

A STUDY OF THE PROBLEMS OF PART-TIME  
INDUSTRIAL AND TECHNICAL INSTRUCTORS  
IN SELECTED MICHIGAN  
COMMUNITY COLLEGES

By

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## ABSTRACT

### A STUDY OF THE PROBLEMS OF PART-TIME INDUSTRIAL AND TECHNICAL INSTRUCTORS IN SELECTED MICHIGAN COMMUNITY COLLEGES

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#### Statement of the Problem

To meet the challenge of recruiting adequate quantities of vocational-technical instructors, community college administrators have recruited persons directly from business, industry, health, and public service occupations to serve as part-time instructors. The problem arises from the fact that employment of these persons directly from nonteaching occupations permits individuals possessing high competence in technical subject matter, but lacking professional teacher preparation or teaching experience, to teach in the classroom or laboratory.

The purposes of this study were: (1) to identify problems of part-time and full-time industrial and technical instructors as perceived by their supervisors, the instructors themselves, and their students; (2) to identify procedures which supervisors and part-time instructors recognize as being helpful in solving their problems;

and (3) to formulate recommendations which will assist the part-time instructors.

### Methodology

The community college sample was made up of 11 institutions selected at random from 16 Michigan institutions operating reimbursable industrial and technical programs. The instructor sample was stratified on the randomly selected institutions, and was composed of two part-time instructors without professional teacher preparation and two full-time instructors with professional teacher preparation, from each of the 11 institutions. The supervisor sample was composed of the immediate supervisors of the instructors. The student sample was composed of students in classes taught by instructors who were interviewed, and who permitted the administering of a student rating form.

The data were gathered by means of individual interviews with 21 part-time instructors, 21 full-time instructors, and 20 of their immediate supervisors. Additional data concerning the instructors were gathered from 473 students, by means of a structured student rating form. The data were subjected to descriptive and inferential statistical analyses in order to answer the questions posed. Multivariate analyses of variance were used to test for problem differences between part-time

and full-time instructor groups. Pearson Product-Moment Correlation tests were used to investigate the relationships between instructors' ratings and students' ratings.

### Major Findings of the Study

The findings related to the supervisors' perceptions of part-time instructors' problems were: (1) methods and procedures in selecting and organizing course materials; (2) methods and procedures in grading and evaluating students; (3) skill in developing test materials; and (4) selecting, designing, and using teaching aids and related materials.

The problems as perceived by a majority of the part-time instructors were: (1) lack of materials such as course outlines, plans, and faculty handbook, which should be furnished upon appointment; (2) self-evaluation of one's effectiveness as a teacher; (3) adapting instruction to individual differences; (4) determining the various competencies required of graduates in one's subject area; (5) keeping abreast of current ideas and trends in one's occupational area; and (6) developing satisfactory tests and examinations.

Statistically significant differences were found between the full-time instructor and part-time instructor groups, based on students' ratings, with the higher positive ratings favoring the full-time instructor group

regarding course organization. Although not statistically significant, full-time instructors were rated better on instructor involvement and course demands. The part-time instructor group was rated slightly higher on student-instructor interaction.

A significant relationship was found between part-time instructors' ratings on difficulty in course organization and students' ratings of their instructors' course organization.

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## CHAPTER I

### THE PROBLEM

#### Introduction

The past decade has shown significant gains in terms of student enrollment and expansion of public community colleges in Michigan. In the fall of 1960, there were 16 public community colleges with a combined head-count enrollment of 27,229 students.<sup>1</sup> In the fall of 1970, there were 29 public community colleges with a total head-count enrollment of 126,647 students.<sup>2</sup> From 1960 to 1970, Michigan community college enrollments increased 365.1 per cent. Furthermore, the number of public community colleges during this same period grew 81.2 per cent.

Michigan community colleges, as a part of post-secondary education, are undergoing annual enrollment increases greater than those of four-year colleges and universities. Evidence shows Michigan community colleges' average growth change was 16.8 per cent for the period 1960 to 1970.<sup>3</sup> During this same period, four-year

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<sup>1</sup>Michigan Department of Education, Enrollments in Michigan Colleges and Universities (Lansing: Michigan Department of Education, Fall, 1970), p. 3.

<sup>2</sup>Ibid.

<sup>3</sup>Ibid., p. 6.

colleges and universities had a 7.2 per cent annual change.<sup>4</sup> Fall enrollment statistics for 1970 indicated 50.8 per cent of all first-time enrolled students in higher education were attending community colleges, 35.4 per cent were enrolled in public four-year colleges and universities; and 13.9 per cent were enrolled in private colleges and universities.<sup>5</sup> The estimated potential enrollment by 1975 for public community colleges totals 175,900 students, a 30.3 per cent increase over 1970.<sup>6</sup>

These figures are significant for educational planners because they manifest a trend by recent high school graduates and adults to seek advanced education at the post-secondary level, specifically in the community college. However, these figures fail to identify the changing educational and occupational training needs and requirements of students of the next decade. Furthermore, these data do not reveal the number or type of staff needed to provide quality and in-depth instruction. Providing quality education, equally accessible geographically to all, which meets students' social, educational, and occupational training needs and interests, is a major challenge facing today's total system of education.

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<sup>4</sup>Ibid., p. 3.

<sup>5</sup>Ibid.

<sup>6</sup>Howard T. Smith, State Plan for Higher Education in Michigan (Lansing: Michigan Department of Education, September, 1968), p. 19.

A growing concern of the community college administrator is recruiting sufficient quantities of qualified professional personnel to cover the expanding enrollments, program expansion, and increasing specialization of programs. At the very time when student enrollments in post-secondary institutions are showing substantial increases, many community colleges are experiencing shortages of qualified professional personnel. If the community college administrators are to succeed, they will need to identify and recruit new sources of qualified instructional personnel, as many national leaders have indicated.

Alvin C. Eurich had this to say to community college administrators attending the American Association of Junior Colleges Convention in 1963:

No group in American education will face greater problems in the years just ahead than junior college administrators. You will struggle with enrollment explosion unprecedented in higher education. You will become responsible for the general education of the majority of students who continue beyond the twelfth grade. You will be called upon to set up vocational and technical programs for students entering wholly new occupations--some of which may become obsolete as automation takes over. The President's retraining proposal gives only a glimpse of the kind of continual vocational training which will be required in the coming decades by an ever-increasing percentage of our population, not just the young or the unemployed.

To meet these challenges you will need good teachers--many more I am afraid than you can possibly find.<sup>7</sup>

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<sup>7</sup>Alvin C. Eurich, "Staffing the Junior Colleges," Junior College Journal, XXXIII (March, 1963), 8.

Community colleges, like all other institutions of learning, are vitally concerned with maintaining and upgrading the quality of their educational programs. The quality of the educational program depends in large measure upon the instructional competence of the faculty. Therefore, it is essential that community college administrators not neglect quality of faculty for sufficient quantity of faculty. Philip Vairo stated:

Unless the two year college has an instructional staff of qualified teachers, its objectives cannot be achieved. Thus the insufficient supply of competent teachers for junior colleges--indeed for all institutions of higher education--is a matter of increasing concern.<sup>8</sup>

Administrators of vocational-technical education programs in community colleges have met with further complications in recruiting qualified personnel. The identification and recruitment of qualified professional personnel for vocational-technical education are clearly problem areas requiring immediate attention and corrective action by all concerned. Grant Venn emphasized the problem when he wrote: "One of the greatest handicaps to the improvement and expansion of vocational and technical education is the desperate shortage of qualified teachers and administrators."<sup>9</sup>

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<sup>8</sup> Philip D. Vairo, "Faculty Quality: A Challenge to the Community College," Journal of Higher Education, XXVI (April, 1965), 217.

<sup>9</sup> Grant Venn, Man Education and Work (Washington, D.C.: American Council on Education, 1968), p. 151.

The rapid expansion in technology has caused an increasing demand for technical skills and knowledge by employers of individuals entering or re-entering the labor market. Thus it is mandatory that the institutions providing occupational education and training be abreast of current occupational trends, skills, and knowledge. These external forces present a challenge to the occupational program administrator to locate and employ instructional personnel who possess current technical subject-matter competence, occupational work experience, and teaching competence. These three qualifications are often considered essential for occupational instructional personnel, to ensure some quality in the instructional program.

Jerry Dobrovolny, of the University of Illinois, expressed a like concern for the short supply of qualified teachers in occupational programs.

Manpower needs of our society have been changed rapidly during the last two decades. Many community colleges and technical institutes have been in the forefront to meet these needs by offering many new two-year associate degree programs in occupational education. But one of the principal restrictive forces preventing greater expansion of these programs has been short supply of qualified teachers. To meet this critical need a new approach must be taken.<sup>10</sup>

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<sup>10</sup> Jerry S. Dobrovolny, "Staff Qualifications for Technical Education Programs," Industrial Arts and Vocational Education, VIX, No. 1 (January, 1970), TE 2.



