH PUBLIC HIGH SCHOOL

Scheduling Procedures	Surveyed High Schools												Totals		% Yes	
	1	2	3	4	5	6	7	8	9	10	11	12	Y*	N*		
Actual Scheduling Procedure?																
-All courses mixed.....	N	Y	Y	Y	Y	Y	N	Y	Y	Y	Y	Y	10	2	83	
-Gen. Dftng. 1-2 alone, & Adv. courses mixed.....	Y	N	N	N	N	N	Y	N	N	N	N	N	2	10	17	
Is class Scheduling An Advantage?	Y	N	Y	N	N	N	Y	N	Y	N	N	N	4	8	33	
Administration Consults Instructor?	Y	N	Y	N	N	N	Y	N	Y	Y	N	N	5	7	42	
Preferred Scheduling Procedure?																
-All courses mixed.....	N	N	Y	N	N	N	N	Y	N	N	N	N	2	10	17	
-Gen. Dftng. 1-2 alone, & Adv. courses mixed.....	N	N	N	N	N	N	Y	Y	N	N	N	N	2	10	17	
-Gen. & Mach. Dftng. mixed, & Arch. Dftng. mixed.....	N	Y	N	N	N	N	N	N	N	Y	N	N	2	10	17	
-Separate Gen., Mach., & Arch. Dftng. courses.....	Y	N	N	Y	Y	Y	N	N	N	N	Y	Y	6	6	50	

\*Y, yes; N, no.

Eight instructors, or 67 per cent, indicated these present schedules to be a disadvantage. Only five instructors, or 42 per cent, indicated they were consulted by their administration concerning the scheduling at their high school.

When asked which scheduling procedure each instructor preferred, six, or 50 per cent, wanted the three areas of general, machine, and architectural drafting to be separate classes. Two instructors, or 17 per cent, wanted General Drafting One and Two to be taught alone, and the advanced courses mixed. Two instructors, or 17 per cent, wanted their architecture courses in separate classes from their other five courses. Two instructors, or 17 per cent, preferred all their classes to be mixed. It was noted from the data that only three instructors, or 25 per cent, actually were teaching the schedule they desired.

The preceding data were concerned with each instructor's classes taught per day, enrollment per class, and the scheduling of these classes. The following pertains to data concerning the drafting courses and their curriculum contents.

#### Course and Curriculum Content Data

The seven drafting courses offered in the Fort Worth Public Schools were presented to each instructor to determine if each course was taught in each high school. If the answer to the preceding question was yes, the instructors were asked to check the grade level allowed to enroll in each course, and to list the textbooks used for instruction and assignments. Every other table, beginning with Table XIV, contains the data collected for each drafting course.

The curriculum content was listed for each of the seven drafting courses listed in the Fort Worth industrial arts handbooks (1; 2). Instructors were asked to check the content areas which were covered and those which were not covered by their individual courses. The data concerning the preceding curriculum content areas can be found in every other table, beginning with Table XV.

### General Drafting

Contained in Table XIV are data in response to three questions concerning the course of General Drafting One and

TABLE XIV

INFORMATION ON GENERAL DRAFTING ONE AND  
TWO OFFERED IN EACH FORT WORTH  
PUBLIC HIGH SCHOOL

General Information	Surveyed High Schools												Totals		% Yes	
	1	2	3	4	5	6	7	8	9	10	11	12	Y*	N*		
Is General Drafting 1-2 Offered? .....	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	12	0	100
Grades Enrolled?																
9 .....	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	12	0	100
10 .....	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	12	0	100
11 .....	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	12	0	100
12 .....	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	12	0	100
Textbooks Used?																
- <u>Mechanical</u>																
<u>Drawing</u> .....	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	12	0	100
- <u>General</u>																
<u>Architectural</u>																
<u>Drawing</u> .....	N	N	N	N	N	N	N	N	Y	N	N	N	1	11	8	

\*Y, yes; N, no.

Two offered in each Fort Worth public high school. Twelve instructors, or 100 per cent, indicated that General Drafting One and Two was offered in their high schools to students of the ninth, tenth, eleventh, and twelfth grades. Twelve instructors also indicated that the textbook used was Mechanical Drawing (3). One instructor made additional use of the textbook, General Architectural Drawing (10).

Contained in Table XV are data pertaining to the curriculum content areas of General Drafting One and Two offered in each Fort Worth public high school. A total of fifty-three curriculum content areas was listed, and forty-five of these areas were incorporated within the courses of a majority of the instructors. The curriculum content areas of skill with advanced equipment, machines of industry, entrances, and sketching and shading were included by five of the instructors. The areas of American standards, sheet-metal development, posters, charts and graphs, and rendering were included by four of the instructors.

No instructor incorporated every curriculum content area. However, one did cover fifty-two areas, of 98 per cent, another included forty-nine areas, or 89 per cent. Only two instructors covered less than 50 per cent of the listed curriculum content areas.

TABLE XV

CURRICULUM CONTENT AREAS FOR GENERAL DRAFTING  
ONE AND TWO IN EACH FORT WORTH  
PUBLIC HIGH SCHOOL

Curriculum Content Areas	Surveyed High Schools												Totals		% Yes
	1	2	3	4	5	6	7	8	9	10	11	12	Y*	N*	
1. Freehand Multi- view Drwng.....	Y	Y	N	N	Y	Y	N	Y	N	Y	Y	Y	8	4	67
2. Freehand Pict- orial Drwng....	Y	Y	N	N	Y	Y	N	Y	Y	Y	Y	Y	9	3	75
3. Mech. Layout & Construction...	Y	Y	N	Y	Y	Y	Y	Y	Y	Y	Y	Y	11	1	92
4. Alphabet of Lines.....	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	12	0	100
5. Lettering.....	N	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	11	1	92
6. Dimensioning...	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	12	0	100
7. Simple Working Drawings.....	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	12	0	100
8. Oblique Proj...	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	12	0	100
9. Cavalier Proj..	Y	Y	N	Y	Y	N	Y	Y	Y	Y	Y	Y	10	2	83
10. Cabinet Proj...	Y	Y	Y	Y	Y	N	Y	Y	Y	Y	Y	Y	11	1	92
11. Isometric Proj.	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	12	0	100
12. Circles, Arcs & Ellipses.....	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	12	0	100
13. Sectioning.....	Y	Y	N	Y	N	Y	Y	Y	Y	Y	Y	Y	10	2	83
14. Aux. Views (simple).....	Y	Y	Y	Y	N	Y	Y	Y	N	Y	Y	Y	10	2	83
15. Pencil Tracings	Y	Y	N	Y	N	N	N	Y	Y	N	Y	N	6	6	50
16. Drwng. Reprod..	Y	N	N	Y	Y	N	N	Y	Y	N	Y	N	6	6	50
17. Amer. Standards	Y	N	N	Y	N	N	Y	N	N	N	Y	N	4	8	33
18. Geom. Constr...	Y	Y	Y	Y	Y	Y	Y	N	Y	N	Y	Y	10	2	83
19. Shtmtl. Devl...	Y	N	N	Y	N	N	Y	N	N	N	Y	N	4	8	33
20. Skill w/ Adv. Equipment.....	Y	N	N	Y	N	N	N	N	Y	Y	Y	N	5	7	42
21. Posters, Chts. & Graphs.....	Y	N	N	Y	N	N	N	N	N	N	Y	Y	4	8	33
22. Mach. of Indus.	Y	N	N	N	N	N	Y	Y	Y	N	Y	N	5	7	42
23. Cnvntl. Mach. Representations	Y	Y	N	Y	N	N	Y	N	Y	Y	Y	N	7	5	58
24. Symbols of Common Matls...	Y	Y	N	Y	N	Y	Y	Y	Y	Y	Y	Y	10	2	83
25. Primary Aux. Drawings.....	N	Y	N	Y	Y	Y	Y	Y	Y	Y	Y	Y	10	2	83
26. Standard Notes & Processes....	Y	Y	N	Y	N	N	Y	Y	Y	Y	N	N	7	5	58
27. Detail Drawings	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	12	0	100
28. Assembly Drwns	Y	Y	N	Y	Y	Y	Y	Y	Y	Y	Y	N	10	2	83

