

**AN ANALYSIS OF THE USE OF THE DIRECTED STUDY METHOD
IN TEACHING INDUSTRIAL COOPERATIVE TRAINING
STUDENTS IN THE HIGH SCHOOLS OF VIRGINIA**

by

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CHAPTER I

INTRODUCTION

Background of the Study

Historically, the operation of the public schools in Virginia has been a concern and a responsibility of the local school district. The State Board of Education has avoided any attempt to assume an authoritarian role and has acted rather in an advisory capacity, recommending action and lending assistance as requested when and where most needed in the localities. As a result, variations may be found in curriculum offerings, local school policies, and teaching procedures in the different school districts of the state. The Cooperative Work-Training Program in Virginia is no exception; implementation of the related study programs in this field has been largely a matter of local administration. The procedure in most work-experience education has been one of delegating the responsibility for selecting the methods of teaching to the Industrial Cooperative Training coordinator.

In order to meet the requirements for certification to teach in this field, the coordinator must have completed courses at the college level in methods and procedures of instruction in Industrial Cooperative Training. A substantial number of coordinators have exceeded minimum requirements by doing additional work on the graduate level. Many have also had experience in industry; some have had teaching experience in industrial arts and in other areas. In spite of the basic requirements and steps toward uniformity, there has been a noticeable individuality

among the Industrial Cooperative Training work-training programs in the state. This lack of consistency and homogeneity in instruction among these programs has contributed largely to the need for this study.

Statement of the Problem

Since methods and procedures used in teaching subject matter to pupils in the Industrial Cooperative Training classes in the high schools of Virginia were left mainly to the judgment and preference of the individual coordinator, considerable variation resulted among the several school programs. These variations were observed in subject matter, classroom procedure, teaching methods, and student activity in class. The degree of variation was revealed to a great extent in the reports from the individual schools to the Industrial Education Service of the State Department of Education. This study was an attempt to determine and analyze some of these variations. The specific problem was An Analysis of the Use of Directed Study Method in Teaching Industrial Cooperative Training Students in the High Schools of Virginia.

Need for the Study

It is the considered opinion of this researcher that greater uniformity on a broad basis of consistency in methods of providing related instruction would result in more effective teaching in Industrial Cooperative Training. This opinion is supported by statements from the Industrial Cooperative Training coordinators in their workshops over a period of seven years and in person to this researcher during the same period. It is further supported by expressed opinions of the State

Supervisor responsible for Industrial Training.

Purposes of the Study

The purposes of this study were: (1) to examine the methods being used in providing directly related instruction in the better programs of the state; (2) to evaluate the effectiveness of such programs in accomplishing the desired objectives for Industrial Cooperative Training; (3) to make recommendations for improvement of directly related instruction to Industrial Cooperative Training, and (4) to suggest significant areas for further study in the field of Industrial Cooperative Training.

Limitations of the Study

This study was restricted to directly related instruction in the Industrial Cooperative Training programs included in the investigation. The Industrial Education Service of the State Department of Education provided this researcher with a list of the 30 Industrial Cooperative Training programs to be used in the study. These 30 programs were designated as "above average" in their programs of directly related instruction as determined by the reports of the coordinators to the State Department of Education. They constituted the upper half of the state programs which filed reports with the State Department for the preceding year.

Definition of Terms Used

Trade and Industrial pursuits. "Trade and industrial pursuits may include:

1. Any industrial pursuit, skilled or semi-skilled trade, craft.

- or occupation which directly functions in the designing, producing, processing, assembling, maintaining, servicing, or repairing of any product or commodity.
2. Other occupations which are usually considered technical and in which workers such as nurses, laboratory assistants, draftsmen, and technicians are employed and which are not classified as agricultural, distribution and other business, professional or homemaking.
 3. Service occupations which are trade and industrial in nature.¹

Industrial Cooperative Training. Known in Virginia before August, 1961, as Diversified Occupations, Industrial Cooperative Training is a form of cooperative part-time education designed to provide opportunities for high school juniors and seniors to train in trade and industrial occupations.² It is a cooperative undertaking between the business enterprises of the community and the high school. Cooperating business and industrial establishments of the community furnish part-time employment and training to participating students during school hours; in this situation the students learn the manipulative parts of their jobs under actual working conditions. At the same time the school furnishes, in the classroom, the technical subject material related to the job being learned. The school also provides a qualified instructor and counselor known

¹United States Department of Health, Education, and Welfare, Administration of Vocational Education, Rules and Regulations, Vocational Education Bulletin No. 1, General Series No. 1, Revised 1958, 102.71, pp. 16-17. (Washington: Government Printing Office, 1962).

²Mrs. Jessie M. Sharpe, Director of Division of Women and Children, State Department of Labor and Industry, "Virginia Labor Laws for Industrial Cooperative Training," letter to "All Coordinators of Industrial Cooperative Training," August 29, 1960.

as a coordinator, who directs the learning of the students in their study of related technical information and visits them periodically on the job. He works closely with the employer to insure proper relationship with the student and to correlate related study material with the operations the student learns on the job as a student-learner employee. In the related study classroom, as many occupational interests may be represented as there are students enrolled. Each student, however, follows an organized course of study designed especially for him, peculiar to the occupation he has selected as representing his chosen career field.³

Directly Related Instruction. Information which pertains to a student's particular occupation is known as directly related information. Classroom instruction in this field is called directly related instruction. "The directly related information is that which is necessary for an individual to possess to enable him to perform manipulative skills."⁴

³"General Information Pertaining to the Operation of a Diversified Occupations Program," Diversified Occupations Bulletin No. 1, Revised August, 1957, (The State Board of Education, Industrial Education Service, Richmond, Virginia, p. 1).

⁴C. E. Rakestraw, Training High-School Youth for Employment, (Chicago: American Technical Society, 1951).

Generally Related Instruction. This type of instruction involves the technical auxiliary information that is generally related to the skills necessary for the job and includes certain other related studies designed to promote civic growth, employer-employee relationships, safety on the job and in all other daily activities, personal development, and general education. Generally related instruction is usually given to the entire class at one time through formal classroom procedure, and therefore has not figured prominently in this study.

Coordinator. That person employed by the local school board to coordinate the work-training program in the school and community. He is responsible for providing counseling and guidance to the students and for directing their occupational study in the classroom.

Joint Coordinator. The coordinator who shares his teaching and coordinating time equally between an Industrial Cooperative Training program and a Distributive Education work-training program.

Industrial Education Service. That branch of the State Department of Education of Virginia having direct supervision of Industrial Cooperative Training, and the responsibility for promoting effective training within this program is the Industrial Education Service of the Division of Vocational Education.

Credit. Students who successfully complete courses in Industrial Cooperative Training in Virginia high schools will receive two units of credit per year toward graduation. These credits are the

equivalent of those earned in other high school classes.