As shown thus far, the demand for qualified instructors is not a new problem of the community college. Chances are the problem will continue to exist, but will be more prevalent in vocational-technical education programs. William Loomis, formerly with the U. S. Office of Education, said:

The vocational teaching force will have to double by 1975 simply to maintain the present fifty to one student-teacher ratio. Currently, about 171,400 teachers serve some 8.5 million vocational students.<sup>11</sup>

#### Statement of the Problem

To meet the persistent challenge of recruiting adequate quantities of vocational-technical instructors to staff the increasing number of occupational subjects, community college administrators have turned to individuals employed in business, industry, health, and public-service occupations to serve as part-time instructors. The continual utilization of this abundant resource of part-time instructors has brought to the forefront concerns by some administrators, teacher educators, and teacher certification officials charged with maintaining and upgrading the quality of vocational and technical education. Foremost among these concerns is the fact that employment of persons directly from nonteaching occupations permits individuals possessing high competence in technical

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<sup>11</sup>"News and Trends," Today's Education, VIX, No. 3 (March, 1970), 4.

subject matter, but lacking professional teacher education or teaching experience, to teach in the classroom or laboratory.

Whether or not these part-time instructors are educationally prepared or qualified for classroom or laboratory teaching, they are employed with the anticipation that they are capable of organizing, presenting, and evaluating instruction in the classroom or laboratory without further major assistance or training. However, the employment of these individuals as part-time instructors assures only part of the qualifications desired of a "competent instructor." To assure some degree of teaching effectiveness, many teacher educators, certification officials, and administrators believe that vocational-technical education instructors must have technical subject-matter competence, recent occupational work experience, and teaching competence.

Due to their lack of professional teacher education, some potentially high-quality, part-time instructors may find the instructional environment nonconducive to a rewarding and satisfactory teaching situation. Moreover, their teaching effectiveness in the classroom may be impaired by their lack of a minimal amount of professional teacher education. Lack of ability to recognize students' capabilities, needs, difficulties, or interests may not

contribute positively to the instructor-student learning situation.

Community colleges, like all other institutions of learning, are vitally concerned with the quality and effectiveness of their staffs. There can be little doubt as to the importance of community college administrators and teacher educators becoming cognizant of the part-time instructors' problems and needs, in an effort to aid and assist in their transition into the classroom environment.

Though increasing use is being made of part-time instructors, limited information is available concerning their institutional and instructional situations. Furthermore, at the present time there is little evidence of systematic effort being put forth to establish specific programs for assisting or upgrading part-time instructors in their new educational roles.

#### Purposes of the Study

The primary purposes of this study were: (1) to identify problems of part-time and full-time industrial and technical instructors as perceived by their supervisors, the instructors themselves, and their students; (2) to identify procedures which supervisors and part-time instructors recognize as being helpful in solving problems; and (3) to formulate recommendations which will assist the part-time instructors.

Questions to be Investigated  
in the Study

While conducting the study, the questions to which answers were sought included:

1. How many part-time and full-time industrial and technical instructors are employed in the cooperating community colleges?
2. What types of in-service programs are being conducted in the community colleges to aid and assist part-time and full-time instructors?
3. What are the educational and occupational characteristics of the industrial and technical instructors supplying data for the study?
4. What are the problems of part-time and full-time instructors as perceived by the supervisors?
5. What problems are common to the majority of part-time industrial and technical instructors surveyed?
6. What kinds of procedures do part-time industrial and technical instructors suggest in resolving their problems?
7. What problems are common to the majority of full-time industrial and technical instructors surveyed?

8. Are there problems which are common to both part-time and full-time instructors surveyed?
9. How do students rate part-time and full-time instructors' instructional situations?

Specific questions relating to the educational and occupational characteristics of cooperating instructors were:

1. What are the highest degrees held by the part-time and full-time instructors?
2. What are the present full-time occupations of the part-time instructors surveyed?
3. How many years of teaching experience do the part-time and full-time instructors have?
4. What are the teaching assignments of the part-time and full-time instructors in the survey?
5. How many years of occupational work experience do the part-time and full-time instructors have?

#### Hypotheses Tested

One of the primary concerns of this research was to identify and compare the differences and relationships between the problems of part-time and full-time industrial and technical instructors as perceived by themselves and by their students. The following hypotheses were investigated:

Hypothesis I: There are significant differences between full-time industrial and technical instructors with professional teacher education and part-time industrial and technical instructors without professional teacher education on eight dependent variables.

Instructor-Rated Variables: Course Organization, Evaluation Procedures, Student-Instructor Interaction, Institutional Procedures.

Student-Rated Variables: Course Organization, Course Demands, Student-Instructor Interaction, Instructor Involvement.

Subhypothesis A: Students' ratings of Course Demands indicate that full-time instructors have higher course demands than do part-time instructors.

Subhypothesis B: Students' ratings of Course Organization indicate that full-time instructors have better course organization than do part-time instructors.

Subhypothesis C: Students' ratings of Student-Instructor Interaction indicate that full-time instructors have better student-instructor interaction than do part-time instructors.

Subhypothesis D: Students' ratings of Instructor Involvement indicate that full-time instructors become more involved with students than do part-time instructors.

Subhypothesis E: Self-ratings of Course Organization indicate that part-time instructors have greater difficulty with course organization than do full-time instructors.

Subhypothesis F: Self-ratings of Evaluation Procedures indicate that part-time instructors have greater difficulty with evaluation procedures than do full-time instructors.

Subhypothesis G: Self-ratings of Student-Instructor Interaction indicate that part-time instructors have greater difficulty with student-instructor interaction than do full-time instructors.

Subhypothesis H: Self-ratings of Institutional Procedures indicate that part-time instructors have greater difficulty with institutional procedures than do full-time instructors.

Hypothesis II: There is a significant positive correlation between self-ratings on difficulty of Course Organization by part-time instructors, and students' ratings of part-time instructors' course organization.

Hypothesis III: There is a significant positive correlation between self-ratings on difficulty of Course Organization by full-time instructors, and students' ratings of full-time instructors' course organization.

Hypothesis IV: There is a significant positive correlation between self-ratings on difficulty of Student-Instructor Interaction by part-time instructors, and students' ratings of part-time instructors' student-instructor interaction.

Hypothesis V: There is a significant positive correlation between self-ratings on difficulty of Student-Instructor Interaction by full-time instructors, and students' ratings of full-time instructors' student-instructor interaction.

#### Definition of Terms

The following terms are used throughout the study and require definitions:

Part-time instructor. A part-time instructor is a person carrying a teaching assignment that contains less than the minimum number of contact hours considered by the local institution to be the recognized full-time load. For purposes of this study, the term refers to part-time industrial or technical education instructors who have completed no teacher education courses and whose primary job responsibility is other than full-time teaching.

Full-time Instructor. A full-time instructor is a person carrying a teaching assignment that contains the minimum number of contact hours considered by the local institution to be the recognized full-time load. For purposes of this study, the term refers to full-time industrial or technical education instructors who have completed teacher education courses and whose primary job responsibility is teaching.

Administrative Supervisor. An administrative supervisor is a person, such as dean, department chairman, or coordinator, who has the responsibility of supervising part-time and full-time instructors teaching in the industrial and/or technical area.

Student. The term "student" refers to a person enrolled in an organized community college industrial or technical education course.

Community College. The term "community college" is used to identify public two-year, post-secondary institutions which offer a general, two-year transfer program and programs leading directly to occupational entry or re-entry.

Industrial and Technical Education. The term "industrial and technical education" refers to trade or preprofessional training designed to prepare craftsmen or technicians for occupations which require less than a baccalaureate degree.



### Scope and Method of Study

Supervisors, instructors, and students of industrial and technical education in 11 Michigan community colleges were the prime focus of this study. The 11 community colleges comprised a random sample from 16 institutions having reimbursed industrial and technical education programs, and currently employing part-time industrial or technical instructors.

Problems of the instructors were observed from the perceptions of the supervisors, the part-time and full-time instructors themselves, and their students. Selection of instructors to be interviewed was completed by: first, identifying those part-time and full-time industrial and technical instructors with the least amount of experience in their present teaching position at each of the 11 community colleges; and second, drawing a sample of two part-time and two full-time instructors from each of the identified subsamples at each of the community colleges.

Methods of study were analysis and summarization of data obtained through interviews with supervisors and instructors, and the individually completed "Student Instructional Rating Form"<sup>12</sup> for evaluating instructors.

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<sup>12</sup>Evaluation Services, Michigan State University, Student Instructional Rating System (East Lansing: Michigan State University, 1969).