TABLE XV Continued

Curriculum Content Areas	Surveyed High Schools												Totals		% Yes
	1	2	3	4	5	6	7	8	9	10	11	12	Y*	N*	
29. Standard Bldg. Materials.....	Y	Y	Y	N	Y	N	Y	N	Y	Y	Y	Y	9	3	75
30. Foundations & Footings.....	Y	Y	Y	N	Y	Y	Y	N	Y	Y	Y	Y	10	2	83
31. Balloon Framing	Y	Y	N	N	Y	N	Y	N	Y	Y	Y	Y	8	4	67
32. Roofs.....	Y	Y	Y	N	Y	Y	Y	N	Y	Y	Y	Y	10	2	83
33. Windows.....	Y	Y	Y	N	Y	Y	Y	N	Y	Y	Y	Y	10	2	83
34. Entrances.....	N	Y	N	N	N	N	Y	N	Y	Y	Y	N	5	7	42
35. Plumbing.....	Y	Y	N	N	N	N	Y	N	Y	Y	Y	N	6	6	50
36. Electrical.....	Y	Y	N	N	N	Y	Y	N	Y	Y	Y	N	7	5	58
37. Heating.....	Y	Y	N	N	N	N	Y	N	Y	Y	Y	N	6	6	50
38. Hardware.....	Y	Y	N	N	N	N	Y	N	Y	Y	Y	N	6	6	50
39. Common Fixtures	Y	Y	N	N	N	N	Y	N	Y	Y	Y	N	6	6	50
40. Arch. Symbols..	N	Y	Y	N	Y	Y	Y	Y	Y	Y	Y	Y	10	2	83
41. Building Codes..	Y	Y	N	N	Y	N	Y	Y	Y	Y	Y	N	8	4	67
42. Plot Planning..	Y	Y	N	N	Y	N	Y	Y	Y	Y	Y	N	8	4	67
43. Convntl. Lines..	Y	Y	Y	N	Y	Y	Y	N	Y	Y	Y	N	9	3	75
44. Arch. Lettering	Y	Y	N	N	Y	Y	Y	Y	Y	Y	Y	Y	10	2	83
45. ASA Standards..	Y	Y	N	N	N	N	Y	N	Y	Y	Y	N	6	6	50
46. Dimensioning...	Y	Y	Y	N	Y	Y	Y	N	Y	Y	Y	Y	10	2	83
47. Sketching & Shading.....	Y	Y	N	N	N	N	Y	N	N	Y	Y	N	5	7	42
48. Arrangement of Views.....	Y	Y	Y	N	N	Y	Y	Y	Y	Y	Y	Y	10	2	83
49. Detailing.....	Y	Y	N	N	N	Y	Y	Y	Y	Y	Y	Y	9	3	75
50. 1-Pt. Perspct..	Y	Y	Y	N	Y	Y	Y	Y	Y	Y	Y	N	10	2	83
51. 2-Pt. Perspct..	Y	Y	Y	N	Y	Y	Y	Y	Y	Y	Y	N	10	2	83
52. Rendering.....	Y	N	N	N	N	N	Y	N	N	Y	Y	N	4	8	33
53. Arch. Styles...	Y	Y	N	N	N	N	Y	N	Y	Y	Y	Y	7	5	58
Total Y.....	49	46	21	25	30	29	47	30	46	46	52	30			
Total N.....	4	7	32	28	23	24	6	23	7	7	1	23			
Per cent Y.....	92	86	40	47	57	55	89	57	86	86	98	57			

\*Y, area is covered; N, area is not covered.

### Machine Drafting

Contained in Table XVI are data in response to three questions concerning the course of Machine Drafting Three

and Four offered in each Fort Worth public high school. Eleven instructors, or 92 per cent, indicated that Machine Drafting Three and Four was offered in their high schools.

TABLE XVI  
INFORMATION ON MACHINE DRAFTING THREE AND  
FOUR OFFERED IN EACH FORT WORTH  
PUBLIC HIGH SCHOOL

General Information	Surveyed High Schools												Totals		%
	1	2	3	4	5	6	7	8	9	10	11	12	Y*	N*	Yes
Is Machine Drafting 3-4 Offered? .....	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	N	Y	11	1	92
Grades Enrolled?															
9 .....	N	N	N	N	N	Y	N	N	N	N	..	N	1	10	9
10 .....	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	..	Y	11	0	100
11 .....	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	..	Y	11	0	100
12 .....	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	..	Y	11	0	100
Textbooks Used?															
- <u>Mechanical</u>															
<u>Drawing</u> .....	N	Y	N	N	N	N	N	N	N	N	..	N	1	10	9
- <u>Technical</u>															
<u>Drawing</u> .....	Y	Y	N	Y	Y	Y	Y	Y	Y	Y	..	Y	10	1	91
- <u>Engineering</u>															
<u>Drawing</u> .....	N	N	Y	N	N	N	N	N	N	N	..	Y	2	9	18

\*Y, yes; N, no.

One high school offered Machine Drafting Three and Four to students in the ninth grade. Eleven high schools offered Machine Drafting Three and Four to tenth, eleventh and twelfth grade students.

Ten instructors indicated that they used the Technical Drawing textbook (5). Two instructors used the Engineering

Drawing textbook (4). Only one instructor used the Mechanical Drawing textbook (3).

Contained in Table XVII are data pertaining to the curriculum content areas of Machine Drafting Three and Four offered in each Fort Worth public high school. There was a

TABLE XVII  
CURRICULUM CONTENT AREAS FOR MACHINE DRAFTING  
THREE AND FOUR IN EACH FORT WORTH  
PUBLIC HIGH SCHOOL

Curriculum Content Areas	Surveyed High Schools												Totals		% Yes
	1	2	3	4	5	6	7	8	9	10	11	12	Y*	N*	
1. Instrumt. Skls.	Y	Y	N	Y	Y	Y	Y	N	Y	N	**	Y	8	3	73
2. Lettering.....	Y	Y	N	N	Y	Y	N	N	Y	N	..	Y	6	5	55
3. Machine Draftng Symbols.....	Y	Y	N	Y	Y	Y	Y	Y	Y	N	..	Y	9	2	82
4. Screw Threads..	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	..	Y	11	0	100
5. Pipe Threads...	Y	Y	Y	Y	Y	N	Y	N	Y	N	..	N	7	4	64
6. Fasteners.....	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	..	Y	11	0	100
7. Structrl. Steel	Y	Y	N	Y	Y	N	N	Y	Y	Y	..	Y	8	3	73
8. Aeronaut. Dftng	Y	N	N	N	N	N	N	Y	Y	N	..	N	3	8	27
9. Wkng. Drawing..	Y	Y	Y	Y	Y	Y	Y	N	Y	Y	..	Y	10	1	91
10. Detail Drawing.	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	..	Y	11	0	100
11. Assembly Drwng.	Y	Y	N	Y	Y	Y	Y	Y	Y	Y	..	Y	10	1	91
12. Tracings.....	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	..	Y	11	0	100
13. Reproduction...	Y	Y	N	Y	Y	Y	Y	Y	Y	Y	..	Y	10	1	91
Total Y.....	13	12	6	11	12	10	10	9	13	8	..	11			
Total N.....	0	1	7	2	1	3	3	4	0	5	..	2			
Per cent Y.....	100	92	46	85	92	77	77	69	100	62	..	85			

\*Y, area is covered; N, area is not covered.

\*\*Course not offered at this school.



total of thirteen curriculum content areas listed, and no area was covered by all instructors. Twelve of these areas were incorporated within the courses of a majority of the instructors. The curriculum content area of aeronautical drafting was covered by only three of the instructors.

Two instructors included all thirteen curriculum content areas, or 100 per cent, and two instructors covered twelve, or 92 per cent. Only one instructor incorporated less than 50 per cent. That instructor included six curriculum content areas, or 46 per cent.

Contained in Table XVIII are data in response to three questions concerning the course of Machine Drafting

TABLE XVIII  
INFORMATION ON MACHINE DRAFTING FIVE AND SIX OFFERED IN EACH FORT WORTH PUBLIC HIGH SCHOOL

General Information	Surveyed High Schools												Totals		% Yes
	1	2	3	4	5	6	7	8	9	10	11	12	Y*	N*	
Is Machine Drafting 5-6 Offered? .....	Y	Y	N	Y	Y	Y	Y	Y	Y	Y	N	Y	10	2	83
Grades Enrolled?															
10 .....	N	N	..	N	N	N	N	N	N	Y	..	N	1	9	10
11 .....	Y	Y	..	Y	Y	Y	Y	Y	Y	Y	..	Y	10	0	100
12 .....	Y	Y	..	Y	Y	Y	Y	Y	Y	Y	..	Y	10	0	100
Textbooks Used?															
- <u>Technical</u>															
<u>Drawing</u> .....	Y	Y	..	Y	Y	Y	Y	Y	Y	Y	..	Y	10	0	100
- <u>Mechanical</u>															
<u>Drawing</u> .....	N	Y	..	N	N	N	N	N	N	N	..	N	1	9	10
- <u>Engineering</u>															
<u>Drawing</u> .....	N	Y	..	N	N	N	N	N	Y	N	..	N	2	8	20

\*Y, yes; N, no.

Five and Six offered in each Fort Worth public high school. Ten instructors, or 83 per cent, indicated that Machine Drafting Five and Six was offered in their high schools.

Machine Drafting Five and Six was not offered to students in the ninth grade in any high school. One high school offered Machine Drafting Five and Six to tenth grade students. Ten high schools offered Machine Drafting Five and Six to eleventh and twelfth grade students.

Ten instructors indicated that they used the Technical Drawing textbook (5). Two instructors used the Engineering Drawing textbook (4). Only one instructor used the Mechanical Drawing textbook (3).

Contained in Table XIX are data pertaining to the curriculum content areas of Machine Drafting Five and Six offered in each Fort Worth public high school. There was a total of nine curriculum content areas listed. No area was covered by all of the instructors. Eight of the curriculum content areas were incorporated within the courses of a majority of the instructors. The area of standard machine book study was included by five of the instructors.

