COOPERATIVE DEGREE PROGRAMS IN AMERICAN COLLEGES AND UNIVERSITIES

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COOPERATIVE DEGREE PROGRAMS IN AMERICAN COLLEGES AND UNIVERSITIES

By

ROBERT IRWIN HUDSON

AN ABSTRACT

Submitted to the School of Graduate Studies of Michigan State College of Agriculture and Applied Science in partial fulfillment of the requirements for the degree of

DOCTOR OF EDUCATION

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APPROVED Walter F. Johnson

ROBERT I. HUDSON

ABSTRACT

The object of this study was to survey cooperative work-study programs in American colleges. Information on enrollments, operating practices and problems, future plans, and the names of representative employers were obtained through questionnaires sent to 87 colleges believed to have cooperative programs. Seventy replies were received. Of these, 17 had no programs. The analysis of college practices was based upon usable questionnaires furnished by 46 colleges. In computing total enrollment figures, data from another study made at the same time were added. Other questionnaires were sent to 125 employers listed by the colleges. Sixty-eight, or 53% of the total, furnished usable replies. They had an average of 12.6 years of experience with cooperative students.

Findings

Programs were found to exist in 56 colleges, with a total cooperative enrollment of 18,634 students in the Fall Term, 1953. Two-thirds of these were in some type of Engineering. Approximately 62% of the Engineering students were enrolled in colleges where only cooperative curricula were offered. Most non-Engineering students were enrolled in Liberal Arts, Business Administration, or Retailing. The colleges were divided into three groups: Engineering, non-Engineering, and Mixed, the last-named having both types of students. The seven Mixed colleges included 11,739 students, nearly two-thirds

of the total cooperative enrollment.

Most Engineering and Mixed colleges schedule alternate periods of full time work and study, and require at least five years for completion. Non-Engineering programs are frequently operated on a part-time basis. Coordinators in the Engineering and Mixed groups tend to devote most of their time to the cooperative program, while those in the other colleges spend much time in teaching. Most non-Engineering students are placed locally, while the other groups usually place a majority of students within a fifty mile radius. Student earnings range from 60% to 85% of college costs. Employers prefer to have students spend all of their work periods in one organization, and plan sequences of experiences for them. Nearly all colleges require periodic reports from employers and students. Very few employers pay any part of the cost of coordination or furnish scholarship aid.

Employers rated cooperative students as superior to regular workers on four basic characteristics. More than 90% indicated a preference for hiring cooperative graduates because they can be placed immediately on productive assignments. The principal benefits of the cooperative system for students are vocational guidance, supplementary training in the major field, financial aid, personal

development, and job placement. Colleges gain through better relations with industry, increased student motivation, financial savings, curriculum development, and increased stability of enrollment. Employers benefit through improved selection and reduced training costs. Present problems of cooperative colleges and employers are mainly related to a shortage of students. Employers suggested improved counseling and guidance, and better publicity. Most colleges reported that they could place more students, and two-thirds of the employers plan to hire more students. More than 80% of the employers feel that they would benefit from an increase in the number of cooperative colleges.

Conclusions

Ample opportunities exist for the expansion of the cooperative system in colleges. Each institution can accomodate a larger number of students through the alternating schedule. Greater efforts to interest students in the cooperative plan are necessary. Increased employer financial aid for present and future programs is necessary. A proposal for such aid is presented.

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A THESIS

Submitted to the School of Graduate Studies of Michigan State College of Agriculture and Applied Science in partial fulfillment of the requirements for the degree of

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ROBERT I. HUDSON

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TABLE OF CONTENTS

CHAPTER PAGE

CHAPTER PAGE

CHAPTER PAGE

CHAPTER PAGE

CHAPTER PAGE

LIST OF TABLES

LIST OF FIGURES

CHAPTER I

THE PROBLEM

In the early part of the Twentieth Century, a new type of educational program involving cooperation between colleges and employers was inaugurated. These programs have experienced a slow but steady growth during the first half of this century. It has been generally assumed by those acquainted with these programs that they are making a significant contribution to the welfare of students, colleges, and employers. However, very little objective evidence is available to support this assumption. It has been suggested that these programs, if more widely understood and adopted, might play an important role in solving some of the present and future problems facing higher education in the United States.

It is the purpose of this study to survey the development, present status, and probable future growth of cooperative work-study programs leading to undergraduate degrees in American colleges and universities. An attempt will be made to evaluate these programs through the opinions of college administrators and employers who have had experience with them, and to explore the potential contributions which they may be able to make to the future growth of higher education in the United States.

Importance of the study. Cooperative work programs may be of great potential value to higher education in the coming years. However, before additional colleges and employers consider the adoption of this system, they must have further information on the "mechanics of cooperation" and a

fairly objective appraisal of the benefits to be expected and the problems which may be encountered. If such information can be assembled, analyzed, and adequately publicized, it may provide college and industrial leaders with the necessary impetus for the development of new programs. Most published studies of cooperative programs have stressed the value of the programs to students and employers. In this study, an attempt has been made to provide, in addition to an appraisal of these factors, a forecast of the role which the cooperative system of education could play in helping colleges to prepare for the increased enrollments which are expected in all types of institutions during the next decade. Those colleges which make plans to operate wholly or in part on the cooperative program will be able to serve larger numbers of students without a proportional increase in physical plant expenditures.

Definition of terms. Two statements may be cited which attempt to define cooperative education. The first was developed by a committee of faculty members at the Rochester Atheneum and Mechanics Institute (now known as Rochester Institute of Technology). Their statement, as quoted by Smith (27), is as follows:

> By cooperative education or cooperative work program is meant that type of curriculum which includes alternation of regularly scheduled instructional periods in school and periods of employment in business or industry with definite provision for integrating work experience into the total education of the student.

A somewhat more detailed definition of a cooperative college is offered by a committee of the Cooperative Engineering Education Division of the Society for the Promotion of Engineering Education (now known as the American Society for Engineering Education). (9) It shall be one:

1. In which curricula lead to the bachelor's degrees in

engineering, or to both bachelor's and higher degrees.

2. Which requires or permits all or some engineering students to alternate periods of attendance at school or college with periods of employment in industry during a portion or all of one or more curricula.

3. In which such employment is constituted as a regular, continuing and essential element in the educational process.

4. Which requires such employment to be related to some phase of the branch or field of study in which the student is engaged.

5. Which expects such employment to be variegated in order to afford a spread of experience.

6. Which specifies minimum hours of employment, and a minimum standard of performance in such employment, among the requirements for a degree.

Thus we may sum up the essential features of cooperative education in three points:

1. Alternating periods of study and work.

2. Paid work under normal working conditions, preferably providing a progressive series of experiences.

3. Some attempt to integrate school and work periods.

The maintenance of these conditions is dependent upon some type of coordination by a representative of the college. This is the feature which distinguishes cooperative programs from more casual part-time or summer work programs. Without this service integration of classroom instruction and work experience would be extremely difficult.

In selecting colleges for this study, it has been necessary to make some rather fine distinctions. Nearly all of the programs which have been included meet all of the above criteria. A few which fall slightly short have been included so as to present a broad picture of this educational system. Others which bear only a slight resemblance to the great

mass of cooperative colleges have been left out, even though they call themselves by that name. Such programs have been discussed in the section on related developments in Chapter II.

Review of previous studies. The first comprehensive study of cooperative programs was made by Smith (27) in 1943, as a part of a larger research project on terminal education sponsored by the General Education Board. He traced the growth of cooperative programs from their inception in 1906 to 1941, described the basic philosophies involved, and outlined the operating procedures used by participating colleges. He also summarized the relative advantages and disadvantages of cooperative programs, basing his information upon questionnaires sent to colleges, and in some cases, personal interviews. Because of its sponsorship, his study included terminal technical institutes below the degree level. However, he did not attempt to survey employer attitudes toward the cooperative system.

A similar study was made by Armsby (3) for the U. S. Office of Education in 1949, covering mainly programs in the field of Engineering. A second report by the same author (4) appeared in 1954. While this report presumed to include cooperative programs in all fields, and enrollments were reported for the current school year, the content was largely the same as that of the 1949 report. In neither case was any attempt made to survey employer opinions and attitudes.

A more specific study, concerned with the value of work experience in career planning and vocational adjustment, has been reported by Baskin (6). He compared matched groups of graduates from two liberal arts colleges, Antioch and Oberlin, in terms of their vocational adjustment 12-14 years after graduation and their attitudes toward their college

experience. He found significant differences between the two groups with regard to certainty of their occupational plans at graduation, the "time" of their choices, and their satisfaction with the career planning contributions of their college program. Differences in median salaries were also noted, although these were not reported to be significant. In all cases, differences favored the Antioch students, who had obtained work experience as a part of their college program. The main conclusion of the study was that non-cooperative graduates had usually made satisfactory career choices after a number of years of "reality-testing work experiences," while the work-study graduates had been able to work out satisfactory plans as a result of their college experiences.

The present study, in addition to including a larger number of colleges than those mentioned by Armsby, makes a distinct contribution to the literature because of its survey of the attitudes and experience of employers who have worked with cooperative students.

Limitations and scope. This study is confined to programs leading to undergraduate degrees. Graduate programs have been eliminated because they are few in number. High school and junior college programs were considered to be worthy of separate study. A few technical institutes below the degree level were also left out. This was a rather arbitrary decision, and was based upon their small number and highly specific programs.

Procedures. The first step in a study of this type required the compilation of a list of colleges offering cooperative curricula. This presented some difficulty, since Armsby's second report had not been issued, and the only previous comprehensive study was more than ten years

old. Starting with the schools listed by Smith (27), and in Armsby's first study (3), additions were made by searching entries in several directories, including those published by Lovejoy (19) and the American Council on Education (13). Further names were obtained from a directory published by the American College Retailing Association (1). The current membership lists of the Cooperative Division, American Society for Engineering Education, as published annually in the Journal of Engineering Education, were consulted, as well as numerous other educational publications. When Armsby's second report (4) was issued, the new programs listed were added to the list. In this manner, a list of eighty-seven colleges believed to have cooperative programs was developed. A questionnaire, a covering letter, and a stamped return envelope were sent to each college.[1] In some cases the name of the program coordinator was not available, and questionnaires were directed to the president or dean of the college. After a follow-up had been mailed, a total of seventy replies were received. They were divided as follows:

Usable questionnaires	46
No cooperative program	17
Refused to complete questionnaire	3
New program	4
Total	70

Since seventeen colleges reported that they were not now operating cooperative programs falling within the definition used in this study, subsequent analysis of data has been based upon returns from 93 percent of the colleges known to have programs of sufficient age to permit adequate replies. It is impossible to determine how many of the seventeen which failed to reply are now operating cooperative programs. However, the three

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[1]See Appendix for copies.

which refused to complete questionnairs are known from other sources to have such programs, and were included in the complete list of cooperative colleges in Chapter III.

Each college was asked to furnish the names of five companies with which it was currently placing students. Preference was to be given to those with at least five years' experience. Although some colleges failed to supply names, a total of one hundred and twenty-five companies were included in the final list. Of these, eighty-three replied. Their replies were distributed as follows:

Usable questionnaires	68
No cooperative program	8
Some information, no questionnaire	7

Colleges were also asked to list companies which had discontinued cooperative relationships for any reason other than a shortage of available students for placement. Only two colleges furnished such names. Letters were sent to these companies asking for information on the reasons for discontinuance of the programs.

Both colleges and employers were asked to supplement their replies with catalogues and other publications relating to the cooperative programs, forms used, and, in the case of employers, sample job sequences. The response to this request was so great that it was impossible to include all of the materials received in the report of the study. Information received, and samples of forms have been included at appropriate points in the study for purposes of illustration.

Preparation of questionnaires. The data to be collected were divided into two major categories: (1) factual information on the number of students included in programs, and various aspects of the operating

procedure, and (2) expressions of attitudes toward various parts of the programs and suggestions for their improvement. For the more factual items, objective questions were developed, while open-end questions were used to elicit responses on matters involving attitudes and opinions. Both questionnaires were reviewed and discussed with college and employer representatives who have had considerable experience with cooperative programs. Their suggestions were incorporated in the final questionnaires which are found in Appendix A.

Analysis of the data. For the purpose of analysis, the colleges have been divided into three groups. These are: (A) Colleges having engineering programs only; (B) Colleges having non-engineering programs only; and (C) Colleges having both types of programs. In each case, the responses to objective items on the questionnaire were tabulated and expressed as a percentage of the particular group from which they were derived. Differences between percentages were analyzed to determine whether any significant differences existed. Where such differences were found, an attempt was made to relate them to the nature of the programs involved. Open-end responses were analyzed and arranged in general categories.

Employer responses will also be presented in tabular form and analyzed as percentages of the total group. Open-end responses will be summarized. Examples of employer suggestions and criticisms will be quoted wherever appropriate, since they represent the principal source of evaluative material. In keeping with assurances given to employers at the time the data were collected, no companies were identified. However, the original list included both private industry and government agencies.

Organization of the study. Chapter II traces the historical and philosophical antecedents of cooperative education, discusses related programs and developments, and defines the general objectives of cooperative education.

Chapter III presents details of the present status of cooperative colleges and their enrollment, and describes typical colleges in each of the three categories mentioned above.

Chapter IV is concerned with the organization of cooperative programs, with particular reference to the college and its role. The duties and qualifications of coordinators, the nature and location of cooperative jobs, and means of integrating school and work periods will be analyzed, as well as any special services provided for cooperative students and methods used to publicize cooperative programs.

Chapter V takes up the positive side of the evaluation of present programs, citing reports from college administrators and employers, as well as a limited number of student reactions quoted from other sources.

Chapter VI discusses the negative aspects of the cooperative system, including the problems encountered in the inauguration and operation of programs, the weaknesses noted by employers, and the changes which have been required in college organization and procedure.

In Chapter VII, the future growth of cooperative programs is discussed in the light of intentions stated by colleges and employers, and the needs of higher education. Special attention will be given to the role which cooperative programs may play in aiding colleges to meet the demands of expanding enrollments without prohibitive capital expenditures.

Chapter VIII summarizes the principal findings of the study, and makes

recommendations for future research.

Chapter IX presents a proposal for an employer-sponsored program which reflects some of the implications of the study and the features of some related programs.

CHAPTER II

HISTORY AND PHILOSOPHY OF COOPERATIVE EDUCATION

In order to understand the cooperative education movement, one must first examine its historical and philosophical antecedents. In this chapter the role of work experience in education has been traced from its earliest beginnings to contemporary higher education in America. Various related programs have been described, and the points at which they differ from cooperative education have been noted. The development of the present system is discussed, as well as the basic philosophies of cooperation now prevalent. Finally, the objectives of present programs, as reported in the literature, have been outlined.

I

Growth of Work Experience in Education

Early background. From the earliest periods of recorded history, work has been a part of the educational process. It is only in more recent years that there has been a tendency to separate it from more formal learning processes. Among the ancient Jews, parents were impressed with the value of work. Leipziger (17) quotes the Talmud, or book of the Law, as stating: "He who does not have his son taught a trade prepares him to be a robber" and "As it is your duty to teach your son the Law, teach him a trade." In this instance instruction in a manual trade, through training on-the-job, was considered to be a social obligation

aimed at preparing the boy to become a useful citizen of the community.

In later years, when all education came under the control of the Church, students were required to devote a considerable amount of time to manual labor. The Rule of St. Benedict, for example, enjoined students to spend seven hours a day in manual labor and two hours in reading (21:331). With the growth of the apprentice system, a minimum of general education was combined with training for each specific trade.

During the 18th Century, educational philosophers, beginning with Rousseau, raised the issue of experience as a means of education. Following his lead, and that of Pestalozzi, von Fellenburg established the Institute at Hofwyl in Switzerland. According to Meyer (20:14), this school possessed "work shops for the manufacture of tools and clothing; an agricultural school for the education of farm labor as well as teachers of rural schools; and a lower school for the teaching of crafts and the middle-class vocations." This movement was brought to its logical conclusion by Kerschensteiner, who developed the Arbeitsschule, or activity school in Germany in the 19th Century. Here, the goal of education was the selection of an appropriate vocation, and the curriculum was oriented accordingly (20:124).

The Mechanic's Institute movement in Great Britain provided another example of the developing relationship between education and manual labor. According to Bennett (7:302), this movement is said to have been started by Dr. George Birkbeck, who began by giving science lectures to workers in Glasgow. He later moved to London, and established the London Mechanic's Institute in 1824. By 1841, there were more than two hundred and sixteen similar institutions in Great Britain. They were designed to promote

technical training and some measure of general education for workers. Their American counterpart was found in schools like the Gardiner Lyceum, opened at Gardiner, Maine in 1823. Here, a full-time program emphasizing technical and scientific subjects was offered. It remained for the Worcester County Free Institute of Industrial Science, later Worcester Polytechnic Institute, to combine scientific training and shop experience in a program of Mechanical Engineering. In the course of three and one-half years, each student was expected to work a total of twenty-three hundred hours in shops operated by the school which manufactured goods for the open market. Although this work was a required part of the course, students were not paid. It was considered sufficiently rewarding that they should have acquired the appropriate machine skills. This program appears to be more closely related to the present cooperative system than any of the other schemes described in this section. It is significant to note that when the first college cooperative program was established, it was again in the field of Engineering.

II

Related Programs

Work colleges. Institutions requiring on-campus work of all students are quite closely related to the cooperative movement. Such programs may be said to have originated with a manual labor "experiment" at Andover Theological Seminary in 1826. In this program, described by Bennett (7:183), a workshop was established where students spent one and one-half hours each day, all working together. The object was not to impart knowledge of mechanical skills, but primarily to improve the health of the

students. Although a number of institutions developed similar programs, the whole movement died out in about ten years (7:182). Present day examples of work colleges are probably best exemplified by Blackburn College, Carlinville, Illinois. Ivins and Runge (15) have described the program inaugurated by President William H. Hudson in 1912. It called for the school to become a self-contained unit, with a farm, a dairy, carpenter and paint shops, et cetera. As the college is now operated, every student, regardless of financial means, is required to defray a part of his expenses by working at some job for the college. Student leaders assign jobs and supervise their performance, with minimal assistance from full-time employees of the college. Since 1912, a sixty acre farm has been operated, and much of the work on construction of college buildings has been done by students with the cooperation of local building tradesmen. Similar programs are in operation at a number of colleges, including Park Berea, Marysville, and William Penn. In most cases, on-campus work, which began as a financial necessity, has become an integral part of the college program. Work experiences offered are not directly related to specific parts of the curriculum, but are considered to be a part of general education.

Off-campus terms. This device has been used by some colleges to enable students to supplement their regular program of studies with work or other specialized experience off campus. Probably the best known programs of this nature are found at Bennington and Sarah Lawrence Colleges. They differ from the cooperative system in that there is only one off-campus period per year, usually in the winter between two school terms, jobs may be paid or voluntary, and in the Bennington plan, as

described by Jones (16), the off-campus period may in some cases be devoted to specialized study or research in libraries or museums not readily accessible during the balance of the school year. While such programs undoubtedly add greatly to students' growth and understanding, they cannot be expected to provide all of the benefits expected of a cooperative program. They do, however, recognize the value of work experience in general education.