Method of Investigation

Preparation. Initial steps in setting up this study were taken in July and August of 1962. The most significant of these were consultations with recognized authorities in the field of vocational education and the cooperative work-training programs in Virginia. Chief among these leaders in the field of this investigation were George E. Wallace, State Supervisor, Industrial Education Service, Virginia State Department of Education; Warren H. Overstreet, Assistant State Supervisor, Industrial Education Service, Virginia State Department of Education; Professor Harry W. Sanders, Head, Department of Vocational Education, Virginia Polytechnic Institute, retired; and the staff of the Vocational Education Department, Virginia Polytechnic Institute. These educators agreed that research in methods of teaching directly related subject matter in Industrial Cooperative Training in Virginia not only was desirable but was long overdue.

Investigation of Other Sources. Vocational Bulletin No. 264, Trade and Industrial Series No. 65, Research in Industrial Education, "Summaries of Studies, 1930-1955,"⁵ and its sequel, Bulletin No. 293,

⁵United States Department of Health, Education, and Welfare, Research in Industrial Education, "Summaries of Studies, 1930-1955," 1957, Vocational Bulletin No. 264, Trade and Industrial Series No. 65, (Washington: Government Printing Office, 1957).

Series No. 72, "Summaries of Studies, 1956-1959," were obtained from the United States Department of Health, Education, and Welfare⁶ and examined carefully to determine whether other research had been done in the field of this study. No record of such research having been found in these bulletins, it was concluded that none had been done in this field up through the date covered by the supplemental bulletin; i.e., 1959. The 1959-1960, 1960-1961, and 1961-1962 volumes of Master's Theses in Education,⁷ Volumes 9, 10, and 11 respectively, were examined for possible studies after 1959; this investigation revealed that none had been made on the subject of this research at any graduate school in the United States after 1959. These findings led to the determination that no study had previously been made of the methods and procedures involved in teaching directly related subject material either in Industrial Cooperative Training or in its forerunner, Diversified Occupations.

Procedure

Following establishment of the conclusion that no previous study had been made on the subject under investigation, the researcher prepared a questionnaire for distribution to the coordinators in the Industrial Cooperative Training programs in Virginia listed as above average.

⁶United States Department of Health, Education, and Welfare, Research in Industrial Education, "Summaries of Studies, 1956-1959," 1961, Vocational Bulletin No. 293, Trade and Industrial Series No. 72, (Washington: Government Printing Office, 1961).

⁷H. M. Silvey, (ed.), Master's Theses in Education, (Iowa State Teachers College, Volumes 9-11, Cedar Falls, Iowa: Research Publications, Cedar Falls Bureau of Research).

The questionnaire was reviewed with some members of the graduate committee, and with Mr. Overstreet of the Industrial Education Service of the Virginia State Department of Education. It was revised and forwarded to the coordinators concerned with letters of transmittal from the researcher and from Mr. Overstreet, requesting their full cooperation in completing the questionnaire and returning it promptly. The letters and questionnaire were mailed to 31 coordinators; 30 were completed and returned as requested. Copies of the questionnaire and letters of transmittal may be found in Appendix A (pages i, ii, and iii) of this thesis.

The Industrial Education Service of the State Department of Education also supplied a list of seven other State Departments of Education which had achieved distinction in their cooperative work-training programs for high school pupils. Inquiries were sent to each, and replies were received from all describing in more or less detail the operation of the program within their states. A copy of the inquiry form and letter are found in Appendix D (page vi), and Appendix E (page vii).

CHAPTER II
A REVIEW OF THE DIRECTED STUDY METHOD

Objectives

A basic objective of Industrial Cooperative Training was found to be the preparation of the high school student for entrance into trade and industrial employment offering long-term opportunities for occupational growth and development. Hence, a primary function of related instruction in the Industrial Cooperative Training classroom was determined to be the offering of instruction which would best contribute to the attainment of this objective. It was discovered that such instruction was considered important both in the quality of the instructional material and in the manner in which it was presented. In order to carry out such a function, it was found necessary to establish long-range as well as immediate goals. While some immediate goals might be concerned with high school credits, part-time employment, and regular income, the long-range or permanent goals were also required. These were determined to be goals which had to do with the professional or vocational preparation of the student for his place in the social and economic society of his community. Such goals involved study with a purpose, an important phase of which was found to be planned instruction.

It was found that one of the early problems coordinators had been forced to cope with was that of providing related instruction which was truly related. One of the reference works used by coordinators in studying the nature and requirements of the coordinator's job made a

detailed reference to the frequency of such a deficiency as follows:

Related Technical Instruction Should Be Truly Related, and It Should Be Based Upon an Analysis of What Competent Workers in a Given Occupation Are Required to Know. --Far too much of our "related subjects" in preparatory vocational industrial education has been just academic science and mathematics colored with a bit of vocational flavoring in order to secure federal and state reimbursements. The "drawing" has often been technical drawing instead of plan reading and sketching. Many teachers have been incompetent, have lacked trade experience in even one occupation. We have not been willing to pay the price of segregating groups of trainees either by trade or by accomplishment levels. On the whole, related subjects have been the weak link in preparatory vocational industrial education. Yet it grows daily in importance. Subject matter should be based on an analysis of real trade needs . . . Better class organization is necessary. Various trades do not require the same kind and amount of related-subjects instruction.⁸

The Virginia State Department of Education was found to have faced the issue forthrightly in the establishment of the programs of Industrial Cooperative Training in Virginia.

Related Instruction: The Directed Study Method

Among the earlier instructions issued to the Virginia coordinators from the State Department were those pertaining to related instruction. The following requirements for coordinators were issued in 1954:

A definite part of the coordinator's duties is to provide related instruction for his student-learners. Related study is directed in the classroom by the coordinator and is a required school subject for all diversified occupations students.

⁸John F. Friese, Course Making in Industrial Education, (Charles A. Bennett Co., Inc., Publishers, Peoria, Illinois, 1946, 1948, pp. 71-72).

Because of the diversity of occupations or trades included in the program, it is not likely that the coordinator would have the technical knowledge necessary to teach all of the occupations or trades in which the student-learners would be engaged. It is necessary, therefore, to direct the learning of each diversified occupations student.

A directed and supervised study plan is used which makes use of study guides, assignment sheets, textbooks, and other media adapted to the needs of the individual student.⁹

Fulfillment of the requirements stated above and compliance with the procedures directed in the instruction quoted resulted in acceptance of the directed study method of teaching directly related materials in the Industrial Cooperative Training programs of the State of Virginia as standard procedure. It was further recommended in connection with the percentage of teaching time to be devoted to directly related instruction:

This type of instruction is directly related to the performance of manipulative skills. These skills involve depicting, shaping, forming, and assembling operations plus auxiliary operations necessary to do the job. Approximately 70 per cent of the student's related study time is spent on directly related material.

Directly related instruction is administered on a supervisory and directed study basis where the individual needs of each student are met. Each student-learner is treated individually.¹⁰

⁹Diversified Occupations Bulletin No. 2, Handbook for Coordinators of Diversified Occupations, p. 32 (State Board of Education, Richmond, Virginia, August, 1954); and Diversified Occupations Bulletin No. 1, 1957, op. cit., p. 12.

¹⁰Handbook for Coordinators, op. cit., p. 8.