Five instructors covered all nine curriculum content areas, or 100 per cent. Three instructors included seven, or 78 per cent. Only two instructors incorporated less than 50 per cent. One instructor covered four curriculum

TABLE XIX

CURRICULUM CONTENT AREAS FOR MACHINE DRAFTING  
FIVE AND SIX IN EACH FORT WORTH  
PUBLIC HIGH SCHOOL

Curriculum Content Areas	Surveyed High Schools												Totals		% Yes
	1	2	3	4	5	6	7	8	9	10	11	12	Y*	N*	
1. Adv. Details....	Y	Y	**	Y	Y	Y	Y	Y	Y	N	**	Y	9	1	90
2. Adv. Assemblies.	Y	Y	..	Y	Y	Y	Y	Y	Y	N	..	Y	9	1	90
3. Adv. Multiview..	Y	Y	..	Y	Y	N	Y	Y	Y	Y	..	Y	9	1	90
4. Adv. Pictorials.	Y	Y	..	Y	Y	N	Y	Y	Y	N	..	Y	8	2	80
5. Study Standard Mach. Handbooks.	N	Y	..	N	Y	N	Y	Y	Y	N	..	N	5	5	50
6. Elem. Mach. Design	Y	Y	..	Y	Y	N	Y	Y	Y	Y	..	N	8	2	80
7. Tolerances.....	Y	Y	..	Y	Y	N	Y	Y	Y	Y	..	Y	9	1	90
8. Shop Processes..	Y	Y	..	N	Y	N	Y	Y	Y	N	..	Y	7	3	70
9. Mach. Meas. Tools	N	Y	..	Y	Y	N	Y	Y	Y	Y	..	Y	8	2	80
Total Y.....	7	9	..	7	9	2	9	9	9	4	..	7			
Total N.....	2	0	..	2	0	7	0	0	0	5	..	2			
Per cent Y.....	78	100	..	78	100	22	100	100	100	44	..	78			

\*Y, area is covered; N, area is not covered.

\*\*Course not offered at these schools.

content areas, or 44 per cent. The other instructor covered only two curriculum content areas, or 22 per cent.

#### Architectural Drafting

Contained in Table XX are data in response to three questions concerning the course of Architectural Drafting Three and Four offered in each Fort Worth public high school. Twelve instructors, or 100 per cent, indicated that Architectural Drafting Three and Four was offered in their high schools.

TABLE XX  
 INFORMATION ON ARCHITECTURAL DRAFTING THREE  
 AND FOUR OFFERED IN EACH FORT WORTH  
 PUBLIC HIGH SCHOOL

General Information	Surveyed High Schools												Totals		% Yes
	1	2	3	4	5	6	7	8	9	10	11	12	Y*	N*	
Is Architectural Drafting 3-4 Offered? .....	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	12	0	100
Grades Enrolled?															
10 .....	Y	Y	Y	N	Y	Y	Y	Y	N	N	Y	Y	9	3	75
11 .....	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	12	0	100
12 .....	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	12	0	100
Textbooks Used?															
-General Architectural Drawing .....	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	N	Y	11	1	92
-Architectural Drafting and Design .....	N	N	N	N	N	N	N	N	N	N	Y	N	1	11	8
-Architecture-Design-Engineering Drawing .....	N	Y	N	N	N	N	N	N	N	N	N	N	1	11	8

\*Y, yes; N, no.

Architectural Drafting Three and Four was not offered to students in the ninth grade in any high school. Nine high schools offered Architectural Drafting Three and Four to tenth grade students. Twelve high schools offered Architectural Drafting Three and Four to eleventh and twelfth grade students.

Eleven instructors indicated that they used the General Architectural Drawing textbook (10). One instructor used the Architectural Drafting and Design textbook (6),

and one used the Architecture, Design, Engineering  
Drawing textbook (9).

Contained in Table XXI are data pertaining to the curriculum content areas of Architectural Drafting Three and Four offered in each Fort Worth public high school.

TABLE XXI

CURRICULUM CONTENT AREAS FOR ARCHITECTURAL  
DRAFTING THREE AND FOUR IN EACH  
FORT WORTH PUBLIC HIGH SCHOOL

Curriculum Content Areas	Surveyed High Schools												Totals		% Yes
	1	2	3	4	5	6	7	8	9	10	11	12	Y*	N*	
1. Drafting Tools & Instruments..	Y	Y	N	N	Y	Y	Y	Y	Y	N	Y	N	8	4	67
2. Develop Lettering Style.....	Y	Y	N	Y	Y	Y	Y	Y	Y	N	Y	Y	10	2	83
3. Arch. Symbols..	Y	Y	Y	Y	Y	Y	Y	Y	Y	N	Y	Y	11	1	92
4. Doors & Windows	Y	Y	N	Y	Y	Y	Y	Y	Y	N	Y	Y	10	2	83
5. Const. Matls...	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	12	0	100
6. Found. & Fitngs	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	12	0	100
7. Wall Sections..	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	12	0	100
8. Framing.....	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	12	0	100
9. Cornice Detail.	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	12	0	100
10. Roof Constr....	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	12	0	100
11. Stair Constr...	Y	Y	N	N	Y	Y	Y	Y	Y	Y	Y	N	9	3	75
12. Firplc. Constr.	Y	Y	N	Y	Y	Y	Y	Y	Y	Y	Y	Y	11	1	92
13. Cabnet. Constr.	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	12	0	100
14. Rsdnc. Bldg....	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	12	0	100
a. Floor Plans.	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	12	0	100
b. Found. Plans.	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	12	0	100
c. Roof Plans..	Y	Y	N	Y	Y	Y	Y	Y	Y	Y	Y	Y	11	1	92
d. Elevations..	Y	Y	Y	Y	Y	N	Y	Y	Y	Y	Y	Y	11	1	92
e. Tracings & Blueprints..	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	12	0	100
f. Rndrng. Tech	Y	Y	Y	Y	Y	N	Y	Y	Y	Y	Y	Y	11	1	92
g. Perspectives	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	12	0	100
h. Matl. Estims	Y	Y	N	Y	Y	N	Y	Y	Y	Y	Y	N	9	3	75
Total Y .....	22	22	15	20	22	19	22	22	22	18	22	19			
Total N .....	0	0	7	2	0	3	0	0	0	4	0	3			
Per cent Y.....	100	100	68	91	100	82	100	100	100	82	100	68			

\*Y, area is covered; N, area is not covered.

There was a total of twenty-two curriculum content areas listed. Twelve of the areas were covered by 100 per cent of the instructors. All areas were included by a majority of the instructors. Eight instructors included the area of drafting tools and instruments which received the least coverage.

Seven instructors covered all twenty-two curriculum content areas, or 100 per cent, and one instructor included twenty, or 91 per cent. One instructor incorporated 86 per cent, two 82 per cent, and another 68 per cent of the curriculum content areas.

Contained in Table XXII are data in response to three questions concerning the course of Architectural Drafting Five and Six offered in each Fort Worth public high school. Ten instructors, or 83 per cent, indicated that Architectural Drafting Five and Six was offered in their high schools.

Architectural Drafting Five and Six was not offered to students in the ninth grade in any high school. One high school offered architectural drafting to tenth grade students. Nine high schools offered Architectural Drafting Five and Six to eleventh grade students. All ten high schools offered architectural drafting to twelfth grade students.

Ten instructors indicated that they used the General Architectural Drawing textbook (10). Two instructors made

TABLE XXII  
 INFORMATION ON ARCHITECTURAL DRAFTING  
 FIVE AND SIX OFFERED IN EACH FORT  
 WORTH PUBLIC HIGH SCHOOL

General Information	Surveyed High Schools												Totals		% Yes
	1	2	3	4	5	6	7	8	9	10	11	12	Y*	N*	
Is Architectural Drafting 5-6 Offered? .....	Y	Y	Y	Y	Y	Y	Y	Y	N	Y	N	Y	10	2	83
Grades Enrolled?															
10 .....	N	Y	N	N	N	N	N	N	..	N	..	N	1	9	10
11 .....	N	Y	Y	Y	Y	Y	Y	Y	..	Y	..	Y	9	1	90
12 .....	Y	Y	Y	Y	Y	Y	Y	Y	..	Y	..	Y	10	0	100
Textbooks Used?															
-General Architectural Drawing .....	Y	Y	Y	Y	Y	Y	Y	Y	..	Y	..	Y	10	0	100
-Architecture Design and Engineering Drawing .....	N	Y	Y	N	N	N	N	N	..	N	..	N	2	8	20

\*Y, yes; N, no.

additional use of the Architecture Design and Engineering Drawing textbook (9).

Contained in Table XXIII are data pertaining to the curriculum content areas of Architectural Drafting Five and Six offered in each Fort Worth public high school. A total of thirty curriculum content areas was listed. Twelve of the areas were covered by 100 per cent of the instructors. All thirty of the areas were included by a majority of the instructors. The least incorporated area was that of scale models which was covered by five of the instructors.