Summer work programs. Since a large number of college students find it necessary to work during the summer vacation to obtain money for their college expenses, a number of colleges have organized summer work programs. In some cases, these are merely supplementary placement services, while in others, a definite attempt is made to help students locate jobs which are related to their course of study. In these cases, a conflict is sometimes presented between the potential value of a particular type of experience and the increased financial return which may be received from some other job. One of the most highly developed schemes of this type is the Work Training Program of the New York State School of Industrial and Labor Relations at Cornell University. Because of the nature of the curriculum, a substantial amount of field work has been considered essential to effective professional training (25). Students are normally expected to have some work experience before entering college. In addition, they are required to complete approximately thirty weeks of work-training during three summers. The first work period is usually spent in basic work, and is considered to be of only general value. Subsequent periods are devoted to jobs more closely related to the field of Industrial Relations. An effort is made to give students experience

in both business and labor organizations. Although they are urged to locate their own jobs wherever possible, students are assisted by Placement Counselors from the School. Reports are required from students and employers for each work period. This program resembles the cooperative system at several points, but falls short of the total number of weeks required in most programs. It would seem that the nature of the curriculum at this institution would make it advisable to provide more work experience, and that a five-year cooperative program could be established without greatly altering the course of study.

Interneships. For many years it has been customary for students in Medicine, Education, Dietetics, Occupational Therapy, and other fields of work to serve an interneship at the end of their formal training before attaining full professional status. Some similar programs on an optional basis have been developed in Accounting and other phases of Business Administration. Internes are usually unpaid, or receive only nominal compensation and, possibly, maintenance. Since there is only one work period, the mutual stimulation of alternating work and class periods is lost. While such work is essential in these programs, and does not disrupt college schedules in any way, it fails to act as a substitute for a cooperative program.

III

Related Developments

Evening colleges. In the course of this study, several colleges which were contacted reported that, although they did not have cooperative programs, evening classes were maintained for employed persons. One of these,

The Cooper Union in New York City, reported in a personal communication to the author that complete employment records were maintained for all students and efforts were made to place them in engineering work paralleling their studies. Similar reports were received from Carnegie Institute of Technology, American University, and the School of Engineering, University of Pittsburgh. The last-named institution was included by Armsby in his second report on cooperative colleges. However, in the present study, the school declined to complete a questionnaire and furnished information which indicates that students spend thirty to forty hours a week in industry, and only ten hours per week in class. Therefore, this must be considered as primarily a part-time program. Students receive scholarships from participating companies, but are not granted any credit for work experience. Although information was not sought from all of the ninety-two colleges which make up the Association of University Evening Colleges as to their relationship with business and industrial firms, it has been reported at a recent conference that the association is attempting to establish an Education-Business Center to study means of relating their programs to the needs of business (18).

Tuition refund plans. A number of companies have, in recent years, sought to encourage employees to further their education by offering to pay all or part of the tuition costs for part-time courses related to their work. In most cases, payment is made after successful completion of each course. According to a recent survey (23), refunds usually cover at least one-half of the tuition. Some companies pay on a sliding scale ranging from one-fourth to all of the tuition, depending upon the grade received. While these programs do not bear any direct relationship to the

cooperative system, they indicate to some extent the willingness of employers to give financial support to employee education apart from in-service training programs.

Graduate cooperative programs. Some employers have established subsidized educational programs for employees who are interested in training beyond the bachelor's degree. Although a few of these are based upon alternating school and work periods, most of them involve evening classes, often given at company plants or offices. One of the most widely known examples of this type is the Westinghouse Graduate Training Program. Classes are conducted at all plants, and, in some cases, company executives have been given faculty appointments in cooperating colleges so that they may assist in instruction. Arrangements have been made whereby students, usually scientific and technical workers, may perform research for the company, and receive credit for this work toward an advanced degree. A few true cooperative programs are operated by colleges which offer undergraduate programs in Retailing. These are intended to supply intensive training and experience for persons with no previous background in the field. With these exceptions, most so-called graduate cooperative programs do not actually meet the definition of cooperative programs set forth earlier.

High school cooperative programs. These may be said to have had their origin in the school for retail sales girls founded by Mrs. Lucinda Prince in Boston in the year 1905. By 1912, similar classes were being offered in some public high schools. Cooperative work-study courses were established in the Cincinnati Public Schools in 1910, following the lead set by Dean Herman Schneider at the University of Cincinnati. These

programs have multiplied rapidly, and in 1947, Ivins (14) reported that twelve hundred and eighty-nine high schools were offering some type of cooperative program. A part of this growth may be attributed to the fact that Federal aid was made available for the support of cooperative programs under the Smith-Hughes and George-Dean Acts. High school programs, as described extensively by Ivins and Runge (15), are frequently offered on a split day basis, with one-half devoted to work and the other to related training and general education. This arrangement, plus the limitations upon child labor imposed by state and federal laws, raises a number of problems with which the college coordinator need not be concerned. Also, since college students often travel out-of-town to cooperative jobs, numerous problems are raised which are peculiar to these programs. As the organization and operation of these programs has been so thoroughly developed by Ivins and Runge (15), no further reference to high school cooperatives will be made in this study.

Specialized training programs for industry. In recent years, many companies have made use of the facilities of local colleges and universities in the training of employees at all levels. Short, intensive programs have been developed for all types of positions, ranging from Hospital Housekeepers at Michigan State College to top business executives in Harvard's Advanced Management Course. A recent survey (24) lists fifteen universities which offer concentrated courses for executives. Many others offer training for foremen, technicians, and other workers through extension or continuing education divisions. Although such programs are not directly related to the cooperative system, they represent a degree of employer-college cooperation which might be applied to the programs

covered in this study. A proposal for improving present cooperative programs through a greater degree of employer participation will be outlined in Chapter IX.

IV

The Development of College Cooperative Programs

Herman Schneider and the Cincinnati Program. The original idea of cooperative work-study programs for college students is generally attributed to Dean Herman Schneider of the School of Engineering, University of Cincinnati. Park, his biographer (26), has given us a very lucid picture of the life of Dean Schneider and the way in which he first conceived the idea of cooperative programs. As a young man, the Dean was employed in the offices of an architect while attending Lehigh University. After graduation, he worked as an architect in private practice, and as a bridge construction engineer for a railroad. He then returned to Lehigh as an instructor in Civil Engineering. In the course of his teaching, he became interested in reviewing the basic concepts of engineering education. Recognizing through his own experience the value of some practical experience for engineering students, he was not satisfied with the usual engineering shop courses, as taught in most colleges at that time. He soon realized that such shops, even if they were expanded to include production of goods for sale, would be restricted in the scope of their operations. Their equipment would tend to become obsolete, since the volume of production would not justify frequent purchase of new and up-to-date machinery. He came to the conclusion that the best place for students to secure experience was in industry. His problem was to discover a way in which

theoretical knowledge and first-hand experience could be combined. Park's description of the way in which the idea came to him reads as follows:

> One evening after teaching hours Herman Schneider was pondering this question while he walked across the Lehigh University campus. Suddenly he was startled out of his reverie by the blast of a Bessemer converter at a near-by steel plant. In that moment an idea came to him that offered a possible solution to his problem. Here was a huge modern industry existing side by side with a university---a vast industrial laboratory filled with the latest, most expensive equipment made to order for his scheme of training. At the end of their college course many young men now studying in Lehigh University would find employment in these steel mills, as other graduates had done before them. Why not have this employment begin on a part-time basis while they were still in college, and make the work a recognized part of their training? Swiftly his imagination followed out the possibilities of the scheme. He went home in an exalted frame of mind and sat up late, mapping out details of an educational project that became increasingly absorbing as he considered its far-reaching implications. (26:44).

In subsequent discussions with his colleagues, Schneider encountered many objections, but maintained his interest in what was to be known as the cooperative plan. At this time one of his friends introduced him to the writings of Marcus Vitruvius Pollio, a Roman architect and engineer. He found in these writings considerable support for his ideas. Although they were directed to architects, they seemed to have merit for engineers as well. He was known to quote Vitruvius in Book I of his writings, as saying: "It follows, therefore, that architects who have aimed at acquiring manual skill without scholarship have never been able to reach a position of authority to correspond to their pains, while those who relied upon theories and scholarship were obviously hunting the shadow, not the substance." (26:48).

Before making a direct application of his idea to engineering education, Schneider made a study of Lehigh graduates who had shown marked engineering

ability soon after completing their college course. He found that nearly all of them had done one or more of the following:

1. Worked while attending college;

2. Worked during vacation; or

3. Stayed out of college a semester or a year and worked in order to obtain money to continue their studies (26:50).

During the Fall of 1901, Schneider developed a detailed plan for his new system of education. He envisioned a new institution, sponsored by industry, which would offer engineering education on a purely cooperative basis. Although this scheme, which he later outlined in a paper entitled "A Communication on Technical Education," was received with interest by a number of industrial executives in the Pittsburgh area, no support was found for such a college. It was not until he moved to the University of Cincinnati in 1903 that Schneider found an opportunity to try out his scheme.

Soon after his appointment as Assistant Professor of Civil Engineering, he presented a copy of his paper on technical education to the new president of the University, Dr. Charles W. Dabney. At the same time, he was engaged in presenting his idea to industrial groups in Cincinnati. Although he failed to win immediate approval from a local trade association because of the disparaging remarks of another educator, many individual employers expressed interest in the proposal. Since two of these individuals were members of the University's Board of Directors, the idea soon received support and encouragement at the highest levels. Having satisfied his colleagues on the faculty that the proposed program would not result in any reduction of academic standards, Schneider was given permission

to go ahead.

In September, 1906, the first group of twenty-seven young men began their training under the cooperative system. They were divided into two groups, with one unpaired, and alternated every other week between shop and classroom. Professor (now Dean) Schneider assumed the responsibility of coordination, visiting the students at work and Sunday conferences with them when necessary to avoid interfering with work or class schedules. By the second year, enrollment had grown to seventy, selected from over four hundred applicants. Since space requirements threatened to halt further expansion of the program, new buildings were planned. At this point the chief financial advantage of the cooperative system was noted by university authorities. In estimating the cost of new buildings, they were able to limit their proposed classroom and laboratory space to that needed for one-half of the proposed enrollment. This discovery had far-reaching implications which have never been fully realized. They will be explored in more detail in a later chapter.

By 1912, a total of fifty-five firms were cooperating with the University (26:37), while cooperative enrollment had risen to two hundred and ninety-four. Some companies were located outside Cincinnati. From this point the cooperative plan grew by leaps and bounds. In 1919 a cooperative curriculum in Commerce was established, and the following year, the four-year curriculum in Engineering was abandoned and the entire school placed on the cooperative plan. By this time, one hundred and thirty-five firms were participating in the program, and a centralized Department of Coordination was established to handle relations between the University, students, and employers. This department was able to draw upon

information collected by Dean Schneider during the twelve years when he coordinated the program. These data included:

(a) Plans for sequential training in practical work;
(b) Methods of acquainting the students with phases of engineering outside of their particular branch;
(c) Stages of development to be expected in the successive years of study and practical experience;
(d) Types of problems and reports to be looked for in various industries;
(e) Occupations and working conditions best suited to the educational purposes of the cooperative course;
(f) Types of industry most likely to provide steady employment, and hence to insure smoothness and continuity in the operation of the course (26:195).

Using this information, the Department of Coordination was able to systematically grade experience and plan work sequences for students in specific curriculums. When at a later date a School of Applied Arts was established, the cooperative system was again used, and coordination was provided through the centralized department.

One may note in the development of the cooperative system at the University of Cincinnati the basic features which characterize many present-day programs. These may be summed up as:

1. Experience directly related to the curriculum.

2. A progressive sequence of experiences.

3. Coordination by a centralized agency within the University.

Although, as we shall see in subsequent chapters, most of the existing programs, including all of the Engineering colleges, are patterned after the Cincinnati Plan, a slightly different type of cooperative program has been developed for use in liberal arts colleges. While retaining many of the features of the Cincinnati Plan, it makes certain modifications to fit the somewhat different mission of the institution. Such a program is now in operation at Antioch College, Yellow Springs, Ohio.

The Antioch Plan. Work experience as a part of general education is the main theme of the program at Antioch. This system, which has become more widely known than the original, was instituted by Arthur E. Morgan when he became president of the college in 1920. In reviewing its basic purposes in a speech thirty-four years later, Mr. Morgan said:

> In the original formulation of the present Antioch program as a whole, the underlying aim was the development in good proportion of the entire personality. The work program is an integral part of that over-all purpose. It is in the very nature of the human species that much of our growing and learning must be through acts of doing, and not just by reading and thinking about doing. We recognize this truth in learning to play baseball or in learning to play a musical instrument, and in the sciences by laboratory work. We do not see it so clearly where the abilities to be developed are less tangible, as in economic life in learning to judge issues, to weigh circumstances, to appraise values or to develop the emotional stamina necessary for making hard decisions. (22).

In his original plan President Morgan included several small campus industries as a nucleus for the work program. While these were established and, for the most part, have survived, they have never been a major source of employment. In the present program, as described by Henderson and Hall (10), freshmen are given a vocational orientation course, and are required to spend ten hours a week for twenty weeks on a paid job at the College. They also write a Life Aims paper in which they describe their present occupational interests and goals. The first few off-campus placements are made with the intention of letting students try out different types of work, and are aimed at furthering their personal development. Students are normally expected to keep subsequent jobs for a year (two work periods), and the average student works for five different employers during his college period. No attempt is made by the college to keep the same jobs intact, to be filled year after year. For example,

in 1940-41, 24% of the employers were new (10:129). This is in marked contrast to the Cincinnati program, in which the main purpose was to provide work experience which would be closely related to the classroom program, often involving all work periods in one company.

At Antioch all work programs are individually planned with the assistance of the Personnel Department, and are intended to fit the student's personal needs as well as his intended field of concentration. In some cases, conflicts arise between a student's desire to obtain only specialized experience and the Personnel Counselor's desire to arrange a broader variety of experiences. In most cases, the latter prevails.

The Antioch adaptation of the cooperative system appears to be highly suited to the needs of a liberal arts college, in which curriculums are not as often occupationally oriented. However, this example has not often been followed. Although most programs tend to follow more closely the Cincinnati Plan, the Antioch modification remains a challenge to scores of liberal arts colleges who might benefit by its adoption. Further reference to this point will be made in a subsequent chapter dealing with the future of cooperative programs.

V

Objectives of Cooperative Programs

In this chapter, the development of cooperative programs has been traced. In the course of this discussion, a number of objectives may be noted as common to all programs. These may be summarized as:

1. Work experience directly related to the student's major field of study.
2. Vocational guidance.

3. Personal and social development.

4. Financial aid to students.

Although most cooperative colleges would probably claim to achieve all of these objectives at some point in their programs, some differences in emphasis may be expected. It may be readily seen that in the Antioch modification of the Cincinnati Plan, the second and third objectives listed above take precedence over the first. Some colleges may place the fourth objective first in their programs. One of the purposes of this study is to establish the relative importance of these objectives in each program, as defined by college administrators. An attempt will also be made to examine the possible consequences of over-emphasizing any one objective to the detriment of the others.

CHAPTER III

THE GROWTH AND PRESENT STATUS OF COOPERATIVE PROGRAMS

The growth of cooperative programs. Even before the success of the Cincinnati program had been fully recognized, other colleges began to adopt the cooperative plan. According to Armsby (3:6), two other colleges joined Cincinnati by 1910, six between 1911 and 1920, six more between 1921 and 1930, four from 1931-40, ten from 1941-50, and six since 1950. One of the original three, the University of Pittsburgh, discontinued its program in 1930, and has now re-established it in a limited form, as described in Chapter II. Six programs were suspended during World War II, and nineteen colleges which conducted cooperative programs during the years 1919-1952 have discontinued them.

During the preparation of this study, four colleges began cooperative degree programs, all in the Fall Term, 1954. Two of these, Pennsylvania Military College and Purdue University, were in the field of Engineering. A third, Colorado State College of Education, offered a program in Business Education, and the fourth, Rochester Institute of Technology, added an additional year to some of its present terminal cooperative courses.

The present status of cooperative colleges. In this study, completed questionnaires were received from forty-six colleges which offer cooperative programs. One other sent supplementary material, but did not complete a questionnaire. Adding nine other colleges listed by Armsby (4), a total of fifty-six colleges offered cooperative programs leading to undergraduate

degrees in the Fall Term, 1953. Most of the colleges listed by Armsby were contacted in the course of this study. Two refused to complete the questionnaire because of the press of business, three stated that their programs were too new or too small for responses, and the others did not respond. These colleges have been divided for the purpose of analysis into three groups (See Table I). The first group is composed of colleges offering cooperative programs only in the area of Engineering. In a few cases, other programs are offered, but are coordinated separately and are entirely independent. There are twenty-four colleges in this group. With one not reporting, they have a total enrollment of 5,071 students, or an average enrollment of 221.4 students per college.

The second group is composed of twenty-five colleges offering cooperative courses in areas other than Engineering. They have a total enrollment of 1824 students, with an average of 82.9 per college. Twelve of these colleges offer courses in Retailing, eleven in other phases of Business Administration, and smaller numbers in Education, Liberal Arts, Physics, Chemistry, Commercial Dietetics, and Mechanical Industries (See Table II).

The third type of institution, offering both Engineering and Non-Engineering courses centrally coordinated, includes only seven colleges. However, their total enrollment is 11,739 students, nearly twice as many as the other two groups combined. The enrollment is divided into 7,345 Engineering and 4,394 Non-Engineering students, and the average enrollment is 1,677 students per college. In subsequent discussions, these colleges will be referred to as the Mixed group.

