

A SURVEY OF INDUSTRIAL ARTS PRINTING IN
THE UNITED STATES

By

James L. Milburn

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Committee on thesis:

J. R. Shannon (by assg)
E. L. Abell

J. B. Shanker, Chairman

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CHAPTER I

INTRODUCTION

Printing began its life in the public schools in 1887, when it was added to the curriculum of the schools of Indianapolis, Indiana. In 1900, the North End Union School of Printing was established in Boston, Massachusetts.¹ From this meager beginning, printing instruction has grown by leaps and bounds until now it is taught in every state of the Union with the exception of Wyoming. It is estimated that there are between 2,000 and 3,000 schools offering printing.

Civilization is rapidly changing and the problems arising therefrom demand that the educational leaders of today set up an educational program that will prepare our younger generation for this new era. School subjects and methods are being given new values. Many of the traditional subjects are losing the commanding positions they once held and are being supplemented, if not replaced by newer subjects. Printing takes care of several types of individual differences with its wide variety of major activities. Education is now interested in purposeful activity which is living. "The new school is a

¹ Chester A. Lyle, "Printing Education in America," Industrial Arts and Vocational Education. August, 1936.

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laboratory with its program built around purposeful creative activities."²

I. WHAT EDUCATORS THINK OF PRINTING IN THE SCHOOLS

There is little doubt now in the minds of educators of the value printing has as an educative agency. Printing has made great strides since its introduction into the school and now holds an important position in the public schools.

According to Mr. F. J. Moffit, Superintendent of Public Schools, Hamberg, New York, the teacher, asked why he teaches printing, would say:

"Because the teaching of printing trains the hand and the eye; because it adds to the student's knowledge of good usage of the English language; because it directs clear, forceful oral expression, and because it aids in orderly thinking. Yes, and because it creates and fosters a wholesome respect for books; because it teaches color and perspective; because it helps in forming habits of accuracy and thoroughness and invaluable ideals of neatness and industry."

Mr. Moffit adds, "It is true that printing education does these things but, facing the educational program, there are even stronger arguments for its retention in the public schools of the nation.

² John Baekus, "Printing Education," Industrial Arts and Vocational Education. April, 1934.

"In order to meet the needs of the boys and girls of today, education must offer, first and foremost, a guiding philosophy. Such a philosophy must train for fundamental honesty of purpose, for useful and intelligent citizenship and for joyful satisfaction in the knowledge that every person has within himself the power to order his own life.

"How better can these things be taught than through the teaching of printing, wherein boys and girls are given a basic training in the value and dignity of honest work with hand and brain allied; where they are taught an appreciation of the art which has brought mankind from the caves of savagery to the light of reason; where they learn the satisfactions that come with an ability to think straight and think through the problems that beset them."³

Mr. Moffit tells how two boys who it seemed had lost their way found their niche in life through their work in the printshop.

Emma V. Tindal, principal of Oliver Wendell Holmes Junior High School, Philadelphia, Pennsylvania, says: "To my mind, printing is an educational agency of undoubted value. When included in a school curriculum, it may be employed to motivate instruction in various studies, such as punctuation, spelling, grammar, composition, mathematics, art, and science. And it will also afford an opportunity for acquired and worth-while manual

³ F. J. Moffit, "Why Teach Printing?" Printing Education, January, 1934.

skill. The project of the school presses will contribute to the socialization program by enabling the school to broadcast material of inter-departmental interests, thereby aiding the development of the cooperative spirit, and the importance of this link between the school and the home cannot be questioned."

C. W. Hague, of the State Teachers College, Fitchburg, Massachusetts says: "Of the many industrial subjects which have been tried in schools, printing leads all as a cultural-manual subject, and can probably be formulated to serve more branches of work than any of the other so-called industrial courses. It is unrivaled as a vocational subject, helpful as a background for practically all commercial and graphic arts courses, and it is an excellent medium for general educational development. As its flexibility of purposes and its real educational value are more fully realized, we may find it among the basic subjects of nearly every curriculum."

The foregoing are only a few of the many complimentary statements that have been made by prominent educators.

II. THE PROBLEM

This problem is a survey of the present practices in the public high school printing departments of the United States in respect to aims and teacher objectives, teacher training, size of classes, teaching material, production work, equipment, and special shop problems.

The development of industrial arts printing in the high schools has been recent and rapid, therefore, studies of this

kind are needed to help put it on the same basis as other subjects.

III. LIMITATIONS

The instruction in printing is divided in to two fields, industrial arts and vocational. In this study only the schools teaching industrial arts printing have been considered.

The industrial arts course has been variously classified as "regular high school printing," "general educational course in printing," "information course," "manual training course," "academic course," etc.⁴ It is the purpose of this type of course to train the future users of printing to appreciate a good product, to know its value and how it is produced.

This study will:

1. Indicate present practices and trends in industrial arts printing.
2. Aid toward an evaluation.
3. Offer recommendations and suggestions to the teacher of printing.

IV. PREVIOUS STUDIES

Very few studies have been made of printing education. Those found by the writer were studies made of all schools

⁴ Carl G. Bruner, "A Study of Values in Printing Instruction in Public Schools." Printing Education. January, 1932.

offering printing, not differentiating between vocational and industrial arts courses.