The quantitative analysis of instructors' ratings of problem items and students' ratings of instructors' classroom instruction involved the machine scoring and calculation of percentages, means, and standard deviations. In order to investigate the question regarding possible statistically significant differences between part-time and full-time instructors' ratings of problem items and student ratings of instructors' instructional situation, a multivariate analysis of variance, Pearson Product-Moment Correlation, and a Fisher  $r$  to  $Z$  transformation test were used in the data analysis. The data were processed using a CD 3600 computer.

#### Assumptions

The following assumptions were made as a basis for conducting the study:

1. That the use of part-time instructors will continue to increase, and accordingly, community colleges and teacher education institutions will need to provide in-service or pre-service programs specifically for part-time instructors.

2. That classroom or laboratory instruction on the part of the part-time instructor can be improved as the result of professional teacher education.

3. That the problem of part-time industrial and technical instructors as perceived by supervisors, instructors, and students can be ascertained in selected

community colleges, and that the problems can be considered valid for these instructors and community colleges.

4. That an interpretation and analysis of the data will provide support for establishing in-service and pre-service programs to aid and assist part-time instructors.

#### Uses of the Study

The study will:

1. Provide teacher educators, community college administrators, and state departments of education with information pertaining to problems and needs of part-time instructors.
2. Provide teacher educators with a basis for selecting and organizing content for teacher education programs directed toward the needs of part-time industrial and technical instructors.
3. Provide community college administrators with criteria for selecting and organizing in-service programs directed specifically to the needs of part-time instructors.

#### Limitations of the Study

The study was limited to 11 Michigan community colleges. Further, delimitations were imposed to include only supervisors, part-time instructors without teacher education, full-time instructors with teacher education, and their students, who were involved in industrial and

technical education programs during the fall term of 1970. This delimitation may preclude the generalization of findings to instructors in other occupational areas and community colleges. Before generalizations can be drawn for other instructors and institutions, one must determine the extent to which these instructors and institutions are homogenous to those studied.

### Summary and Overview

There is no lack of evidence that qualified community college instructors, specifically vocational and technical instructors, have been and may continue to be in short supply. In an attempt to fill the void, community college administrators have recruited professionals from business and industry on a part-time basis. In so doing, individuals without professional teacher education have been employed to teach in the classrooms and laboratories.

The purpose of this study was to investigate the problem which may exist with the part-time instructor in his new teaching role. From this investigation, it is believed that a meaningful base can be established for developing in-service and pre-service education programs based upon the needs of part-time instructors. One of the justifications of providing programs coordinated with identified needs is that they are more meaningful to those involved. Moreover, it is believed that some form of

professional teacher education will assist the part-time instructor in becoming more effective in the classroom and laboratory.

Thus, the first chapter has identified the problem and set the stage for completing the investigation. A review of related literature and research is presented in Chapter II. The details in the design of the study are presented in Chapter III. Characteristics of the respondents are reported in Chapter IV. The findings of the study are reported in Chapter V; a summary and recommendations are provided in Chapter VI.

## CHAPTER II

### REVIEW OF LITERATURE AND RESEARCH

The studies and literature reported in this chapter were selected from many sources as being applicable and relevant to the problem under investigation. Mainly, they are literature and research concerning: (1) The Vocational-Technical Instructor, (2) Michigan Community Colleges, (3) Problems of Beginning Instructors, and (4) The Part-Time Instructor. Furthermore, the major portion of the cited literature and research was published after 1960.

The first category focuses attention on teacher preparation, teacher education, teacher effectiveness, and post-secondary vocational-technical instructor qualifications and vocational certification. The second category highlights the growth of Michigan community colleges, and their role in vocational-technical education. The third category investigates the problems of beginning community college instructors, and the problems of vocational-technical instructors. Category four brings together literature and research dealing with the characteristics and sources of part-time instructors, and with one experimental training program for the part-time instructors.

### The Vocational-Technical Instructor

Growth in the number of community colleges and expansion of vocational education programs has kept the demand for qualified vocational-technical instructors ahead of the supply. As vocational education has grown, so has the issue over the professional preparation desired and required of vocational-technical instructors.

#### Instructor Preparation

With the uncertainty that exists as to the value of professional teacher education, it is reasonable to expect diverse attitudes and opinions concerning the rationale for and against such training. Not specifically referring to vocational-technical instructors, but to community college instructors as a group, Cohen wrote:

My rationale for junior college teacher preparation is based upon these premises:

1. Teaching is the prime function of the junior college.
2. Teaching is, itself, the process of influencing learning.
3. Learning is changed ability or tendency to act in particular ways.
4. Operationally, both teaching and learning may be assumed to have occurred only when observable changes are demonstrated by the learner.
5. Change may be observed only if there has been determination of students' abilities prior to instruction.
6. Specific, measurable objectives must be set so that learning may be appropriately guided.

When teacher education rests upon this rationale, it gains perspective. Substantive programs for preparing junior college instructors may be constructed within the framework of existing

patterns of university and college teacher education. The usual prerequisites--subject area degrees for academic instructors and equivalent experience for teachers in vocational-technical fields--may be obtained. Selection between programs based on defined learning and those based on other, perhaps less definitive, philosophical orientations, comes in the "education" or "professional" portion of the preparation sequence.<sup>13</sup>

Certainly, the professional preparation required of vocational-technical education instructors in the community college cannot be considered less important or brushed aside completely. The increased breadth and depth of vocational education that is being offered to post-secondary students calls for a very competent, fully trained, proficient instructor. Swanson and Kramer emphasized:

Just as there is need for a more comprehensive program for the preparation of individuals to enter the labor force, so it follows that the program of preparation for the vocational teacher must be more rigorous and often quite different from those now provided. Collegiate preparation of vocational teachers--earlier thought by many to be somewhat inconsistent with the basic vocational education philosophy--is becoming more and more accepted as logical and necessary. This is not to suggest that the vocational education teacher's need for successful work experience in the occupation for which he will give training is considered any less important. It is imperative that he who would prepare students for successful vocational careers must first of all know, from experience, the skills and activities required for success in the occupation and must have been successful in it. However, it has become apparent over the years that each individual's

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<sup>13</sup>Arthur M. Cohen, "Teachers Preparation: Rationale and Practice," Junior College Journal, XXXVII, No. 8 (May, 1967), 21-25.



educational development must include adequate general and liberal education.<sup>14</sup>

With increased frequency, vocational education administrators are bypassing the requirement of academic degrees and/or professional teacher education in favor of employing persons who have recent and relevant occupational work experience. They are employing persons such as technicians, engineers, supervisors, and craftsmen from non-educational sources for teaching responsibilities in the classroom or laboratory. Such practices seem to indicate that if one is successful and competent in his subject-matter field, he can successfully and effectively teach it.

. . . Competency in the skill being taught is an obvious necessity, but the present emphasis on this alone is inadequate in light of changing occupational concepts involving the application of science, mathematics, related knowledge, and general education.<sup>15</sup>

When administrators employ these individuals, such practices may also bring problems or difficulties that may eventually outweigh the immediate or future advantages. Venn contended:

This solution creates some difficulties: the new instructor's subject-matter knowledge tends to be circumscribed by his job experience. That experience may include little acquaintance with the

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<sup>14</sup>Chester J. Swanson and Ernest G. Kramer, "Vocational Education Beyond High School," Vocational Education, Sixty-Fourth Yearbook of the National Society for the Study of Education (Chicago: University Press, 1965), p. 170.

<sup>15</sup>Venn, op. cit., p. 152.

related skills and knowledge that should be taught. The instructor may not have had much formal or informal education in mathematics, English, speech, industrial relations, or civic and cultural matters. Then, too, he may not be abreast of newer thinking in his field. By the same token, once he settles into the teaching routine, he tends to be isolated from newer developments in industry, for he will find few opportunities or publications to help update his knowledge.<sup>16</sup>

An investigation by Cashin<sup>17</sup> on the attitudes held by college deans of instruction, instructor preparation coordinators, and junior college instructors regarding professional teacher preparation revealed that those who criticize professional preparation the most may well be those who have experienced it the least. The data revealed that preparation in professional methods carried greater value than preparation dealing with the nature and philosophy of the junior college.

The consistently greater value placed upon professional preparation by coordinators, deans, and prepared instructors, as opposed to unprepared instructors, supports the conclusion that professional teacher education for community college instructors is appropriate and valuable. Further encouragement and support for all teachers to have completed professional teacher education was recommended by the Advisory Council on Vocational Education. The

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<sup>16</sup> Ibid., p. 35.

<sup>17</sup> John H. Cashin, "Some Attitudes Toward Instructor Preparation," Junior College Journal, XXXIX, No. 6 (March, 1969), 31-34.