Basic Requirements

For an adequate directly related instruction program the Virginia State Department of Education stated certain basic requirements of instructional materials and teaching personnel which must be available.

Materials listed in the Handbook for Coordinators included: "Library facilities: (1) at least one book for each occupation represented, (2) trade journals and magazines, and (3) at least six generally related books."¹¹

Since the coordinator was found to be the principal teacher in the related instructional program, there devolved upon him the responsibility of being adequately qualified for the teaching requirements of his program. It was observed that he must "have the ability to meet and deal with business leaders of the community. In securing and maintaining their cooperation, he must be familiar with business and industrial practices. Above all, he must like people and believe in youth."

"Much of the success of the diversified occupations program depends on the coordinator. His duties are many and varied. He is an administrator, supervisor, teacher, and counselor, all in one."¹²

Sources of Materials

Study guides for numerous occupations had been prepared by the Virginia State Board of Education and made available to coordinators and

¹¹Ibid, p. 32.

¹²Ibid, p. 2.

students in Industrial Cooperative Training classrooms. However, most of the Virginia study guides were prepared many years ago and few have been revised; they were found in virtually all cases so outdated as to be of little value in related instruction in the classroom. In June, 1952, Instructional Materials for Diversified Occupations, Bulletin No. 4,¹³ was prepared and a copy supplied to each coordinator in Virginia. This publication was found to be a thoroughly comprehensive catalog of source materials for Industrial Cooperative Training classes. It contains, first, an alphabetized index of study guide bibliographies, with their sources, for about 75 major headings of occupations in trade and industry, broken down into some 245 job titles. This section is followed by a list of texts, study plans, and reference texts available for specific jobs listed in the index, giving classification, source, and the prices at the time the list was compiled. A third section lists the sources of the study guides, giving the State Departments which produce them, the commercial publishers, and certain trade and industrial sources. A final section contains an index of all publishers of items included in the bulletin. Supplements to this bulletin will be issued and distributed to the coordinators as changes and additions are available.

¹³ Instructional Material for Diversified Occupations (Bibliographies), Diversified Occupations Bulletin No. 4, (The State Department of Education, Trade and Industrial Education Service, Richmond, Virginia, June, 1959).

Methods of Financing

Since the financing of public education in Virginia is primarily a responsibility of the local school district, it was not surprising to learn that there were wide variations in the procedures used to secure funds for supplying the basic requirements of the Industrial Cooperative Training programs. In fact, at one extreme were the school systems in which all material for related instruction was paid for by the school, and at the other extreme the systems in which each student was required to purchase all the related material he used. This applied to basic texts, reference texts, study guides, workbooks, and all expendable items used for related instruction. It was the opinion of the coordinators in the latter group of systems that the related instruction in their programs would not likely be as varied, complete, or adequate as in those programs in which all or part of the related instruction materials were furnished by the school system.

The acuteness of the problem of adequate instructional materials for related instruction is emphasized in Chapter IV in the replies of coordinators to the questionnaire used in this study.

CHAPTER III

FINDINGS OF THE STUDY

The data received from the coordinators of the 30 Industrial Cooperative Training programs of the State of Virginia in reply to the questionnaire submitted to them as described on page 15 contain several items of information which merit special attention and further analysis. A survey of seven other states revealed that all used the supervised group study plan for directly related instruction, conducted by the directed study method. Explanatory comments were added by three supervisors of other state systems as follows:

"Our . . . study guides for individual study have assignments with specific texts and references. The exact pages to study are indicated. The student responds to objective type questions after his readings either as a test or as facts to find out or both."

"If sufficient part-time job placements can be made in one trade only, it is desirable to form a separate related subjects class for each trade objective. If insufficient jobs are available to justify separate trade classes, more than one trade can be represented in the related subjects class . . . In such mixed classes the related instruction must be directly related to each trade represented in the class."

"The procedure most successfully used by a teacher-coordinator in presenting related instruction in a diversified program is the directed-study technique."

Occupations in the Programs

The number of different occupations included in the Industrial Cooperative Training programs of the coordinators responding to the questionnaire varied from a high of 19 in one program to a low of five

in another. The responses indicated that the program having the high of 19 occupations was a full-time Industrial Cooperative Training program, and that the program having a low of five was a joint Industrial Cooperative Training - Distributive Education Program. The average number of occupations in the full-time Industrial Cooperative Training programs was found to be about 11. There were seven joint coordinators among those included in the survey. The average number of occupations in the joint programs was approximately eight. The data revealed in Table 1 show the range of different occupations represented through student on-the-job training in Industrial Cooperative Training. These figures would appear to support the contention of coordinators and supervisors that some method of supervised directed study on an individual basis is essential to the operation of a cooperative training program. The problem of coordination is apparent from the data showing that 87 percent of the local programs have from five to 15 different trades represented. Half of the local programs surveyed have students employed in 11 to 15 different trades.

TABLE I
NUMBER OF DIFFERENT OCCUPATIONS
IN PROGRAMS SURVEYED, 1962-1963

Number of Occupations	Programs	
	Number	Percent
5-10	11	37
11-15	15	50
16-19	4	13

Coordinators' I.C.T. Class Periods

The number of class periods spent daily in teaching or in co-ordinating the several phases of the Industrial Cooperative Training programs is shown in Table 2 for the coordinators who received and completed the questionnaire.

TABLE 2
**DAILY CLASS PERIODS DEVOTED TO INDUSTRIAL
COOPERATIVE TRAINING**

Coordinators	No. Periods in Related Study				No. Periods in Other Coordinating Activities				
	1	2	3	4	1	1½	2	4	4
Full Time	4	10	6	1	0	0	11	8	2
Joint	9	0	0	0	3	1	3	2	0
Total	13	10	6	1	3	1	14	10	2

Some coordinators have accepted school responsibilities for class periods other than their Industrial Cooperative Training. Such responsibilities include home room assignments, study halls, and guidance activities.

Experience of Coordinators

Figure 1, page 27, shows the number of years' experience of the coordinators who provided information for the study. It will be noted that these coordinators had from one to 26 years' experience in the Industrial Cooperative Training program of the State of Virginia. Figure

1 also shows that six coordinators had more than ten year's experience. Comments included in their replies to the questionnaire indicated certain advantages in their related instruction methods which accrued from their increased experience. Among such advantages were wider selection of appropriate directly related materials to be used in classroom instruction, less of a problem in securing valid and suitable materials for directly related instruction, and more effective methods of presentation of these materials in classroom procedure. The methods used in the selection and utilization of directly related instructional materials are described more fully in the following section of this chapter.

Use of Directed Study

Figure 2, page 28, shows the percentage of directly related instructional time devoted to directed study procedures and presentations. It will be noted that all the coordinators used the directed study method for 50 percent or more of their directly related teaching time, reaching a maximum of 85 percent in one program. The average percent of directly related instruction time which was devoted to the directed study method for all programs surveyed was 63.5 percent.