In combining the figures from all types of institutions, a total of

TABLE I

ENROLLMENT IN COOPERATIVE COLLEGES FALL 1953
ENGINEERING

College	Cooperative Enrollment	Type of Control
* University of Akron	101	Public
Bradley University	6	Private
University of California		Public
Berkeley	36	
# Los Angeles	5	
Cornell University	39	Private
# University of Delaware	20	Public
University of Denver	8	Private
* University of Detroit	1500	Private
University of Florida	Few	Public
# Georgia Institute of Technology	905	Public
# University of Houston	(1)	Public
Illinois Institute of Technology	90	Private
Lehigh University	12	Private
* University of Louisville	450	Private
# Marquette University	110	Private
Massachusetts Institute of Technology	205	Private
Michigan State College	5	Public
University of Minnesota	91	Public
* Northwestern University	813	Private
Rensselaer Polytechnic Institute	48	Private
* Southern Methodist University	149	Private
University of Tennessee	150	Public
# Virginia Polytechnic Institute	318	Public
Wayne University	10	Public

(1) Enrollment not available
* Cooperative required
\# Data from Armsby

Total	5071	Public - 12 Private- 12

TABLE I

ENROLLMENT IN COOPERATIVE COLLEGES FALL 1953
NON-ENGINEERING

College	Cooperative Enrollment	Type of Control
Adelphi College	1	Private
* Antioch College	800	Private
Bradley University	40	Private
University of Buffalo	(1)	Private
City College of New York	(1)	Public
University of Dayton	25	Private
Drake University	130	Private
Fairmont State College	3	Public
# University of Georgia	6	Public
Hofstra College	45	Private
Los Angeles State College	99	Public
Marquette University	26	Private
Marshall College	50	Public
University of Michigan	7	Public
North Texas Stage College	25	Public
University of Oklahoma	20	Public
University of Omaha	18	Public
St. Joseph's College	30	Private
# John B. Stetson University	50	Private
Syracuse University	16	Private
* Tuskeegee Institute	83	Private
Washington University (St. Louis)	45	Private
Wayne University	75	Public
Western Michigan College	30	Public
Wilmington College	200	Private

(1) Enrollment not available
* Cooperative required
\# Data from Armsby

Total 1824

Public - 11
Private- 14

TABLE I

ENROLLMENT IN COOPERATIVE COLLEGES FALL 1953
MIXED

College	Cooperative Enrollment Engineering	Non-Engineering	Type of Control
Alabama Polytechnic Institute	238	58	Public
* University of Cincinnati	1371	1674	Public
(1)Drexel Institute of Technology	1480	633	Private
Evansville College	126	2	Private
* Fenn College	424	386	Private
# General Motors Institute	1673	175	Private
(2)Northeastern University	2033	1466	Private

(1) Cooperative required in Engineering and Retail Management
(2) Cooperative required in Engineering
* Cooperative required
# Data from Armsby

Totals	7345	4394	Public - 2
Both		11739	Private- 5

Grand Totals

Type of College	Cooperative Enrollment	Type of Control Public	Private
Engineering	5071	12	12
Non-Engineering	1824	11	14
Mixed	11739	2	5
Total	18634	25	31

Type of Student	Enrollment
Engineering	12416
Non-Engineering	6218
Total	18634

TABLE II

MAJOR AREAS OF STUDY - NON-ENGINEERING COLLEGES

College	Business Administration	Retailing	Education	Area Liberal Arts	Physics or Chemistry	Commercial Dietetics	Mechanical Industries
Adelphi		x					
Antioch				x			
Bradley	x	x					
U. of Buffalo		x					
City College of New York	x	x					
U. of Dayton		x					
Drake U.	x	x					
Fairmont State		x					
U. of Georgia	x						
Hofstra		x					
Los Angeles State	x	x		x			
Marquette U.	x						
Marshall	x	x					
U. of Michigan			x				
North Texas State	x						
U. of Oklahoma	x						
U. of Omaha		x					
St. Joseph's					x		
John B. Stetson	x				x		
Syracuse U.		x					
Tuskeegee Institute						x	x
Washington U. (St. Louis)		x					
Wayne U.	x		x				
Western Michigan			x				
Wilmington				x			

TABLE II

MAJOR AREAS OF STUDY - MIXED COLLEGES

College	Engineering	Business Administration	Liberal Arts	Home Economics	Applied Arts & Arch.	Chemistry & Chem. Eng.
			Area			
Alabama Polytechnic	x		x		x	x
U. of Cincinnati	x	x			x	
Drexel Inst. of Technology	x	x		x		
Evansville	x	x				
Fenn	x	x	x			
Northeastern U.	x	x	x			
General Motors Institute	x	x				

12,416 students, or approximately 66% of the total, are enrolled in Engineering programs. This large proportion is undoubtedly related to the pattern of growth in cooperative colleges. Since the first program, at the University of Cincinnati, was in the field of Engineering, there has been a tendency for new programs to develop on colleges of Engineering, rather than in other major areas. Also, six of the Engineering colleges and four of the Mixed group offer only cooperative programs in Engineering. These account for 7,746 students, or 62.4% of those enrolled in cooperative Engineering programs. In contrast, only two colleges in the Non-Engineering group offer only cooperative programs. Adding to their enrollment some students from the Mixed colleges, a total of 2,943, or 47.3% of all Non-Engineering students are in colleges where the cooperative plan is required.

In considering the figures in Table I according to the type of college involved, it should be noted that, of the 11,739 students in Mixed colleges, 7,736, or 65.9% were in areas where the cooperative system is required. This undoubtedly explains the predominance of the Mixed group in both total and average enrollment. The question of offering both cooperative and regular curriculums in the same areas, which has been largely resolved by the Mixed colleges, is still a matter of concern for others. Since the Mixed colleges are generally among the older programs, their concentration on required programs would seem to indicate a trend toward the elimination of dual programs in most major areas. Such a trend would tend to simplify administrative procedures in the colleges involved, since a uniform schedule could be more easily arranged. In one case, conversion to a strictly cooperative program was the major problem reported

by college officials.

Control of colleges. Of the fifty-six colleges listed in this chapter, twenty-five are publicly controlled, and thirty-one are under private control. One of the latter, General Motors Institute, is operated by a private company as a source of trained engineering and business personnel. Since the difference between the two types of control does not appear to be significant, it suggests that the cooperative program can be effectively adapted to fit the needs of colleges under both types of control. However, the large cooperative colleges in the Mixed group are almost entirely under private control. It would appear that private colleges, with their more limited financial resources, have been more sensitive to the potential advantages of the cooperative system in providing financial aid to students and to themselves. In a period when most public institutions are making strong efforts to cement relationships between themselves and business firms, a greater degree of cooperation through student work programs would seem to be advisable. Also, the possible advantages of the cooperative system in raising the capacity of colleges without extensive capital investment cannot be ignored. These are discussed in greater detail in Chapter VII.

Cooperative employers. Armsby (4:9) reports that in the colleges covered in his study, students were placed with 3,536 companies or agencies in the year 1953-54. This is an average of one employer for each 5.4 students. Since the degree of overlap in this employer figure cannot be effectively measured or controlled, no attempt was made to obtain comparable information in the present study. All efforts were concentrated on obtaining qualitative information from employers who have had adequate experience with cooperative students. The selection of the employer sample

was described in Chapter I. Out of one hundred and twenty-five employers contacted, sixty-eight returned usable questionnaires. Seven others stated that they employ cooperative students, but did not return the questionnaire. Eight employers reported that they did not employ cooperative students. The usable questionnaires represent approximately 53% of the original mailing.

The sixty-eight companies furnishing complete returns employ a total of 1,450 students each year. The number of students employed ranges from two to two hundred per company, with half of the companies employing from two to ten students each year. This would seem to indicate that the employment of a large number of cooperative students is not essential to the success of an employer in a cooperative program. On the contrary, the typical employer uses only a small number each year. It may be that many of these companies would be willing and able to employ a greater number of students, if they were available. This possibility is analyzed in the light of college and employer reports in Chapter VII.

The students employed by the respondents represent two hundred and thirteen colleges, with a range of one to twelve colleges per employer, and a median of two. Since there is a great deal of overlap, the number of colleges mentioned above does not represent a marked discrepancy in the report of the number of cooperative colleges contained in this study.

The employers responding to this request for information have been hiring cooperative students for various periods ranging from two to forty-two years. With six companies not reporting their experience, the average was 12.6 years of experience. Twelve companies reported at least twenty-five years of experience. This degree of experience indicates that the

companies included in the sample have had sufficient contact with cooperative students and colleges to be cognizant of the advantages and disadvantages of this system of education. Twenty-two companies employ all students in alternating pairs. Fourteen others employ none on this basis. Twelve did not indicate their method of employment. This bi-modal distribution would seem to indicate that the placement of students in pairs is not uniformly required, and will vary widely from one employer to another. This is somewhat contrary to the usual assumption that paired placement is essential to the success of a cooperative program. This question has been analyzed according to the type of college involved in Chapter IV.

Forty-five out of sixty-eight companies hire only men from cooperative colleges. Only five hire at least 50% women, and all of these are in the retail field. Thirty-five companies, or just over half of the sample, hire only Engineering students. Nine others hire at least 50% in this field. This distribution must be considered in other phases of the study, as it may inflate the average rate of pay received by students. The next most popular field is Retailing. Six companies hire only students in this area, and two others hire at least 50%. Smaller numbers were hired in the areas of Education, Business Administration, and Liberal Arts. Some other major fields mentioned by individual employers are Physics, Chemistry, and Metallurgy. Since 66% of the total cooperative enrollment are in some type of Engineering, the sample of employers would seem to be fairly representative of cooperative employers as a whole. The length of experience of the employers, as noted earlier, is a further indication of its reliability. Only two colleges listed the names of former cooperative employers. Several stated that no companies had discontinued

relationships for reasons other than a shortage of students. Letters were sent to these employers, and to those who reported the discontinuance of programs in response to questionnaires sent directly to them, asking for information on their experience with cooperative students. Only two replies were received. In both cases, discontinuance of the program was attributed to lack of work.

CHAPTER IV

ORGANIZATION FOR COOPERATION

The "mechanics" of cooperative education hold the key to its success or failure. They include such vital subjects as schedules, personnel, jobs, integration between school and jobs, finances, selection of students, and public relations. A thorough understanding of these important factors can only be gained by examining them in detail. In each of these areas, common practices have been analyzed and differences between the types of colleges have been measured and tested for their statistical significance. In most cases, the Engineering and Mixed groups of colleges have been combined for convenience. Since they both include Engineering students, and tend to resemble each other in patterns of administrative organization, they provide an appropriate contrast with the non-Engineering colleges.

I

College Schedules

School periods. A majority of the colleges surveyed offer both cooperative and regular curriculums. Consequently, most schedules have been arranged to fit the usual academic patterns. This is true for 18 of the Engineering colleges, 17 of the non-Engineering colleges, and 4 of the Mixed group. The other 16 colleges have developed special schedules to meet their particular needs. Although it would seem that colleges operating exclusively on the cooperative plan would find it easier to

operate on unorthodox schedules, only 6 of the 16 have required programs. This indicates that a required cooperative program is not an absolute necessity for the development of a special schedule. Naturally, such schedules require a great deal of cooperation from college authorities, and are often more easily arranged when they do not include a large number of students. The length of school periods ranges from 8 to 20 weeks, with the most common pattern among the Engineering and Mixed colleges reported to be the 12 or 13 week quarter. This provides an opportunity for two work periods per year, and simplifies assignment of students in pairs on their cooperative jobs. All but two of the non-Engineering colleges operate on the semester plan. Since 16 of these schedule work experience on a half-day or alternate day basis, with both work and classroom studies offered during the same period of enrollment, paired placement is not particularly important. The two colleges which do not operate on the semester basis both provide alternating periods of full-time work and study. Since most of the non-Engineering programs are in some phase of Business Administration, usually Retailing, the part-time schedule mentioned above seems to find favor with employers whose needs are often seasonal, or confined to particular days and hours.

Work schedules. In the Engineering and Mixed colleges, the work schedule naturally follows the class schedule, and is most frequently on a quarter basis. Some slight variations to allow for vacations are reported. The range in length of work periods is from four to sixty weeks. However, these extremes exist only in connection with company-sponsored programs, the former in a company-controlled college. The sixty-week program represents a small program in which students work for more than

a year approximately half-way through their college course. Short work periods, such as the four-week interval used by the institution mentioned above, are generally considered to be undesirable, unless placements are entirely local. Even in these cases, the frequent shift from classroom work to job experience makes preparation of subject units difficult. One institution, the University of Houston, permits students to arrange work schedules for split days, alternate days, or full time work with evening classes. Consequently, only the first two can be considered as bona fide cooperative programs.

In the non-Engineering colleges, where part-time programs predominate, there appear to be no good reasons for having work periods of varying length. In these colleges, work experience is often defined in terms of the number of hours per week or term spent on the job. Two colleges have found it advantageous to arrange store experience at the rate of two days per week plus one month full time before Christmas. Since most stores employ additional help at that time, placement is greatly simplified. One college schedules classes and work on alternate days of the week. All placements are local, and students are able to maintain unbroken residence and participation in all activities. Students are paid weekly, and may pay their college bills on the same basis. This greatly reduces the amount of money necessary for initial enrollment.

Total amount of work required. In the Engineering colleges, the number of work weeks ranges from 36 to 115. The average is approximately 67 weeks. The Mixed colleges range from 84 to 144 weeks, with an average of 105 weeks. Two colleges which require the maximum amount of work spread this over a six-year period. (See Table III.)

TABLE III

ADMINISTRATIVE PATTERNS IN COOPERATIVE COLLEGES: ENGINEERING

College	Length of Periods		Weeks of Work Assigned					
	Class	Work	1st year	2nd year	3rd year	4th year	5th year	Total
University of Akron	10 wks.	10 wks	20-30	20-30		10		50-70
Bradley University	18 wks.	60/12 wks		60		12		72
University of California Berkeley	6 mos.	6 mos		26	26	26		78
(3) Los Angeles	Sem.	Sem		18	18	18		54
Cornell University	15 wks.	16 wks		19		30		49
University of Denver	11 wks.	13 wks. (Avg.)		26	26	26		78
University of Detroit	13 wks.	13 wks		26	26	26		78
(3) University of Florida	Sem.	Sem		(1)				Varies
(3) Georgia Institute of Tech.	Quarter	Quarter		27	27	27	27	108
University of Houston	Sem.	Sem., Day, Half Day		(1)				Varies
Illinois Institute of Tech.	20/19/14 weeks	20/19/14 weeks		19	34	14	34	14	115
Lehigh University	Quarter	Quarter		12	12	12		36
U. of Louisville	11 wks.	13 wks		26	26			52
(3) Marquette University	Quarter	Quarter		26	26	13		65

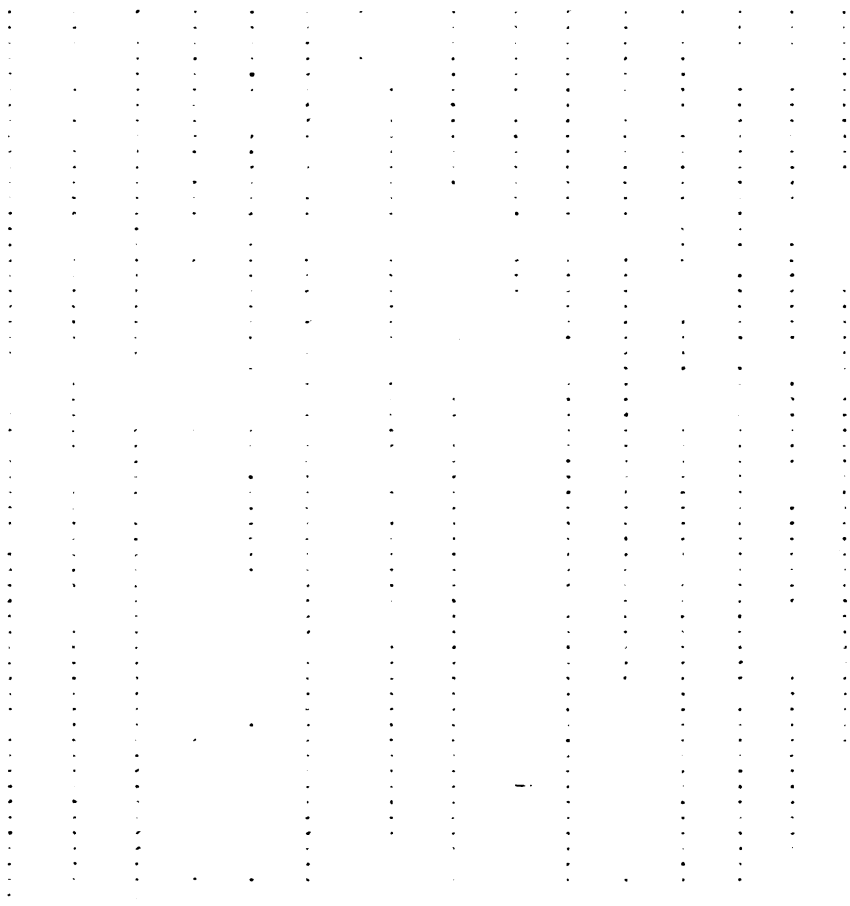
(2)Mass. Inst. of Tech.	4 mos.	4 mos.	22	22	23	67
Michigan State College	Quarter	Quarter	24	24		48
University of Minnesota	Quarter	Quarter	22	22	22	66
Northwestern University	Quarter	Quarter	13	26	26	13	78
Rensselaer Polytechnic Inst.	16½ wks.	14-18 wks.	18	18	14	14	64
Southern Methodist U.	8 wks.	8 wks.	26	26	26	18	96
University of Tennessee	3 mos.	3 mos.	12	24	24	24	84
(3)Virginia Polytechnic Inst.	Quarter	Quarter	26	26	26	18-26	96-104
Wayne University	3½/4½mos.	3½/4½mos.	(1)				Varies

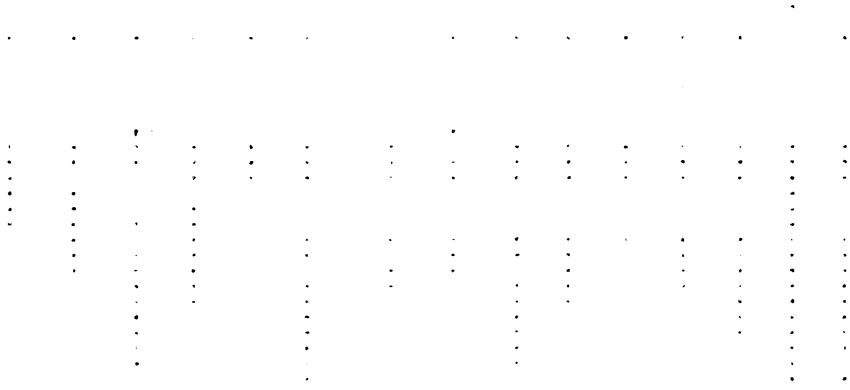
(1) Starting date of cooperative program is optional
(2) Data covers EE program. ME requires industrial period of 5 to 6 months plus regular curriculum
(3) Data from Armsby

TABLE III

ADMINISTRATIVE PATTERNS IN COOPERATIVE COLLEGES: NON-ENGINEERING

College	Length of Periods: Class	Length of Periods: Work	Weeks of Work Assigned: 1st year	2nd year	3rd year	4th year	5th year	Total
Adelphi College	(1)	15 wks.	160 store hours			320 hrs.		320 hrs.
Antioch College	8/12 wks.		8/12 wks.	0-26	26	26	26	104-130 wks.
Bradley University	(1)	16 wks.	16 wks.				32	32 wks.
University of Buffalo	(1)	16 wks.	16 wks.			(2)		Varies
City College of New York	(1)	16 wks.	16 wks. (half-days)			32		32 wks.
University of Dayton	(1)	16 wks.	16 wks.		32	32		64 wks.
Drake University	(1)	18 wks.	2 days/week + 3 weeks full-time at Christmas			36		36 wks.
Fairmont State College	(1)	18 wks.	18 wks.			100-200 hours		1000-2000 hrs.
University of Georgia	(4)	Quarter	11/12 wks.	24	24	24	24	24 6th year. 24. 144 wks.
Hofstra College	(1)	18 wks.	15 wks.			30		30 wks.
Los Angeles State College	(1)	20 wks.	20 wks. 8/16 hrs. per week			(2)		Varies
Marquette University		15 wks.	15 wks. - 2 sem. part-time or 1 sem. full-time.			15		15 wks.
Marshall College	(1)	16 wks.	16 wks.			(2)		Varies
University of Michigan		18 wks.	18 wks.	18	30	18	30	18 104 wks.
North Texas State College		18 wks.	6 mos.			(2)		Varies





University of Oklahoma.....(1)...18 wks.	18 wks.....300 hours.....	300 hrs.
University of Omaha.....(1)...16 wks.	16 wks.....32.....32.....	64 wks.
St. Joseph's College.....16 wks.	12 wks.....(2).....	Varies
John B. Stetson U.....(4)...8/18 wks.	8/18 wks.....18.....26.....18.....26.....18.....	106 wks.
Syracuse University.....(1)...18 wks.	18 wks. 8 hrs./week.....30.....	30 wks.
Tuskeegee Institute.....12 mos.	6 mos.....16.....16.....24.....24.....	80 wks.
Washington U.(St. Louis).....(1)..16 wks.	16 wks. - 2 days/week + one month full time.....	30 wks.
Wayne University.....(3)..16 wks.	16 wks.....32.....32.....	64 wks.
Western Michigan College.....18 wks.	18 wks.....18.....18.....18.....18.....	72 wks.
Wilmington College.....(1)..18 wks.	18 wks. - alt. days..36.....36.....36.....	144 wks.