TABLE XXIII

CURRICULUM CONTENT AREAS FOR ARCHITECTURAL  
DRAFTING FIVE AND SIX IN EACH FORT  
WORTH PUBLIC HIGH SCHOOL

Curriculum Content Areas	Surveyed High Schools												Totals		%
	1	2	3	4	5	6	7	8	9	10	11	12	Y*	N*	Yes
1. Arch. Tms. & Smbls	Y	Y	N	N	Y	Y	Y	N	**	N	**	Y	6	4	60
2. Arch. Prncpls..	Y	Y	Y	N	Y	Y	Y	Y	..	Y	..	Y	9	1	90
3. Mech. of Constr	Y	Y	Y	N	Y	Y	Y	Y	..	Y	..	N	8	2	80
4. Orig. in Design	N	Y	Y	N	Y	N	Y	Y	..	Y	..	Y	7	3	70
5. Know. Arch. Ord	Y	Y	Y	Y	Y	N	Y	Y	..	Y	..	Y	9	1	90
6. Dvlp. Philos. Dsgn. & Wkmshp.	Y	Y	Y	Y	Y	N	Y	Y	..	Y	..	N	8	2	80
7. Study Difs. in Rsdncl. & Comcl Constr.....	Y	Y	Y	N	Y	Y	Y	Y	..	Y	..	Y	9	1	90
8. Study Laws Re- lating to Arch.	Y	Y	Y	N	Y	N	Y	Y	..	Y	..	N	7	3	70
9. Study Crnt. Cons	Y	Y	Y	Y	Y	Y	Y	Y	..	N	..	Y	9	1	90
10. Small Business.	Y	Y	Y	Y	Y	Y	Y	Y	..	N	..	Y	9	1	90
a. Flr. Plan Skchs	Y	Y	Y	Y	Y	Y	Y	Y	..	Y	..	Y	10	0	100
b. Elev. Sktchs..	Y	Y	Y	Y	Y	Y	Y	Y	..	Y	..	Y	10	0	100
c. Perspc. Sktch..	Y	Y	Y	Y	Y	Y	Y	Y	..	Y	..	N	9	1	90
d. 1 & 2 Flr. Plan	Y	Y	Y	Y	Y	Y	Y	Y	..	Y	..	Y	10	0	100
e. Wall Section..	Y	Y	Y	Y	Y	Y	Y	Y	..	Y	..	Y	10	0	100
f. Stair Detail..	Y	Y	N	Y	Y	Y	Y	Y	..	Y	..	Y	9	1	90
g. Elevations....	Y	Y	Y	N	Y	Y	Y	Y	..	Y	..	Y	9	1	90
h. Specifications	Y	Y	Y	Y	Y	N	Y	Y	..	Y	..	N	8	2	80
i. Cost.....	Y	Y	N	Y	Y	N	Y	Y	..	Y	..	N	7	3	70
j. Perspct. 1-pt.	Y	Y	N	Y	Y	Y	Y	Y	..	Y	..	Y	9	1	90
k. Perspct. 2-pt.	N	Y	Y	Y	Y	Y	Y	Y	..	Y	..	Y	9	1	90
11. Plng. Pub. Bldg..	Y	Y	Y	Y	Y	Y	Y	Y	..	Y	..	Y	10	0	100
a. Flr. Plan Sktch	Y	Y	Y	Y	Y	Y	Y	Y	..	Y	..	Y	10	0	100
b. Elev. Sktch...	Y	Y	Y	Y	Y	Y	Y	Y	..	Y	..	Y	10	0	100
c. Perspc. Sktch.	Y	Y	Y	Y	Y	Y	Y	Y	..	Y	..	Y	10	0	100
d. Wall Section..	Y	Y	Y	Y	Y	Y	Y	Y	..	Y	..	Y	10	0	100
e. Detail Sheet..	Y	Y	Y	Y	Y	Y	Y	Y	..	Y	..	Y	10	0	100
f. Perspective...	Y	Y	Y	Y	Y	Y	Y	Y	..	Y	..	Y	10	0	100
g. Found. Plan...	Y	Y	Y	Y	Y	Y	Y	Y	..	Y	..	Y	10	0	100
12. Model to Scale with Landscape.	Y	Y	N	Y	Y	N	N	N	..	Y	..	N	5	5	50
Total Y.....	28	30	25	23	30	23	29	28	::	27	::	23			
Total N.....	2	0	5	7	0	7	1	2	::	3	::	7			
Per cent Y.....	93	100	83	77	100	77	97	93	::	90	::	77			

\*Y, area is covered; N, area is not covered.  
\*\*Courses not offered at these schools.



Two instructors covered all thirty curriculum content areas, or 100 per cent. All the remaining eight instructors covered a majority of the curriculum content areas.

### Pre-Engineering Drafting

Contained in Table XXIV are data in response to the three questions concerning the course of Pre-Engineering Drafting One and Two offered in each Fort Worth public high school. Only six instructors, or 50 per cent, indicated that Pre-Engineering Drafting One and Two was offered in their high schools.

TABLE XXIV

INFORMATION ON PRE-ENGINEERING DRAFTING  
ONE AND TWO OFFERED IN EACH FORT  
WORTH PUBLIC HIGH SCHOOL

General Information	Surveyed High Schools												Totals		% Yes
	1	2	3	4	5	6	7	8	9	10	11	12	Y*	N*	
Is Pre-Engineering Drafting 1-2 Offered? .....	Y	Y	N	Y	Y	N	N	Y	N	Y	N	N	6	6	50
Grades Enrolled?															
10 .....	N	N	..	N	N	..	..	Y	..	Y	..	..	2	4	33
11 .....	Y	N	..	Y	Y	..	..	Y	..	Y	..	..	5	1	83
12 .....	Y	Y	..	Y	Y	..	..	Y	..	Y	..	..	6	0	100
Textbooks Used?															
- <u>Graphics for Engineers</u> .....	Y	N	..	Y	Y	..	..	Y	..	Y	..	..	5	1	83
- <u>Technical Drawing</u> .....	N	Y	..	N	N	..	..	N	..	N	..	..	1	5	17

\*Y, yes; N, no.

Pre-Engineering Drafting One and Two was not offered to students in the ninth grade in any high school. Two high

schools offered Pre-Engineering Drafting One and Two to tenth grade students. Five high schools offered Pre-Engineering Drafting One and Two to eleventh grade students. All six high schools offered Pre-Engineering Drafting One and Two to the twelfth grade students.

Five instructors indicated that they used the Graphics for Engineers textbook (7). One instructor used the Technical Drawing textbook (5).

Contained in Table XXV are data pertaining to the curriculum content areas of Pre-Engineering Drafting One and Two offered in each Fort Worth public high school. A total of forty curriculum content areas was listed. All forty of these areas were covered by a majority of the ten

TABLE XXV

CURRICULUM CONTENT AREAS FOR PRE-ENGINEERING  
DRAFTING ONE AND TWO IN EACH FORT  
WORTH PUBLIC HIGH SCHOOL

Curriculum Content Areas	Surveyed High Schools												Totals		% Yes
	1	2	3	4	5	6	7	8	9	10	11	12	Y*	N*	
1. Lettering.....	Y	Y	**	Y	Y	**	**	Y	**	Y	**	**	5	1	83
2. Dftng. Machine.	Y	N	..	Y	Y	..	..	Y	..	N	..	..	4	2	67
3. Instrumt. Dwng.	Y	Y	..	Y	Y	..	..	Y	..	Y	..	..	6	0	100
4. Ortho. Project.	Y	Y	..	Y	Y	..	..	Y	..	Y	..	..	6	0	100
5. Aux. Views.....	Y	Y	..	Y	Y	..	..	Y	..	Y	..	..	6	0	100
6. Oblique Views (2ndry. aux.)..	Y	Y	..	Y	Y	..	..	Y	..	Y	..	..	6	0	100
7. Revolutions....	Y	Y	..	Y	Y	..	..	Y	..	Y	..	..	6	0	100
8. Sectnl. Views..	Y	Y	..	Y	Y	..	..	Y	..	Y	..	..	6	0	100
9. Intersections..	Y	Y	..	Y	Y	..	..	Y	..	Y	..	..	6	0	100
10. Developments...	Y	Y	..	Y	Y	..	..	Y	..	Y	..	..	6	0	100
11. Isomet. Project	Y	Y	..	Y	Y	..	..	Y	..	Y	..	..	6	0	100
12. Diamet. Project	Y	N	..	Y	Y	..	..	Y	..	Y	..	..	5	1	83
13. Trimet. Project	Y	N	..	Y	Y	..	..	Y	..	Y	..	..	5	1	83
14. Axonom. Project	Y	N	..	Y	Y	..	..	Y	..	Y	..	..	5	1	83