Council stated, "The objective for all teachers--full-time or part-time--in all occupational programs should be that the teacher has teacher training."<sup>18</sup>

The question of professional teacher education may long be debated, but it appears that most individuals will agree that some form of teacher education is important in professional teacher development.

### Teacher Education

The paucity of research in vocational-technical teacher education is evidenced as a result of a major attempt to review and synthesize research in the field, as reported in the series of documents, Review and Synthesis of Research. This publication gave a cross-sectional view of vocational-technical teacher education.<sup>19</sup> Appearing in this review and synthesis was a model for classifying vocational-technical teacher education research into six major categories: (1) Studies of Job Requirements, (2) Input Studies, (3) Program Development, (4) Guidance and Selection Studies, (5) Recruitment, and (6) Program Evaluation. No attempt will be made here to list the studies

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<sup>18</sup>U.S., Department of Health, Education and Welfare, Office of Education, Vocational Education: The Bridge Between Man and His Work (Washington, D.C.: Advisory Council on Vocational Education, 1969), p. 127.

<sup>19</sup>Jerome Moss, Jr., Review of Research in Vocational-Technical Teacher Education (Minneapolis: Minnesota Research Coordinating Unit, 1967), p. 3.

which were reviewed, using the model as a classification guide.

Reporting on a project designed to develop a model curriculum for vocational and technical teacher education, Cotrell<sup>20</sup> indicated preliminary findings of 10 different competency categories for teachers in vocational and technical education. The category clusters were: (1) Program Planning, Development and Evaluation; (2) Instruction-Planning; (3) Instruction-Execution; (4) Instruction-Evaluation; (5) Management; (6) Guidance; (7) School-Community Relations; (8) Student Vocational Organization; (9) Professional Role and Development; and (10) Coordination.

Dobrovolny recommended that junior college instructors of technical subjects should have a minimum of a baccalaureate degree and should have completed professional teacher education which has included:

. . . some professional courses dealing with the philosophy of technical education, occupational analysis, fundamentals of teaching techniques, and some essentials of curriculum and program planning. These should be specifically tailored to meet the needs of the subject matter teacher at the post-high school level.<sup>21</sup>

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<sup>20</sup>Calvin J. Cotrell, "Model Curricula for Vocational and Technical Teacher Education" (paper presented at the Fourth Annual National Vocational-Technical Teacher Education Seminar, St. Louis, Missouri, November, 1970).

<sup>21</sup>Dobrovolny, op. cit., p. TE 3.

Hamachek<sup>22</sup> reported that:

Available evidence does not support the belief that successful teaching is possible only through the use of some specific methodology. . . . Perhaps what we need first of all are flexible, "total" teachers who are as capable of planning around people as they are around ideas.

Byrd,<sup>23</sup> in conducting a study concerned with teacher competencies, indicated that the teacher has a distinctive role in assuring continuity in the process of occupational training and competency in all phases of vocational and technical education. Occupationally oriented persons could utilize their experience in teaching situations after completing teacher education courses. According to Byrd, basic competencies needed were technical and personal. Personal competencies included role commitment, personal involvement, and recognition and transmission of respect for the dignity of work.

The National Faculty Association of Community and Junior Colleges proposed that a Doctor of Arts degree be established for community college instructors. Furthermore, they stated, "Vocational-technical-occupational teachers should be able to qualify for the top level degree

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<sup>22</sup>Don Hamachek, "Characteristics of Good Teachers and Implication for Teacher Education," Phi Delta Kappan, L, No. 6 (February, 1969), 344.

<sup>23</sup>Flossie N. Byrd, The Role of Teacher Education Institutions. Selection of Teachers Basic Competencies Needed (Columbus: Ohio State University, Center for Vocational and Technical Education, March, 1966), p. 11.

by completing appropriate requirements the same as any other individual."<sup>24</sup>

From interviews with more than 650 instructors, deans, and other support personnel, Garrison<sup>25</sup> reported that those instructors most satisfied with their preparation for junior college instruction were those in the vocational areas. He further found agreement that the Ph.D. degree is not necessary for junior college teaching. In commenting on the liberal arts and sciences, rather than the technical-vocational fields, he believed the basic acceptable preparation for junior college instructors seemed to be the Master's degree, the B.A. or B.S. plus 30 hours of credit, mainly in content, rather than in education or methods courses.

### Teacher Effectiveness

Attempts to predict and measure teacher effectiveness date back several decades. Many of the articles that have been written reflect expressions of opinion, for the most part, based on little or no evidence. The increasing need for evaluating and predicting teacher effectiveness

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<sup>24</sup>Alan G. Stratton, "Needed: The Doctor of Arts in College Teaching," Junior College Journal, XXXIX, No. 8 (May, 1969), 23.

<sup>25</sup>Roger H. Garrison, Junior College Faculty: Issues and Problems, Preliminary National Appraisal (Washington, D.C.: American Association of Junior Colleges, 1967), pp. 70-71.

is rapidly becoming more evident. In commenting upon this point, Ellis and Wootton stated:

The need to evaluate teaching is imperative if we are to effectively change teaching and improve learning. . . . Also as we move more and more into programs of team teaching and into developing instructional programs calling for staff differentiation, we must evaluate staff in order to determine those persons suited for differentiated roles. Finally, we simply need a check on ourselves to see how well we are doing.<sup>26</sup>

Some studies have tried to relate teacher effectiveness to student achievement, self-ratings, indexes of student behavioral change, student ratings of teachers, traits and qualities of teachers, and observational analysis ratings. Some individuals are hypothesizing that the greatest potential in the measurement of teacher effectiveness lies in the area of professional supervision in the training of teachers, and most of all in an investigation of the conditions under which teachers work.<sup>27</sup> Even so, before an acceptable method of measuring teaching effectiveness is discovered, agreement on what effective teaching is must be defined. "Despite decades of educational

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<sup>26</sup>Ellmer G. Ellis and Lutian R. Wootton, "Valid Evaluation of Teaching is Imperative," Kappa Delta Pi Record, VII (April, 1970), 139.

<sup>27</sup>George Brian, "Evaluating Teacher Effectiveness," National Education Association Journal, LIV (February, 1965), 36.

research, there is even little informed consensus on what effective teaching is."<sup>28</sup>

Research findings related to teacher effectiveness and preparation point to similar conclusions. In general, it appears that student achievement is largely unaffected by the amount of training or preparation of the instructor. For example, Metzner reviewed literature and research studies comparing teacher preparation to pupil gain, and concluded:

The plain fact is there is not a single study that, after equating for pupil intelligence and socio-economic status, has found the length of teacher preparation variable to be even peripherally related to pupil gain, let alone being of major importance in his educational outcome.<sup>29</sup>

In the field of vocational education, some strides have been made in measuring teacher effectiveness. As the use of performance contracting, differentiated staffing, and the use of individuals from business and industry as teachers becomes a common part of our educational system, the importance of having a systematic means of measuring teaching effectiveness will be recognized.

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<sup>28</sup>Roger H. Garrison, Teaching in a Junior College (Washington, D.C.: American Association of Junior Colleges, 1968).

<sup>29</sup>Seymour Metzner, "The Teacher Preparation Myth a Phoenix Too Frequent," Phi Delta Kappan, L, No. 1 (September, 1968), 105-106.



Of primary importance to the present study was a project in California, reported by Popham,<sup>30</sup> in which the objective was to assess a procedure for measuring teaching proficiency. The study was an attempt to compare the teaching effectiveness of tradesmen and experienced teachers. Two performance tests of teaching proficiency in the fields of auto mechanics (carburetion) and electronics (power supplies) were developed. An assessment was made of each test's ability to distinguish between experienced teachers and nonteachers, with respect to these individuals' ability to achieve prespecified instructional objectives. All subjects, tradesmen and experienced teachers alike, were given sets of operationally defined objectives, and each attempted to achieve those objectives during an instructional period of approximately ten hours. Pre- and post-tests based explicitly on the objectives were given to each subject's pupils; average class achievement was used as the index of the teacher's proficiency.

Included in the study were 28 auto mechanics teachers and 28 nonteachers instructing 1,200 students; and 16 electronics teachers and 16 nonteachers instructing over 700 students. Comparison of pupil performance data

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<sup>30</sup>James W. Popham, "Validation Results: Performance Tests of Teaching Proficiency in Vocational Education," Paper Abstracts 1969 (Los Angeles, California: American Educational Research Association), p. 107.

revealed no systematic differences between the performance of the tradesmen and experienced teachers groups for either auto mechanics or electronics classes.