(1) Concurrent work and school periods
(2) Starting time of cooperative program is optional
(3) Data covers Industrial Education only. Industrial Management is 5 year concurrent program
(4) Data from Armsby

TABLE III

ADMINISTRATIVE PATTERNS IN COOPERATIVE COLLEGES: MIXED

College	Length of Periods		Weeks of Work Assigned					
	Class	Work	1st year	2nd year	3rd year	4th year	5th year	Total
Alabama Polytechnic Inst.	12 wks.	12 wks.	24	24	24	24	24 6th year..24..	144
University of Cincinnati	7/14 wks.	7/14 wks.	8	26	26	26	10	96
Drexel Institute of Tech.	12 wks.	12 wks.		24	24	24	12	84
Evansville College	12 wks.	12 wks.		24	24	24	12	84
Fenn College	13 wks.	13 wks.	13	26	26	26	13	104
General Motors Institute..(1)..	4/8 wks.	4/8 wks.	24	24	24	24	44	140
Northeastern University	5/10 wks.	5/10 wks.		26	26	26	26	104

(1) Data from Armsby

Since most of the non-Engineering colleges use part-time work schedules, comparison of the number of weeks worked is meaningless. However, in most cases, the actual amount of time spent on the job is much lower than in the other types of colleges. The two which offer alternating periods of full-time work include a total number of work weeks which compares favorably with the Engineering and Mixed colleges.

Years when work experience is offered. In half of the Engineering colleges, students are required to complete two years of academic work before entering the cooperative phase of the program. Six others require one year of study, while only four begin work periods in the first year. In contrast, 10 of the non-Engineering colleges do not begin work experience until the last year or two of enrollment. Five have optional starting dates, and only 7 include any work in the first year. As indicated previously, this results in a greatly reduced amount of experience. Delaying admission to the work phase of these programs provides the colleges with greater opportunities for selection of students. However, it reduces the vocational guidance values of experience, since radical curriculum changes after the first two years of college are often complicated by loss of credit and failure to meet pre-requisites. Early work experience is most common in the Mixed colleges, and requires more careful screening of students for original admission, since many of them offer only cooperative curricula.

Length of curriculum. This varies considerably according to the type of program. Thirteen of the Engineering colleges and four of the Mixed group require at least five years for completion of degrees. This figure is based upon a full calendar year, since cooperative colleges

ordinarily ignore the usual three-month summer vacation. The non-Engineering colleges, because of the nature of their programs, are ordinarily able to include work experience without extending the length of time necessary to obtain a degree. In those colleges where full-time work periods are required, more than four years is also required for completion of a degree.

Credit for work periods. No uniform policy was discovered on this subject. Among the Engineering and Mixed colleges, only six grant credit, compared to 18 who do not. On the other hand, 18 non-Engineering colleges grant credit, and 4 do not. This is a significant difference. According to Armsby (4), the Engineers Council for Professional Development does not favor granting credit for work periods. Consequently, class hours in each curriculum must be the same as those required for non-cooperative curricula. Any change in this situation will probably be dependent upon the ability of the cooperative Engineering colleges to agree upon a standard unit of work. In some institutions, a specified number of weeks or hours of work experience is a part of degree requirements, even though credit is not granted. Where alternate programs are offered, those who elect the cooperative plan must normally complete the entire amount of work specified. A few colleges make the starting time and duration of work periods optional. While this plan may have advantages for students who are late in realizing the advantages of the cooperative system, it complicates relations with employers. They are unable to maintain positions for students when their number varies widely from year to year.

II

College Coordinators

The principal difference between cooperative programs and various other methods of providing work experience for students lies in the quality and quantity of coordination. Without positive efforts by some representative of the college to relate work experience to the total curriculum, its values may be largely dissipated. There is also a real danger that students may be exploited as a source of cheap labor, or may be placed in jobs which add little or nothing to their educational development. Consequently, a great deal of attention must be given to an examination of the coordination process, including the position of coordinators in the college organization, their qualifications, duties, and work load. Employer attitudes toward the effectiveness of coordination are used as an evaluative criterion.

Position of coordinators in the college. The location of the coordinator in the organizational pattern of the college may have a great deal of influence upon his effectiveness. The nature of the program, the location of jobs, and the collateral duties which are given to coordinators all tend to produce particular patterns of organization. In examining the colleges which have reported on their plans, some contrasts may be immediately noted. Although 79% of the Engineering and Mixed colleges have centralized coordination for all cooperative programs within the institution, only 55% of the non-Engineering colleges do so. This difference is barely significant from a statistical point of view. However, the larger figure includes all of the Mixed colleges, since these institutions have generally followed the Cincinnati plan described in Chapter II, and established a Department of Coordination. Such departments often have the added responsibility of graduate placement, since both involve relations with

employers. In the non-Engineering colleges, coordination is frequently handled by major professors, as indicated in a subsequent discussion of coordinators' duties. The pros and cons of centralized coordination, like those of centralized placement, have been a point of controversy for some time. Those who favor a centralized system point to the larger work load which can be handled by coordinators, the opportunity to use specialized personnel, the financial savings which may be effected in travel costs when job assignments cover a wide area, and the elimination of duplicated visits to employers. On the other hand, the advocates of coordination by separate departments or colleges stress the value of using teachers as coordinators, on the ground that their wider knowledge of subject matter and closer acquaintance with students will be beneficial to the program. Although schedules are often complicated by the necessity of off-campus visits, teachers have an opportunity to increase their own knowledge of current practices while supervising students. If this system is used, some type of contact should be maintained between all departments of an institution which offer cooperative programs. In many cases, they may be contacting the same employers. Even if this is not the case, an exchange of information would be beneficial. The ultimate result of failure to establish such contacts was noted in the course of this study. One large university has three cooperative programs, operated by three different colleges. Each of the coordinators is unaware of the existence of the other programs. While centralized coordination may not be the answer for this institution, continuation of the present situation is not conducive to efficient operation of any of the programs.

Another matter which is rather closely related to the position of

coordinators is their titles. Here there is little disagreement among colleges. In 44 out of 46 colleges responding to a question on this subject, coordinators hold academic rank. It would seem that even those colleges which provide centralized coordination recognize the value of academic rank as a means of providing status for coordinators and aiding them in their relations with other faculty members. The uniform acceptance of this procedure by almost all colleges marks it as a valuable guide to colleges contemplating the establishment of a cooperative program.

Duties of coordinators. As indicated earlier, the principal responsibility of the coordinator is to provide liaison between students, employers, and the college. This may involve interviews with students, both on campus and in the work location, and conferences with employer representatives. Other duties related to the cooperative program include public relations, both internal and external, and sometimes student selection. In addition to these activities which are related to the cooperative program, some coordinators have other responsibilities, including teaching, administration, and graduate placement. The amount of time which they must devote to these outside activities, and the corresponding amount remaining for cooperative work, has a definite relationship to the type of program offered. For example, all of the Mixed colleges and more than half of the Engineering colleges reported that their coordinators spend at least 50% of their time in cooperative student placement and supervision. None of the non-Engineering colleges reported this amount of time for such duties. The differences in this case are obvious. They may be related to the predominance of part-time programs in the non-Engineering group. Since such programs ordinarily make use of local placement opportunities

for the majority of their students, and are confined to the last year or two of college, coordinators find more time to devote to other duties. The way in which they spend their time is well illustrated by another inter-group comparison. Although a number of colleges did not respond to any parts of this question, 75% of the non-Engineering colleges who did respond reported that their coordinators spent at least half of their time in teaching. In the Engineering and Mixed colleges, none were so occupied. Other duties as indicated above take up lesser amount of time for all groups, in most cases less than 25% for any one activity.

Work loads of coordinators. A direct relationship between the duties of coordinators and their work load in the cooperative program may be expected. The actual number of persons engaged in coordinating cooperative programs is fairly small. The 42 colleges which furnished information on this point employ a total of 116 coordinators. In 29 colleges, one coordinator handles the entire program. The maximum number is found in one non-Engineering college which reports 37 coordinators. However, this is a part-time program, and faculty members handle the students in their major areas. No significant differences between the types of colleges were noted, other than a tendency for the Mixed colleges, which have large cooperative enrollments, to employ more than one coordinator.

The best measurement of a coordinator's work load is the number of students supervised. In a survey by Bintzer (8), 17 colleges reported a range of 8-250 students per coordinator, with an average of 59. Considering separately the colleges which placed more than 100 students in each period, the average was 83 students per coordinator. In the present study, some rather striking differences were noted between the different types of

colleges. Among the Engineering colleges, with five not reporting, coordinators' loads ranged from 5-225 students, with a median of 85. Eight colleges reported work loads under 100 students per coordinator. In the non-Engineering group, 19 out of 21 colleges reporting stated that coordinators supervised less than 100 students, and the median was 25. In the Mixed group, all coordinators supervised at least 150 students, and the median was 200. In this comparison, the nature of the coordinators' duties in the Mixed colleges is directly reflected in their ability to carry a heavier work load. Although Bintzer (8) states that his respondents believed in a maximum load of 100 students per coordinator, the continuing success enjoyed by the Mixed colleges, who enroll more than half of all the cooperative students, suggest that, with proper organization, much heavier loads can be carried. The key factor, of course, is the elimination of numerous extraneous duties for coordinators.

The actual amount of work done by coordinators may also be related to the number of employers contacted and the frequency with which these contacts are made. In the Engineering colleges, the number of employers ranges from 4-150, with a median of 15. This includes three colleges which deliberately restrict the size of their programs in numbers of students and employers. In the non-Engineering colleges, the range is from 1-65, with a median of 11. Mixed colleges again depart from the rest with a range of 25-200, and a median of 87.5. Thus their coordinators not only supervise many more students, but contact more employers in the process. The frequency of coordinator visits varies from a median of two per year for the Engineering and Mixed groups to five per year for the non-Engineering colleges. One of the latter reports that employers

are visited weekly. However, its program is small, and includes only local placements.

Employer reports on coordination. Each employer was asked to state whether college coordinators' visits were sufficiently frequent to handle all problems arising in connection with the cooperative program. Fifty-four out of sixty-five companies responding to this question gave positive answers. Adequacy of supervision is probably related to the degree of organization of work periods. Those companies which have well-established job sequences will not be likely to encounter many problems which require the presence of a coordinator. Also most employers furnish supervision by some official. In 37 cases, this individual was reported to be in the Personnel or Industrial Relations Department. Twenty-four placed the responsibility in the Training Department, and four reported the employment of persons specifically designated as coordinators of college cooperative programs. The rest leave the responsibility in the hands of line officials, ranging from supervisors to vice-presidents. One company reported that no one person had the responsibility for students. This activity on the part of employers greatly simplifies the coordinator's task, since he deals directly with one person in the company. However, it may prevent him from making contacts with first-line supervisors which were considered an important part of early cooperative programs. Since many more problems may be expected to arise in the initial phases of a program, colleges entering the cooperative system for the first time might profit by placing some of their students with companies which have participated in such programs in the past. This will ease the load on the coordinator, and give him an opportunity to learn from the

company's experience.

Another index of coordinator activity is offered by the amount of time spent off campus. Here, responses are almost uniform, with median percentages of 19, 23, and 20 reported for the Engineering, non-Engineering, and Mixed groups respectively. Although it might be expected that the larger number of students and employers for which the Mixed coordinators are responsible would demand a greater amount of off-campus time, this did not prove to be the case. Since most of these colleges have operated their programs for a number of years, and have had cooperative arrangements with some companies for as long as thirty years, time-consuming development problems have been largely eliminated. Nevertheless, the efficiency of their student supervision is indicated by the fact that the number of visits per year to each employer does not vary significantly from those reported by the other types of colleges.

Coordinators' assignments are usually made on the basis of the student's major field of study. A few colleges divide the load on the basis of job location, and in those colleges where students are widely scattered while on the job, one coordinator normally handles all placements in a particular area, regardless of his activities on campus.

Qualifications of coordinators. In order to meet the demands of their complicated jobs, coordinators must possess certain qualifications. All types of colleges agree that coordinators should have some industrial or business experience. The number of years of experience was not of sufficient importance to warrant replies from most colleges. From an educational point of view, a bachelor's degree seems to be the minimum requirement. Graduate degrees are required most frequently in the

Engineering colleges, but are considered desirable in the non-Engineering group. Teaching experience is also a fairly common requirement in the Engineering colleges, although very few of the coordinators now handle classes. It was considered desirable by most non-Engineering colleges, where teaching forms a substantial amount of the coordinator's duties, but was not mentioned by any of the Mixed group. Comments made by respondents on some of the questionnaires indicate that, where a single coordinator has full responsibility for a program, he usually answered this question according to his own qualifications, and not necessarily according to the requirements of the position. Many coordinators have "grown up" with their programs, and might not require an identical background of an assistant if expansion should necessitate hiring one. According to Armsby (4), at least one of the present coordinators was a student, and later a "cub" coordinator, in the original Cincinnati program. It would seem that experience as a cooperative student would be of great value as preparation for coordination work. Future coordinators may be largely drawn from the ranks of former cooperative students.

III

Cooperative Jobs

The nature and location of positions in which cooperative students are placed has a profound effect upon the success of the program. This section is concerned with the location of jobs in relation to the college, the number of jobs filled on a year-round basis, the principal sources of jobs, and student earnings. The types of work experience available to students is illustrated through typical job sequences furnished by

employers. Employer-sponsored programs are discussed separately, since they represent a fairly recent development with far-reaching implications.

Location of jobs. In previous sections, the large number of part-time programs conducted by the non-Engineering colleges was noted. As might be expected, 84% of these colleges place all their students with local employers. In contrast, none of the Mixed group and only two of the Engineering colleges use local placement exclusively. One of the latter is a small program involving only one employer. However, a placement radius of 50 miles includes at least 50% of the students in a majority of the colleges, and only a small number of colleges report more than 50% of their students placed over 100 miles away. The advantages of placement within daily driving distance of a college are numerous. Coordinators avoid lost time in traveling, and students are able to maintain a closer connection with campus friends and activities during the work periods. Also, employers in the immediate vicinity of a college are more likely to be receptive to the cooperative plan because of its public relations values. In those programs where placement is entirely on a local basis, students are able to maintain residence at home or in college facilities, and thus retain a greater part of their earnings.

Sources of jobs. Colleges were asked to rank their sources of jobs in order of use. For all groups, coordinators' visits have the highest median ranking, with direct requests from employers second. Former students seem to play a very small part in the placement process. This is easily understood in the case of recently-organized programs, since their graduates are not yet in a position to influence hiring by their respective employers. Although some colleges permit students to locate their own

jobs, this is rarely a major source of placement opportunities. In those situations where it is permitted, approval must be secured before beginning work if credit is to be granted.

Nature and duration of placements. The typical description of a cooperative program includes the placement of students in pairs, with one on the job at all times. In the course of this study, it was reported that 14 out of the 22 Engineering and Mixed colleges reporting followed this procedure. However, only 4 of the non-Engineering colleges did so. The latter might be expected, since paired placement is not necessary in a part-time program. However, the other colleges have apparently found that students can be placed in many companies without pairing. This was true in regard to all of the students in one of the small, specialized programs described earlier. In that situation, all students following the cooperative pattern are on the same schedule. The eight companies which employ them keep them in a trainee status, and are not concerned with the existence of a particular position to be filled at all times. Although most employers prefer that a student spend all of his work periods with one company, the usual practice in colleges involves placement with an employer for at least one year, or two work periods.

Cooperative earnings. The amount of money received by students in cooperative programs is of considerable importance as a source of support for their college study. Although virtually all authorities are agreed that financial aid is not the major object of cooperative programs, this feature cannot be ignored. Many students who might otherwise be denied a college education may obtain one through earnings on the cooperative plan. A number of colleges which publish booklets on their programs

have included estimates of earnings and related them to college costs. One engineering college, for example, sets up the following figures, based upon a survey of student earnings:

Four-year total of average earnings . . . . . $ 5,722.00

Five-year total of college tuition and fees 2,299.67

Thus the typical student in this college will earn approximately $3,400.00 more than the cost of tuition and fees for the college program. This amount will probably meet a large percentage of his living expenses. A more general picture of student earnings may be obtained through analysis of employer reports on wage rates, and college reports on the percentage of college expenses earned.

Cooperative student pay rates. Fifty-five out of 68 companies furnished reports on the payment of cooperative students. The rate and method of payment varied considerably. Twenty pay monthly, 10 weekly, and the rest hourly. Several of those included in the monthly group are government agencies which actually establish pay rates on a yearly basis in accordance with Civil Service regulations. They have been converted to a monthly basis because no students are employed for a full year. Most employers of Engineering students pay them on a sliding scale, based upon their year in college. For example, one company, paying a comparatively high scale, reported the following figures:

First year	$220. per month
Second year	250. per month
Third year	290. per month
Fourth year	335. per month
Fifth year	380. per month

Government agencies generally hire students at the GS-2 level, $2,750.00 per year. Upon completion of one-fourth of the course, they are advanced to GS-3, $2,950.00, at the half-way point, GS-4, $3,175.00, and at the three-quarter mark, GS-5, $3,410.00. Since the latter represents the entry level for inexperienced college graduates in the Federal service, the advantage of the cooperative system is immediately apparent.

In trying to report an average salary figure for the fifty-five employers, it was necessary to convert all reports to an hourly rate, since most of the Retailing programs are on a part-time basis. The amounts paid to students range from $.75 to $1.95 per hour, with an average of $1.47. This equals $58.80 per week for 40 hours. In addition, many companies provide fringe benefits, such as hospitalization, during the work period. Several reported that students who remain with the company after graduation receive seniority from the beginning of the first work period. One reported vacation credit on the same basis.

Proportion of expenses earned. Colleges were asked to estimate the proportion of college expenses earned by students during their work periods. These averaged 68.75% for the Engineering colleges, 60.6% for the non-Engineering group, and 83.3% for the Mixed colleges. In some cases, responses were qualified to distinguish between students who lived at home, those who lived in dormitories, and those who had to go out of town to work. One employer reported paying a higher rate to students from out-of-town colleges. It is apparent that cooperative earnings can be expected to cover a large portion of each student's expenses after the beginning of this phase of the program.