Other significant data regarding use of the directed study method were included in the questionnaire. The six coordinators who had more than ten years' experience used this method in teaching directly related instructional materials 63 percent of the teaching time which they devoted to directly related instruction. The seven coordinators indicated in Figure 1, page 27, as having had fewer than four years' experience also averaged 63 percent teaching time utilizing directed study in

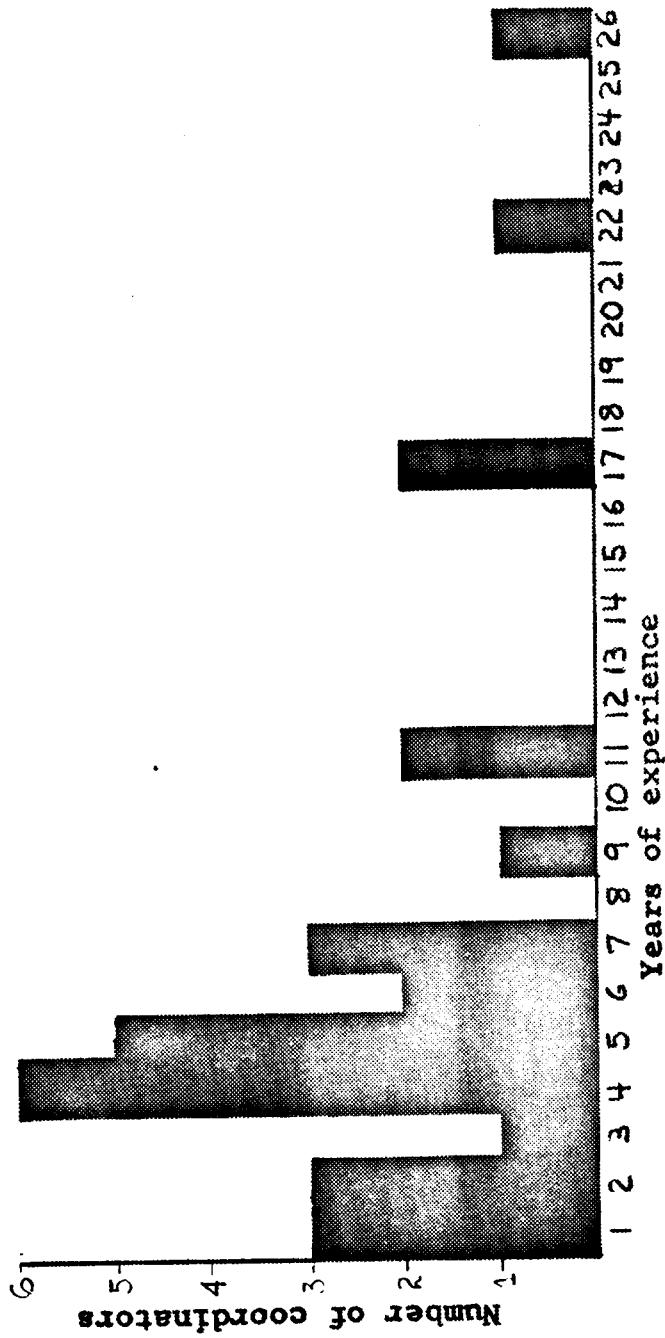


FIGURE 1
EXPERIENCE OF COORDINATORS IN PROGRAMS SURVEYED

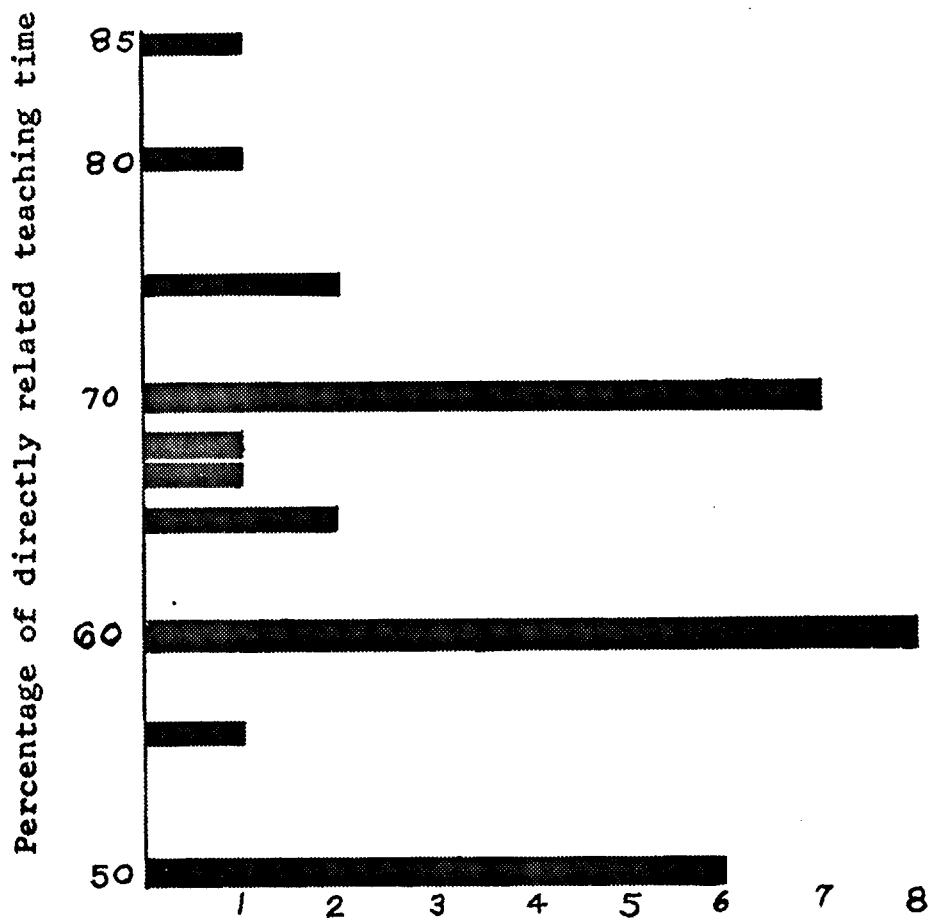


FIGURE 2
PERCENTAGE OF DIRECTLY RELATED INSTRUCTION
TIME DEVOTED TO DIRECTED STUDY
METHOD IN PROGRAMS SURVEYED

teaching directly related material. The seven joint coordinators having above average programs who completed and returned the questionnaire and who averaged eight occupations to the program used the directed study method for directly related instruction 64.6 percent of their directly related teaching time. As to experience, only one of the joint coordinators surveyed had fewer than four years, and none more than six.

All the coordinators regardless of experience in the Industrial Cooperative Training programs, used the directed study method to about the same degree in providing directly related instruction. The use of directed study was in accord with the recommendations of the Virginia State Department of Education in regard to preferred procedure in directly related instruction.

All coordinators who were surveyed in the Virginia Industrial Cooperative Training programs selected the directed study method as first in importance in amount of time devoted to its use in teaching directly related materials, over formal classroom procedure, group discussion, or conference method. Seven coordinators, as illustrated in Figure 2, page 28, used directed study from 50 to 60 percent of their directly related teaching time; and all used this method more than 50 percent of their total directly related teaching time. Four of the six coordinators with most experience used all four methods during the year, as did six of the seven least experienced. Seven of the remaining 17 also made use of all four of the designated methods at some time during the school year.