In 1933, Fred J. Hartman sent questionnaires to the 1,444 schools of printing that were listed in the Printing Education Directory. Replies were received from 338 schools, located in 38 states, District of Columbia, and Canada.⁵ The findings were as follows:

1. More than 50,000 young people were enrolled in printing courses in the 338 schools of the various types reporting.

2. The value of the printing school equipment of the schools reporting was estimated at \$4,000,000.

3. There were 23,179 people who completed prescribed courses, and it was estimated that not more than ten per cent of these would enter the industry.

4. The basic shop courses were; hand composition; platen presswork; and elementary pamphlet binding.

5. There is no lack of instructional material in printing, but there still remains the problem of proper selection of text for the different types of schools.

6. Over fifty per cent of the schools had reference libraries.

In 1936, J. E. Fintz made a study of "Qualification and Certification."⁶

⁵ Fred J. Hartman, "The 1933 Survey of Printing." Printing Education. November, 1933.

⁶ J. E. Fintz, "Qualification and Certification." Graphic Arts Education. November, 1936.

Mr. Fintz did not report how many questionnaires he sent but reported the return of 215. The data received indicate the following:

1. The percentage of men teaching printing with no trade experience outnumbered any other group of printing teachers from 3 to 1 to 23 to 1.
2. The greatest number of teachers reporting were between thirty-two and fifty years of age.
3. Sixty-two per cent of the teachers reported teaching either in junior or senior high schools. This indicates a growth of printing as an industrial arts subject.
4. Approximately fifty-six per cent reported from one to ten years' teaching experience. Fifty-two per cent reported one or more degrees.
5. All evidence indicated that educational requirements have more than doubled in most localities.

V. PROCEDURE

The Questionnaire. The means by which the information was gained for this study concerning industrial arts printing was the questionnaire. There are approximately 540 high schools in the United States offering industrial arts printing according to the 1936 Directory, published by the Graphic Arts Guild, which is the most accurate list available. The writer attempted to send a copy of the questionnaire to one-third of the high schools in each state that were listed as offering industrial

arts printing. Each state that has at least one high school teaching industrial arts printing is represented in the study. One hundred and eighty-two questionnaires were mailed to the head of the printing departments in schools representing forty-three States and the District of Columbia.

The Response. A teacher filling in the questionnaire wrote in the margin; "If you get thirty per cent of the questionnaires returned you can consider yourself lucky." If that is the case, the writer is more than lucky because 114 questionnaires were returned or more than sixty-two per cent.

Eleven questionnaires were not used because the schools taught vocational printing; fourteen were returned stating that printing had either been discontinued or that no printing was taught; two schools returned the questionnaire stating it was against the rules to give out any information. Table I gives the number of questionnaires sent, number returned, and the number used from each state.

TABLE I
DISTRIBUTION AND RETURN OF THE QUESTIONNAIRES

States	Number of questionnaires sent	Number of questionnaires returned	Per cent of questionnaires returned	Number of questionnaires used
Alabama	1	1	100	1
Arizona	1	0		0
Arkansas	1	1	100	1
California	28	15	53.57	14
Colorado	2	1	50	1
Connecticut	3	2	66.66	2
Delaware	1	0		0
Washington D. C.	1	0		0
Florida	1	0		0
Georgia	1	1	100	1
Illinois	14	10	71.42	7
Indiana	10	9	90	7
Iowa	3	3	100	1

TABLE I (Continued)

DISTRIBUTION AND RETURN OF THE QUESTIONNAIRES

States	Number of questionnaires sent	Number of questionnaires returned	Per cent questionnaires returned	Number of questionnaires used
Kansas	5	2	40	1
Kentucky	1	1	100	1
Louisiana	1	0		0
Maine	1	1	100	1
Maryland	1	1	100	1
Massachusetts	11	6	54.54	4
Michigan	10	7	70	7
Minnesota	3	3	100	3
Missouri	2	1	50	0
Montana	1	1	100	1
Nebraska	1	1	100	1
New Hampshire	1	0		0
New Jersey	7	5	71.42	4

TABLE I (Continued)

DISTRIBUTION AND RETURN OF THE QUESTIONNAIRES

States	Number of questionnaires sent	Number of questionnaires returned	Per cent of questionnaires returned	Number of questionnaires used
New York	17	10	52.94	6
North Carolina	1	0		0
North Dakota	1	0		0
Ohio	16	11	68.75	8
Oklahoma	2	2	100	2
Oregon	1	1	100	0
Pennsylvania	14	7	50	5
Rhode Island	2	0		0
South Carolina	1	1	100	0
South Dakota	1	1	100	0
Tennessee	1	1	100	1
Texas	2	1	50	0
Utah	1	1		0

TABLE I (Continued)

DISTRIBUTION AND RETURN OF THE QUESTIONNAIRES

States	Number of questionnaires sent	Number of questionnaires returned	Per cent of questionnaires returned	Number of questionnaires used
Vermont	1	0		0
Virginia	2	2	100	2
Washington	1	1	100	1
West Virginia	1	0		0
Wisconsin	5	3	60	3
Total	182	114	62.64	87

CHAPTER II

PRESENTATION OF DATA

The data that were used came from eighty-seven schools as shown in Table I. One school reported having three teachers of printing, six schools had two teachers, and eighty schools indicated only one. In presenting the data those items referring to the physical shop will have a total of eighty-seven answers, and those referring to the teacher will have ninety-five responses. Each phase of the questionnaire will be treated separately in this chapter and the tables presented are for the most part self explanatory. A copy of the questionnaire may be found in the Appendix.