Job sequences. One of the primary aims of the cooperative system is

to give students a variety of work experience at progressively higher levels. This may be achieved by arranging employment in a number of different companies, in the manner practiced by Antioch College and described in Chapter II, or by arranging, in cooperation with employer representatives, a sequence of experiences within a particular company. This method was preferred by 59 out of the 68 employers participating in the study, since it means that students spend all of their work periods in the same organization. Eleven companies sent reports of sample work sequences. In accordance with assurances given to employers in soliciting information, no companies are identified. However, in some cases, sequences have been included in publications distributed to students, so that they may have an opportunity to study the types of experiences which will be available to them. Most of the sample sequences received were for Engineering students. They range from brief outlines to several pages of detailed descriptions. The government agencies which furnished these reports did so in more detail than any other group, possibly because of their more rigid system of position classification. One company, which has employed cooperative students since the beginning of the original program at Cincinnati, reported that identical 4,000-hour programs are arranged for cooperative students and graduates of non-cooperative colleges. This is a vivid illustration of the advantage enjoyed by cooperative students, since they reach in a five-year program the same level attained by a regular graduate after two years of employment. A typical program arranged by this company for Liberal Arts, Commerce, and Business Administration students and graduates is reproduced in Figure I. Another company, employing Electrical Engineering students, arranges their

FIGURE I

4,000-Hour Training Program for Cooperative Liberal Arts, Commerce, Business Administration College Students and Liberal Arts Commerce and Business Administration Graduates

The _____ Company

DEPARTMENT	HOURS		
Foundry	80		
Lathe	240		
Drill	80		
Mill	360		
Tool Grind	80		
Heat Treat	40		
Grind	240	Shop	40
Vise - Tool Repair	200		
Gear	20		
Assembly:			
Standard	80		
Special	80		
Maintenance	160		
Hydraulics	80		
Electrical Wiring	80		
Power House	20		
Time Study	320		
Cost	160		
Purchasing	160	Cost	20
Shipping and Receiving	80		
Engineering	320	Engineering	12
Shop Engineering	120		
Production	160	Production	8
Tracing	40		
Engineering Service	280		
Advertising	240	Sales	20
Order	280		
	4,000		

Approx. 4,000 hours

Work Assignment (After Graduation):

Required:

General Accounting		12 weeks
Subsidiaries		22 weeks
Field Service		
Local Office Only	2	
Field Office	2	4 weeks
One of Following Depending on Objective:		
Production	12)	
Advertising	12)	12 weeks
		50 weeks

schedule to provide 24 weeks of Drafting, 32 weeks in the Electrical Model Shop, 8 weeks Instrument R & M, 8 weeks Q and E Test, 8 weeks Mechanical Model Shop, and 16 weeks on Special Assignment. In some companies programs are "tailor-made" for each student. While many of the elements are similar, the sequence may vary. One company furnishes the following example (each work assignment consisting of one school quarter or three calendar months):

Student A	Student B
Production Control	Timestudy
Timestudy	Production Control
Foundry	Parts Packaging Engineering
Experimental Lab.	Experimental Lab.
Design Engineering	Design Engineering
Design Engineering	Tool Design

Student C	Student D
Production Control	Timestudy
Quality Control	Foundry
Heat Treat	Metallurgical Lab.
Dynamometer Lab.	Heat Treat
Design Engineering	Design Engineering
Design Engineering	Tool Design

The employer reports that these are typical work sequences. He states: "What we attempt to do is to expose the student to broad experience in his opening assignments and then to specialize him on assignments of his choice in the later stages." Unfortunately, it has not been possible to reproduce all of the sample sequences furnished. Those illustrated above are typical of the reports received. One company, however, furnished a 10-page booklet detailing an 18-month training program involving five departments and three different locations. The failure of any retail stores to furnish sequences indicates that their job assignments are probably made on a more informal basis.

Employer-sponsored programs. These constitute a special category of

jobs, since employers play a much more active role in the operation of the entire program. College reports indicate that all of the Mixed colleges, 8 out of 17 Engineering colleges, and 8 out of 22 non-Engineering colleges participate in such programs. However, nearly all feel that they are desirable. One of the few who did not express this view felt that such programs would produce divided loyalties on the part of students.

Typical employer-sponsored programs are those conducted by the International Harvester Company and the installations making up the Potomac River Naval Command. In both cases, students are considered to be employees from the beginning of their first work period. They are placed on leave of absence to return to college, and thus develop eligibility for many benefits provided by the employer. One military installation, the Rock Island Arsenal, has recently established a cooperative program in Engineering. Arrangements have been made with St. Ambrose College in nearby Davenport, Iowa, to furnish the first two years of instruction. It is expected that students will complete their work in the cooperative program at Northwestern University. Students who enter this program are required to obtain "Secret" security clearance, and to sign, with their parents or guardians, an agreement to remain in the employment of the Arsenal for two years after graduation. Such agreements are rather unusual. However, one other government agency expressed the need for some type of control to prevent students leaving their employment simply because of a change in interests.

In all of these programs, students are paid only for the time spent on the job. Some scholarships are available, and will be discussed in a subsequent section. No instance has been reported of a program in which

students receive financial support during the total course.

A somewhat different type of employer-sponsored program is that operated by the General Motors Corporation. Through the General Motors Institute, students are trained for Engineering and Business positions in the corporation. All students are sponsored by a General Motors division, and spend their work periods in it. During the fifth year, they prepare a project report on a current plant problem, and work full time. Although employment after graduation is neither promised nor required, many graduates remain in the sponsoring division.

IV

Integration of School and Work Periods

If cooperative work experience is to be of real value to students, colleges, and employers, specific steps must be taken to relate this experience to the total college curriculum. Also, techniques for evaluating work experience must be developed. While the coordinator has the overall responsibility for arranging the details of student placement, and adjusting any difficulties which arise, students and employers must play an active role in determining the actual value of on-the-job learning experiences. Their role in this process is usually fulfilled through periodic reports to the college.

Student reports. In 36 out of 46 colleges, students are required to write some type of report on each work period. Such reports are intended to give students an opportunity to demonstrate what they have observed in the employment situation. In many colleges, detailed instructions are given for the preparation of reports. A number of

colleges furnished copies of these instructions, and outlines of the topics to be covered. Reports are commonly expected to be 1,000-2,000 words in length, and have three main purposes, as expressed in one set of college instructions:

1. To serve as an incentive to the student to observe as much of the activity in the plant as possible, that is, to get as much practical knowledge as possible beyond his own immediate task.

2. To develop the student's ability in report writing, which is an important phase of the work of a practicing engineer.

3. To increase the value of the student's work to his employer and himself.

To achieve these purposes, students are usually directed to write under two main headings: (1) the employer, his operations and policies; and (2) the particular job occupied by the student. Other topics covered may include the student's evaluation of the work experience, and suggestions for its improvement. Illustrations in the form of drawings, sketches, blueprints, forms, et cetera are expected in all reports. However, care must be taken to avoid disclosing any confidential information. Students are also cautioned to avoid discussing personalities. Reports should be prepared so that they can be submitted to employers as well as to the college.

In addition to their value to the student, these reports are of great assistance to the coordinator. Since he visits the average employer only twice a year, he must make use of these reports to constantly examine the nature of the experiences which are available to students. He is thus prepared to correct any attempts to exploit students, and to plan future assignments so as to give the student a well-rounded series of

experiences.

Student reports on work periods would seem to represent a convenient means of solving the conflict over academic credit for work periods. It is common practice in many colleges to award credit, in varying amounts, for independent research. Grades are usually based upon an evaluation of the reports of such research. There should be no objection to the use of a similar system in granting credit for work experience, based upon student reports. As in most cooperative programs, an acceptable student report presupposes a satisfactory rating by the employer for the period covered. Student reports may be of real value to an employer. However, care should be taken not to place students in the position of being regarded as "management spies" on the job.

Employer reports. Thirty-eight out of 46 colleges require reports from employers. These are usually received at the end of each term or work period. A number of sample forms were submitted by colleges. These are usually rating sheets, approximately two pages in length. Employers are asked to rate students on such characteristics as Interest in Work, Application, Ability to Learn, Self-Reliance, Accuracy, Grooming, Reliability, and Judgment. In addition, objective reports on attendance and punctuality are requested. In most forms, characteristics and rating steps are well defined. Most leave room for additional comments at the end. In one case, employers are asked to list critical incidents supporting or illustrating each rating. Some colleges have developed card rating forms, apparently to reduce the amount of time spent by company officials in evaluating students. A great deal of similarity between the rating forms was noted. In one case, a card developed by one college

has been reprinted by at least two others for their own use.

Employers were asked to evaluate the report forms used by colleges. Fifty-nine, or 88% of those responding to this question, felt that present forms are adequate. Eight suggestions for improving forms were listed. Two asked for more detail, one for less. One employer reported that no forms were received and no report requested. The rest suggested changes which have already been adopted by many colleges, such as the use of descriptive phrases, rather than such adjectives as "Fair," et cetera.

Employer reports, like those received from students, help the coordinator to evaluate the effectiveness of the work period. In most colleges, a satisfactory report from the employer is necessary if the student is to receive credit for the work period. Unsatisfactory reports may lead to disciplinary action or dismissal. In those cases where the report is not actually unsatisfactory, but certain personal inadequacies are noted, the coordinator may take advantage of this fact to suggest that the student obtain assistance from counselors or other faculty members. Students are much more likely to appreciate the value of certain desirable personal characteristics when they are confronted with their effect upon employability.

College reports to employers. Since nearly all colleges expect some kind of report from employers, a certain degree of reciprocity would seem to be appropriate. Slightly more than half of the employers reported that they receive reports from at least one of the colleges whose students are employed. Only seven who did not receive them felt that they were unnecessary. There would seem to be some degree of negligence on the part of college officials in this instance. Those employers who are

considering cooperative students as potential executives and managers have a vital interest in the activities of students on campus, as well as their grades. They should be entitled to receive reports with the same frequency that they furnish them to the colleges.

Other techniques of integration. A number of methods have been used by various colleges to facilitate integration of class and work periods. The most common of these is the coordination class, sometimes known as a "swap session." In these classes, students report on their job experiences, and discuss them. This exchange of information and ideas supplements the experience which each student may gain on a limited number of jobs. In addition, it gives students valuable experience in oral presentation of reports. The use of swap sessions at Antioch College has been described by Arnold (5). She reports that groups of students, usually less than twenty, discuss such questions as the status of cooperative students in an organization, types of supervision given, and the carry-over value of one job to another. An attempt is made to operate these sessions with a minimum of direction, so as to provide a permissive atmosphere.

Another frequently used technique is the faculty plant visit. This helps to bring the instructional staff more closely into the cooperative program, and prevents the development of a feeling that class and work periods are mutually exclusive. Armsby (4:29) reports that one of the early coordinators at Cincinnati took many notes on his plant visits, and developed hundreds of shop problems, illustrating practical applications of mathematics, engineering drawing, physics, and other subjects. Some colleges have considered the development of faculty work periods, on an

exchange basis with industry. Only one program of this nature has been reported. In a recent article, Dean David L. Arm of the School of Engineering, University of Delaware, described arrangements which had been made for faculty members to spend 12 months on survey assignments at Dupont (2). They were to survey the organization and management of the Engineering Department, with the first group beginning on April 1, 1951. It was felt that this arrangement would give the University, which has just inaugurated a cooperative program, considerable aid in preparing a curriculum suited to the needs of industry. In those situations where plant visits or faculty work periods are not possible, and coordination is handled by a specialized staff, regular reports to instructors on the placement of their students has been found helpful.

A few colleges expect students to attend evening classes during work periods. In one case, company engineers are given faculty appointments, and conduct these classes. It is felt that this technique preserves the continuity of the classroom program, and also reduces slightly the total time necessary to complete degree requirements.

Orientation classes. Very few colleges reported the use of this method. However, it may have been confused with coordination classes, and reported under that category. Since most programs do not begin until after the first year or two of college, ample time for the organization of such classes is available. They provide an opportunity for discussion of the job placement procedure, and the responsibilities which students have in the program. They should tend to reduce the amount of time which coordinators would have to spend in individual interviews with students before their first work period. In one college, discussed in Chapter II,

on-campus work during the first year is required of all students. This would seem to offer an excellent opportunity for the observation and correction of unfavorable work habits before the first off-campus placement. Also, it provides financial assistance to students prior to the beginning of the cooperative phase of the program.

V

Financial Administration

Finances play an important part in any college program, and particularly in the cooperative plan. The operating expenses of the program must be borne by students or employers, or absorbed by the college. Student earnings, and the extent of scholarship aid available are also important.

Student fees. Thirty-nine out of 46 colleges reported that cooperative students do not pay any extra fees. However, 24 charge tuition during the work periods. A majority of these were in the non-Engineering group, where class attendance and work experience are both included in the same period. Thus, only a small number of colleges attempt to support the cooperative program through student fees.

Employer contributions. Only 6 colleges out of 45 reporting stated that employers pay any part of the cost of coordination. Three of these operate highly selective Engineering programs, in which only a small number of students and employers are involved. In these, and in one non-Engineering program, employers bear the entire cost of coordination. In the latter case, an association of retailers makes an annual grant to the college. Out of the 68 employers participating in the study, only 9 pay

a part of the cost of coordination. However, 22 report that they make some general contribution to the colleges from which they receive cooperative students. Further development of the cooperative system may require that employers play a larger part in its financial support. The use of trade associations would seem to be a particularly promising approach. In this way, financial aid and placement opportunities could be solicited through the same channels. Obtaining financial aid for a college through a cooperative program would seem to be a very useful device, since employers are able to visualize direct benefits to their organization. A further extension of this possibility has been included in the proposal which makes up Chapter IX.

Scholarships. For those students who do not enter the cooperative program until after the first or second year of college, the availability of scholarships is of extreme importance. Although most colleges have some scholarship funds, an attempt was made in this study to determine the extent to which employer-sponsored scholarships are available. Fifteen Engineering and Mixed colleges report such scholarships, but only 9 of the non-Engineering group have them. This difference, which is quite significant, is probably related to the current shortage of Engineers, and increased employer interest in their preparation.

Employer reports of scholarships. Only 8 of the employers sampled reported that they provide scholarship aid to cooperative students. One of these limits such assistance to sons of employees, and another gives preference to students residing near its plants. Since many companies are now offering various types of college scholarships, some further effort to integrate these with cooperative programs would seem to be

mutually beneficial. Most of the plans reported cover only the first year or two of college. Their purpose is to bridge the gap between entrance and the point where cooperative periods begin.

VI

Special Procedures for Cooperative Students

In operating a program of this nature, a number of special problems arise. One of these concerns the selection of students. In a cooperative program, students must pass a double screening, since they must be accepted by the college and an employer. This section is concerned with procedures used by colleges and employers in the selection of students. A second problem, which is also covered, involves the services which colleges provide to students during the work periods. Most of the activities in this area concern students who are working outside the city in which the college is located.

College selection procedures. In the Engineering colleges, five indicated no requirements beyond college admission. Two require passing grades during the first two years of class work. Four colleges expect students to have better than average grades, ranging from C+ to B. One college reports that financial need is considered, while another makes use of guidance tests. In the non-Engineering group, ten have no set requirements. A few make use of interviews by employer screening committees, two use guidance tests, and only one requires above average grades. The Mixed colleges have a somewhat different problem, since most of them require participation in the cooperative program. This necessitates more careful selection of students for original admission. The most

common requirement reported was a grade average in the upper half of the high school class. The most surprising conclusion that can be drawn from these reports is the failure of most colleges to make use of any type of tests in selecting students. There would seem to be a considerable advantage in the use of some measurements to supplement other information, particularly in those cases where little or no college study is required before the first work period.

Employer selection procedures. Methods used by employers in selecting cooperative students seem to follow the usual pattern for hiring salaried personnel. Only six companies reported that they hire all students referred by the colleges, although others place considerable weight on college recommendations. Sixty-two companies require interviews, often with more than one person. Although most interviews are conducted by representatives of Personnel or Training Departments, additional interviews with line supervisors are often required. Two companies have committees which interview students. Other techniques reported, in order of their frequency, are review of personal data, review of college grades, and psychological tests. One company requires a physical examination. Most government agencies select students through competitive examinations, as a part of the usual Civil Service procedure.

Services to students. More than half of the colleges did not indicate any special services for students during work periods. Those who did respond gave primary attention to housing arrangements. Medical care, if necessary, ranked second, and very few make any attempt to provide travel assistance or recreation. Of course, those colleges which place students entirely in the local area will need no special arrangements, since students

will remain in residence. It would seem that not all of the colleges reporting no services to students place all of their students locally. Consequently, some review of the needs of students while at work would seem advisable.

VII

Public Relations

The development and operation of a cooperative program normally requires the use of various techniques to inform students and employers of its benefits. Colleges were asked to provide information on the procedures used. Some reports from employers were also considered in cases where they seemed appropriate.

Publications, and talks by coordinators are used by a majority of colleges in disseminating information about their programs. A few make use of talks by students. Other methods reported by one or more colleges include press releases, high school visits, and coordinator membership in civic and service organizations. Only one college mentioned the campus newspaper. This would seem to be an excellent means of reaching students who might be interested in entering a cooperative program. It is surprising that its use is so infrequent. Employer publications also play a part in publicizing cooperative programs. Several companies, particularly those employing large numbers of Engineering students, have supplied copies of folders sent to high schools in an effort to encourage students to enroll in cooperative colleges. In some cases, the folders are combined with announcements of scholarships mentioned earlier.

Employer advisory committees are used by 13 out of 24 non-Engineering

colleges. In contrast to this figure, only 4 out of the 24 Engineering and Mixed colleges report the existence of such committees. This is a significant difference, and may indicate that most of the latter groups, having operated their programs over many years, do not feel the need of such committees. It would seem that their reports do not indicate a lack of concern for relations with employers, but rather a strong confidence in the stability of their relationships with them. The most extensive use of employer committees was reported by Los Angeles State College. This is primarily a result of the inclusion in its organization authorization the requirement that the college shall "...initiate the establishment of cooperative relationships with industry and business looking toward the development of programs of training which will relate practical experience with classroom instruction." As a consequence of this injunction, separate committees for each major subject field have been organized.

In those colleges where advisory committees have been organized, they are used almost equally in three areas: (1) Aid in curriculum planning; (2) Aid in screening and assigning students to jobs; and (3) Development of new job openings. One college reported that all job assignments are made after students are interviewed by an employer screening committee. It would seem advisable for any college undertaking the establishment of a cooperative program to make use of such committees in the initial stages of development. Their continued use would also seem to be of value in promoting better community relations, and would be a convenient vehicle for presenting the financial needs of the program to employers, if it should become necessary to solicit their support.

CHAPTER V

THE VALUE OF COOPERATIVE PROGRAMS

The evaluation of an educational program is, at best, a difficult and tenuous project. This is particularly true in the absence of definite criteria. Consequently, the most logical standard for measuring the effectiveness of cooperative programs must be the degree of satisfaction reported by those who have participated in them, either as students, colleges, or employers.

I

Employer Attitudes Toward Cooperative Students

The unique function of this study is to present a systematic survey of employer attitudes toward cooperative programs. The employers involved have been described in Chapter III. Although their number is comparatively small, their collective experience is sufficient to lend credence to their opinions. Their satisfaction is indicated by the way in which they rate cooperative students on their performance, and the extent to which they have attempted to retain students as permanent employees after graduation. Some explanation of their behavior is afforded through the qualitative analysis of the reasons which they give for preferring cooperative college graduates.