TABLE XXV Continued

Curriculum Content Areas	Surveyed High Schools												Totals		%
	1	2	3	4	5	6	7	8	9	10	11	12	Y*	N*	Yes
15. Asmbly. & Expld View Dwng.....	Y	Y	**	Y	Y	**	**	Y	**	Y	**	**	6	0	100
16. Pict. Sktchng..	Y	Y	..	Y	Y	..	..	Y	..	Y	..	..	6	0	100
17. Pict. Spc. Dwng	Y	Y	..	Y	Y	..	..	Y	..	Y	..	..	6	0	100
18. Oblique Project	Y	Y	..	Y	Y	..	..	Y	..	Y	..	..	6	0	100
19. Cavalier Proj..	Y	N	..	Y	Y	..	..	Y	..	N	..	..	4	2	67
20. Cabinet Proj...	Y	N	..	Y	Y	..	..	Y	..	Y	..	..	5	1	83
21. Perspct. Dwng..	Y	Y	..	Y	Y	..	..	Y	..	Y	..	..	6	0	100
22. Shading.....	Y	N	..	N	Y	..	..	Y	..	N	..	..	3	3	50
23. Coloring.....	Y	N	..	N	Y	..	..	Y	..	N	..	..	3	3	50
24. Detail Drawing.	Y	N	..	Y	Y	..	..	Y	..	Y	..	..	5	1	83
25. Dimensioning...	Y	N	..	Y	Y	..	..	Y	..	N	..	..	4	2	67
26. Tech. Sketch...	Y	N	..	N	Y	..	..	Y	..	Y	..	..	4	2	67
27. Shop Processes.	Y	N	..	N	Y	..	..	Y	..	N	..	..	3	3	50
28. Materials.....	Y	N	..	Y	Y	..	..	Y	..	Y	..	..	5	1	83
29. Meas. Devices..	Y	N	..	Y	Y	..	..	Y	..	Y	..	..	5	1	83
30. Cam & Gear.....	Y	N	..	Y	Y	..	..	Y	..	Y	..	..	5	1	83
31. Structural.....	Y	N	..	Y	Y	..	..	Y	..	Y	..	..	5	1	83
32. Topographic....	Y	N	..	Y	Y	..	..	Y	..	N	..	..	4	2	67
33. Aeronautical...	Y	N	..	N	Y	..	..	Y	..	N	..	..	3	3	50
34. Electrical.....	Y	N	..	Y	Y	..	..	Y	..	Y	..	..	5	1	83
35. Pipe.....	Y	N	..	Y	Y	..	..	Y	..	Y	..	..	5	1	83
36. Patent.....	Y	N	..	N	Y	..	..	Y	..	Y	..	..	4	2	67
37. Welding.....	Y	N	..	Y	Y	..	..	Y	..	Y	..	..	5	1	83
38. Sheet Metal....	Y	N	..	Y	Y	..	..	Y	..	Y	..	..	5	1	83
39. Architectural..	Y	N	..	N	Y	..	..	Y	..	Y	..	..	4	2	67
40. Reproduction...	Y	Y	..	Y	Y	..	..	Y	..	Y	..	..	6	0	100
Total Y.....	40	16	..	33	40	..	..	40	..	31	..	..			
Total N.....	0	24	..	7	0	..	..	0	..	9	..	..			
Per cent Y.....	100	40	..	87	100	..	..	100	..	78	..	..			

\*Y, area is covered; N, area is not covered.

\*\*Course not offered at these schools.

instructors. The areas of shading, coloring, shop processes, and aeronautical drafting were the least included with only three of the instructors covering these content areas.

Three instructors incorporated all forty curriculum content areas, or 100 per cent. One instructor covered thirty-one areas, or 78 per cent, and another only sixteen areas, or 40 per cent.

Pre-Engineering Descriptive Geometry

Contained in Table XXVI are data in response to the three questions concerning the course of Pre-Engineering Descriptive Geometry One and Two offered in each Fort Worth public high school. Only three instructors, or 25 per cent, indicated that Pre-Engineering Descriptive Geometry One and Two was offered in their high schools.

TABLE XXVI

INFORMATION ON PRE-ENGINEERING DESCRIPTIVE  
GEOMETRY ONE AND TWO OFFERED IN EACH  
FORT WORTH PUBLIC HIGH SCHOOL

General Information	Surveyed High Schools												Totals		% Yes
	1	2	3	4	5	6	7	8	9	10	11	12	Y*	N*	
Is Pre-Engineering Descriptive Geometry 1-2 Offered? .....	N	N	Y	N	N	Y	Y	N	N	N	N	N	3	9	25
Grade Enrolled? 12.....	..	..	Y	..	..	Y	Y	..	..	..	..	..	3	0	100
Textbook Used? -Descriptive Geometry .....	..	..	Y	..	..	Y	Y	..	..	..	..	..	3	0	100

\*Y, yes; N, no.

All three high schools indicated that Pre-Engineering Descriptive Geometry One and Two was only offered to students

of the twelfth grade, and indicated that they used the Descriptive Geometry textbook (8).

Contained in Table XXVII are data pertaining to the curriculum content areas of Pre-Engineering Descriptive Geometry One and Two offered in each Fort Worth public high school. A total of twenty-nine curriculum content areas was listed. Twenty-five of these areas were covered by 100 per cent of the instructors. The areas of principal dimensions, strike and dip, and intersection of solids were included by two of the instructors. Only one instructor incorporated the area of cuts and fills.

TABLE XXVII

CURRICULUM CONTENT AREAS FOR PRE-ENGINEERING  
DESCRIPTIVE GEOMETRY ONE AND TWO IN EACH  
FORT WORTH PUBLIC HIGH SCHOOL

Curriculum Content Areas	Surveyed High Schools												Totals		%
	1	2	3	4	5	6	7	8	9	10	11	12	Y*	N*	Yes
1. Locating Points	**	**	Y	**	**	Y	Y	**	**	**	**	**	3	0	100
2. Ortho. Proj....	..	..	Y	..	..	Y	Y	..	..	..	..	..	3	0	100
3. Prin. Dimens...	..	..	N	..	..	Y	Y	..	..	..	..	..	2	1	67
4. Prin. Planes...	..	..	Y	..	..	Y	Y	..	..	..	..	..	3	0	100
5. Prin. Lines....	..	..	Y	..	..	Y	Y	..	..	..	..	..	3	0	100
6. Aux. Views-Prmy	..	..	Y	..	..	Y	Y	..	..	..	..	..	3	0	100
7. Refrnc. Planes.	..	..	Y	..	..	Y	Y	..	..	..	..	..	3	0	100
8. Visibility of Lines.....	..	..	Y	..	..	Y	Y	..	..	..	..	..	3	0	100
9. Normal Views of Planes.....	..	..	Y	..	..	Y	Y	..	..	..	..	..	3	0	100
10. Edge Views of Planes.....	..	..	Y	..	..	Y	Y	..	..	..	..	..	3	0	100
11. Oblique Views (see aux.).....	..	..	Y	..	..	Y	Y	..	..	..	..	..	3	0	100
12. T.L. of Lines..	..	..	Y	..	..	Y	Y	..	..	..	..	..	3	0	100
13. End View Lines.	..	..	Y	..	..	Y	Y	..	..	..	..	..	3	0	100
14. Oblique Lines..	..	..	Y	..	..	Y	Y	..	..	..	..	..	3	0	100
15. Intrsectng Line.	..	..	Y	..	..	Y	Y	..	..	..	..	..	3	0	100
16. Parallel Lines.	..	..	Y	..	..	Y	Y	..	..	..	..	..	3	0	100

TABLE XXVII Continued

Curriculum Content Areas	Surveyed High Schools												Totals		% Yes
	1	2	3	4	5	6	7	8	9	10	11	12	Y*	N*	
17. Strike & Dip...	**	**	Y	**	**	N	Y	**	**	**	**	**	2	1	67
18. Intersection of Line & Plane...	..	..	Y	..	..	Y	Y	..	..	..	..	..	3	0	100
19. Intersection of Two Planes.....	..	..	Y	..	..	Y	Y	..	..	..	..	..	3	0	100
20. Cutting Plane..	..	..	Y	..	..	Y	Y	..	..	..	..	..	3	0	100
21. Parallel Plane..	..	..	Y	..	..	Y	Y	..	..	..	..	..	3	0	100
22. Perpendicular..	..	..	Y	..	..	Y	Y	..	..	..	..	..	3	0	100
23. Angle Between Planes.....	..	..	Y	..	..	Y	Y	..	..	..	..	..	3	0	100
24. Revolution.....	..	..	Y	..	..	Y	Y	..	..	..	..	..	3	0	100
25. Intersection of Solids.....	..	..	N	..	..	Y	Y	..	..	..	..	..	2	1	67
26. Developments...	..	..	Y	..	..	Y	Y	..	..	..	..	..	3	0	100
27. Cuts & Fills...	..	..	N	..	..	N	Y	..	..	..	..	..	1	2	33
28. Slope of Line..	..	..	Y	..	..	Y	Y	..	..	..	..	..	3	0	100
29. Bearing of Line	..	..	Y	..	..	Y	Y	..	..	..	..	..	3	0	100
Total Y .....	..	..	26	..	..	27	29	..	..	..	..	..			
Total N .....	..	..	3	..	..	2	0	..	..	..	..	..			
Per cent Y .....	..	..	90	..	..	93	100	..	..	..	..	..			