Some controversy exists among teacher educators, teachers themselves, and administrators as to the value and importance of occupational work experience in the effectiveness of vocational and technical teachers. In an attempt to narrow the controversy and seek some possible answers, a study was designed and conducted by Musgrove at the University of Missouri. The objective of the study was to find out whether relationships exist between the rated effectiveness of vocational electronics teachers and their occupational experience, teaching experience, college training, and technical training in electronics. Teacher effectiveness ratings were obtained through the cooperation of 200 supervisors, 210 teachers, and 2,738 students.

The study resulted in the following statements, which may be considered to be the major findings.

There is insufficient evidence from this study to conclude that the amount of electronic work experience should, or should not, be the primary consideration in the certification and hiring of vocational electronics teachers.

It would appear that there is insufficient evidence from this study to conclude that the amount of teaching experience has a measurable influence upon the effectiveness of vocational electronics teachers.

It appears that any measure of the amount of college training possessed by an electronics

teacher will be of doubtful value in assessing effective teaching.

There is no significant relationship between the amount of electronics technical training and subsequent rated teacher effectiveness. Here again, it would appear that a simple measure of the quantity of electronic technical training is not likely to be indicative of teacher effectiveness in their area.<sup>31</sup>

#### Post-Secondary Vocational- Technical Instructor Qualifications

In most professions some criteria of quality have been established as the minimum qualifications for persons desiring to secure employment in the profession. Furthermore, upon achieving these qualifications, through some recognized source, a license or certification is awarded. To make clear the minimum qualifications for post-secondary vocational-technical instructors and the requirements for vocational approval in Michigan, a brief description of those requirements will be presented.

Federal guidelines and regulations do not specify what the minimum educational or occupational qualifications should be. They merely specify that the state shall establish some minimum criteria. These qualifications can be ". . . standards of experience and education, and other requirements which are reasonable in relation to the duties

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<sup>31</sup>William R. Musgrove, "Relationships of Occupational Experience, Teaching Experience, Technical Training and College Training to Rated Teaching Effectiveness of Vocational Electronics Teachers" (unpublished Ph.D. dissertation, University of Missouri, 1968).

to be performed."<sup>32</sup> Thus, individual states have adopted individual codes based upon their experience. In Michigan, the Michigan State Plan for Vocational Education lists the minimum educational and occupational requirements for those persons involved in vocational education. The state plan recommends that post-secondary vocational-technical instructors, whenever possible, should be selected utilizing the following criteria:

#### Education

Shall possess or be eligible to possess a valid Michigan vocational teaching certificate for the occupational area concerned and shall possess a Baccalaureate Degree from a recognized college or university with a major or minor in the field of specialization or equivalent graduate credits to substitute for required major or minor. When a state license is required in specialized fields, this license must be obtained prior to employment.

#### Occupational Experience

Shall have a minimum of two years of experience in the occupational area concerned or shall have approved by the Department of Education a planned equivalent program of directed supervised occupational experience. Such occupational experience will be characterized by its relevancy and recency.

#### Special Conditions

If a candidate does not meet the standards as outlined above, an evaluation of competency will be made by the Department of Education. The Department will determine the adequacy of his combined

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<sup>32</sup>U.S., Department of Health, Education and Welfare, Office of Education, Administration of Vocational Education, Rules and Regulations, Vocational Education Bulletin No. 1 (Washington, D.C.: Government Printing Office, 1967), p. 14.

education, occupational and teaching experience, in the above.<sup>33</sup>

It is important to note that if the candidate recruited by the institution does not meet these criteria, the institution can receive approval for the candidate, "provided it can be demonstrated to the Department of Education that the candidate's education and occupational experience or a combination of the two will enable him to provide high quality instruction in the appropriate technical area."<sup>34</sup>

All post-secondary instructors who are employed to teach state reimbursed vocational-technical education courses must have a vocational certificate, designated as a community college approval. To qualify for the approval certificate the candidate must have the minimum qualifications listed above.

Further consideration must be given at this time to an opinion handed down by the Attorney General for the State of Michigan, which eliminates the need for instructors in community colleges to hold teacher certificates. Opinion 3478 is as follows:

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<sup>33</sup>Michigan Department of Education, Division of Vocational Education, State Plan for Vocational Education (Lansing, Michigan: Michigan Department of Education, 1969), pp. 7-9.

<sup>34</sup>Ibid., p. 4.

The board of trustees of a community college district is required to employ such teachers as shall meet the qualifications prescribed by the state board of education under Section 7 of Act 188 PA 1955, as amended. The board of trustees is under no duty to hire only certificated persons although the law requires that the board of trustees of a community college district hire such persons as shall meet the qualifications established by the state board of education.<sup>35</sup>

With this decision, community colleges were permitted to employ persons without professional teacher certification and/or degree. Vocational education administrators were now permitted legally to employ individuals directly from noneducational sources and occupations to serve as full-time or part-time instructors.

Larson examined the qualifications of industrial-technical instructors in the public community/junior colleges of Michigan. The study included only those individuals seeking vocational certification as instructors of industrial-technical programs in Michigan community/junior colleges through the State Department of Public Instruction. Data were secured on 138 instructors from 11 community colleges, during the academic year 1960-61. A brief profile of those instructors suggested that:

1. One hundred and thirty-seven of the 138 instructors were male.

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<sup>35</sup> Report of the Attorney General of Michigan, 1961-1962 Biennial Period, January 1, 1961 to December 31, 1962, Frank J. Kelley, Attorney General (Lansing, Michigan: Speaker-Hines and Thomas, Inc., 1963), p. 239.

2. Eleven community junior colleges offered industrial-technical programs, under MDTA Title VIII in Michigan during 1960-61.
3. Seventy-five per cent of the instructors were employed by 5 of the 11 colleges.
4. The median education was in the master's range.
5. The largest single group earned the master's degree in education; while at the bachelor's level the largest group was in subject-matter oriented fields.
6. Largest number of those having education oriented degrees at the bachelor's level had majors in Industrial Arts.
7. The median semester hours earned in technical subject matter courses was 18.
8. The median semester hours earned in teacher education professional courses was 6.
9. One instructor in 7 had served an apprenticeship.
10. Nearly one-half of the instructors were employed as full-time teachers.
11. The median of closely related work experience was 50 months or a little over four years.<sup>36</sup>

Barlow and Reinhart<sup>37</sup> conducted a much broader and more comprehensive study of California's trade and technical teachers' characteristics. Their report provided substantial amounts of factual and descriptive data on teachers' education, occupational experience, teaching experience, professional affiliations, and present teaching assignments.

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<sup>36</sup>Milton E. Larson, "Community Junior College Teachers--Some Characteristics of Excellence," Journal of Industrial Teacher Education, III, No. 2 (Winter, 1966), 15-16.

<sup>37</sup>Melvin L. Barlow and Bruce Reinhart, Profiles of Trade and Technical Teachers--Comprehensive Report (Sacramento: California State Department of Education, 1968).

Michigan Community Colleges

Michigan's first junior college at Grand Rapids was established in 1914 as an upward unit of the local secondary school. Community colleges, which were initially called junior colleges, were formed in response to a growing interest in having the first two years of higher education within easy reach of the local population. The newly formed junior colleges were designed for the purpose of offering the first two years of higher education to those persons desiring to transfer to senior institutions. The exception to this was the first community college at Grand Rapids, which originated as a matter of expediency of utilizing vacant facilities. Furthermore, it became Michigan's first community college to offer terminal vocational curriculum in industrial arts and business.<sup>38</sup>

The number of community colleges and student enrollment grew slowly, until the 1950's. During the decade between 1950 and 1960, the number of community colleges grew from 9 to 16, and enrollments grew to an all-time high of 27,000 students. The following decade, 1960 to 1970, witnessed Michigan community colleges growing to a total of 29, with some 126,647 students.

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<sup>38</sup>Wayne Rodehorst, "An Analysis of the Introduction of Vocational-Technical Education Programs in Michigan Community Colleges Established Before 1930" (unpublished Ph.D. dissertation, Michigan State University, 1964), pp. 28-31.



Until the 1960's, the development of Michigan community colleges proceeded without a central planning or coordinating agency. The service area of early community colleges was confined to the local school system. In contrast to the early organizational structure, most colleges formed after the early 1950's were independent of the public schools, and served a county or regional area rather than a single public school district.

As a result of recommendations stemming from the Staff Survey of Higher Education in Michigan<sup>39</sup> and other similar studies, Michigan has moved toward a system of state-wide planning and coordination, with local community college boards retaining the supervisory and controlling authority. The actual implementation of state-wide planning and coordination was made possible by a revision of the State Constitution in 1963. One section of the revision stipulated that the State Board of Education "shall serve as the general planning and coordinating body for all public education including higher education. . . ." <sup>40</sup>

Michigan community colleges have emerged from institutions with a single purpose into comprehensive, multi-purpose institutions. This is best exemplified in

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<sup>39</sup>S. V. Martorana, "The Community College in Michigan," Staff Study No. 1 (Lansing, Michigan: Michigan Legislative Study Committee Study on Higher Education, 1957), p. 163.