Rating cooperative students. Each employer was asked to rate students as generally Good, Average, or Poor, in comparison with regular employees,

on Attendance, Quality of Work, Quantity of Work, and Ability to Get Along with Others. (See employer questionnaire, Appendix A.) These ratings were averaged, allowing 3 for Good ratings, 2 for Average, and 1 for Poor. Fifty companies rated students as Good in Attendance, and the average rating was 2.8. On Quality of Work, 41 rated students as Good, and the average was 2.66. Quantity of Work received only 34 Good ratings, but the average was 2.70. Ability to Get Along with Others received the most favorable ratings, with 45 Good reports and an average of 2.71. Thus, on all characteristics students were rated well above the average for regular employees. (See Table IV.) This is particularly significant

TABLE IV

EMPLOYER RATINGS OF COOPERATIVE STUDENTS

Factor	Number of employers			
	Good	Average	Poor	Mean Rating
Attendance	50	10	1	2.80
Quality of Work	41	18	1	2.66
Quantity of Work	34	23	2	2.70
Ability to Get Along with Others	45	18	0	2.71
Weighting: Good = 3 Average = 2 Poor = 1				

with regard to Quantity of Work performed. It has been assumed by some authorities that the extensive use of cooperative students would result in a loss of productivity because of the long period of time which they

would take to reach normal output. This report indicates that such assumptions are unwarranted. The consistently favorable ratings reported above indicate a high degree of satisfaction with cooperative students on the part of a great majority of employers.

Retention of cooperative students. Employers were asked to indicate what percentage of cooperative students in their companies were normally offered permanent jobs after graduation. Twenty-three reported offers made to all graduates, and a total of 60% of the companies made offers to at least 75% of the graduates. It may be expected, in view of the present shortage of Engineers, that job offers in this type of work might be abnormally high. Consequently, employers were asked a more general question: "Other qualifications being equal, would you prefer to hire cooperative graduates?" Of those responding, 91.5% gave positive replies. Two of those who did not do so explained their responses in terms of a desire to hire students from a wide number of colleges, rather than negative attitudes toward the cooperative system. Those employers favoring the employment of cooperative graduates were asked to give reasons for their attitude. In most cases, these were concerned with the specific training and experience which students had received on the job, and their immediate availability for productive employment. General familiarity with the company and opportunities for employer assessment of personal characteristics were also considered to be important. The reasons for preferring cooperative graduates have been effectively summed up by one respondent as follows:

> ... because the learning resulting from the interaction of alternating work and study, produces an engineer who is superior in education, practical grasp of the job, and one who has a firm mature grasp of the problem of working

people. He also has a pretty good understanding of what he wants to do for his future work, and is generally more mature.

II

The Objectives of College Cooperative Programs

In Chapter II, four general objectives of cooperative programs were listed. These were:

1. Work experience directly related to the student's major field.
2. Vocational Guidance.
3. Personal and Social Development.
4. Financial Aid to Students.

College administrators were asked to indicate the one most important objective of their programs, and to supplement this with a list of the other goals which they felt were being attained. In twenty-eight colleges, work experience in the major field was considered most important. Guidance and student orientation together were chosen by fifteen, and only three gave first place to financial aid. Intergroup differences were negligible. Analyzing the additional goals which were reported, most colleges tended to mention the two which they did not select as first choice. Better student orientation and vocational guidance was most frequently mentioned, with personal development second and financial aid third. Other objectives listed included more effective teaching, better student achievement, aid in recruiting new students, and better relations with industry. Two coordinators indicated that they felt too much emphasis had been placed upon financial aid, tending to turn the cooperative program into a welfare activity. However, as noted in the

previous chapter, only one college considers financial aid in selecting students for the program, and, as stated above, Financial aid to students is rarely considered the primary object of a program.

III

The Benefits of Cooperative Programs

At this point, an attempt has been made to sum up the benefits which can be realized from the cooperative system of education by students, colleges, and employers. In a later chapter, the disadvantages of the system and the programs which have been encountered in operating various programs are reported.

Benefits to students. These can be divided into five areas: Vocational guidance; More effective professional training; Financial aid; Personal development; and Job placement. The first noticeable effect of the cooperative program on students is the aid which they may receive in making or confirming vocational choices. The importance of this assistance is indicated by the results of Baskin's study, reviewed in Chapter I. He found that 75% of the students who had graduated from a cooperative college considered their work experience as the most important factor in their career decision. The opportunity to work closely with persons who are doing those things which a student hopes to do after graduation, and to perform some of the required tasks in a particular occupation, presents an unparalleled opportunity for confirmation or rejection of tentative vocational choices. No aptitude or interest measurement can compare with actual performance in providing solutions for this important problem. Students who may have glamorized

or otherwise unreal concepts of various jobs may square them against actual requirements through their own observation. Similarly, students in fields where personality characteristics and temperament are of primary importance, such as Retailing, have an opportunity to determine through actual sales experience whether they are temperamentally suited to the demands of their chosen field. Unfortunately, most Retailing programs defer store experience until the last year or two of the program. It would seem to be highly important that students in this area obtain some store experience early in their college career, so that they may be cognizant of the environment in which they must work, and the demands which the work will make upon them. In this respect, conferences with coordinators and counselors are often valuable in aiding students to relate their work experiences and their attitudes toward them to vocational choices. For those students who conclude that their original choice is not the best, an opportunity to change without a material loss of credits is an advantage. This, of course, is dependent upon the point at which the first work period is scheduled. For those who confirm their choice as the result of work experience, it provides an opportunity to consider various areas of specialization within a particular occupation.

A second point at which students find an advantage in the cooperative program is inherent in its schedule. During the work periods, the student has an opportunity to supplement his classroom instruction by observation of practical applications of theoretical concepts and problems. He also has an opportunity to facilitate learning by actually taking part in operations. In many cases these involve equipment and materials not available in college shops or laboratories. The opportunity to work in

close contact with experienced professional specialists, and to receive instruction from them is a valuable supplement to classroom training. An incidental value in those colleges which alternate full-time work and study is the separation of periods of intense mental effort by work periods which usually offer a more favorable balance of mental and physical effort. This tends to avoid boredom, and enables students to perform more adequately in both periods.

Financial aid is an advantage which must rank high for many students, regardless of the attitude which colleges take toward its importance. Many students on conventional programs find it necessary to take part-time and summer jobs in order to remain in college. Since such jobs are frequently chosen for maximum financial return, their contribution to the student's total educational program must often be minimal. Also, since campus jobs are frequently paid on a rather low scale, students are tempted to work an excessive number of hours, to the detriment of their studies. The cooperative plan offers students an opportunity to gain useful experience, and at the same time earn more than they could ordinarily expect from a part-time job. Some cooperative colleges include comparative figures on student earnings and college expenses in their publications. If present programs are to be expanded, efforts must be increased to make students aware of these comparisons. Such publications are particularly valuable in contacting students who have college ability but lack the necessary funds for a full college program. Increased scholarship aid during the period before the first work assignment will also be necessary in some cases. Even those students whose parents are fully able to assume their college costs may benefit

by the independence which cooperative earnings will give them.

The development of desirable personal characteristics is another by-product of the cooperative system. Students have an opportunity to take part in a productive enterprise. They are able to gain a sense of accomplishment from the completion of concrete tasks. A well-developed work program rarely includes any of the "busy work" which creeps into some college courses. The necessity of working in some situations under the supervision of a person who has gained his position through extensive experience rather than specialized training may have a beneficial effect upon the student's sense of his own importance. Also, such jobs help to give students an appreciation of the feelings of the working man. In our highly specialized productive system, engineers and managers who have never done production work may tend to ignore the feelings of workers in the interest of "mechanical" efficiency. Recent research has demonstrated the folly of such emphasis in terms of over-all productive efficiency. In addition to his appreciation of the problems of working people, the cooperative student, through his knowledge of specific products and processes, may attain greater status and respect from production workers and supervisors. In more advanced assignments, students have an opportunity to take the responsibility for independent operations, and learn the necessity for careful planning and constant checking of results. In addition, they learn to work as members of staff teams, taking part in group planning sessions and learning the importance of inter-departmental relations. In short, the student is conditioned through progressive experience toward the kind of activities in which he will participate as a professional worker.

The advantage which cooperative graduates hold in placement after graduation is obvious. Many students remain with the employer where they obtained their cooperative experience. Those who do not do so will still have an advantage over other recently graduated students. The ability of the cooperative student to become immediately productive after graduation was stressed by employers in indicating their preference for hiring such students. Also, cooperative students have an opportunity to see a company from within and determine, before graduation, whether it offers real career opportunities. This is in marked contrast to the "red carpet" treatment given many graduates, particularly in Engineering, under present employment conditions. In such situations, even with plant visits, the student may not be in position to adequately evaluate the offers which he receives. Often a decision made under these circumstances is based upon monetary returns only. The cooperative graduate is usually in position to consider other aspects of company policy which will outweigh financial considerations in the long run. Finally, the cooperative graduate, if he accepts a position in the company where he has been training, will often receive vacation and other benefits retroactive to the date of his first work assignment. Many of the arguments advanced in favor of cooperative programs with regard to placement apply equally to future advancement. Instead of spending six weeks to two years in an orientation program, the student can progress in his special field, which is often designated prior to graduation.

Benefits to colleges. Although practically all of the features which benefit students indirectly benefit colleges, a number of more specific advantages may be noted. These may be grouped under five headings:

(1) Better relations with industry; (2) Increased student motivation; (3) Financial savings; (4) Curriculum development; and (5) Stability of enrollment. Advantages related to each of these areas are discussed in the light of present and possible future benefits.

In listing the benefits which they felt their institutions had received from the cooperative system, college administrators most frequently mentioned improved relations with industry. There would seem to be a feeling that this system represents an excellent means of establishing and maintaining contacts with business and industrial leaders. A certain amount of the motivation for such contacts is clearly financial. As one respondent phrased it, "Industrial leaders have greater realization of need to support colleges." Obviously, the cooperative system, in which employers may recognize in a direct way the importance of colleges as a source of trained personnel, has the effect of stimulating their interest in the general problems facing higher education at this time. Close contact between college and industrial leaders may also increase the use of college facilities for in-service training of personnel, trade conferences, et cetera. The rapid growth of contract research, both private and governmental, in recent years, has been a strong source of support for many institutions. However, a broader sort of mutual understanding is the real goal which the cooperative system helps to achieve. Industrial leaders, as individuals and in their corporate capacity, are in position to have a great deal of influence on public opinion and governmental policy. It is essential to the future of higher education that this influence be on the positive side, to aid in combatting the recurrent waves of "anti-intellectualism" which greatly hamper the work and prestige

of colleges and universities. In addition, it would seem that through closer contact with college officials and faculty members, business and industrial leaders might be more likely to make use of the results of research performed without subsidy, and thus improve the general welfare. This possibility would have particular application in relation to research findings in the Social Sciences and Human Relations.

A second way in which colleges benefit from the cooperative system is in its effect upon students. The opportunity to see and make practical applications of classroom theory is a strong motivating factor. Also, the concentration of work in a single period leaves the student free to devote his major efforts to his studies during the school periods. The increased personal and emotional maturity which is recognized as a by-product of the cooperative system should greatly simplify problems of student discipline. Thirty-six colleges reported that no special arrangements for the regulation of student conduct during work periods are made. It would, therefore, seem unnecessary to apply rigid regulations to students during their school periods when, in a few weeks, they will be at work and subject only to the usual laws and customs of society as a whole and the rules of their employer. In recent years there has been a growing tendency for college students to behave, in some instances, in ways more becoming to their younger brothers and sisters. This behavior, while frowned upon by college authorities, has been generally condoned by the general public as a sign of youthful exuberance, et cetera. This may result in the development by students of certain attitudes and habits which will be a definite handicap to their satisfactory adjustment after graduation. The cooperative system, by placing students in a work

environment during their college years, substitutes for college rules, which sometimes seem arbitrary and artificial, the rules and customs of the working world. Thus students will tend to develop an attitude of conformity to the accepted mores of society as a whole rather than the somewhat irresponsible stereotype of the college student which has arisen.

The third, and most obvious advantage of the cooperative system for colleges is in the matter of finances. By using industry as its "laboratory," a college may avoid the necessity of investing in a great deal of costly equipment which may rapidly become obsolete. The inability of many colleges to provide adequate laboratory experiences in the light of modern complex production techniques is most obvious in the field of Engineering. Even when a college attempts to run some type of small business or manufacturing activity as a laboratory for students, the motivational factors are not the same. In addition, the volume of operations rarely reaches a point at which reasonable overhead costs can be absorbed. Business men may also object to colleges operating any business which competes with private enterprise.

Another way in which colleges receive financial benefits results from the more efficient use of physical facilities. This advantage was reported by 14 of the 46 colleges participating in the study. In examining the cooperative schedule, it may be noted that, after the beginning of alternating work and class periods, twice as many students can be accommodated each year in the same classrooms and laboratories. If a large proportion of placement is outside the local area, a similar saving in dormitory accommodations can be achieved. Although the effect of these savings is somewhat modified by the extra year which is required for

completion of degree requirements, material gains may still be expected. The implications of this situation for the future of cooperative programs have been further explored in Chapter VII.

In the area of curriculum development, the cooperative system has a great deal to offer colleges. Besides providing laboratory experiences for students, it aids instructional personnel in adjusting their teaching to the changing demands of business and industry. It also offers an opportunity for evaluation of the total instructional program in the light of employer reactions to its product - the student. The degree to which these benefits may be realized by any college will depend upon the interest which faculty members evidence in the cooperative program. The increased use of full-time coordinators in a central department has a tendency to separate faculty members from the contacts with industry which were felt to be valuable in the early days of cooperative programs. Unless definite steps are taken to bridge this gap, the instructional program in cooperative colleges will not realize the potential benefits of the system. Such steps may include faculty plant visits, faculty work periods or consulting assignments, and frequent meetings with industrial advisory committees. Many colleges now make use of some of these devices. It would seem essential for all to do so.

Finally, the cooperative system aids the college in stabilizing enrollment. This is accomplished in three ways. First, increased student motivation and financial aid should tend to reduce the drop-out rate. Second, the year-round operation of most programs tends to avoid the Fall term peak loads which are common to other institutions. Third, the presence of the cooperative program should serve as an inducement to

prospective students, if it is adequately publicized. This will aid the college in maintaining enrollment during periods of economic instability and decreases in enrollment due to population changes.

Benefits to employers. Employers may expect to gain in three areas from participation in cooperative programs. These are Selection, Training, and Relations with Colleges. Most employers recognize the real problems involved in the selection of college graduates for employment. In most cases, these graduates are considered as potential managers and executives. Their induction and training cost, at present salary levels, is very high. However, most companies follow the usual hiring pattern of college and plant interviews, plus recommendations and a review of background factors. This procedure does not offer an adequate opportunity to evaluate the personality factors which are essential in most managerial positions. The use of psychological tests offers little assistance in this area, since they are at their weakest and most unreliable point in dealing with personality factors. A series of work periods, in which the student may be observed on a number of different tasks, can contribute more toward effective selection than any of the techniques mentioned above. Of course, the efficiency of this procedure depends upon the existence of systematic techniques for evaluating student performance on the job. A number of employers sent copies of rating forms used for this purpose. In addition, almost all employers are expected to rate students in their reports to the colleges. Group orientation classes and conferences with executives are used in many firms to aid in the selection process, as well as in training. For many students who remain with the cooperating company after graduation, the problem of selecting a field of specialization

has already been solved. This can be a great aid to management in forecasting its personnel needs.

The retention of college graduates is fully as important as original selection in most companies. Under present hiring conditions, particularly in the field of Engineering, positive efforts may have to be made to "sell" the company to a candidate. Those students who have reached their decisions after working for a company for several periods are much more likely to be satisfied, and to remain as valuable employees.

Even more important than selection, to most employers, is the training which is given to cooperative students. As noted earlier, this was the reason most frequently given for preferring to hire cooperative graduates. Most employers find it necessary to place college graduates in a training program of varying duration, before they can be given productive assignments. The cost of such programs, including the high salary which must be paid to graduates, is considerable. Forty-seven employers, or 78% of those responding, feel that cooperative work periods can substitute, to some degree, for the usual graduate orientation program. The ability to place graduates directly avoids the necessity of maintaining such programs for many students. Although this advantage may be lost through inability to retain graduates after graduation, this is not a major problem for most employers. However, they must be prepared to make offers to nearly all graduates who have worked in their organizations in order to gain the maximum training benefits. The percentage of job offers made to graduates, as reported in an earlier section, indicates that most employers **recognize** this necessity.

Finally, the cooperative program provides employers with an opportunity

to work more closely with colleges. As the ultimate consumers, in a sense, of the college product, they are vitally interested in its preparation. By aiding colleges in curriculum development, they can help to prepare students more adequately for the duties and responsibilities which they will have after graduation. Other advantages, such as contract research, et cetera, described as advantages to colleges, are mutually beneficial. Although they will try to retain most graduates, employers may expect some benefits from students who do not remain in their employment after graduation. Even though they may accept some more attractive offer, if a favorable impression of the company has been formed during the work period, some indirect benefit may result. Their greater familiarity with a particular company's products and services may influence their decisions when they are in position to make a choice between competing suppliers. These indirect benefits, as well as the desire for good community and public relations, are the main incentive for companies to employ vocational education students, since these students cannot be considered as potential employees.

CHAPTER VI

PROBLEMS IN THE DEVELOPMENT AND OPERATION OF COOPERATIVE PROGRAMS

The development of any new educational program is likely to produce problems, and to reveal weakness in the basic idea and its application. In many cases, the basic idea may be sound, but subject to misunderstanding because of faulty application. The cooperative system is no exception. In this chapter, the problems and weaknesses of cooperative education are described, as reported by colleges and employers. The first section is drawn from reports of former cooperative colleges. The second presents a number of problems inherent in the system, while the third discusses the present problems considered most important by colleges and employers. Finally, employer suggestions for the improvement of these programs are reported.

I

Discontinued Programs

A number of colleges which were contacted in the course of this study reported that their programs had been discontinued. In the hope that their experience might be of value to others, they were asked to describe the circumstances which led them to this action. Six colleges furnished such information. Four reported difficulties related to the need for close supervision of the program, and the added cost of such

supervision. Two stated that, in a time when jobs were plentiful, students had preferred to work without reference to the cooperative program. One stated that these problems were complicated by the existence of a parallel non-cooperative program in the college. The administrator felt that there was considerable difficulty in keeping track of the status of individual students, since frequent changes from one type of program to the other were permitted. Other reports of students remaining on the job, rather than returning to college, suggest that some type of understanding must be reached with students and employers regarding their obligations under the cooperative program. Further difficulties mentioned were concerned with recruiting students, conflicts with extra-curricular activities in a small college, and the resignation of a key faculty member. All colleges reported that they considered the principle of cooperative education to be valuable, and that the program had been of benefit to students and the college. However, none anticipate the resumption of the cooperative system in the near future. Two of the colleges now operate on an evening schedule, and enroll primarily employed students. The experience of these colleges emphasizes the need for careful planning, and willingness to devote considerable time and money to the initial stages of the program.

II

Disadvantages of the Cooperative System

College organization and scheduling. As might be expected in a program of this nature, a number of colleges have encountered administrative problems. Eleven colleges reported more complicated registration and

scheduling as a result of the cooperative program. The extent of this problem would seem to depend, to a considerable degree, upon the size of the college, the number of students involved in the cooperative program, and the type of work schedule followed. In large institutions, parallel programs can be more easily offered, since most subjects are offered each term. However, even these colleges find that certain specialized curricula, such as Engineering, will only support advanced subjects once a year. In such cases, schedules must be arranged to keep students on campus at that time. When a quarter schedule is used, one work period may be arranged during the Summer, leaving only one school term when cooperative students will be away from classes. Some of the smaller, more selective programs which operate with comparatively few employers have arranged to keep all of their cooperative students in a unit schedule. In this arrangement, jobs are not filled on a year-round basis. The ultimate solution to scheduling difficulties is the maintenance of a cooperative curriculum for all students, with sufficient number to offer each subject at least twice a year.