\*Y, area is covered; N, area is not covered.

\*\*Courses are not offered at these schools.

One instructor covered all twenty-nine curriculum content areas, or 100 per cent. Another instructor included twenty-seven areas, or 93 per cent; and another incorporated twenty-six areas, or 90 per cent.

Information was presented in this chapter to display the data found with the instrument in a way that would show any variations from school to school concerning the drafting courses; and whether or not any school deviated from the prescribed courses and their curriculum content areas which

were established by the Fort Worth Public Schools. The variations can be seen by showing the range of the percentages which the instructors covered each of the prescribed course curriculum content areas. An average of 71 per cent of the General Drafting One and Two curriculum content areas was included by the instructors whose coverage varied from 40 to 98 per cent. An average of 80 per cent of the Machine Drafting Three and Four curriculum content areas was included by the instructors whose coverage varied from 46 to 100 per cent. An average of 80 per cent of the Machine Drafting Five and Six curriculum content areas was included by the instructors whose coverage varied from 22 to 100 per cent. An average of 93 per cent of the Architectural Drafting Three and Four curriculum content areas was included by the instructors whose coverage varied from 68 to 100 per cent. An average of 89 per cent of the Architectural Drafting Five and Six curriculum content areas was included by the instructors whose coverage varied from 77 to 100 per cent. An average of 84 per cent of the Pre-Engineering Drafting One and Two curriculum content areas was included by the instructors whose coverage varied from 40 to 100 per cent. An average of 94 per cent of the Pre-Engineering Descriptive Geometry One and Two curriculum content areas was included by the instructors whose coverage varied from 90 to 100 per cent. Presented in the following chapter is a summary along with some findings and recommendations.

## CHAPTER BIBLIOGRAPHY

1. Fort Worth Public Schools, Industrial Arts: A Handbook For Teachers Grades 7-9, Curriculum Bulletin Number 210.1 (Fort Worth, Texas, 1962), pp. 29-40.
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## CHAPTER IV

### SUMMARY, FINDINGS, AND RECOMMENDATIONS

#### Summary

One purpose of this study was to review and compare the courses and content of the drafting curriculums listed in the bulletins of the TEA and the Fort Worth Public Schools. A second purpose was to study drafting scheduling procedures in each Fort Worth public high school. A third purpose was to study the courses and contents of the drafting curriculums offered in each of the Fort Worth public high schools. A fourth purpose was to determine if there were variations in the drafting curriculum content from one Fort Worth public high school to another. Finally, a fifth purpose was to offer suggestions and recommendations for improving the curriculum, if weaknesses were evident when it was evaluated by acceptable criteria (4, 5, and 6).

The study was limited to the industrial arts drafting programs conducted for students in grades nine, ten, eleven, and twelve by the drafting instructors in charge of these programs in the Fort Worth public high schools during the 1972-1973 school year. The study was also limited to the drafting courses listed in the TEA and Fort Worth Public Schools bulletins (1, 2, 4, 5, and 6).

An instrument was designed to obtain the needed information. It was mailed to the thirteen drafting instructors of the thirteen Fort Worth public high schools. The instrument was completed and returned by twelve, or 92 per cent, of the instructors.

Several studies were found with information relating to drafting curriculums. Studies were also found which related to industrial arts programs in the Fort Worth Public Schools containing information concerning drafting. The most closely related study was completed in 1959 by Payne (3). Payne's study was concerned with the organization and administration of the industrial arts programs in the junior high schools in Fort Worth, Texas, with a major emphasis on the curriculum of the programs. Payne found that procedures of instruction, and the time spent on various subjects and areas varied greatly from school to school. The greatest degree of variance was in the area of drafting. One conclusion was that the curriculums should be similar to permit student transfer from school to school without losing credits or being behind in courses.

The drafting curriculums listed by the TEA and the Fort Worth Public Schools for drafting courses taught in grades nine, ten, eleven, and twelve are compared in Chapter II.

The data received from the drafting instructors concerning the drafting courses they taught at their particular

high schools are presented in Chapter III. The information was tallied and presented in tabular form. The data indicate where variances occur concerning the drafting courses and their curriculum contents from school to school in the Fort Worth public high schools.

Chapter IV contains the summary, findings, and recommendations based on the findings of the study.

### Findings

Based on the data obtained in this study the following findings are presented:

1. The Fort Worth Public Schools bulletins (1, 2) from which the drafting curriculums are taken were printed in 1962 and 1963.

2. The state of Texas adopted new textbooks for all high school drafting classes in 1970.

3. The drafting courses listed by the TEA which are also listed by the Fort Worth Public Schools have identical names, grade placement, credit value, and prerequisites. The only differences occurred in the course numbers.

4. The only drafting course listed by the TEA and not listed by the Fort Worth Public Schools was Technical Drafting I-II.

5. The drafting course objectives listed by the TEA and the Fort Worth Public Schools compared closely.

6. The drafting course curriculum contents listed by the TEA were included in the curriculum contents of the Fort Worth Public Schools and in some cases augmented.

7. The average drafting instructor taught 3.9 classes per day.

8. The average drafting class contained twenty-six students.

9. The Fort Worth public high schools deviated from school to school when listing drafting courses for scheduling purposes.

10. Less than one-fifth of the drafting instructors reported having any drafting classes with nonmixed subject matter.

11. All drafting instructors reported having drafting classes with mixed subject matter.

12. One third of the drafting instructors reported their present class subject scheduling to be an advantage.

13. Less than half of the drafting instructors were consulted by their administrators concerning their schedules.

14. One fourth of the drafting instructors had their class subjects scheduled to their preferences.

15. Of the seven drafting courses listed in the Fort Worth Public Schools bulletins (1, 2) only General Drafting One and Two and Architectural Drafting Three and Four were offered in all Fort Worth public high schools.

16. The prescribed grade placements that were to coincide with each drafting course deviated from the TEA and the Fort Worth Public Schools in some Fort Worth public high schools.

17. A uniform textbook was not used in all schools for each drafting course.

18. The drafting instructors covered an average of 71 per cent of the listed curriculum content of General Drafting One and Two, ranging from 40 to 98 per cent.

19. The drafting instructors covered an average of 85 per cent of the listed curriculum content of Machine Drafting Three and Four, ranging from 46 to 100 per cent.

20. The drafting instructors covered an average of 80 per cent of the listed curriculum content of Machine Drafting Five and Six, ranging from 22 to 100 per cent.

21. The drafting instructors covered an average of 92 per cent of the listed curriculum content of Architectural Drafting Three and Four, ranging from 68 to 100 per cent.

22. The drafting instructors covered an average of 89 per cent of the listed curriculum content of Architectural Drafting Five and Six, ranging from 77 to 100 per cent.

23. The drafting instructors covered an average of 84 per cent of the listed curriculum content of Pre-Engineering Drafting One and Two, ranging from 40 to 100 per cent.

24. The drafting instructors covered an average of 71 per cent of the listed curriculum content of Pre-Engineering Descriptive Geometry One and Two, ranging from 90 to 100 per cent.

#### Recommendations

In terms of the findings of the study, the following recommendations appear to be justified:

1. The Fort Worth Public Schools should provide for the revision of their ten and eleven-year-old curriculum bulletins (1, 2) and should incorporate the new textbook adoptions in the drafting areas.

2. The Fort Worth Public Schools should set up a uniform scheduling procedure to be used for all high school drafting. This procedure should require close co-operation between the administration and the drafting instructors of each high school.

3. Drafting instructors should adhere closely to established curriculum contents, grade placement, and course textbooks. These procedures would eliminate problems encountered when students transfer from school to school.

4. Similar studies should be made in other areas of the Fort Worth industrial arts program.

5. It is further recommended that a follow-up study be conducted in the event of new curriculum guidelines.

## CHAPTER BIBLIOGRAPHY

1. Fort Worth Public Schools, Industrial Arts: A Handbook For Teachers Grades 7-9, Curriculum Bulletin Number 210.1 (Fort Worth, Texas, 1962), pp. 29-40.
2. Fort Worth Public Schools, Industrial Arts: A Handbook For Teachers Grades 10-12, Curriculum Bulletin Number 211.1 (Fort Worth, Texas, 1963), pp. 5-16, 25-79.
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5. Texas Education Agency, Principles and Standards for Accrediting Elementary and Secondary Schools and Description of Approved Courses Grades 7-12, Bulletin 615 (Austin, Texas, 1961), pp. 240-248.
6. Texas Industrial Arts Association, Drafting, Grades 7-12, A Supplement of Texas Education Agency Bulletin 615 (Austin, Texas, June, 1964).

APPENDIX A

Fort Worth, Texas  
May 14, 1973

Instructors of High School Drafting:

Enclosed you will find a questionnaire which has been prepared by one of the members of our faculty, Mr. D. W. Agee, who is at this time writing his thesis.

He is making a study of the industrial arts drafting programs in the Fort Worth public high schools.

Your co-operation in checking and promptly returning the questionnaire will be greatly appreciated.

Please answer every question that is possible for you to answer. All names and schools are confidential and will not appear in the study.