<sup>40</sup>State of Michigan, Constitution, Article VIII, Section 3, 1963.

the definitional role, as defined by the State Board of Education. Michigan comprehensive community colleges are to:

1. Provide the first two years of college work for those desiring, and able, to transfer to four-year colleges and universities.
2. Provide the occupational, educational, and training programs needed by the youth and adults of the community, and by the larger society.
3. Provide general cultural education programs and community services intended to contribute to the cultural and economic welfare of the community.
4. Provide guidance and counseling services to assist youth and adults to fit themselves better into an increasingly complex technological society.<sup>41</sup>

The philosophy and purpose of Michigan's comprehensive community colleges may be expressed as follows:

The community college is becoming the one versatile educational institution with the flexibility and adaptability to meet the ever changing requirements of community needs in a dynamic world. It is coming of age under the spiraling needs that a modern, democratic society has for educated and trained manpower. It offers hope that in this nation there shall not exist an educational gap breachable only by the economically, the socially, or intellectually elite.

Public community colleges can and should provide additional educational opportunities leading not only to advanced academic study in our four-year institutions of higher education, but also to the best in continuing education programs in general and in broadening educational programs beneficial to the entire community and to society, in

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<sup>41</sup>Michigan Department of Education, State Plan for Higher Education in Michigan (Lansing, Michigan: Michigan Department of Education, 1969), pp. 1-14.

diversified community enrichment activities and functions that will elicit maximum participation by both youths and adults.<sup>42</sup>

Closely aligned with the expansion of Michigan community colleges has been the growth of post-secondary vocational education. This association has been due, in part, to recommendations by Smith, who concluded that:

The hub of the whole vocational education system of tomorrow, by whatever name it is called, will be the comprehensive area post-secondary and adult education institution. The national trend is in this direction, and the reasons for it are clear. Most individual high schools cannot offer the variety of programs needed. More and more vocational-technical courses beyond the high school level are needed.<sup>43</sup>

Vocational-technical education in Michigan has been developing around two primary goals.

First, is the development of human resources through the concept of meeting the needs of the individual. Second, is the simultaneous provision of a skilled manpower pool which meets the needs of our highly industrialized state.<sup>44</sup>

To accomplish these goals, vocational education must continue to launch forth with quality programs of

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<sup>42</sup>Michigan Department of Education, A Position Paper by the State Board of Education (Lansing, Michigan: Michigan Department of Education, 1967), pp. 1-2.

<sup>43</sup>Harold T. Smith, Education and Training for the World of Work: A Vocational Education Program for the State of Michigan (Kalamazoo, Michigan: W. E. Upjohn Institute for Employment Research, July, 1963), p. 3.

<sup>44</sup>Michigan Department of Education, Vocational Education Services of the Michigan Department of Education (Lansing, Michigan: State Board of Education, October, 1970), p. 22.

adequate diversity to meet individual needs and interests. It has been recognized for some time by vocational leaders and educators that it is not practical for one institution to provide the total program of vocational education. It is believed that a shared, coordinated effort by all institutions is a feasible and logical approach. To systematize the planning and coordinating of resources within the state, the Michigan State Board of Education has adopted a document entitled, A Position Statement Concerning the Development of Area Vocational and Technical Education Programs in Michigan.<sup>45</sup> This document clearly defines the roles of the K-12 program, the Secondary Area Vocational Center, the Community College, the Intermediate School District, and the State Department of Education.

Adequate vocational education programs must provide for continuing education. To accomplish this, each region of the State should be served by a community college or be part of a post-secondary area vocational-technical institution. In some instances, a university or college offering vocational-technical education programs in their region can serve this function.

The community college should provide vocational and technical programs for post-high school students who desire to continue their education, and for out-of-school youth and adults in need of training or retraining. Secondary area vocational programs could be operated by the community college if requested to do so by K-12 districts involved.

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<sup>45</sup>Michigan Department of Education, A Position Statement Concerning the Development of Area Vocational and Technical Education Programs in Michigan (Lansing, Michigan: Michigan Department of Education, July, 1967), pp. 2-3.

The post-secondary institutions--community colleges and the four-year universities and colleges--need to plan for providing the specialized occupational training programs not available in all areas of the State. Such a statewide plan is essential to avoiding undesirable duplication and competition and to make most judicious use of State and local funds.<sup>46</sup>

The above-stated role of Michigan community colleges fits well with the current proposed thrust for vocational education in Michigan. Presently, the major thrust of efforts is directed to achieve three main objectives:

1. To provide facilities, programs, and an introduction to the world of work to every student in the state of Michigan.
2. To guarantee that no student entering high school in the state of Michigan leaves without having the opportunity to gain an entry level salable skill regardless of his career objective.
3. To provide programs of adult continuing education to all citizens of the state who need or desire such service.<sup>47</sup>

#### Problems of Beginning Instructors

Reviewing the literature and research on the problems of the beginning teacher revealed an abundance of material dealing with the problems of beginning teachers at the elementary and secondary levels. However, relatively little research or literature was revealed concerning problems of the beginning community college instructor

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<sup>46</sup>Ibid.

<sup>47</sup> Michigan Department of Education, Vocational Education Services, pp. 20-21.

or problems of the beginning vocational-technical instructor. During recent years, there has been an increasing interest in determining the difficulties that do exist among these instructors, in an attempt to formulate improved pre-service and in-service teacher education programs for post-secondary instructors.

Siehr<sup>48</sup> conducted a study to ascertain the problems perceived by new faculty members in community colleges, and the administrative practices which new instructors recognized as most helpful in alleviating their problems. Data were secured through a mailed questionnaire administered to 2,783 new faculty members in 429 public and private community colleges in 50 states and territories of the United States. The respondents were asked to record their perceptions of 72 items listed for identification as problem areas, for difficulty and persistence. The instructors were further instructed to (1) identify 19 administrative procedures used by colleges in the orientation of beginning instructors, as to their use or nonuse, and (2) indicate how helpful the practice was if used, or how helpful the instructor thought the procedure would have been, had it been used.

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<sup>48</sup>Hugo Emil Siehr, "Problems of New Faculty Members in Community Colleges" (unpublished Ph.D. dissertation, Michigan State University, 1962).

The study revealed nine problem items which were classified as major problems:

1. Lack of time for scholarly study.
2. Adapting instruction to individual differences.
3. Dealing with students who require special attention to overcome deficiencies.
4. Acquiring adequate secretarial help.
5. Understanding college policies regarding teaching load.
6. Challenging superior students.
7. Obtaining needed instructional materials.
8. Grading or marking students' work.
9. Understanding college policies to be followed in curriculum development and revision.

The respondents identified five orientation procedures as being particularly effective:

1. Further materials such as schedule, course outlines, texts, and faculty handbook should be supplied upon appointment.
2. An orientation conference with the department head should be arranged upon appointment.
3. A lighter teaching load should be set up for new faculty members.
4. Regular departmental meetings should be held.
5. A faculty sponsor should be provided for each new faculty member.

McCall<sup>49</sup> conducted an investigation of new faculty members in North Central Association colleges and universities to determine problems they encountered which were of a personal, institutional, and instructional character. Data were collected by questionnaire from 1,145 first- and third-year faculty members in 144 institutions. McCall's findings indicated that faculty members had difficulty in:

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<sup>49</sup>Harlan Richardson McCall, "Problems of New Faculty Members in North Central Association Colleges and Universities of Less than 3,000 Enrollment" (unpublished Ph.D. dissertation, Michigan State University, 1961).

(1) acquiring adequate secretarial help, (2) finding suitable living quarters, (3) understanding college policies regarding promotions and salary increases, (4) acquiring sufficient teaching aids, (5) acquiring adequate office space, (6) knowing what other departments of the college expect of one's own department, (7) using effective discussion techniques in class, and (8) developing effective lectures.

From interviews with more than 650 individual instructors, instructional deans, and other personnel in 20 community colleges across the nation, Garrison concluded that junior/community college instructors saw their most pressing professional problem as TIME. The instructors reported over and over, there was not enough time:

. . . to keep up in my own field; to do a proper job with individual students; to investigate what other junior colleges are doing; to study for myself; to discuss educational matters with my fellow-teachers; even, more often than I like to think, to do a decent job of preparation for my classes; to refresh myself, even occasionally, by brief association with some of my colleagues in my own discipline, whether at conventions, special regional meetings, or whatever; to function effectively on faculty committees, to help in advising student organizations.<sup>50</sup>

A study of the professional problems of post-secondary trade and technical instructors in the area

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<sup>50</sup>Garrison, Junior College Faculty, pp. 30-31.



schools of Iowa was conducted by Holman.<sup>51</sup> The primary purpose was to ascertain the professional problems of trade and technical instructors, as seen by the instructors themselves and their immediate supervisors. In addition to noting the professional problems, opinions as to the possible causes were also investigated. During the 1967-68 school year, interviews were conducted with a 50 per cent random sample of trade and technical teachers who lacked professional teacher training, and with their immediate supervisors. The major findings were:

1. Major problems encountered in determining and formulating objectives, preparing and presenting educational materials, and evaluating student progress were:
  - a. Selecting texts, references, and related material.
  - b. Allotting proper time and emphasis to each unit.
  - c. Planning and presenting related materials.
  - d. Preparing classroom and laboratories for daily use.