Another point at which the cooperative program may cause difficulty is in relation to student activities, particularly athletics. Nine colleges reported reduction or elimination of intercollegiate athletics as a result of the cooperative program. However, others, including some of the Mixed colleges where a large proportion of the student body follows the cooperative plan, still participate. In this situation, the length of work periods is an important factor. If these can be appropriately arranged, athletes may actually find an advantage in the cooperative system, since the need for part-time work during school periods is reduced.

Those colleges in which the cooperative system has forced discontinuation of inter-collegiate competition usually maintain a strong intra-mural program.

Students may also find some difficulty in participating extensively in sustaining activities such as publications, musical groups, et cetera. However, if these difficulties were insurmountable, no student activities would exist in colleges operating exclusively on the cooperative plan. A review of the catalogue of one of these, Fenn College, reveals that virtually all of the activities offered in other colleges of comparable size are present. Of course, in a college where only a few students are on the cooperative plan, they will be at a disadvantage in opportunities for participation.

Added expenses to students. The necessity for students to travel to new locations and establish residence there during their work periods must inevitably cause some additional expense. However, this disadvantage is somewhat offset by the high rate of student earnings cited earlier, as compared to those which could be expected from part-time jobs while in residence. Also, the intangible value of the work experience should outweigh immediate financial considerations.

Divided loyalties. A few employers and colleges have suggested that participation in cooperative programs may produce divided loyalties which tend to impair its effectiveness. While such conflicts may exist in a small number of cases, it must be recognized that the student's primary obligation is to the college. Work experience is highly desirable, for reasons indicated in the previous chapter. However, the completion of degree requirements is the primary object, and this can be achieved in

most colleges without work experience. Ordinarily, there would seem to be no need for any conflict of interest. If such exists, it indicates a need for clarification of the objectives of the program. Both students and employers should have a clear understanding of their obligations under the program. Most employers recognize the value of the degree program, and will not do anything which might tempt students to leave college before completing it.

Finances. It is obvious that the operation of a cooperative program entails increases in the college budget. Very few colleges have succeeded in transferring this expense to the employers. In previous discussions of financial problems, and in Chapter VII, the potential savings inherent in the cooperative system have been discussed. Very few colleges reported any attempt to compare savings with the cost of coordination. Unless a greater degree of employer support can be obtained, many colleges, particularly those receiving public support, may find it necessary to make such comparisons in order to justify further expansion of their cooperative programs.

Marginal students. One college reported that the placement of marginal students constituted a problem. Although the reference was probably made in regard to academic standing, it might easily apply to personality characteristics and behavior as well. This problem is more acute in those institutions where the cooperative program is required. Even with the most careful selection, some students are likely to fail, or to approach failure so closely as to make them poor risks for the completion of a degree. Their placement with an employer who is looking to the cooperative program as a source of permanent professional

employees presents a real problem, particularly when academic deficiencies are coupled with negative personality traits. Colleges would seem to have some responsibility to students and employers in this situation. Students should receive all possible assistance through counseling and other remedial services of the college. If a positive prognosis is then possible, employers may then be approached for acceptance of such students in special assignments. If a doubtful prognosis is apparent, the college may find it necessary to ask the student to withdraw, or to transfer to a regular curriculum. Help through remedial services and counseling is the preferred solution, since it offers opportunities for growth. Exclusion from the cooperative program only postpones the question of employability until after graduation.

III

Present Problems of Cooperative Programs

Reports from colleges and employers point out a number of current problems. Unlike the disadvantages mentioned above, these problems are most frequently the result of defects in the application of cooperative principles, and are not inherent in the system. They relate to such broad topics as the supply of students, schedules, coordination and integration, personnel and finances, and the attitude of unions.

Supply of students. Both colleges and employers report a shortage of students as a major problem. For some employers the situation is apparently more acute because of the over-all scarcity of Engineering personnel. Several colleges report difficulty in arousing student interest in the cooperative program. They attribute this to various

causes, ranging from impending military service to alleged discriminatory regulations of the Veterans Administration. The problem of military service obligations is not peculiar to the cooperative student, and would seem to offer no exceptional difficulties in most cases. Reports indicate that in colleges which offer ROTC programs, the Service Departments have been willing to adjust schedules to accommodate cooperative students. Those who enter Advanced programs must graduate before they can be commissioned. In view of these facts, the representation of this problem as a real deterrent to student enrollment in cooperative programs seems rather artificial. Similarly, the second complaint mentioned above is of doubtful validity. While it is true that most students cannot complete a cooperative degree course in the thirty-six months maximum time allowed under the Korean G. I. Bill (P. L. 550), the law provides that they will receive subsistence payments during work periods. This offers them an opportunity to accumulate funds toward the expenses of the last year of college. Apart from these rather minor points, the shortage of students is probably related to an over-all trend toward decreased enrollments, which has only recently been reversed, and to the present favorable economic situation. As one employer has suggested, a slight economic decline may increase cooperative enrollments, because the students will then be attracted by the financial features of the program. It is unfortunate that this should come to be the most powerful attraction of the system. Wider publicity among high school seniors and college freshmen would seem to be needed.

Schedules. Several employers suggested that a greater degree of uniformity in the length and starting dates of work periods in colleges

would be helpful. The savings which might be obtained by inducting cooperative students from all colleges at the same time are obvious. This is a problem for which no easy solution is possible. In those colleges with parallel programs, cooperative schedules must be integrated with the total college schedule. Where only cooperative programs have been offered, colleges have, in most cases, already set up what seem to them to be the most efficient schedules.

Coordination and integration. A number of employers indicated a need for improved supervision of students by college coordinators. Several others felt that a clear statement of policy and procedure should be furnished to companies entering the program. These criticisms, although voiced by a minority of companies, should encourage all college administrators to examine their programs for weaknesses in this area.

Personnel and finances. The criticisms mentioned immediately above suggest problems in this area also. One new program, in the field of Teacher Education, has been greatly handicapped in its development by the fact that its coordinator can only spend 10% of his time on it. Additional time would require the employment of additional staff members. This brings the financial problems into focus. As indicated in a previous section, these are difficult to solve without increased employer aid. Perhaps in the developmental stages, when expenses are highest, some assistance might be obtained from educational foundations. Further exploration of this source of funds would seem appropriate at this time, in anticipation of rising enrollments in the near future.

Union relations. One college reported their most pressing problem to be the reaction of unions to the presence of cooperative students

where questions of seniority and lay-offs were prominent. The solution to this problem would seem to have been reached by most companies, since the great majority place students on jobs not covered by bargaining agreements. In others, union complaints are forestalled by placing students on the Training Department payroll. In this way, they do not become a charge upon the department where they are employed, and cannot be considered as displacing a worker. However, according to company reports, this is a minority practice.

Other problems. The question of differences in ability between paired students on a particular job has been cited as a problem by one employer. Where students are placed in pairs, it would seem necessary, in some cases, to select them carefully according to the job which must be performed. Another employer objected to required participation in the cooperative program for students. He based this criticism on the premise that only volunteer participants have the necessary motivation for adequate performance. Even if this were true, no student is obliged to select a cooperative college. Since they are in the minority, few students would be compelled to attend such a college in order to receive training near their homes.

IV

Employer Suggestions

Thirty-two employers did not feel constrained to make any suggestions for the improvement of cooperative programs. Those who did frequently directed their suggestions to the improvement of specific weaknesses mentioned in the previous section. Other ideas fell into three categories:

(1) Better counseling and guidance for students; (2) Better industry publicity; and (3) Uniformity of report forms.

Counseling and guidance. Most well-established cooperative programs make extensive use of the college's facilities for counseling students. However, these are not always adequate. Extensive educational, vocational, and personal counseling would seem to be a necessity in all cooperative colleges. The cooperative schedule, with its frequent moves, may have a tendency to place some students under somewhat greater stress than a conventional arrangement. Also, employers seem to feel that students should have fairly well-developed vocational choices before entering the program. In both cases, adequate counseling facilities are indicated. One employer representative made the statement that "Engineering Depts. of universities do not have sufficient understanding of the use of psychological appraisal devices in counseling and guidance." This would seem to indicate a need for close cooperation between counselors and members of the teaching faculty, possibly including in-service training meetings. A further implication would seem to be that counselors might play an important role in selecting students for the cooperative program.

The relationship between counseling and guidance facilities and the cooperative program may also be extended to include high school counselors. These workers have often tended to think of financial aid for college students only in terms of scholarships. While these have their place, especially in the freshman year, over-all financial benefits are greater, in most programs, through the cooperative system. An increased awareness of these facts, as well as the other values of the system, on the part of high school counselors, might be of considerable value in recruiting new

students.

Employer publicity. Many companies are now realizing that they can and must play a more active role in the recruitment of students for cooperative colleges. One sent a sample of a folder developed for this purpose. Increased activity in this area, in close cooperation with the colleges, should bring the advantages of the cooperative system to the attention of a much larger number of potential students and their parents.

Uniform reports. One employer suggested that colleges might make some effort to standardize their report forms. This would simplify the task of company supervisors in rating students. A common outline for student reports was also felt to be desirable.

CHAPTER VII

THE FUTURE OF COOPERATIVE PROGRAMS

The growth of cooperative education in the next decade should at least parallel that of higher education in general. There are some indications that it may surpass it. In this chapter, the probable future development of cooperative education is considered from two viewpoints. First, the plans and expectations of colleges and employers presently participating in cooperative programs. Second, the role which this system of education may play in new institutions. In the latter case, the relationship between projected enrollments and the savings possible under the cooperative plan have been analyzed, as well as the subject areas where it would be especially helpful in providing necessary experience.

I

The Growth of Present Programs

College reports. Plans for the expansion of cooperative programs in the near future were reported by a large number of colleges. Thirty expect to increase the number of students, but only fourteen will increase the number of subject fields covered. Thus we may expect that cooperative programs during the next decade will follow the same general subject matter distribution as in the past, with Engineering predominant. Because of the present shortage of personnel in this field, there will probably be a tendency for new programs to develop in Colleges of Engineering.

The over-all growth in the number of students enrolled in cooperative programs which may be expected will be based upon increased college enrollments, and the report from 92.8% of the colleges that they could place more students than are now at work. The latter report, if given sufficient publicity, may encourage additional colleges to begin cooperative programs, since some have probably hesitated, fearing difficulty in placing students.

Employer reports. Another aspect of the forecast for future cooperative enrollments may be obtained from employer responses. As noted previously, a number of employers complained about the present shortage of students. In spite of this fact, 44 companies reported plans to expand their utilization of cooperative students in the near future. Of this number, 25 plan to increase the total number of students hired, 10 will employ students in additional plants or branches, and 11 expect to employ students in other subject areas than those now covered. It may reasonably be expected that these figures reflect employer recognition of the shortage of students available for placement. With a more plentiful supply, even more might increase their employment. As a further indication of their attitude, 31 employers, or 52.5% of those reporting, stated that they had plans for the eventual increase of their company's participation in cooperative programs. Even more significant is the fact that approximately 80% of the employers felt that an increase in the number of cooperative colleges would be of benefit to them. It would seem apparent that cooperation from this representative group of employers may be expected for any efforts to expand the size and number of cooperative programs. In addition, many other companies would probably

employ students if they were available. One indication of this conclusion in a specialized field is offered by Highlen (11). In a study of placement opportunities for Trade and Industrial Education students, he found that 35.4% of the companies who responded would be willing to cooperate by providing work experience. This is particularly significant, since these students are not potential employees. In other major fields, therefore, the response could be expected to be even more favorable. Reports received from two colleges indicate that they have waiting lists of employers. In one case, 20 companies have indicated their willingness to participate, and to pay their share of the cost of coordination. New colleges entering the cooperative field may expect to find solid support for their initial efforts from companies now hiring cooperative students. By making use of this resource, they will simplify the task of arranging placement for the first few groups of students.

II

The Role of the Cooperative System in Institutional Growth

Any prediction of the future growth of cooperative programs must take into consideration the expected expansion of enrollments in the next decade. According to the report of the Commission on Human Resources and Advanced Training (28:171), the number of college graduates is expected to increase from 286,000 in 1954 to 427,000 in 1964. This estimate is based upon the expected population increase and the trends in numbers of students graduating from college. It does not take into consideration the effects of any concerted effort to increase the number of students of

college calibre who receive some type of higher education. The Commission further reports (28:175) that only 51% of the students in the upper quarter of their high school classes, according to grades and mental ability, actually enter college, and only 42% graduate. There are many reasons why capable students do not attend college. These include finances, lack of motivation, and other plans. In the case of female students, the latter often involves marriage. It is difficult to estimate the number of additional students who would attend college if financial aid were available. Hollinshead (12:81) estimates that at least 125,000 more top-quarter high school graduates would attend if funds were provided. In addition, about 26,000 top-quarter students who do not graduate from high school might be kept in school and eventually go on to college if they could be properly guided in high school and given financial aid in college. The total, 151,000 students, would increase college enrollments by about one-third, and would increase the college attendance of those in the top quarter in ability from the present two-fifths to approximately three-fourths.

The implication of these figures for cooperative programs is tremendous. A large number of students who have college capacity but would not otherwise attend may be brought into the college population through a combination of scholarship aid and cooperative earnings. For many of these students, the cooperative schedule will supply added motivation, since the more practical aspects of college training will be evident.

Savings through the cooperative plan. Most of these have been mentioned earlier. The most notable saving can be expected in the physical plant needed for expanded enrollments. As indicated in Chapter V, a

given number of classrooms and laboratories can accommodate twice the usual number of students, since only half of them are present at any one time. Savings are reduced by the extra year required, and the late starting point for work periods in some programs. However, even a slight expansion in college capacity would be of great value. A recent news release from the Council for Financial Aid to Education estimates the needs for buildings, equipment, and maintenance of 753 American colleges at $2,500,000,000. for the next ten years. Even a small fraction of this amount saved would be significant.

The second area in which cooperative colleges may reduce costs is in the purchase of laboratory equipment, particularly those items required in advanced courses in Engineering and Sciences. If basic principles can be taught in the colleges, students may have an opportunity to learn the use of more complex, expensive equipment during their work periods.

Subject areas for cooperative development. In the course of this study, a number of areas were noted in which work experience would seem to be extremely valuable. In most of these, very few cooperative programs are available. The most notable of these is Vocational Education. In almost all states, teachers of vocational subjects are required to have a certain amount of work experience in their particular subject field, in addition to practice teaching. Unless this has been gained prior to enrollment in college, it is difficult to fulfill these requirements through part-time or summer work. Some states permit these requirements to be met through the passage of proficiency examinations. However, this is no substitute for actual shop experience. As indicated earlier, employers participating in Highlen's study (11) seemed to be willing to

employ Education students. In most cases, their employment is considered to be a matter of good community and public relations, rather than a means of recruiting future employees.

Other major subject areas which might be enriched by work experience include virtually all of the Natural Sciences, the divisions of Business Administration, Agriculture, and such specialized fields as Public Administration. If the present shortage of teachers continues, and classroom aides are employed, as has been suggested, Education students could perform such work on a cooperative program. Although the areas above would seem to be particularly adaptable to the cooperative system, some type of work experience should be of value to all students. This point of view is represented in contemporary programs by Antioch College, where, as described in Chapter II, all students are required to obtain work experience as a part of their general education.

CHAPTER VIII

SUMMARY AND CONCLUSIONS

I

Summary of Study

The purpose of this study was to survey the development, present status, and probable future growth of cooperative work-study programs leading to undergraduate degrees in American colleges and universities. In reviewing the development of cooperative programs, the growth of work experience in education was traced from its earliest origins to the founding of the first cooperative college program in 1906. The circumstances surrounding the development of this first program by Herman Schneider, and the subsequent spread of his idea to other colleges were considered in some detail. Previous studies of cooperative programs were reviewed, and their procedure and findings noted. No studies which measured employer attitudes toward cooperative programs were found.

General procedure. Questionnaires were developed to obtain information on enrollments, operating practices, problems, and attitudes toward the cooperative system. These were sent to all colleges believed to have such programs. Forty-six usable replies were received. Adding one college which sent literature but did not return the questionnaire, and nine others listed by Armsby (4), a total of 56 colleges were operating cooperative programs, with a total cooperative enrollment of 18,634 students in the

Fall term, 1953. Two-thirds of these were in some type of Engineering. Approximately 62% of the Engineering students were enrolled in colleges where only cooperative curricula are offered. Most non-Engineering students were enrolled in Liberal Arts, or some phase of Business Administration, usually Retailing. The colleges were divided into three groups: Engineering, non-Engineering, and Mixed, the last-named having both types of students. The Mixed colleges, numbering only seven, include 11,739 students, or nearly two-thirds of the total cooperative enrollment. Most of the analysis was based upon returns from the 46 colleges which returned usable questionnaires.

Questionnaires were also developed to obtain information on employer practices, and their evaluation of cooperative students. Replies were received from 68 employers, representing 53% of the original list furnished by the colleges. The employers who responded had an average of 12.6 years' experience with cooperative students.

Organization for cooperation. In analyzing college reports, it was found that most of the Engineering and Mixed colleges follow a schedule involving alternate periods of full-time work and study. The non-Engineering colleges, for the most part, provide work experience through part-time programs, with simultaneous registration. The implications of these arrangements are apparent in the organizational patterns used by the colleges. Most Engineering programs begin after the first two years of academic study, while non-Engineering colleges schedule work experience most frequently in the last year. Mixed colleges begin work experience earlier, more than half starting it in the first year of attendance. This fact, together with the type of schedule followed

results in a much smaller amount of work experience for the non-Engineering students, and a maximum amount of work for the Mixed college students. Also, students in the Engineering and Mixed colleges usually require at least five years for the completion of degree requirements, while most non-Engineering college programs do not extend beyond the usual four years.

Numerous differences between the groups were also noted in regard to the coordination process. In the Engineering and Mixed colleges, there is a tendency for coordinators to devote the major portion of their time to the cooperative program, particularly the placement and supervision of students. Coordinators, especially in the Mixed colleges, are frequently located in a central department. Coordinators in the non-Engineering programs are most commonly teaching personnel who devote less than half of their time to the cooperative program. Consequently, coordinators in the Engineering and Mixed colleges supervise many more students and visit more employers than those in the non-Engineering colleges. All groups report that coordinators spend about 20% of their time off campus. Coordinators are uniformly required to have a bachelor's degree and some non-academic work experience. Graduate training and teaching experience are considered desirable, except in the Mixed group.

Nearly all jobs held by non-Engineering students are local. Also, all groups tend to place a large number of students within a 50-mile radius of the college. This simplifies coordination. Jobs are usually located through coordinators' visits to employers. About two-thirds of the Engineering and Mixed colleges reported practically all students placed in alternating pairs. This is rarely required in the non-Engineering

group because of the nature of their schedules. Employers reported student pay rates ranging from $.75 to $1.95 per hour, with an average of $1.47. Colleges reported on the percentage of school expenses earned by students. These ranged from 60.6% for the non-Engineering colleges to an average of 83.3% for the Mixed colleges. Most employers prefer to have students spend all of their work periods in the same company. Where this is done, a sequence of experiences in different jobs is usually arranged. A few employers have directly-sponsored programs, one in connection with a company-controlled college. Most colleges would like to see a greater degree of employer participation in the sponsorship of students. No company was reported as paying student school expenses in addition to cooperative earnings.