Although all the reporting coordinators listed the directed study method as that most used in teaching directly related materials in their programs, five listed one of the other instructional procedures as most important and effective in their classrooms as a whole. The reasons they gave follow herewith; the order in which they are given is random.

1. "I feel that our directly related study should be minimized and that a strong course of generally related study developed. Not small units on safety, labor laws, income tax, etc., but such larger units of study as Employer-Employee Relations, Business Law, and others.

"The main courses should be set up and smaller units of study worked on a group basis, special reports, etc.

"While I am using directly related study and have done so through the years, I find it the least effective. I get much better participation on a group-lecture discussion-type class.

"At the same time, I find a lot of my students getting a lot out of their directly related texts."

2. "It must be remembered that differences exist in students' ability and jobs; therefore the coordinator must constantly strive to fit the material to the student and the job. Also, methods and materials should vary to keep the student interested."
3. "My program is located in a small community . . . Training Stations are mostly in small shops.

"Students are in a good learning situation but it is most difficult to set up a schedule of learning experiences.

"I find it most effective to make assignments to students based on suggestions from foremen, managers, or owners as the case may be. Materials, texts, or references will depend upon the nature of assignments. For example: the owner of a garage may wish a student to learn how to perform some particular job on one certain make or model automobile. In this case the student will study this procedure from a manual provided by the employer."

4. "Students are tested on all material that is studied. Types of tests are varied and test results are discussed following grading. Both directly related and generally related material are tested.

"I would like to find more sources of available directly related and generally related study materials, and believe courses of study should be worked out on all the most common I.C.T. subjects. State approved courses of study should be used by all I.C.T. programs, with variation only under unusual circumstances."

Teaching Materials for Directed Study

The types of teaching materials used in directed study in the 30 programs represented in the questionnaire are shown in Table 3.

TABLE 3
TYPES OF TEACHING MATERIALS USED IN DIRECTED STUDY

	Teaching Materials				
	Trade Texts for Students	ICT Class Library: Ref. Books	Study Guides	Work- books	Other
Number Programs Using Material	27	29	29	13	1
Average Number of Occupations	10.5	9.35	8.5	7	15

The data from the questionnaire revealed that only one Industrial Cooperative Training coordinator of those surveyed used no reference texts in the directly related instruction program in his school. However, the use of reference texts varied widely in extent. As reported in the questionnaire and illustrated in Table 5, they were employed in the teaching of only one occupation in one program, but were used in teaching 18

occupations in another. The average number of occupations in the programs statewide, as stated on page 24, was found to be about 11. The data from the questionnaire revealed that textbooks for pupils were utilized in all but three of the programs included in this survey, for an average of almost ten occupations per program in those making use of textbooks. Reference books from the I.C.T. classroom library or from other sources, used in 29 of the 30 programs surveyed, were employed for an average of nine occupations per program using them. Study guides, also used in 29 programs, served in the study of 8.4 occupations per program using them in the directed study phase of classroom activity. Workbooks, an adjunct to the directed study in 13 of the programs, contributed to the study of 6.8 occupations in the programs which employed them as instructional materials.

It was noted as responses were received and recorded in Table 3, page 31, that most of the coordinators availed themselves of the opportunities to secure directly related instructional materials from more than one source. One coordinator had secured source material he considered worthy of special mention for the 15 occupations in his program. In addition to textbooks for students and reference texts for all the occupations in his program, he listed other teaching aids as shown in Table 4.¹⁴

¹⁴From the coordinator's questionnaire.

TABLE 4
OTHER TEACHING AIDS USED BY ONE COORDINATOR

	Teaching Aids			
	Charts	Films	Recordings	Trade Magazines
Number Occupations Using Aids	1	10	1	3

Testing Methods

Examination of the section of the questionnaire which pertained to testing methods revealed, as did the data on instructional procedures and that on teaching methods, something of the extent to which each coordinator was responsible for administering his own program. This is illustrated in Table 5.

TABLE 5
SOURCES OF TESTING MATERIALS USED BY COORDINATORS

	Source				
	Texts Study Guides Workbooks	Prepared by Coordinator	Students' Notes	Other	
Number of Programs	21	27	14	2	
Average Number of Occupations	7.65	8.33	8.7	1	

Of the 30 coordinators submitting data, 21 used commercially prepared tests from textbooks, study guides, or workbooks, or from a

combination from among the three sources. The prepared tests were used in an average of 7.65 occupations among those utilizing this method of testing. The tests were prepared by the coordinators in 28 of the programs from which data were submitted. They were used in an average of eight occupations per program among those in which this procedure was followed. In 14 programs, pupils' notes were used in preparing the tests in an average of 8.3 occupations per program among this group. Two coordinators used other testing methods as follows:

1. "Some tests are prepared by the professional organization (for one occupation)."
2. "One employer does all testing (one occupation)."

CHAPTER IV

IMPLEMENTATION OF THE DIRECTED STUDY METHOD

Instructional Materials

The minimum basic requirements for instructional materials and teaching personnel for Industrial Cooperative Training classrooms were stated briefly on pages 20 of this report. However, a complete investigation of the use of the directed study method in teaching directly related information in the programs included in the study indicated that further examination was essential for accurate analysis of its present application in Virginia. For instance, in the programs from which replies were received to the questionnaire utilized in this study, one specific aid in addition to those considered minimum by the Virginia State Department of Education was found to have been employed with such regularity that it might almost have been considered standard equipment in the Virginia programs. This specific aid is the student's notebook. It was used as an instructional device by 28 of 30 coordinators replying to the questionnaire, with marked similarity in the purposes it served in the various programs.

The Student's Notebook

In all programs using the student's notebook, the notebook was employed to record work experiences and study assignments. In addition, it was used as a teaching aid in directly related instruction by 23 coordinators. Its use and arrangement for the latter purposes, with only slight variations, was as follows:

Section I. Personal data page, giving student's name, address, telephone number, and class schedule. In some cases employment address and telephone number were added after the student's training had begun.

Section II. A section containing records, including a daily trainee work report consisting of a daily record of work experiences and time devoted to each; weekly trainee work report, a cumulative weekly summary of the data from the daily report, continuous for the entire school year, usually recorded on a form supplied to coordinators by the Virginia State Department of Education, a copy of which is included in Appendix F, page viii; and an annual report of hours worked and wages earned with entries on a monthly basis, recorded on a form similar to that in Appendix G, page ix. Daily, weekly, and annual report entries must be balanced on these reports.

Section III. A section on the Diversified Occupations Club of Virginia (DOCV), a professional and social organization of members of Industrial Cooperative Training classes in Virginia.

Section IV. A section containing generally related lesson materials and assignment sheets.

Section V. A record of study of directly related material, including sources and day-to-day progress. A copy of a typical form used for this purpose is included in Appendix H, page x.

Section VI. Students' notes on study; tests and examinations; data helpful and pertinent to the student's own directly related study.