I. AIMS

The first item on the questionnaire that was sent to the schools that offer industrial arts printing was:

"Please underline the specific aim or aims you accept for your printing course: Vocational education; prevocational education; general education."

It was the belief of the writer that too many teachers of industrial arts printing were emphasizing the vocational side of printing which should be left to the teacher of vocational printing. This study, as indicated by Table II, shows that this belief should be reversed.

TABLE II

PERCENTAGES OF SEVENTY-EIGHT TEACHERS OF INDUSTRIAL
ARTS PRINTING AT THE HIGH SCHOOL LEVEL

	Per cent										
	0	10	20	30	40	50	60	70	80	90	100
1. Vocational education	****										
2. Prevocational education	*****										
3. General education	*****										

Forty-four teachers accepted only one aim; thirty-five general education, seven prevocational education, and two vocational education. Twenty-eight teachers accepted two aims; twenty-seven general education and prevocational education, and one general education and vocational education. Six teachers chose to accept all three of the aims while nine teachers declined to answer.

Koos made a study to determine the trend of the teachers of home economics in respect to the three major aims, vocational education, prevocational education, and general education.¹ A few teachers accepted two of the aims, but most of them only one. About an eighth of the group accepted the vocational aim; approximately one-fourth the exploratory aim;

¹ Koos, "The Administration of Secondary School Units." Table XCII. p. 138.

about four-fifths, the aim of general education, either alone or with one of the others. In Koos's study the teachers of home economics lean emphatically toward the general education aim as do the teachers of industrial arts printing as revealed by the present study conducted by the writer.

II. PREPARATION

The teachers were asked to give the number of years of college training and the degrees they held. The data received on the educational qualifications reveal that over fifty-five per cent of the teachers have either one or more degrees. Forty-two teachers reported having a B. S. degree or its equivalent; nine indicated that they held an M. S. degree or its equivalent; two reported L. L. B. degrees; forty-one teachers held no degree; and one failed to answer.

There was a wide range in regard to the number of years of college training. Fourteen teachers reported no college training, while one reported having had fifteen years of college work. Table III gives a complete picture concerning the college training as found by this study.

III. TEACHING EXPERIENCE

The questionnaire asked the teacher to fill in the number of years of teaching experience. Three teachers reported experience of one year and one reported thirty-one years of teaching. The mode was ten years experience while the median was 12.7.

TABLE III
YEARS OF COLLEGE TRAINING

Years of college	Number of teachers	Per cent
0	14	14.74
1/3	1	1.05
1	2	2.10
1 1/2	1	1.05
2	8	8.42
2 1/2	1	1.05
3	9	9.47
3 1/2	2	2.10
4	25	26.31
4 1/2	5	5.26
5	15	15.79
5 1/2	1	1.05
6	4	4.21
7	2	2.10
7 2/3	1	1.05
8 1/2	1	1.05
15	1	1.05
Not answered	2	2.10
Total	95	
Median	4	

Printing education is only about thirty-two years old and this study indicates that about forty per cent of the teachers have come into the field in the last ten years which indicates a steady growth of the subject of printing in the high schools. Table IV shows the complete findings.

IV. YEARS OF SHOP EXPERIENCE

This study did not answer the question, "How much trade experience is desirable?" However it furnishes a bit of interesting information regarding the trade experience of the teachers now in service. In checking over Table V one may note that fifty-six per cent of the teachers have had only five years or less shop experience outside of the school shop, and forty per cent of these have had no outside experience. Twenty-one teachers reported no shop training and at the other extreme one reported thirty-three years in the shop.

V. SUBJECTS TAUGHT BESIDES PRINTING

The question was asked, on the questionnaire sent to the teachers, "Do you or your assistants teach anything besides printing? If so, what?" Sixty-eight teachers reported that printing was the only subject and twenty-seven indicated that they had other duties. Table VI gives a summary of the number of subjects taught besides printing and Table VII names the subjects or duties the teachers had.

TABLE IV
YEARS OF TEACHING EXPERIENCE

Years of teaching experience	Number of teachers	Per cent
1	3	3.15
2	4	4.21
3	0	----
4	0	----
5	2	2.10
6	2	2.10
7	4	4.21
8	3	3.15
9	3	3.15
10	11	11.57
11	7	7.37
12	8	8.42
13	4	4.21
14	4	4.21
15	6	6.31
16	7	7.37
17	4	4.21
18	3	3.15
19	5	5.26
20	4	4.21
21	3	3.15
22	0	----
23	0	----
24	1	1.05
25	0	----
26	0	----
27	1	1.05
28	0	----
29	0	----
30	0	----
31	1	1.05
Not answered	5	5.26
Total	95	
Median	12.7	

TABLE V
YEARS OF SHOP EXPERIENCE

Years of shop experience	Number of teachers	Per cent
0	21	22.11
1/2	2	2.10
1	8	8.42
1 1/4	1	1.05
1 1/2	1	1.05
2	7	7.37
3	3	3.15
4	4	4.21
5	5	5.26
6	2	2.10
7	1	1.05
8	3	3.15
9	3	3.15
10	7	7.37
11	2	2.10
12	6	6.31
13	2	2.10
15	4	4.21
18	1	1.05
20	7	7.37
21	2	2.10
33	1	1.05
Several summers	1	1.05
Not answered	1	1.05
Total	95	
Median	4.5	