The integration of school and work periods is maintained through coordinators' visits and reports from students and employers. Only half of the employers receive any type of report on students from the colleges. Most of the others would like such reports. Other techniques of integration used include coordination classes, faculty plant visits, orientation classes, and evening courses during the work periods.

In most colleges, cooperative students do not pay any extra fees. However, more than half of the colleges charge tuition during work periods. Very few employers pay any part of the cost of coordination. The amount of scholarship aid furnished by cooperative employers is very small.

Selection of students for participation in cooperative programs is made by colleges and employers jointly. Colleges rarely require more than a passing average. Employers use the techniques commonly associated with the hiring of professional personnel, with emphasis on interviews,

often multiple. Most colleges do not find it necessary to furnish any special services for students during work periods. Those who do are mainly concerned with housing arrangements.

Publications and talks by coordinators are the main methods used to publicize cooperative programs. More than half of the non-Engineering colleges have employer advisory committees, while only four of the other types used them. Where such committees exist, they are used to aid in curriculum planning, selection of students, and development of new jobs.

The value of cooperative programs. Employer attitudes toward the employment of cooperative students are almost entirely favorable. Students were rated higher than regular employees on Attendance, Quality and Quantity of Work, and Ability to Get Along with Others, with highest ratings reported on the last-named characteristic. Twenty-three companies reported that all students who have worked in their organizations as a part of their cooperative training received job offers. A total of 60% of the employers made similar offers to at least 75% of the students employed. As a further indication of their satisfaction, 91.5% of the employers reported that they would prefer to hire cooperative graduates, other qualifications being equal. The most common reason given for this preference was that cooperative graduates could become productive immediately.

The main objectives of cooperative programs, in order of their importance as listed by colleges, were: (1) Work experience directly related to the student's major field; (2) Vocational guidance and better student orientation; and (3) Financial aid to students. The benefits of the cooperative system to students include vocational guidance, more

effective training, financial aid, personal development, and improved placement after graduation. Colleges benefit from these programs through better relations with industry, increased student motivation, curriculum development, financial savings, and increased stability of enrollment. Employers, as indicated above, find their greatest gain in savings on training costs. They also benefit through improved selection of college-trained personnel and better relations with colleges.

Problems in the development and operation of cooperative programs. A number of colleges which have discontinued cooperative programs reported that their action was due to difficulties in the maintenance of adequate supervision of students, finances, and lack of student interest. Disadvantages inherent in the system include more complicated registration and scheduling, some limitation of opportunities for student participation in extra-curricular activities, particularly athletics, and added expenses to students when they are required to move during work periods. The cost of coordination and the placement of marginal students also seem to be inevitable problems. The most pressing problems of colleges and employers at the present time seem to center around a shortage of students. Other reports cite scheduling, coordination and integration, personnel and finances, and union relations as areas which present difficulties. Employer suggestions for improving programs emphasize better student counseling and guidance, better industry publicity, and uniformity of report forms and work schedules.

The future of cooperative programs. Most colleges expect to increase the number of students enrolled in cooperative programs in the near future. This increase will generally be confined to the subject areas now covered.

More than 90% report that they could place more students than are now at work. This report, coupled with employer statements that more than two-thirds of them plan to expand their utilization of cooperative students, indicates a promising opportunity for the expansion of present programs and the creation of new ones. More than 80% of the employers consider the latter course desirable. The cooperative system, through increased student motivation and financial aid, has the potential ability to greatly increase the percentage of high ability high school graduates who attend college. Colleges may expect to make financial savings through more efficient use of their physical plant and reduced expenditures for laboratory equipment. A need for cooperative experience in a number of subject areas was noted. The most important of these was Vocational Education.

II

Conclusions

In reviewing this study, the following conclusions were apparent:

1. Most colleges and employers who have had experience with cooperative programs feel that they have derived substantial benefits from them.

2. Opportunities for placement of additional students exist.

3. Expansion of present programs and creation of new programs is warranted, and would be supported by present employers.

4. Cooperative work experience has definite value for students in the areas of supplementary training and vocational guidance.

5. The cooperative system can play an important part in helping colleges to accommodate increased enrollments.

6. Greater efforts by colleges and employers to publicize the

advantages of the cooperative system are needed.

7. High school and college counselors should be made aware of the benefits which students may derive from cooperative programs.

8. Increased employer participation in the operation and support of programs is needed.

9. A greater degree of coordination between cooperative colleges would be desirable.

10. College coordinators should make greater use of counseling and guidance facilities in working with students.

11. Definite steps should be taken to relate teaching personnel to the cooperative programs.

12. Colleges operating parallel programs should consider the advantages of required participation in cooperative programs.

13. Reports on students by colleges would greatly aid relations with employers.

Suggestions for further research. Additional studies similar to that made by Baskin (6) would be helpful in measuring the effectiveness of cooperative experience. Such studies are particularly needed in colleges where the cooperative program is optional. A second area worthy of investigation would involve examination of the reasons for the lack of student interest in cooperative programs, and ways of increasing it. Finally, exploration of major subject areas and the positions in which graduates are placed should reveal new fields for cooperative development.

CHAPTER IX

PROPOSAL FOR AN EMPLOYER-SPONSORED PROGRAM

Since most employers are now experiencing a shortage of cooperative students, particularly in technical fields, a new type of program would seem to be needed, involving a greater degree of employer participation. The following proposal includes features drawn from present cooperative programs and other employee educational programs. It is intended to offer employers a method for increasing the number of professionally trained workers in their organizations by adding a new group to those participating in cooperative programs.

General provisions. The proposed program would follow the pattern of alternating classroom and work periods common to most Engineering cooperatives. A schedule based on the quarter system would be most suitable. Employers would make a contribution to the college to defray the cost of coordination, basing it on the total number of students employed. Each company would employ two groups, in equal numbers, known as Regular and Contract students. Both groups would spend all of their work periods in one company.

Regular students. These would be recommended by the colleges in the manner now common to most cooperative programs. They would receive no financial aid from the company other than cooperative earnings, and would have no obligation for continued employment after graduation. Regular students would attend classes for the first two quarters of the

freshman year before beginning the first work period. During this time, they would have an opportunity to visit various companies participating in this special program, and would be interviewed by company representatives. Colleges would make use of their counseling and testing services in recommending students for final selection by the participating companies.

Contract students. Each employer would select from his own employees those who have the ability, educational background, and desire for college training. College counseling and testing services would be available for assistance in this process if desired. Preference would be given to those employees with at least one year of service who had demonstrated potential ability for leadership or technical proficiency. Workers selected in this manner would be placed on leave of absence with pay for the first quarter of the college year. They would then enter the alternating schedule, which would place them at college while the regular students were at work. During the balance of the program they would receive funds from the company to cover tuition, fees, and books, in addition to their cooperative earnings. Each worker would be required to sign a contract, similar to an apprentice agreement, containing the details of the plan, and providing for continuation of employment, at the company's option, for at least two years after graduation. This would offer the company some measure of protection for its investment.

Probable effects of this proposal. A program of this nature would have as its first object an increase in the number of cooperative students. This might, in turn, stimulate an increase in the number of colleges offering cooperative programs. Employers would probably prefer to have local colleges participate in programs of this type, so that

travel and other cost for students might be kept to a minimum. The most important feature of this program, concerning the Contract students, would tend to increase the rate of college attendance among high school graduates of high ability. As indicated in Chapter VII, only about two-fifths of this group now go to college. A program of the type proposed above would make it possible for most students in this group to overcome financial barriers to college attendance. Counseling by company personnel workers and college representatives would be helpful in arousing the interest of young workers in the program.

There are now in existence many apprentice training programs, which provide on-the-job training supplemented by related classroom instruction. This instruction makes the work more meaningful, and is an essential part of the program. The proposal presented above is simply an extension of the apprentice principle, with a changed distribution of time due to the more technical nature of the positions to be filled. Although classroom instruction predominates, the work experience is essential, since it gives a practical value to the entire program.

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REPORT-FORM

COLLEGE COOPERATIVE PROGRAMS

I. General Information

A. Name of College_____

B. Enrollment (Fall, 1953) in schools or divisions offering co-operative programs.

School or division	Total enrollment	Co-operative enrollment
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____

Please check those divisions where co-operative plan is required for all students.

II. Organization for Cooperation

A. Operating schedule

1. What is the length of school terms?_____

   work periods?_____

2. Number of weeks of work assigned to the average student

1st year	2nd year	3rd year	4th year	5th year
_____	_____	_____	_____	_____

3. Is credit given for work periods?_____At what rate?_____

   What part of graduation requirements does it meet?_____

4. What period of time is necessary for the typical co-operative student to obtain a degree?_____

B. Coordination

1. Is coordination centralized for all co-operative programs within the institution?_____

   _____

   _____

   _____

2. Do coordinators hold academic rank?_____

3. Qualifications of coordinators - check **once** if desirable, **twice** if required.

   ____Bachelor's degree (no field specified)

   ____Bachelor's degree in subject in which most placements are made

   ____Graduate degree

   ____Industrial or business experience - number of years_____

   ____Teaching experience

   ____Other (specify)_____

4. Duties of coordinators (if more than one, consider them as a group) Please estimate percentage of time spent in:-

   ____Student placement and supervision

   ____Graduate placement

   ____Teaching

   ____Vocational counseling

   ____Public relations for co-operative program

   ____Administrative duties not related to co-operative program

   ____Other (specify)_____

   100%

5. Work load of coordinators

a. Number of coordinators?_____

b. Average number of students supervised by each?_____

c. Average number of employers contacted annually by each?_____

d. How often is the average employer visited?_____

e. What percent of time do coordinators spend off campus?_____

f. Are coordinators responsibilities assigned on the basis of:-

____student's major field
____location of job
____type of business or industry
____other (specify)_____

C. Cooperative Jobs

1. Are most students paid
____a special cooperative rate
____according to the job held
____Other (specify)_____

2. Are most students placed in pairs?_____

3. What percentage of the jobs filled are on a year-round basis?_____
on a seasonal basis?_____

4. What percentage of job assignments are:-
____local ____100-500 miles away
____within 100 miles ____more than 500 miles away

5. What are your principal sources of job openings ? please rank in order of use.
____ Direct requests from employers
____ Personal contacts by faculty members
____ Coordinators' visits
____ Former students
____ Present students locating their own jobs
____ Other (specify)_____

D. Integration of School and Work Periods

1. What reports on work periods are required? (please indicate length and frequency)
a. From students_____

b. From employers_____

PLEASE ENCLOSE SAMPLES OF FORMS USED.

2. What techniques are used to integrate school and work experiences? Please check those used.
____"swap sessions" ____faculty plant visits
____coordination classes ____faculty work periods
____work syllabus ____Other (specify)

III. Administrative Details

A. Financial Arrangements

1. Do co-operative students pay any additional fees?_____

2. Do students pay tuition during work periods?_____

3. Are company scholarships available to freshmen?____Others?_____

4. What percentage of his college expenses does the average student earn during his work periods? (estimate)_____

5. Do employers pay any part of the cost of coordination?_____

B. Employer-sponsored Programs

1. Do you participate in any program in which students are sponsored by an employer and are considered as employees throughout their college career?_____

2. Do you consider such programs desirable?_____
Reasons_____

C. Selection of students

1. What requirements, other than college admission, have been established for entrance into the academic phase of your program?_____

2. Are students in the co-operative program required to maintain a higher scholastic average than that required for graduation?_____
If so, please indicate requirements_____

D. Special Services for Co-operative Students

1. What services are provided by the school in connection with work periods? Please check those provided.
____ Travel arrangements
____ Housing near work location, or aid in locating same.
____ **Recreation**
____ **Medical care**
____ Other (specify)_____

2. Are any special arrangements necessary for the regulation of student conduct during work periods?_____

E. Public Relations

1. What methods are used to publicize your program ?
____ Publications (please enclose samples)
____ Talks by coordinators
____ Talks by students
____ Other (specify)_____

2. Do you have an advisory committee composed of employers?_____
If so, what use is made of it?
____ Aid in curriculum planning.
____ Aid in screening and assigning students to jobs
____ Development of new job openings.
____ Other (specify)_____

IV. Objectives and Effects of the Co-operative Program

A. Objectives

1. Which of the following do you consider to be the most important objective of your program? Please check ONLY ONE
____ Better student orientation and vocational guidance
____ Supplementaty training in students major field
____ Financial aid to students

2. What additional goals do you feel that you are attaining?_____

B. Effects

1. What changes has the co-operative program produced in school operations ? Please check those noted.

____ More complicated scheduling and registration

____ More efficient use of physical plant

____ Modified course content

____ Reduction or elimination of inter-collegiate athletics

____ Other (specify) _____

2. What do you consider to be the principal benefits of the co-operative system to your institution? _____

3. What were the principal problems encountered in the establishment and operation of your program? _____

4. What do you consider your most pressing unsolved problem? _____

5. Has any attempt been made to equate the direct cost of coordination with identifiable savings in college costs ? _____

6. Have any evaluative studies of your program been conducted? _____

Please indicate references, (if published), or main conclusions.

V. Future Plans

A. Immediate

1. Could you place more students than are now at work ? _____

2. Do you expect to expand your program in the near future? _____

In number of students ? _____

In subject fields covered ? _____

3. Do you feel that a moderate economic recession would have a serious effect upon your program ? _____

B. Long Range

1. Do you feel that a considerable increase in the number of co-operative schools would have an adverse effect upon your operations ? _____

2. Do you foresee greater employer interest in co-operative programs ?

VI. Additional Information

Subsequent portions of this study will require information from employers who have had experience with co-operative programs. *This information will be used to evaluate the co-operative system of education, rather than as a basis for inter-school comparisons.* To facilitate this portion of the study, please attach the following names:

1. At least five companies representative of those with whom you are now placing students (preferably those with whom you have had at least five years experience)
2. At least three companies which have discontinued co-operative relationships with your institution for reasons other than a shortage of available students.

COLLEGE COOPERATIVE STUDY

Employer Information Form

I. Basic Information

A. Name of Company_ _

B. How many students are normally employed each year? _ _ _ _ _ _ _ _ _ _ _

C. How many colleges do they represent? _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _

D. What percentage are employed in alternating pairs? _ _ _ _ _ _ _ _ _ _ _

E. How long has your company been hiring cooperative students?_ _ _ _ _ _

F. How did your company first become interested in cooperative programs?

_ _

_ _

II. Employment Procedure

A. How are cooperative students selected (check methods used)

____ Accept all those sent by colleges.

____ Interview (s) with whom?_ _

____ Tests ____ Review of school records

____ Review of personal data on application blank

____ Other (specify) _

B. What percentage of the students hired are men_ _ _ _ _women_ _ _ _ _ _

C. What major fields of study are represented (give approximate % of each)

____ Engineering ____Liberal Arts

____ Business Administration ____Retailing

____ Education ____Other (specify) _ _ _ _ _ _

III. Coordination

A. Personnel

1. What official is responsible for cooperative students in your Company? _

2. Are College Coordinators' visits sufficiently frequent to handle all problems which arise?_ _

_ _

B. Reports

1. Are report forms furnished by colleges generally adequate? _ _ _ _ _

How could they be improved? _

2. Do you receive reports from colleges on students' grades and activities? _ _ _ _ _

3. If not, would such reports be of value to you?- _ _ _ _ _ _ _ _ _ _ _ _

C. Job Planning

1. Is a sequence of experiences in various jobs planned for each student_ _

2. May students choose jobs within the company? _ _ _ _ _ _ _ _ _ _ _ _

IV. Financial Arrangements

A. Payment of students

1. What is the average rate of pay for cooperative students? _____
2. Who bears the cost of their payroll?
   ____ Department in which they work
   ____ Training Department
   ____ Other department (specify) _____

B. Company Contributions

1. Do any students receive financial aid (scholarships, etc.) in addition to their wages? _____
2. Does your company make any general contributions to colleges from which you receive cooperative students? _____
3. Do you pay any part of the colleges' cost of coordination? _____

V. Relations with Organized Labor

A. Are cooperative students permitted to join a union? _____
   Are they required to join? _____

B. What is the attitude of the union toward employment of cooperative students? _____

VI. Evaluation

A. Students

1. How would you rate the average cooperative student, in comparison with your regular employees?

Factor	Rating		
	Good	Average	Poor
Attendance	____	_____	____
Quality of work	____	_____	____
Quantity of work	____	_____	____
Ability to get along with others	____	_____	____

2. What percentage of students usually receive job offers from your company after graduation? _____
3. Would you prefer to have students spend all of their work periods in your company? _____
4. Other qualifications being equal, would you prefer to hire cooperative graduates? ____ Why? _____

B. Programs

1. What are the principal weaknesses which you have observed in the operation of cooperative programs? _____
2. What suggestions would you make for their improvement? _____

VII. Future Plans

A. Immediate

1. Do you plan to expand your utilization of cooperative students in the near future?
   ____ in numbers of students ____ in types of students
   ____ in other plants or branches
2. Have current economic conditions caused any reduction in your employment of cooperative students? _____

B. Long Run

1. Do you have plans for the eventual increase of your company's participation in cooperative programs? _____
2. Do you feel that an increase in the number of colleges operating cooperative programs would be of any benefit to your company? _____
3. Do you feel that cooperative work periods can, in any way, substitute for the usual college graduate orientation program in your company? _____

APPENDIX B

COLLEGE LETTER

Highland Park Guidance Center
Highland Park Junior College
Third Avenue Entrance
Highland Park 3, Michigan
_____, 19__

Dear _____:

Cooperative work-study programs are a comparatively recent addition to American higher education. We have generally assumed that these programs are making a significant contribution to the welfare of students, colleges, and employers. Their continued development must depend, to a considerable extent, upon the verification of this assumption, and upon the amount of information about the "mechanics of cooperation" which is available to college administrators and employers.

In an attempt to make such information available, and to test the above assumption, a study of the operating procedures and problems of cooperative colleges is now under way. It would appear that many of the methods and techniques which have made cooperative education successful have been developed by administrators to meet immediate needs. Their experience would be of immeasurable value to college and industrial leaders who are considering the establishment of a cooperative program.

As a leader in the field of cooperative education, your assistance is requested in furnishing information on your program. All information obtained will be confidential, and a summary of the results will be sent to each participating college.

A form is enclosed for your convenience in supplying the necessary information. Please return it in the enclosed envelope, for which no postage is necessary. In addition, a copy of your current catalogue and any other publications relating to your cooperative program will be of great assistance.

Very truly yours,

Robert I. Hudson
Study Director

APPENDIX B

EMPLOYER LETTER

Highland Park Guidance Center
Highland Park Junior College
Third Avenue Entrance
Highland Park 3, Michigan
_____, 19__

Dear Mr. _____:

Cooperative work-study programs are a comparatively recent addition to American higher education. We have generally assumed that they are making a significant contribution to the welfare of students, colleges, and employers. Their continued development must depend, to a considerable extent, upon the verification of this assumption.

A key factor in the evaluation of these programs is the attitude of employers who have had experience with cooperative students. One of the more than forty colleges participating in a current study has listed your company as a representative employer. It is hoped that you will find it possible to furnish information on your experience. In addition, your comments and suggestions for the improvement of these programs will be welcome.

A form and a stamped envelope are enclosed for your convenience in replying. All information received will be confidential. You are invited to supplement your answers with any publications, forms, or materials used in working with cooperative students. Sample work sequences will be particularly appreciated. Your assistance will be of great value to educators in planning for the future development of cooperative programs.

Very truly yours,

Robert I. Hudson
Study Director