Notebooks were graded, and thereby used in evaluating the student's progress in the classroom, by 13 of the reporting coordinators.

Disposition of the notebook records was also varied. The annual record of earnings and the cumulative weekly report were considered permanent by most of the coordinators giving data on their disposition. The sections of the questionnaire including this information indicated the following final disposal of these records:

Kept on file by the coordinator.

Placed in the student's permanent school record.

Filed temporarily for periods ranging from ten to two years.

Destroyed after student's graduation.

Some coordinators used the students' directly related study notes from the I.C.T. notebooks as an aid in preparation of tests and examinations. The questionnaire showed that 13 coordinators followed this procedure for an average of 8.25 occupations per program using this practice. The number of occupations so tested ranged from a low of two in one program to a maximum of 15 in another.

One coordinator reported sending students from his Industrial Cooperative Training class to other high school classes for specialized instruction. He stated on his questionnaire:

I use every means available to make the directly related work interesting and eliminate the boredom that could creep in. Nursing groups I send to classes taught by the Chemistry professor when it is directly related with the work they will take up in their training, such as drugs and solutions, equations, and simple math in working ratio and proportion.

I've allowed students to attend Home Ec. classes where dietetics are taught. This gives them better instruction than mine, since it is of special nature and up to date.

I allow my printing students to do some work with the graphic arts teacher when he can take them.¹⁵

Other specific instructional materials, above the basic minimum needs established by the Virginia State Department of Education, were noted in several programs. The additional materials worthy of note, with the number of programs employing them, are shown in Table 6.

TABLE 6

METHODS OF SUPPLEMENTING THE I.C.T.
INSTRUCTIONAL PROGRAMS

Type of Material	No. Programs Using
Accessible college library	2
Demonstrations and reports by students	2
Plant tours	2
Publications from business and industry	5
Publications of United States Government	1
Recordings on certain occupations	2
Resource personnel	2
Visual aids	4
Total	20

¹⁵From a coordinator's questionnaire.

Two coordinators, each of whom was employed in a high school near one of the large state universities, made it a regular practice to secure from the college libraries, with the cooperation of the institutions, quantities of supplementary occupational material not available in their own school or class libraries. The coordinator made a study of such available materials and prepared study guides and assignment sheets from them when the assignment sheets were not already available in the materials used.

Demonstrations and reports by students, used in two other programs as indicated in Table 6, page 38, were made to groups employed in occupational fields which made such demonstrations and reports applicable to their situations. One coordinator reported, "On occasion the students actually perform a task that is done on the job: painting, sanding, polishing, etc."

Plant tours, as reported by two coordinators, were utilized primarily for orientation of student employees on new jobs, but could have been extended to include other students whose jobs were of such nature that such a tour might also have been of educational value in their occupational fields.

Publications from business and industry, used by five of the coordinators reporting, were selected because of availability or for direct application to work experiences. One coordinator reported, "I use study guides and materials sent in from companies, etc., wherever possible."

Another coordinator stated, "I find it most effective to make assignments to students based on suggestions from foremen, managers, or owners, as the case may be . . . In this case the student will study procedure from a manual provided by the employer."

One coordinator stated on his questionnaire that several specific companies' (by name), booklets, University of Texas Occupational Kits . . are used in connection with certain occupations.

Only one reporting coordinator made use of available United States Government occupational publications, securing the USAFI automotive mechanics series for students employed in the automotive industry. Two coordinators reported using recordings secured from employers in industry which described job processes; two reported having specialists in certain occupational fields represented in their programs visit their classes to demonstrate skills required in their industries; and four used visual aids pertaining to specific occupations which were included in the program.

Twelve of the 30 coordinators reported using one or more of the supplemental teaching aids shown in Table 6 on page 38. Six of these 12 specified that the student's notebook was utilized as an aid in making use of the additional materials more effective. The basic importance of the student's notebook as a device for implementing the directed study method, as indicated by the 28 coordinators who described their use of the notebook was found to have made it the outstanding factor which contributed generally to the success of the directed study method in the programs surveyed in this research.

Some Specific Needs

Seven of the coordinators who were included in the survey stated that the principal failings they encountered in the present system of handling the instructional processes in the Industrial Cooperative Training programs concerned teaching materials. Their criticisms dealt mainly with the lack of, or insufficient accessibility of adequate instructional materials; with methods of providing instructional materials; and with lack of uniformity in the use of directly related instructional procedure in presenting the materials used in this phase of the instructional program. Their comments follow:

1. "I think that the direct instructional method would be more effective if we had more materials available for the students' use. Most pupils cannot afford to purchase a great deal of material and if there are no funds available from the school for such purchases, then the program suffers."
2. "I have found many problems dealing with directly related material. Most of this is due to the fact that I have not been able to find enough complete and adequate texts and other study materials for every occupation. Many occupations do not have study guides. Many study guides do not have adequate texts. These and related problems have caused difficulty in having the most effective directly related study material."
3. "Extreme care should be exercised in the selection of textbooks. Those having test questions and answers are most desirable as long as availability of such does not determine the quality of the book. End-of-chapter questions should be available by all means. These serve as a good study guide. A possible State Committee responsible for a recommended list of such books might serve well in assisting us here."
4. "I would like to find more sources of available directly related . . . study materials, and believe courses of study should be worked out on all the most common I.C.T. subjects.

State approved courses of study should be used by all I.C.T. programs, with variation only under unusual circumstances."

5. "I have to review the books and study guides. I also borrow books from employers and order ones they suggest. I really need more time in all areas since I am a joint coordinator. Anything done on a State level to help us select teaching materials more effectively would add to the efficiency and effectiveness of our programs."
6. "I definitely need material on occupations which are not so popular, such as 'Mechanic, Maintenance (Motorcycle Repairman)'. I think that we need more up-to-date material and that we should be able to get our hands on this material with relative ease, instead of having to write to . . . different publishers for the materials, only to find that they are no longer in print. I personally feel that we need someone on the state level to keep us informed as to the availability of material in nearly all fields. It irks me no end to write for a study guide, receive same and then find out that the books used as reference books are no longer in print. If we could be kept up to date on these things, it would save us a great deal of time as well as money.

"I do have one complaint regarding study guides. If it could at all be possible, I would like to see some uniformity in the publishing of study guides . . . One will be handled one way and another will use a different procedure."

7. "Most related instruction materials have desired merit. We need more 'up-dated' materials. I placed an order for 15 texts last week; only four publications were printed since 1960. This order was in anticipation of next year's program. My students enjoy more the use of current printings related to their training classification."

CHAPTER V

CONCLUSIONS AND RECOMMENDATIONS

Conclusions

A careful study of the responses made by the coordinators selected for this research through questionnaire and personal interview leads to the following conclusions:

1. This was a study of procedures and techniques presently employed by coordinators in presenting directly related instruction. Thirty leading coordinators from Virginia's 69 industrial cooperative training programs provided information on their methods of instruction. Facts brought out in the study confirmed the principle that greater uniformity in providing and implementing directly related materials would result in more effective instruction in Industrial Cooperative Training. This principle was supported by Industrial Education supervisory personnel of the Virginia State Department of Education and the local coordinators who participated in the study.
2. Of the 30 coordinators surveyed there was a great uniformity in the procedures used in providing directly related instruction.
3. There was agreement among the leading coordinators that the directed study method is the most effective method of teaching the directly related information pertinent to any trade

or industrial occupation. The variations in using this technique appeared to be in amount of class time devoted to the method rather than the application of the method itself.