TABLE VI
NUMBER OF SUBJECTS TAUGHT BESIDES PRINTING

Number of subjects taught besides printing	Number of teachers reporting other duties besides printing
1	19
2	4
3	1
Two and vice principal	1
In charge of free text books	1
Study hall	1
Total	27

VI. NUMBER OF STUDENTS TAKING PRINTING

Eighty-four schools reported 8,749 students taking printing. Three schools did not answer the part of the questionnaire asking for this information. One school reported the printing department had only fourteen pupils, while another school gave four hundred as the enrollment for printing classes. There were twenty-three schools reporting between 76 and 100 pupils taking printing which was the mode, and the average number for the eighty-four schools was about 104. This number is a sizeable increase over the average number of 85 which was found by the survey conducted in 1932 by the Department of Education of the

TABLE VII
SUBJECTS TAUGHT BESIDES PRINTING

Subjects taught besides printing	Number of times reported
Drawing	13
Shop	4
Journalism	3
Wood work	2
Electricity	2
Advertising	2
Mathematics	2
Sheet metal	1
Annual	1
Commercial law	1
Tennis coach	1
Study hall	1
In charge of free text books	1
Vice principal	1

United Typothetae of America.² Figure 1 shows the distribution of schools in regard to the number of pupils taking printing.

VII. SIZE OF PRINTING CLASSES

The writer has taught printing for more than six years and has always had the handicap of having too many in a class, and has often wondered what size classes the other teachers have. One school failed to fill in the information on the questionnaire pertaining to the size of classes, but of the other 86, 59 had classes of 20 or more. Thirty-five reported classes of twenty-five or more with one school heading the list with an average of forty-five pupils in each class. Two schools indicated only ten in each class which was the smallest number reported. The writer has been unable to find any survey covering the size of printing classes, but is of the opinion that they are increasing and will continue to do so. The findings are shown in Table VIII.

VIII. MINUTES PER DAY CLASSES MEET

There was little agreement among 86 schools as to the number of minutes per day classes meet. Three schools allowed only 40 minutes per day for each class while one school reported 120 minutes for each class. Table IX will show how

² David Gustafson, "Printing Education Survey for 1932." Printing Education. November, 1932.

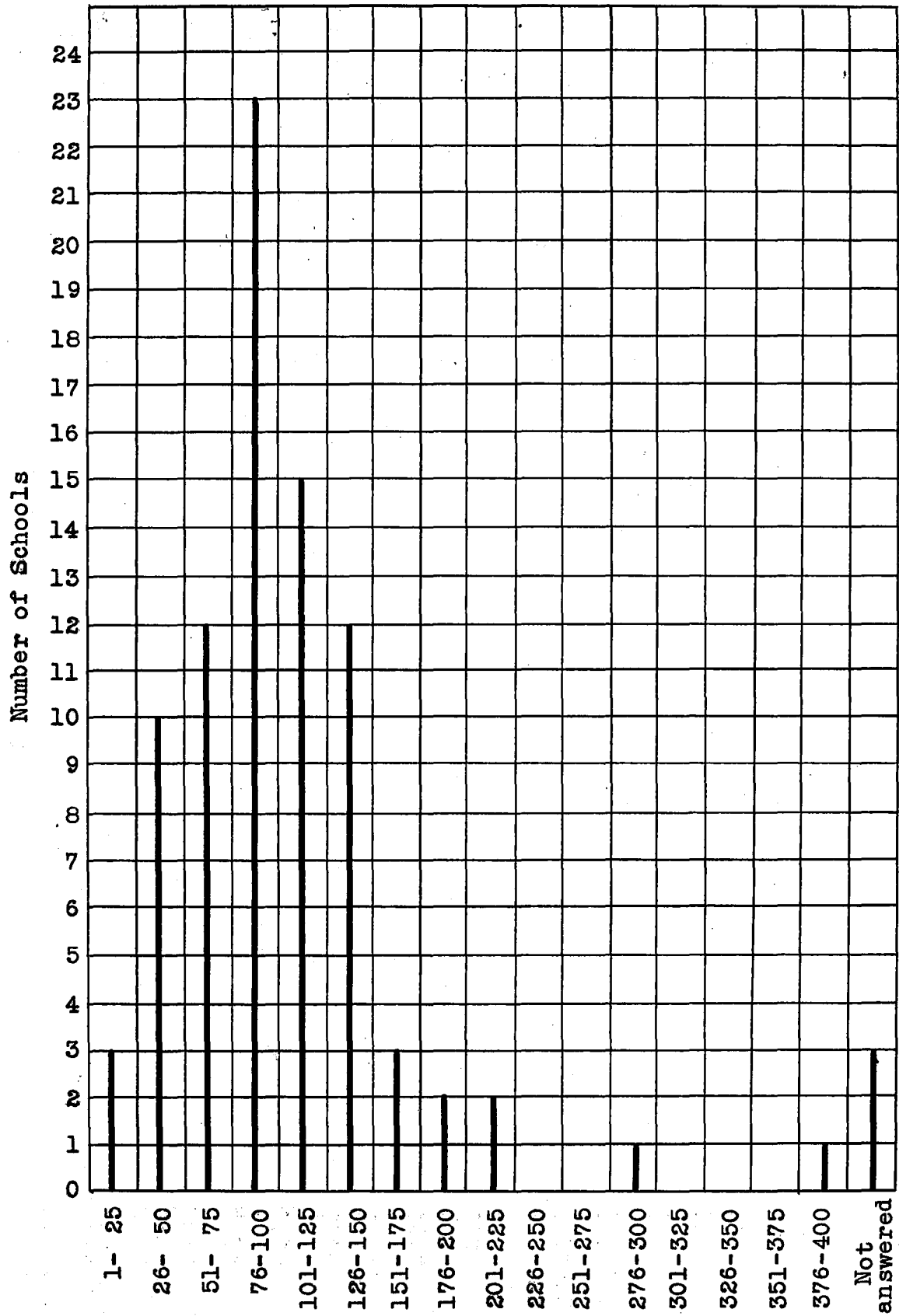


Figure 1.