The primary causes of these problems were:

- a. Inadequate time.
  - b. Inadequate teaching experience.
  - c. Inadequate educational preparation.
  - d. Lack of appropriate texts and/or materials.
2. Major problems encountered in working with the administration, faculty, students, and public were:
  - a. Making the transition from industry to teaching.
  - b. Motivating students.
  - c. Understanding the function of state vocational education personnel.

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<sup>51</sup>Holger Emanuel Holman, "Professional Problems of Trade and Technical Education Teachers in the Fifteen Area Post-Secondary Schools of Iowa, with Implications for In-Service Teacher Education" (unpublished Ed.D. dissertation, University of Missouri, 1969).

- d. Class attendance.
  - e. Understanding administrative policy.
  - f. Providing for individual differences.
- The primary causes of these problems were:
- a. Inadequate in-service training.
  - b. Inadequate teaching experience.
  - c. Inadequate time.
  - d. Inadequate educational preparation.
3. Major problems encountered relative to buildings and facilities were:
- a. Recommending budgetary items.
  - b. Planning for, selecting, ordering, and installing new equipment.
  - c. Working with advisory groups in planning new buildings and facilities.
- The primary causes of these problems were:
- a. Temporary facilities.
  - b. Inadequate finances.
  - c. Inadequate time.<sup>52</sup>

Ryan<sup>53</sup> conducted a study to determine the teacher training needs of trade and industrial education teachers in North Carolina. He further attempted to evaluate the present education programs and to make program proposals for the training of trade and industrial teachers. Results from the study showed that 60 per cent of the respondents indicated 10 out of 95 possible items as representative of problems they had experienced during their initial year of teaching. Findings indicated beginning trade and industrial teachers experienced difficulties in the following areas: (1) criteria for student selection; (2) philosophy

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<sup>52</sup>Ibid., abstract.

<sup>53</sup>Chester M. Ryan, "An Analysis of the Preparation, Selection, and Training of Teachers in the Trade and Industrial Education Programs of North Carolina with Implications for the Future" (unpublished Ph.D. dissertation, University of North Carolina, Chapel Hill, 1963).

of vocational education; (3) understanding local, state, and national relationships; (4) fitting the trade and industrial program into the school program; (5) selecting and organizing educational materials; (6) planning a lesson; (7) developing a course of study; (8) developing visual aids; (9) measuring student achievement; and (10) coordinating relationships of trade and industrial programs with other school projects.

In addition, 30 per cent of the teachers experienced problems on 11 items, and indicated they had received no help from their teacher training programs. The study also revealed that, because of varying backgrounds, education, and work experience, teachers may need individual help in solving their problems.

#### The Part-Time Instructor

This section includes publications and research dealing with part-time instructors. The availability of factual or descriptive information on the part-time instructor is very limited in scope and frequency of reporting. As pointed out earlier in this study, significant increases are anticipated in post-secondary enrollments in the community college, and it is here that part-time instructors have contributed and will be able to make a significant contribution in the future. James D. Park, President of Olympic College, said:

The regular staff could not provide the services needed in the specialized courses. In these, the part-time instructors bring, besides their vocational or management experience, a considerable prestige to the specific applications made of the subject matter taught in the service-oriented industry and a degree of community interest and interrelatedness unequalled in many other situations.<sup>54</sup>

The future role which part-time instructors will play in the community college rests heavily upon the performance of those who occupy these positions today. Presently, positions are held by individuals representing a broad cross-section of professional clientele from business and industry. Some of the occupational classifications represented by part-time instructors are:

. . . construction management engineer, radio advertising salesman, social worker, superintendent of boys' training school, staff artist, naval astronomer, physicist, research chemist, insurance analyst, supervisor of instrumental music, operation analyst, aero-space technologist, ICC attorney-advisor, chief statistician, NIMH educational specialist, applied mathematician, research scientist, merchandise manager, etc.

As the above statement indicates, the professional background of part-time instructors cuts across many occupational fields. Recognizing the diverse background of part-time instructors, what are some of the characteristics which are associated with him as an instructor? Maul stated:

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<sup>54</sup>Eileen P. Kuhns, "Part-Time Faculty," Junior College Journal, XXXIII, No. 5 (January, 1963), 10.

Typically, the part-time junior college teacher is a mature, experienced worker in the occupation being explored by the student. There, the presence or absence of academic degrees is not a vital--perhaps not even a major--factor in determining the teacher's qualifications. But a successful background of firsthand experience is of first importance.<sup>55</sup>

A similar definition, yet different interpretation, of the qualifications of part-time instructors was expressed by Dapper and Murphy,<sup>56</sup> who are associated with the organization Catalyst in Education. They defined a part-time teacher as "a qualified teacher who works on a specified, part-time schedule." Their experience with part-time teachers has been primarily in elementary and secondary education, whereas Maul's experience has been primarily with post-secondary education.

Yet another definition of the part-time instructor, but with less complimentary characterization, has been supported by Lett and Margoshes. As they saw it:

. . . Part-time instructors can be classified under the rubric of "marginal" teachers. Using the sociological concept of marginality, we define the marginal teacher as one who has little identification with the educational institution in which he teaches. In short, the college has no commitment to him and he in turn has no commitment to the college or its students. . . . He is typically a part-time employee

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<sup>55</sup>Ray C. Maul, "The Biggest Problem Finding Good Teachers," Junior College Journal, XXXVI, No. 4 (December, 1965), 6.

<sup>56</sup>Gloria Dapper and Judith Murphy, "Part-Time Teachers and How They Work," Education Digest, XXXV, No. 3, 22.

who is paid by the hour, earning an average wage ranging from \$6.00 to \$10.00 per classroom hour.<sup>57</sup>

#### Sources of Part-Time Instructors

Administrators desiring part-time instructors need potential sources they can successfully utilize in recruitment. The potential sources, as recommended by Ivey,<sup>58</sup> are: (1) those professional persons in industry who have proven themselves to be capable in their specialty; (2) wives of the male faculty members, many of whom have the M.A. degree or better; (3) public school teachers, supervisors, and administrators; (4) professional men's wives; and (5) retired professional persons living in the community.

When the administrator finds himself in need of the services of a part-time instructor, there are many factors he must consider before employing the part-time instructor. Whether or not the part-time instructor's educational and occupational background are sufficiently adequate to prepare him for the classroom or laboratory is of primary consideration. Ivey stated:

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<sup>57</sup>Sheldon Litt and Adam Margoshes, "The Marginal College Teacher," Journal of Higher Education, XXXVII, No. 8 (November, 1966), 451.

<sup>58</sup>Nathan A. Ivey, "The Part-Time Instructor and Effective Teaching," Junior College Journal, XXXI (September, 1960), 40.

The prospective part-time instructor may have had a minimum amount of teaching experience but a wealth of experience in business or industry, which is pertinent to the subject matter to be taught. . . . The majority of [the administrator's] new part-time instructors will be lacking in pre-service preparation, and he should provide a program of orientation for them.<sup>59</sup>

Keeping these factors in perspective, the administrator must consider whether the college itself has the personnel and technical resources to orient these people efficiently to what they are to do.<sup>60</sup> Having effective orientation and in-service programs for part-time instructors becomes of major importance, as stated by Kuhns:

. . . Part-time evening instructor is the only contact many students have with the college. Thus his familiarity with college philosophy, rules and procedures becomes doubly important in order that he may serve in the role of informal counselor on occasion. Accurate knowledge about matters such as graduation requirements, final withdrawal dates, absence rules, etc., is essential.<sup>61</sup>

#### Related Research on Part-Time Instructors

Kennedy<sup>62</sup> studied the recruitment, orientation policies, and practices used by Illinois and Maryland

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<sup>59</sup>Ibid., p. 41.

<sup>60</sup>Roger H. Garrison, "Professional and Philosophical Faculty Attitudes," Junior College Journal, XXXVI, No. 5 (February, 1966), 18.

<sup>61</sup>Kuhns, op. cit., p. 12.