4. The effectiveness of the directed study method of teaching is related to the quantity and quality of reference materials available. An adequate library of selected materials, including texts, study guides, pamphlets, work books, manuals, etc., appears to be an essential ingredient in a successful directed study program.
5. The cost factor is one of the important problems to be overcome by the coordinators in their efforts to establish a good reference materials library. There appears to be a wide diversity of methods employed to finance such libraries at the present time.
6. There is a need for a central agency, possibly the Industrial Education Service of the State Department of Education, through which study guides, course outlines and other reference materials could be prepared, evaluated, up-dated and distributed.
7. Supplementary instructional resources which can make a worthwhile contribution to the directed study method of teaching are available from many sources outside the school building. Coordinators may employ plant tours, resource persons, college libraries and visual aids to supplement the departmental

- library of reference materials used in directed study teaching.
8. The student notebook is a valuable tool if used effectively and was advocated by 25 of the 30 selected coordinators.
 9. Years of service in the industrial cooperative training program apparently bears little relationship to the use of the directed study method of teaching. This study revealed that coordinators with less than four years experience employed the directed study method as much as those with ten or more years of experience.
 10. It is possible to utilize other high school classes for specialized instruction in some of the related subject areas. Classes in chemistry, mathematics, home economics, vocational and industrial arts may make valuable contributions to the Industrial Cooperative Training student in his individual directed study. Examples of this might be mathematics for printing students, chemistry for practical nurses, dental assistants or cosmetologists, shop skills and operations for many industrial occupations.
 11. The wide diversity of trade and industrial occupations represented in an industrial cooperative training class makes the directed study technique almost mandatory in providing directly related instruction. The study revealed that there were 19 occupations represented in one class and ranged from this high to a low of five.

Recommendations

As observed in previous pages of this study, analysis of data from the questionnaires indicated differences in coordinators' procedures in operating their programs. It was observed, however, that the differences were for the most part in minor details of execution of rather consistent fundamental procedures. In furthering consistency in fundamental operation of the programs, it is recommended that the following steps be taken by the coordinators, as individuals interested in their own personal programs and as a body of cooperating instructors with similar interests and problems:

1. The results of this study seem to support the opinions of the better coordinators that the student notebook is a valuable instructional tool in directed study teaching. Uniform application in the use of the student notebook by Industrial Cooperative Training coordinators would probably lead to more effective instructional programs.
2. Utilize all available school and community facilities to secure adequate Industrial Cooperative Training library and classroom equipment, supplies, and materials. This study brought to light the fact that adequate equipment is necessary for an effective program of directly related study. Inadequate financial support for the purchase of these items can be partially offset by utilization of all available facilities of the school, the community, the government agencies, and the representatives of private industry who

are in charge of public relations and personnel policy.

3. Make a thorough study on a statewide basis of the definitive use of the directed study method. Data from the questionnaires revealed that the majority of the coordinators using the directed study method considered it the most effective method of teaching directly related materials. This recommendation for further study of the use of the directed study method is based on discovery by this researcher that directed study techniques were not always acknowledged with full comprehension, even by coordinators using them, and that the effectiveness of these techniques would be increased measurably with better understanding on the part of those using them.

Other Research Needed in Industrial Cooperative Training

One of the most startling revelations to this researcher in the course of this study was the discovery of the dearth of previous research in the field of Trade and Industrial Cooperative Education. Only one record of a study dealing with any phase of this program was found: a statistical study of the Diversified Occupations program at South Boston, the first program established in Virginia, made three years after the program was inaugurated.¹⁶

¹⁶Robert Wilson Allen, "The Diversified Occupations Program in Virginia," (Unpublished Master's Thesis, The University of Virginia, 1959).

Analysis of the data from the questionnaires disclosed a pressing need for research and study in connection with many phases of Industrial Cooperative Training in Virginia. Some of the areas in which research appears to be most urgent are:

1. It was concluded by this researcher following a study of the accumulated data that Virginia's Industrial Cooperative Training programs need evaluating to determine effectiveness of the directed study method. A specific study, on an experimental basis, under actual classroom conditions of the comparative effectiveness of the directed study method to other instructional methods would be highly desirable. Further, it was concluded by this researcher, from the responses, that results of such a study as is herein recommended would be likely to vary considerably in a program having a large number of occupations from those having few occupations. For this reason such a study, in order to be conclusive, would have to include programs having few as well as those having many occupations.
2. The wide variation in use and interpretation of the directed study method disclosed by analysis of the data received led the researcher to conclude that a most effective and valuable study could be made of the feasibility of a handbook on directed study methods for coordinators. The replies of the coordinators to the questionnaire indicated that such a handbook would go far toward providing greater uniformity in the

teaching of related materials to Industrial Cooperative Training students.

3. There is a need for a comparative study of Industrial Cooperative Training programs in schools where the duties of the coordinator are limited to those of his program and in comparable programs where the coordinator has other school responsibilities.
4. It is the conclusion of this researcher that a comparative study of Industrial Cooperative Training graduates on the job with other employees on the same job would serve a very useful purpose. Comparison of the two groups on such factors as interest, progress, skill development, employer-employee relationships, and cost to industry of training are points to be considered in such a study.

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APPENDICES

APPENDIX A

**QUESTIONNAIRE ON RELATED TRAINING IN
INDUSTRIAL COOPERATIVE TRAINING CLASSES**

IDENTIFICATION:

Name of your school _____

Name of coordinator _____

How long have you been a coordinator? _____ at this school? _____

PHYSICAL FEATURES:

Length of class period _____ No. periods a day _____ How many

I. C. T. classes? _____ Do you have a Homeroom? _____ Enrollment

in H.R. _____ Do you have a study hall? _____ Enrollment in S.H. _____

Are you a school counselor? _____ How many periods? _____ How many

pupils? _____ How many periods do you have for coordinating I.C.T.

activities? _____ How many occupations are included in your program?

_____ About how many each year? _____ What seating arrangement do you use for I.C.T. classes? _____

INSTRUCTIONAL PROCEDURES:

Please check instructional procedures you use; if more than one,

give approximate percentage of teaching time devoted to each:

1. Formal classroom procedure _____ Percentage of teaching time _____
2. Group discussion _____ Percentage of teaching time _____
3. Conference method _____ Percentage of teaching time _____
4. Directed study _____ Percentage of teaching time _____
5. Other (please identify) _____

Percentage teaching time _____

If more than one procedure is used, please rate those used in order of their importance and effectiveness in your program.

If you use the directed study method in your I.C.T. classes, please complete pages 2 and 3 of this questionnaire.