Number of Pupils Taking Printing

TABLE VIII
 SIZE OF PRINTING CLASSES

Average number in each class	Number of schools	Per cent
10	2	2.33
11	2	2.33
12	2	2.33
14	3	3.49
15	3	3.49
16	4	4.66
17	3	3.49
18	6	6.99
19	2	2.33
20	13	15.14
21	1	1.16
22	5	5.82
23	1	1.16
24	4	4.66
25	18	20.97
26	6	6.99
28	2	2.33
29	1	1.16
30	4	4.66
31	1	1.16
34	1	1.16
35	1	1.16
45	1	1.16
Median	23.3	

TABLE IX
MINUTES PER DAY CLASSES MEET

Number of minutes	Number of schools	Per cent
40	3	3.49
42	1	1.16
45	3	3.49
48	1	1.16
49	1	1.16
50	6	6.99
54	1	1.16
55	12	13.98
60	19	22.13
65	1	1.16
66	1	1.16
70	1	1.16
75	1	1.16
80	11	12.81
85	1	1.16
90	19	22.13
95	1	1.16
100	2	2.33
120	1	1.16
Median		64

little the agreement is pertaining to the minutes per day allowed for printing courses.

IX. DAYS PER WEEK CLASSES MEET

There was more agreement among the schools as to the number of days per week classes met than to the number of minutes per day. Seventy-seven schools indicated that their printing classes met five days a week, one reported four days a week, two reported three days, three reported two days, and two schools indicated that the printing classes met but once a week. Two schools did not answer this part of the questionnaire.

X. NUMBER OF SEMESTERS

Fifteen schools indicated that the student desiring printing could take it each semester he was in high school, and on the other extreme three schools limited the student to one semester of printing. Refer to Table X for complete data.

XI. ENROLLMENT OF SCHOOLS

This study indicated that printing is offered in very few of our smaller schools. One school with 160 enrollment offered printing, but this only helped to make up the number of five out of 87 schools, that had less than 500 enrollment, and thirteen schools had over 3,000 pupils with 10,000 being the largest school reporting. Table XI gives a picture of the size of the schools that have industrial arts printing as part of their curriculum.

TABLE X
NUMBER OF SEMESTERS

Number of semesters	Number of schools
1	3
2	13
3	4
4	28
5	1
6	22
7	0
8	15
Not answered	1
Total	87
Median	4.2

XII. TEXT BOOKS AND TEACHING AIDS

The schools were divided on the text book question. Forty-seven schools used one or more text books, and forty schools used no text books. Of the text books used, "The Practice of Printing," by Polk, was used by 26 teachers and, "Printing for School and Shop," by Henry was mentioned by 9 schools, and no other text was mentioned more than once. Sixty-eight teachers indicated that they used supplementary material of some kind

TABLE XI
ENROLLMENT OF SCHOOLS

Enrollment	Number of schools
1 - 499	5
500 - 999	14
1000 - 1499	14
1500 - 1999	19
2000 - 2499	15
2500 - 2999	7
3000 - 3499	3
3500 - 3999	7
4000 - 4499	0
4500 - 4999	2
Over - 5000	1
Median	1776

such as job sheets, and reference books. Twenty-six teachers reported that they were using their own job sheets. Following is a complete list of the textbooks and reference material reported.

The Practice of Printing--Polk

Printing for School and Shop--Henry

Practice of Presswork--Spicher

Elementary Platen Presswork--Polk

Printing and the Allied Trades--Karch

Printing Occupations--Hague

Hand Composition--Berucker

Fundamentals of Printing--Tranbarger

U. T. A. Lessons

I. T. U. Lessons

Job Sheets--Hague

A. T. F. Visual Aids in Printing

Linotype Mechanism--Means and Swank

Typography for Advertising--Trezise

Newspaper Makeup--Allen

Keyboard Operation--Mergenthaler Linotype Company

Practical Proofreading--Highton

Inland Printer--Magazine

Printship Arithmetic--Ginsbach

Printing and Typography for Printers--Levitas

Introduction to Typography--Stern

History of Printing--Haynes

Projects in Printing--Karch

Practical Typography--McClellan

Printshop Practice--Loomis

Progressive Lessons in Printing--Bohrev

Get it Right--Opdyche

Applied Design for Printing--Gage, H. S.

Job Sheets--Randal

Hand Composition--John

Step in the Production of the Printed Job--Park

Manual for Young Printers--Selvidge and Witt
American Type Founders Instructional Charts.