Sincerely,

Phil W. Wright  
Supervisor of  
Industrial Arts

Encl: Instrument  
Return envelope



APPENDIX B

5629 Pershing Ave.  
Fort Worth, Texas

Dear Fellow Drafting Teachers:

I am engaged in a study of the drafting curriculums of the Fort Worth public high schools.

The actual courses and their contents can only come from teachers such as yourselves. It is my feeling that the drafting curriculum within our system is widely diversified due to our new textbooks of 1970-1971, our old handbook of 1963, and the differences among our teachers and class schedules from school to school.

I would greatly appreciate your co-operation in completing and returning the enclosed instrument as soon as possible. The enclosed return-addressed envelope has been provided for your convenience.

This study is being completed under the direction of Pat N. McLeod, North Texas State University. The names and information will be held in confidence and only total results will appear in the study.

Thank you for your time, interest, and co-operation in assisting me to complete this study.

Sincerely,

David W. Agee  
Drafting Instructor  
R. L. Paschal  
High School

Encl: Instrument  
Return envelope

APPENDIX C

A STUDY OF THE DRAFTING CURRICULUM OF THE  
FORT WORTH PUBLIC HIGH SCHOOLS

GENERAL:

1. Please provide the following information:

Name: \_\_\_\_\_ School Number # \_\_\_\_\_

2. How many classes of drafting do you teach each day?

Circle one: 1 2 3 4 5 6

3. What is the average size of your class? \_\_\_\_\_

CLASS SCHEDULING:

1. How are your drafting classes listed for scheduling purposes in your school's counseling office? Check below "✓".

- A. Drafting. . . . . \_\_\_\_\_
- B. Beginning Drafting. . . . . \_\_\_\_\_
- C. Advanced Drafting . . . . . \_\_\_\_\_
- D. Architectural Drafting. . . . . \_\_\_\_\_
- E. General Drafting 1 and 2. . . . . \_\_\_\_\_
- F. Machine Drafting 3 and 4. . . . . \_\_\_\_\_
- G. Machine Drafting 5 and 6. . . . . \_\_\_\_\_
- H. Architectural Drafting 3 and 4. . . . . \_\_\_\_\_
- I. Architectural Drafting 5 and 6. . . . . \_\_\_\_\_
- J. Pre-Engineering Drawing . . . . . \_\_\_\_\_
- K. Pre-Engineering Descriptive Geometry. . . . . \_\_\_\_\_

2. Are any of the twelve (12) courses listed above taught alone in one period? YES \_\_\_\_\_ NO \_\_\_\_\_

If yes, circle course(s): A B C D E F G H I J K

3. Are any of your class periods a combination of two or more courses? YES \_\_\_\_\_ NO \_\_\_\_\_

If yes, circle course(s): A B C D E F G H I J K

4. Do you consider your present class scheduling an advantage? YES \_\_\_\_\_ NO \_\_\_\_\_
5. Are you consulted by your principle or counselors about the scheduling of your classes? YES \_\_\_\_\_ NO \_\_\_\_\_
6. Which of the following scheduling procedures would you prefer for your school? Check below "✓".
- A. Mixed, all areas in each class. . . . . \_\_\_\_\_
- B. General Drafting 1-2 separated by periods from mixed advanced classes. . \_\_\_\_\_
- C. Separate General and Machine Drafting mixed classes from Architectural Drafting mixed classes. . . . . \_\_\_\_\_
- D. Separate General Drafting 1-2, Machine Drafting 3-6, and Architectural Drafting 3-6 classes. . . . \_\_\_\_\_

#### COURSES AND CURRICULUM CONTENT:

1. Please read the following list of courses taken from Bulletins 210.1 and 211.1.
- A. General Drafting 1 and 2
- B. Machine Drafting 3 and 4
- C. Machine Drafting 5 and 6
- D. Architectural Drafting 3 and 4
- E. Architectural Drafting 5 and 6
- F. Pre-Engineering Drafting
- G. Pre-Engineering Descriptive Geometry

The following pages contain questions pertaining to each of the courses listed above. Please complete only the questions relating to those courses which are offered at your school.

#### GENERAL DRAFTING 1 and 2

Prerequisite: None

Credit:  $\frac{1}{2}$ -1

Is this course offered at your school? YES \_\_\_\_\_ NO \_\_\_\_\_

What grades are enrolled? 9 \_\_\_\_\_ 10 \_\_\_\_\_ 11 \_\_\_\_\_ 12 \_\_\_\_\_

What textbook(s) do you use? \_\_\_\_\_

The following is a list of possible content areas for General Drafting 1 and 2. Please check (✓) "C" if the area is covered and "NC" if the area is not covered by this course in your school.

"C"	"NC"	CONTENT AREAS - GENERAL DRAFTING 1 and 2
-----	------	--

- |  |  |  |
|--|--|--|
|  |  | 1. Freehand Multiview Drawing              |
|  |  | 2. Freehand Pictorial Drawing              |
|  |  | 3. Mechanical Layout & Construction        |
|  |  | 4. Alphabet of Lines                       |
|  |  | 5. Lettering                               |
|  |  | 6. Dimensioning                            |
|  |  | 7. Simple Working Drawings                 |
|  |  | 8. Oblique Projection                      |
|  |  | 9. Cavalier Projection                     |
|  |  | 10. Cabinet Projection                     |
|  |  | 11. Isometric Projection                   |
|  |  | 12. Circles, Arcs, & Ellipses              |
|  |  | 13. Sectioning                             |
|  |  | 14. Auxilliary Views (simple)              |
|  |  | 15. Pencil Tracings                        |
|  |  | 16. Drawing Reproduction                   |
|  |  | 17. American Standards                     |
|  |  | 18. Geometric Construction                 |
|  |  | 19. Sheetmetal Development                 |
|  |  | 20. Skill with Advanced Equipment          |
|  |  | 21. Posters, Charts, & Graphs              |
|  |  | 22. Machines of Industry                   |
|  |  | 23. Conventional Machining Representations |
|  |  | 24. Symbols of Common Metals               |
|  |  | 25. Primary Auxilliary Drawings            |
|  |  | 26. Standard Notes & Processes             |
|  |  | 27. Detail Drawings                        |
|  |  | 28. Assembly Drawings                      |
|  |  | 29. Standard Building Materials            |
|  |  | 30. Foundations and Footings               |
|  |  | 31. Balloon Framing                        |
|  |  | 32. Roofs                                  |
|  |  | 33. Windows                                |
|  |  | 34. Entrances                              |
|  |  | 35. Plumbing                               |
|  |  | 36. Electrical                             |
|  |  | 37. Heating                                |
|  |  | 38. Hardware                               |
|  |  | 39. Common Fixtures                        |
|  |  | 40. Architectural Symbols                  |
|  |  | 41. Building Codes                         |
|  |  | 42. Plot Planning                          |
|  |  | 43. Conventional Lines                     |
|  |  | 44. Architectural Lettering                |
|  |  | 45. ASA Standards                          |
|  |  | 46. Dimensioning                           |
|  |  | 47. Sketching and Shading                  |
|  |  | 48. Arrangement of Views                   |
|  |  | 49. Detailing                              |

"C"	"NC"	Content Areas - General Drafting 1-2 contd.
( )	( )	50. One-Point Perspective
( )	( )	51. Two-Point Perspective
( )	( )	52. Rendering
( )	( )	53. Architectural Styles

#### MACHINE DRAFTING 3 and 4

Prerequisite: General Drafting 1-2 or Pre-Engineering Drafting

Credit:  $\frac{1}{2}$ -1

Is this course offered at your school? Yes \_\_\_ NO \_\_\_  
 What grades are enrolled? 9 \_\_\_ 10 \_\_\_ 11 \_\_\_ 12 \_\_\_  
 What textbook(s) do you use? \_\_\_\_\_

The following is a list of possible content areas for Machine Drafting 3 and 4. Please check (✓) "C" if the area is covered and "NC" if the area is not covered by this course in your school.

"C"	"NC"	CONTENT AREAS - MACHINE DRAFTING 3 and 4
( )	( )	1. Instrument Skills
( )	( )	2. Lettering
( )	( )	3. Machine Drafting Symbols
( )	( )	4. Screw Threads
( )	( )	5. Pipe Threads
( )	( )	6. Fasteners
( )	( )	7. Structural Steel
( )	( )	8. Aeronautical Drafting
( )	( )	9. Working Drawing
( )	( )	10. Detail Drawings
( )	( )	11. Assembly Drawings
( )	( )	12. Tracings
( )	( )	13. Reproduction

#### MACHINE DRAFTING 5 and 6

Prerequisite: Machine Drafting 3 and 4

Credit:  $\frac{1}{2}$ -1

Is this course offered at your school? YES \_\_\_ NO \_\_\_  
 What grades are enrolled? 9 \_\_\_ 10 \_\_\_ 11 \_\_\_ 12 \_\_\_  
 What textbook(s) do you use? \_\_\_\_\_

The following is a list of possible content areas for Machine Drafting 5 and 6. Please check (✓) "C" if the area is covered and "NC" if the area is not covered by this course in your school.