TEACHING MATERIALS FOR DIRECTLY RELATED STUDY:

Do you use:

1. Textbooks for pupils? _____ For how many occupations? _____
2. Reference texts? _____ For how many occupations? _____ What is your source of reference materials? _____
3. Study guides? _____ If so:
 - a. Commercially produced? _____ Number of Occupations _____
 - b. Virginia State Dept.? _____ Number of Occupations _____
 - c. Other? (Please identify) _____

Number of Occupations _____
4. Workbooks? _____ If so:
 - a. Commercially produced? _____ Number of Occupations _____
 - b. Other? (Please identify) _____

Number of Occupations _____
5. Other: Please identify and give details of use, as above.

RECORDS AND REPORTS:

1. What records and reports are pupils required to keep? _____

2. How are the pupils' records and reports used in the program?

3. What disposition is made of pupils' records and reports? _____

4. Please enclose samples of the records and reports used by pupils, with instructions for use of each.

TESTING ON DIRECTLY RELATED STUDY:

1. Type tests used in testing:

a. From commercial tests? _____ Number of Occupations _____

b. Prepared by coordinator? _____ Number of Occupations _____

c. From pupils' notes? _____ Number of Occupations _____

d. Other (Please identify) _____

_____ Number of Occupations _____

2. What specific steps does the coordinator take to relate the

tests to the individual pupils' study? _____

3. Please add any comments which you think will contribute to the evaluation of the effectiveness of the direct instructional methods and procedures used in your program.

APPENDIX B

INDUSTRIAL COOPERATIVE TRAINING
(Diversified Occupations)
Newport News High School
Newport News, Virginia

W. Phil Wynn
Coordinator

Mr. I. C. T. Coordinator
Sometown High School
Sometown, Virginia

Dear I.C.:

It is the opinion of several outstanding educators in Virginia and of certain members of our State Department of Education, that a study of directly related instruction procedures in above average I. C. T. programs in the State may reveal methods of procedures which contribute uniquely to the excellence of instruction in such programs. I have undertaken the study under the supervision and with the cooperation of Professor Harry Sanders, retired Head of Vocational Education at V.P.I.; his successor, Dr. Rufus W. Beamer; Mr. Samuel Kerr, Head of Vocational Industrial Education at V.P.I.; and the Industrial Education Service of the State Department of Education of Virginia.

The "above average" programs have been designated by the Industrial Education Service from data available to them through the State Department of Education. Your program is one of those so designated; it will be greatly appreciated if you will complete the enclosed questionnaire in accordance with Mr. Overstreet's letter included herewith, and will return it to me promptly in order that your contribution to this important field of education in Virginia may lend its weight in determining the findings and recommendations of this study.

Many thanks for your cooperation in this endeavor.

Yours sincerely,

W. Phil Wynn

Enclosures 2

APPENDIX C

MEMO TO: COORDINATORS OF THE INDUSTRIAL COOPERATIVE TRAINING

**FROM: WARREN H. OVERSTREET
ASSISTANT STATE SUPERVISOR
INDUSTRIAL EDUCATION SERVICE
STATE DEPARTMENT OF EDUCATION**

As you may be aware, Mr. W. Phillips Wynn, Coordinator of the Industrial Cooperative Training Program at Newport News High School, is engaged in an analysis of the directed study method of teaching used in I. C. T. classrooms across the state. Your program has been selected and suggested to Mr. Wynn by this office as one making effective use of this method of teaching. You will find enclosed a questionnaire he has prepared that will be helpful in his reaching valid conclusions. Please give it your prompt attention.

The elements for successful determination of the pertinent factors in this study are the careful evaluative judgments of those who use the directed study method. Your program was selected for the coordinator's knowledge of the essential components in the effective use of this method. Therefore, you are urged to give that portion of the questionnaire dealing with the essential items your careful consideration and treatment.

It is our sincere hope that from this study we may achieve greater uniformity on a broad basis of consistency in presentation of related subject material, the results of which will be an improved instructional program for the students in Industrial Cooperative Training throughout Virginia.

Enclosure

APPENDIX D

1. Types of instruction used by the work-training coordinators or instructors in the cooperative industrial work-training program in your State (as distinguished from Distributive Education and Vocational Office Training).
2. Materials used by the coordinators or instructors in teaching pupils in the industrial cooperative work-training program.
3. Sources of teaching materials for industrial cooperative work-training pupils, and use of such materials.
4. Procedures most successfully used by the coordinator or instructor in presenting related instruction to the pupils in the program.

APPENDIX E

INDUSTRIAL COOPERATIVE TRAINING
(Diversified Occupations)
Newport News High School
Newport News, Virginia

W. Phil Wynn
Coordinator

State Supervisor
Trade and Industrial Education
State Department of Education
Columbia, Missouri

Dear Sir:

The Cooperative Work-Training Program in your State has been recommended to me by the Virginia State Board of Education for consideration in a study of the methods and procedures employed in teaching high school pupils in work-training programs. We are endeavoring to determine the practices used by coordinators and instructors who supervise junior and senior high school pupils in work-training programs which they have found most efficient in presenting related instruction to pupils in the program.

A brief explanation of the treatment in your schools of the phases of instruction listed on the attached pages will be most helpful and will be deeply appreciated.

Very sincerely yours,

W. Phil Wynn

Enclosure

Name of Student -

Place of Training _____ Date of Entrance _____

Date of Entrance _____

Trade or Occupation _____ Contact Official _____ Phone No. _____

APPENDIX G
INDUSTRIAL COOPERATIVE TRAINING
Yearly Report

NAME	HOME ROOM					
	MONTH	Hours Worked		Hourly Wage	Monthly Earnings	
		Actual	Required		Actual	Required
September						
October						
November						
December						
January						
February						
March						
April						
May						

Total Hours for Year	Average Hourly Wage	Total Amount Earned in the Year
Actual _____	_____	Actual _____
Required _____		Required _____

APPENDIX H

NAME

OCCUPATION

STUDY GUIDE

DIVERSIFIED OCCUPATIONS PROGRESS CHART

Directly Related Instruction

ABSTRACT

The object of this study was to determine the extent to which co-ordinators of Industrial Cooperative Training programs in Virginia high schools used the directed study method in directly related instruction, to compare its use with other teaching methods used, and to determine the coordinators' evaluation of its effectiveness as related to other methods.

A list of 30 programs providing a representative sampling of the I.C.T. programs in the state system considered above average on the basis of past performance was secured from state supervisory personnel. Questionnaires prepared by the researcher were mailed to the coordinators of the selected programs, and to seven other state departments of education to determine the procedure found most effective in their directly related instruction. The questionnaires provided data for the study.

The other state departments reported use of the directed study method for directly related instruction. In Virginia, where each co-ordinator was found responsible for his own program, all but five of the coordinators questioned considered the directed study method most effective in directly related instruction. The researcher concluded that the evaluative judgment of the individual coordinators resulted in agreement that the most effective instructional procedure in directly related instruction was the directed study method. The researcher also concluded that additional research in Industrial Cooperative Training is needed in comparing the effectiveness of the directed study method with that of other methods in actual use in the classroom, and in other fields necessary for complete understanding and utilization of directed study.