XIII. OBJECTIVES

The writer drew a list of eleven objectives from literature dealing with industrial arts printing and this list was submitted to the teachers asking them to check the objectives they thought should be accomplished by the industrial arts printing teacher and to cross out the objectives they did not accept. Following is the list that was submitted to the teachers:

1. To develop in each pupil an active interest in printing.
2. To develop in each pupil an appreciation of good printing.
3. To develop in each pupil a feeling of self-reliance and confidence in his ability to deal with people and to care for himself in an unusual or unfamiliar situation.
4. To develop in each pupil an attitude of pride or interest in his ability to do useful things.
5. To develop in each pupil the ability to select wisely the printing matter to be bought or used.
6. To develop in each pupil the habit of an orderly method of procedure in the performance of any task.
7. To develop in each pupil the habit of self-discipline which requires one to do a thing when it should be done, whether it is a pleasure or not.

8. To develop in each pupil the habit of careful, thoughtful work without loitering or wasting time.

9. To develop in each pupil the attitude of readiness to assist others when they need help and to join in group undertakings.

10. To develop in each pupil a thoughtful attitude in the matter of making things easy and pleasant for others.

11. To develop in each pupil elementary skills in the art of printing and an understanding of some of the more common problems of the printer.

A summary of the teachers opinions is provided in Table XII.

Twenty-three teachers added one or more additional objectives in a space provided for that purpose. The writer carefully analyzed these objectives and found that in the main they were the same as those in the questionnaire only stated in the teacher's individual manner. "To develop attention to the use of good English," was the only new objective found and this was mentioned by six teachers.

XIV. PRODUCTION

Eighty-six of the eighty-seven school print shops in this survey stated that they did the school printing, leaving only one shop to report that no production work was done. Printing for anyone outside the school system was reported as being done by only six of the school shops and four of them stated that they printed only for churches, boy scouts, and charitable

TABLE XII

FREQUENCY OF RECOGNITION AND DISAPPROVAL OF OBJECTIVES
PRESENTED TO TEACHERS OF INDUSTRIAL ARTS PRINTING

Number of objective	Number of teachers accepting the objective	Number of teachers disapproving of the objective	Number of teachers non-committal
1	50	7	30
2	64	0	23
3	43	9	35
4	62	0	25
5	52	7	28
6	63	0	24
7	57	3	27
8	65	0	22
9	58	4	25
10	49	6	32
11	63	1	23

organizations. The two shops that did printing for anyone, were located in small towns where there were no commercial shops.

The writer is of the belief that the printing instructor should control the production work and therefore was pleased to find that 51 teachers in this survey of 87 schools controlled the production work. The production work was controlled by the principal in ten schools, by the superintendent in twelve schools, and in thirteen shops it was indicated that there was no particular person in control of the production work.

Twenty-seven schools indicated that they did not keep a record of the value of the production work. The sixty schools that gave this data varied from the small amount of \$100.00 per year to the other extreme of \$30,000.00 per year. The total amount reported was \$212,555.00, an average of more than \$3,500.00 per school, and it was estimated that approximately 50 per cent of this amount was saved the respective school systems annually. The distribution of the schools in relation to the amount of production work done is shown in Table XIII.

Forty-eight schools indicated that the local printers were in favor of printing being taught in the school as an industrial arts subject, eleven schools had the disfavor of the commercial printers, eighteen reported that the commercial shops were divided on the question, and ten schools gave no information on this point.

TABLE XIII
VALUE OF PRODUCTION WORK DONE IN SIXTY SCHOOLS

Value of work done	Number of schools
\$ 100 - 1000	17
1001 - 2000	11
2001 - 3000	6
3001 - 4000	5
4001 - 5000	12
5001 - 6000	3
Over 6000	6
Total	60
Median	\$2334.33

XV. EQUIPMENT

A list of the major printing equipment was printed in the questionnaire and the teacher was asked to indicate the number of each and to estimate the value of the printing equipment his shop possessed. Table XIV shows the amount of equipment as reported by the 87 schools. As a whole the reports indicated that the schools were fairly well equipped for the teaching of industrial arts printing. Eleven schools did not report the value of their equipment. The 76 schools giving these data indicated an average equipment valuation of approximately \$7,775.00 per school. The values reported with the number of schools reporting them are given in Table XV.

XVI. SHOP PROBLEMS

The last item on the questionnaire was as follows: "In teaching printing what have you found to be some of the more difficult problems?" There were only five teachers that failed to answer this question, and the rest gave from one to five of their most difficult problems. "Keeping cases clean," led the list of problems, being mentioned by 38 teachers. "Keeping type off the floor," was listed by 21 teachers. Some of the teachers wrote letters concerning their problems, proving that these problems are serious and deserve attention. Following is a list of the problems giving the number of times each was mentioned.

Keeping cases clean - - - - - 38

TABLE XIV
MAJOR SHOP EQUIPMENT

	Number	Number of schools	Number of schools reporting none	Number not answered
Cylinder presses	24	23	64	
Job presses	227	87		
Cutters	95	87		
Folders	7	7	80	
Stitching machines	74	71	16	
Linotypes	19	14	73	
Number of cases of types	11,272	82		5
Stones	171	86		1

TABLE XV
VALUE OF PRINTING EQUIPMENT

Number of schools	Value of equipment
1	\$ 200
1	1,000
1	1,800
4	2,000
5	2,500
9	3,000
3	3,500
1	3,800
3	4,000
2	4,500
12	5,000
1	5,500
6	6,000
2	7,000
1	8,000
1	9,000
1	9,500
3	10,000
1	10,500
1	11,500
3	12,000
1	14,000
5	15,000
1	16,000
1	18,000
3	20,000
1	25,000
1	30,000
1	35,000
Total	590,800
Median	4,715.29

Keeping type off the floor -	31
Proper care of materials and equipment - - - - -	29
Too large classes - - - - -	11
Getting students to be accurate - - - - -	10
Getting students to be considerate of others - -	8
Regulating production - - -	6
Getting proper equipment - -	6
Periods too short - - - - -	4
To overcome monotony - - - -	2
Loafing - - - - -	2
Preventing accidents - - - -	2
Keeping stock clean - - - -	1
Keeping records - - - - -	1
Cutting stock accurately - -	1

CHAPTER III

SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

I. SUMMARY

Replies from eighty-seven schools representing all sections of the United States were used in this study.