"C" "NC" CONTENT AREAS - MACHINE DRAFTING 5 and 6

"C"	"NC"	CONTENT AREAS - MACHINE DRAFTING 5 and 6
( )	( )	1. Advanced Details
( )	( )	2. Advanced Multiview
( )	( )	3. Advanced Assemblies
( )	( )	4. Advanced Pictorials
( )	( )	5. Study Standard Machine Handbooks
( )	( )	6. Elementary Machine Design
( )	( )	7. Tolerances
( )	( )	8. Shop Processes
( )	( )	9. Machine Measuring Tools

## ARCHITECTURAL DRAFTING 3 and 4

Prerequisites: General Drafting 1-2 or Pre-Engineering Drafting

Credit:  $\frac{1}{2}$ -1

Is this course offered at your school? YES \_\_\_ NO \_\_\_  
 What grades are enrolled? 9 \_\_\_ 10 \_\_\_ 11 \_\_\_ 12 \_\_\_  
 What textbook(s) do you use? \_\_\_\_\_

The following is a list of possible content areas for Architectural Drafting 3 and 4. Please check (✓) "C" if the area is covered and "NC" if the area is not covered by this course in your school.

"C" "NC" CONTENT AREAS - ARCHITECTURAL DRAFTING 3-4

"C"	"NC"	CONTENT AREAS - ARCHITECTURAL DRAFTING 3-4
( )	( )	1. Drafting Tools and Instruments
( )	( )	2. Develop Lettering Style
( )	( )	3. Architecture Symbols
( )	( )	4. Representation of Doors and Windows
( )	( )	5. Construction Materials
( )	( )	6. Foundations and Footings
( )	( )	7. Wall Sections
( )	( )	8. Framing
( )	( )	9. Cornice Details
( )	( )	10. Roof Construction
( )	( )	11. Stair Constructions
( )	( )	12. Fireplace Construction
( )	( )	13. Cabinet Construction
( )	( )	14. Residence Building
( )	( )	a. Floor Plans
( )	( )	b. Foundation Plans
( )	( )	c. Roof Plans
( )	( )	d. Elevations
( )	( )	e. Tracings and Blueprints
( )	( )	f. Rendering Techniques
( )	( )	g. Perspective
( )	( )	h. Material Estimates

## ARCHITECTURAL DRAFTING 5 and 6

Prerequisite: Architectural Drafting 3-4

Credit:  $\frac{1}{2}$ -1

Is this course offered at your school? YES \_\_\_ NO \_\_\_

What grades are enrolled? 9 \_\_\_ 10 \_\_\_ 11 \_\_\_ 12 \_\_\_

What textbook(s) do you use? \_\_\_\_\_

The following is a list of possible content areas for Architectural Drafting 5 and 6. Please check (✓) "C" if the area is covered and "NC" if the area is not covered by this course in your school.

"C"	"NC"	CONTENT AREAS - ARCHITECTURAL DRAFTING 5-6
( )	( )	1. Architecture Terms and Symbols
( )	( )	2. Architecture Principles
( )	( )	3. Mechanics of Construction
( )	( )	4. Principles of Design
( )	( )	5. Knowledge of Architectural Order
( )	( )	6. Develop Philosophy of Design & Workmanship
( )	( )	7. Study Differences in Residential & Commercial Construction
( )	( )	8. Study Laws Relating to Architecture
( )	( )	9. Study Current Construction
( )	( )	10. Small Business
( )	( )	a. Floor Plan Sketches
( )	( )	b. Elevation Sketches
( )	( )	c. Perspective Sketches
( )	( )	d. Floor Plan First & Second Floors
( )	( )	e. Wall Section
( )	( )	f. Stair Details
( )	( )	g. Elevations
( )	( )	h. Specifications
( )	( )	i. Cost
( )	( )	j. Perspective One-Point
( )	( )	k. Perspective Two-Point
( )	( )	11. Public Building In Planning Stage
( )	( )	a. Floor Plan Sketch
( )	( )	b. Elevations Sketches
( )	( )	c. Perspective Sketch
( )	( )	d. Wall Section
( )	( )	e. Detail Sheets
( )	( )	f. Perspective Two-Point
( )	( )	g. Foundation Plan
( )	( )	12. Model to Scale with Landscape

## PRE-ENGINEERING DRAFTING

Prerequisite: Geometry (may be taken concurrently)

Credit:  $\frac{1}{2}$ -1

Is this course offered at your school? YES \_\_\_\_\_ NO \_\_\_\_\_

What grades are enrolled? 9 \_\_\_\_\_ 10 \_\_\_\_\_ 11 \_\_\_\_\_ 12 \_\_\_\_\_

What textbook(s) do you use? \_\_\_\_\_

The following is a list of possible content areas for Pre-Engineering Drafting. Please check (✓) "C" if the area is covered and "NC" if the area is not covered by this course in your school.

"C"	"NC"	CONTENT AREAS - PRE-ENGINEERING DRAFTING
( )	( )	1. Lettering
( )	( )	2. Drafting Machine
( )	( )	3. Instrument Drawing
( )	( )	4. Orthographic Projection
( )	( )	5. Auxilliary Views
( )	( )	6. Oblique Views (secondary auxilliary)
( )	( )	7. Revolutions
( )	( )	8. Sectional Views
( )	( )	9. Intersections
( )	( )	10. Developments
( )	( )	11. Isometric Projection
( )	( )	12. Diametric Projection
( )	( )	13. Trimetric Projection
( )	( )	14. Axonometric Projection
( )	( )	15. Assembly and Exploded View Drawing
( )	( )	16. Pictorial Sketching
( )	( )	17. Pictorial Space Drawing (Explosions)
( )	( )	18. Oblique Projection
( )	( )	19. Cavalier Projection
( )	( )	20. Cabinet Projection
( )	( )	21. Perspective Drawing
( )	( )	22. Shading
( )	( )	23. Coloring
( )	( )	24. Detail Drawing
( )	( )	25. Dimensioning
( )	( )	26. Technical Sketching
( )	( )	27. Shop Processes
( )	( )	28. Materials
( )	( )	29. Measuring Devices
( )	( )	30. Cam & Gear
( )	( )	31. Structural Steel Drafting
( )	( )	32. Topographic Drafting
( )	( )	33. Aeronautical Drafting
( )	( )	34. Electrical Drafting
( )	( )	35. Pipe Drafting



"C"	"NC"	Pre-Engineering Drafting continued
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( )	( )	36. Patent Drafting
( )	( )	37. Welding Drafting
( )	( )	38. Sheet Metal Drafting
( )	( )	39. Architectural Drafting
( )	( )	40. Drawing Reproduction

## PRE-ENGINEERING DESCRIPTIVE GEOMETRY

Prerequisites: Geometry and Algebra II (may be taken concurrently)

Credit:  $\frac{1}{2}$ -1

Is this course offered at your school? YES      NO       
 What grades are enrolled? 9      10      11      12       
 What textbook(s) do you use? \_\_\_\_\_

The following is a list of possible content areas for Pre-Engineering Descriptive Geometry. Please check (✓) "C" if the area is covered and "NC" if the area is not covered by this course in your school.

"C"	"NC"	CONTENT AREAS -PRE-ENGINEERING DESCRIPT. GEO.
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( )	( )	1. Locating Points
( )	( )	2. Orthographic Projection
( )	( )	3. Principle Dimensions
( )	( )	4. Principle Planes
( )	( )	5. Principle Lines
( )	( )	6. Auxilliary Views (primary)
( )	( )	7. Reference Planes
( )	( )	8. Visibility of Lines
( )	( )	9. Normal Views Planes
( )	( )	10. Edge Views Planes
( )	( )	11. Oblique Views (see auxilliary) (secondary)
( )	( )	12. T.L. of Lines
( )	( )	13. End View of Lines
( )	( )	14. Oblique Lines
( )	( )	15. Intersecting Lines
( )	( )	16. Parallel Lines
( )	( )	17. Strike and Dip
( )	( )	18. Intersection of Line and Plane
( )	( )	19. Intersection of Two Planes
( )	( )	20. Cutting Planes
( )	( )	21. Parallel Planes
( )	( )	22. Perpendicularity
( )	( )	23. Angle Between Plane
( )	( )	24. Revolution
( )	( )	25. Intersection of Solids
( )	( )	26. Developments
( )	( )	27. Cuts and Fills
( )	( )	28. Slope of a Line
( )	( )	29. Bearing of a Line

APPENDIX D

5629 Pershing Ave.  
Fort Worth, Texas  
Ph: 731-2923

Dear Fellow Drafting Teachers:

Several weeks ago I sent out a questionnaire concerning the twelve high school drafting programs of our school system. Four were promptly returned, but I am still waiting for the other eight. It is very important that I have all twelve questionnaires, since my survey is so small.

If you have misplaced your questionnaire please call me and I will send you another. I will greatly appreciate it if all the questionnaires could be returned for fall graduation.

Will you please put your school numbers on the beginning sheet so that I will know which schools are completed. Thank you for your help and co-operation.

Sincerely,

David W. Agee  
Drafting Instructor  
R.L. Paschal  
High School

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