Approximately 89 per cent of the schools accepted general education as their specific aim, either alone or in combination with the exploratory aim.

Fifty-five per cent of the teachers have either one or more degrees. Only thirty-three per cent of the teachers have over four years college work and over fourteen per cent of the teachers reporting indicated no college work. Thirty-two teachers indicated teaching experience of ten years or less; there were twenty-one that had had no shop experience outside of the school shop.

No other subjects were taught by sixty-eight of the ninety-five teachers included in this survey.

Eighty-four schools reported a total of 8,749 printing students, an average of 104 plus for each school.

More than sixty-eight per cent of the schools had twenty or more students in each class.

The printing classes met five days a week in nearly all of the schools but the minutes per day varied from 40 to 120.

The student could take printing for four semesters or more in 67 of the 87 schools. Sixty-eight schools reported 1,000 or over for their total enrollment, and thirty-five of these had an enrollment of 2,000 or over.

No text-books were used by forty schools, and in the forty-seven where text books were used, "The Practice of Printing," by Polk, was the most popular. There were numerous reference books listed.

Each objective was accepted by over half of the teachers, and six teachers suggested adding to the list, "To develop attention to the use of good English."

Only one school in this survey indicated that the print shop did not do production work. Fifty-one of the printing teachers controlled the production work. An average of over \$3,500 worth of printing done annually was revealed by this study, with a saving of approximately half this amount. There were only eleven cases where the school shop had the disfavor of the commercial shops.

The data received indicated an average of approximately \$7,775 for each school as the cost of the printing equipment.

There were several problems mentioned by the teachers, but the three most frequently named are; "Keeping cases clean," "Keeping type off the floor," and "Proper care of materials and equipment."

Using the medians, found through this survey, one may assume that the typical high school printing instructor has four years

of college training, twelve and seven tenths years of teaching experience, and four years of shop experience outside of the school shop. The typical printing class has 23.3 students in it and meets for 64 minutes per day. The enrollment in the typical high school offering industrial arts printing is 1,776, and offers printing 4.2 semesters. The shop in this school has equipment valued at \$4,715.29, and its production work is estimated at \$2,334.33 annually.

II. CONCLUSIONS

This study summarizes the present status of industrial arts printing education in the United States. This type of education is being conducted in all sections and in all sizes of schools, but is more prevalent in the larger ones.

A large majority of the teachers questioned in this survey agreed on the general education aim, and indicated that the teachers' objectives listed on the questionnaire had been their teaching guide.

The college training of the printing teacher is rather low as only fifty-five per cent indicated degrees, and fourteen per cent had no college work. This is caused by having to take men from industry to teach this relatively new educational subject.

The large enrollment of printing students, the time spent in classes, and the value of the equipment used, indicate the important place printing has in our schools of today.

Very few teachers of printing are expected to teach anything besides printing, but this survey reveals that printing classes are entirely too large. This fact perhaps would be remedied to some extent if well qualified teachers were more plentiful.

This study proves that there is no shortage of instructional material in printing, but the problem of proper selection is not solved. About fifty per cent of the teachers are using no text-books, but most of them are using teachers aids of some kind. Many teachers are using their own lesson sheets.

Production is expected of the industrial arts shop, but most of the teachers reported that they controlled this work. The teacher can use production work to a great advantage if he is able to control it himself and not have too many "rush jobs."

In general the commercial printer is for printing in the schools if outside work is not done by the school shop.

The data received indicate that industrial arts printing education is alive and moving; time and money are being spent; teachers are serious about their program; students of printing are numerous; the shop pays its way by production work; therefore, it is a permanent part of our educational system.

III. RECOMMENDATIONS

The printing teacher must go on to college and increase his training to help put the subject of printing on the same basis as other subjects. The writer does not believe that the

teacher needs a great number of years of shop experience, but some shop experience should be required of each teacher. Further study should be made to try and determine what is needed along this line.

The printing classes are too large, and if teachers and equipment can not be procured, the teacher should be allowed to limit his classes to a certain size. This study does not attempt to determine the size of classes, but the writer suggests that eighteen be the limit in printing classes where there is production work to be done.

There should be more unity in regard to the number of minutes per day classes meet, but the various schedules used by the different schools would make this matter difficult to remedy.

The fact that so few of our many smaller high schools offer printing is indeed alarming to the advocates of printing education. The small schools need not spend as much for equipment as the larger ones, and the maintenance is usually much less for the print shop than that for other shops. It is often that the production work soon pays for the equipment. The equipment for the industrial arts shop need not be so elaborate as that for the vocational shop, but there are certain things that are necessary. The administrators should always consult the teacher when equipment is bought, otherwise some unnecessary pieces may be bought while the shop is in need of perhaps a less expensive piece of equipment.

There are several text-books and a great deal of reference material available for the teacher of printing, but what is better to use is another question. The writer suggests that an impartial analysis be made of the many text-books and lesson sheets and the results be made available to the teachers.

A large amount of production, if not properly arranged, can offset a great deal of the educative value. This matter should be controlled by the printing instructor and so arranged that the full amount of the great educative value of printing may be obtained. The training in industrial arts courses should be production of quality printing and learning about the materials and cost of the work. The printing industry will be ready to accept the school shop if critical appreciation of good printing is developed on the part of the buying public.

This study, so far as the writer has been able to find, is the only survey that has been made of industrial arts printing. Similar studies made in the future compared with this one will furnish definite conclusions as to where industrial arts printing education is going and at what speed.

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APPENDIX

I. TEACHERS' COMMENTS

The comments that were written in the margins of the returned questionnaire were indeed interesting. The most interesting to the writer are as follows:

"Your questionnaire gives promise of making a very interesting study and I should like very much to hear from you when you have completed it. I think a great deal of good could be done printing education through just such a study as this one you are making, particularly as regards aim and objectives and statistics with reference to production work."

"I am no fool optimist. To save me I can see no good that has been derived from questionnaires."

"I like your list of objectives."

"Permit me to express my heartiest approval of your undertaking in your study. Such studies are greatly needed. I have found a lively interest in this sort of thing on part of progressive men in the printing industry."

"I hope your findings will in due time be available to those of us who feel deeply for the welfare and progress of printing education."

"If you get thirty per cent of the teachers to return your questionnaire you will be able to consider yourself lucky."

"The burden of so much job work in school shops would not be there if it was not for the fact that when ever a printer gets a bid on a job he wants to skin the board."

"Although this is an industrial arts shop, a number of boys have gone out from here with quite a goodly amount of time recognized toward their apprenticeship."

TEACHERS COLLEGE PRESS
Indiana State Teachers College
TERRE HAUTE, INDIANA

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J. C. TRANBARGER, Director

Head of Printing Department:

The Teachers College Press is making a study of the teaching of printing in the high schools of the United States. In order that this study may be as complete and accurate as possible, we will need the data called for on the inclosed questionnaire.

Believing that this study will prove to be both interesting and valuable to the field of printing education, we are asking your cooperation in making it. Your contribution will be the filling out of the questionnaire that we have tried to make brief and to the point. We will welcome any comment you may wish to make.

Please return the questionnaire as soon as possible. A stamped addressed envelope is inclosed for your convenience in replying.

Your hearty cooperation will be appreciated. Thank you.

Yours very truly,

TEACHERS COLLEGE PRESS,

J. C. Tranbarger, Director

T:m

Name of Head Printing Instructor.....

School

City....., State.....

Which do you teach, industrial arts printing or vocational printing?.....

Please underline the specific aim or aims you accept for your printing course: Vocational education;
prevocational education; general education.

Number of years college training you have had..... Degrees held.....

Number of years you have taught printing.....

Number of years of shop experience outside of teaching.....

Number of printing instructors in your school.....

Please make a statement as to their teacher training and shop experience.....

Do you or your assistants teach anything besides printing?.....

If so, what?.....

Number of pupils taking printing..... Average number in each class.....

Number of minutes per day classes meet..... Number of days per week classes meet.....

How many semesters of printing do you offer?.....

What is the enrollment of your school?.....

Do you use a textbook?..... If so, what book?.....

Please list with authors' names the other teachers' aids you use, such as job sheets, etc.....

Following is a list of objectives for the teacher of industrial arts printing and space for additional ones you may wish to add. Please check the objectives you think can and should be accomplished by the industrial arts printing teacher. Please cross out the objectives you think should not be accepted by the industrial arts printing teacher.

1. To develop in each pupil an active interest in printing.
2. To develop in each pupil an appreciation of good printing.
3. To develop in each pupil a feeling of self-reliance and confidence in his ability to deal with people and to care for himself in an unusual or unfamiliar situation.
4. To develop in each pupil an attitude of pride or interest in his ability to do useful things.

- 5. To develop in each pupil the ability to select wisely the printing matter to be bought or used.
- 6. To develop in each pupil the habit of an orderly method of procedure in the performance of any task.
- 7. To develop in each pupil the habit of self-discipline which requires one to do a thing when it should be done, whether it is a pleasure or not.
- 8. To develop in each pupil the habit of careful, thoughtful work without loitering or wasting time.
- 9. To develop in each pupil the attitude of readiness to assist others when they need help and to join in group undertakings.
- 10. To develop in each pupil a thoughtful attitude in the matter of making things easy and pleasant for others.
- 11. To develop in each pupil elementary skills in the art of printing and an understanding of some of the more common problems of the printer.

Others

.....

.....

.....

Do you do the school printing?..... Do you do printing for anyone outside of the school system?.....

Do you control the production work?..... If not, who does?.....

What is the approximate value of the work done for the school each year?.....

What is the approximate amount you save the school annually?..... On this basis how much does printing instruction cost the school?..... Are local printers for or against school shops?

Number of cylinder presses..... Number of stitching machines.....

Number of job presses..... Number of linotypes.....

Number of cutters Number of cases of type.....

Number of folders..... Number of stones.....

Total approximate cost of your equipment.....

In teaching printing what have you found to be some of the more difficult problems? e. g. keeping cases clean; keeping type off the floor; etc.

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