<sup>62</sup>Gerald Kennedy, "Preparation, Orientation, Utilization and Acceptance of Part-Time Instructors," Junior College Journal, XXXVII, No. 7 (April, 1967), 14-15.

public junior college administrators in hiring part-time instructors. The study was completed during the 1964-65 school year, and involved 935 part-time staff members in 19 Illinois and 12 Maryland public junior colleges.

The study revealed in Illinois 54 per cent of the part-time appointments came from secondary schools, whereas in Maryland 26 per cent of the part-time appointments came from secondary schools. The employment vacancies varied from district to district and from subject to subject. Part-time appointments continued to exist in terminal-technical programs. Thirty-four per cent of Maryland's part-time faculty came from full-time governmental employment, particularly at the federal level.

The study further revealed that 75 per cent of Maryland's part-time instructors had a Master's degree and/or advanced work. In Illinois, 78 per cent of the part-time instructors had similar preparation. Eighteen per cent of Maryland's part-time instructors had Doctorate degrees, compared with only 4 per cent in Illinois.

It was discovered that administrators preferred to select applicants who had had some previous teaching experience; yet, 28 per cent of the Illinois part-time faculty and 30 per cent of the Maryland group had had no previous professional teaching experience when initially appointed.



The typical teaching load was one course per semester. Part-time instructors received a minimum of orientation upon appointment. Only two institutions in each state had identifiable orientation programs for new part-time instructors. A majority of the administrators voiced the opinion that part-time instructors are dedicated and are doing a highly professional job.

A similar study was conducted by Messerschmidt,<sup>63</sup> who attempted to determine the practices used by community colleges in Michigan to recruit, hire, and prepare part-time instructors in vocational-technical education. He also attempted to compare certain attitudes of part-time vocational-technical instructors and full-time vocational-technical instructors on six selected variables. The data were secured through interviews with administrators of vocational-technical programs in 12 community colleges in Michigan, and through the administering of the Minnesota Teacher Attitude Inventory. Returns were received from 39 full-time instructors and 78 part-time instructors.

Interviews with administrators of vocational-technical education on recruiting, hiring, and preparing part-time instructors revealed the following findings:

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<sup>63</sup>Dale Harvey Messerschmidt, "A Study of Part-Time Instructors in Vocational-Technical Education Among Community Colleges in Michigan" (unpublished Ph.D. dissertation, Michigan State University, 1967).

1. The primary source of part-time instructors for vocational-technical education in the community college was local business and industry.
2. Attempts to use retired personnel from industry and the military were not successful.
3. Administrators who utilized several sources (five or more) for recruiting activities had an easier time obtaining services of part-time instructors than administrators who used fewer than four sources.
4. The supply of and demand for part-time instructors appeared to be growing at similar rates. Therefore the difficulty involved with finding instructional personnel has not increased appreciably in the recent years.
5. Most administrators relied on department chairmen, other administrators, and faculty to assist in the selection of part-time instructors. However, some administrators made the selection decisions without consulting anyone.<sup>64</sup>

The study measured the attitudes of part-time and full-time instructors through the use of the Minnesota Teacher Attitude Inventory. The data revealed the following:

1. The length of teaching experience and course work in education has an effect on the attitudes of part-time instructors.
2. The length of teaching experience and course work in education has no effect on the attitudes of full-time instructors.
3. The age at which part-time and full-time instructors started teaching has no effect on instructors' attitudes toward students.

#### Experimental Training Program for Part-Time Instructors

Gowin and Daigneault<sup>65</sup> designed an experimental program to recruit and prepare part-time instructors for

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<sup>64</sup>Ibid., abstract.

<sup>65</sup>D. B. Gowin and George H. Daigneault, The Part-Time College Teacher (Chicago: Center for the Study of Liberal Education for Adults, 1961).

college teaching. Participants in the program had neither formal preparation for teaching, nor teaching experience. However, they were required to meet at least one or more of the following criteria: (1) have obtained a Master's degree or above, (2) have been licensed or certified by a recognized authority to practice in his chosen field, and (3) have enough experience in a particular field to insure competence in presenting its subject matter at the college level. The recruits were intensively interviewed for screening purposes and then divided into experimental and control groups. The study sought to prepare the experimental group for college teaching through a pre-service program involving educational theory (philosophy, psychology, sociology) and educational practices.

The experiment revealed: (1) that interns who experienced the pre-service preparation program exhibited increased theoretical consistency and decreased authoritarianism; (2) that interns who experienced the actual teaching situation decreased in theoretical consistency and increased in authoritarianism, but not enough to lower significantly the gain derived from the preparation; (3) not unequivocally supported was that interns who shifted toward greater consistency were not rated by students as "better" teachers than those who did not so shift. However, the experimental group of interns (which did as a

group shift toward greater consistency) was rated as the equal of experienced full-time instructors.

### Summary

The review of the literature and research presented in this chapter included four sections: (1) the vocational-technical instructor, (2) Michigan community colleges, (3) problems of beginning instructors, and (4) the part-time instructor.

Diverse opinions prevail on the importance of professional teacher education and qualifications for vocational-technical instructors. The literature revealed that a majority of the writers acknowledged the value of instructors' having some professional teacher education to supplement their technical subject-matter competence. Initial research findings indicated no difference in student achievement when taught by teachers with professional teacher training and by tradesmen. Further research is needed before conclusions can be drawn.

Michigan community colleges have grown rapidly in number within the past decade. This growth is due, in part, to their flexibility and adaptability to the changing needs of the people they serve. Possibly more important to their growth is the open-door policy of admitting students. Furthermore, the institutions have assumed a major responsibility for post-secondary vocational-technical education.

A minimum number of studies has been conducted, attempting to identify the problems of beginning community junior college instructors. Siehr and McCall conducted similar studies, which looked at instructional and institutional problems of all beginning community/junior college instructors. Garrison studied the issues and problems facing the community/junior college instructors and found the major problem to be TIME. Holman studied the professional problems of beginning full-time post-secondary area center trade and technical instructors in Iowa.

Part-time instructors are no new phenomenon to the teaching profession. They are being recruited from many occupations in the world of work. Part-time instructors are being used at all educational levels, and are considered an indispensable resource in some situations, but are regarded less favorably in other areas. Parallel to their services is the institution's responsibility of providing orientation and other assisting services to the new and unfamiliar instructor in the institution. Fledgling efforts have thus far been developed to provide the part-time instructor with opportunities for professional development in teaching.

## CHAPTER III

### DESIGN OF THE STUDY

#### Introduction

The present study was designed to determine the problems confronting part-time and full-time industrial and technical instructors in the community college as perceived by administrative supervisors, the instructors themselves, and their students. The assumption was that such an identification and analysis would provide a basis for assisting community college administrators, teacher educators, and state departments of education in identifying needs for action in implementing or upgrading in-service or pre-service training programs.

Procedures and methodology used to identify and analyze the problem areas are presented in this chapter. Specifically, information is presented concerning the selection and identification of the sample, methods of collecting data, description of the instruments, and treatment of the data.

#### Selection and Identification of the Samples

In identifying the problems of part-time and full-time industrial and technical instructors in Michigan

community colleges, one of the first tasks was to decide on logical sources of relevant data. After a preliminary investigation, it was considered desirable to gather data pertinent to the instructors' situation from three different, but complementary, viewpoints: that of the administrative supervisor, that of the instructor himself, and that of the student.

#### Community College Sample

To increase the specificity and relevance of the findings, the study was limited to vocational reimbursed industrial and technical education programs in Michigan public community colleges. The document, Vocational Education Services of the Michigan Department of Education,<sup>66</sup> was used to identify those community colleges having reimbursed industrial and technical education programs. As listed in this document, 16 institutions operate reimbursed industrial and technical education programs. A simple random sample of 11 institutions was drawn from the possible 16 eligible institutions. The sampling procedure involved placing the individual names of the 16 eligible institutions in a container, and then drawing 11 names from the container.

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<sup>66</sup>Michigan Department of Education, Vocational Education Services of the Michigan Department of Education (Lansing, Michigan: State Board of Education, October, 1970), Appendix B.

The identified institutions were then contacted by letter to confirm that they employed part-time instructors, and to ask for their participation in the study. A copy of the letter is included in Appendix A. A map showing geographical location of community colleges in Michigan and listing institutions which participated in the study is included in Appendix B. Each community college and its personnel will remain anonymous in the presentation of the data, to allow for open and frank discussion.

#### Instructor Sample

Instructors were selected on the basis of their educational background and community college teaching experience. The instructor sample was stratified on the randomly selected institutions. At each community college, both part-time and full-time industrial and technical instructors were first identified. From this population, all part-time instructors with the least amount of community college teaching experience at that institution and no professional teacher education were identified. Concurrently, all full-time instructors were screened to identify those individuals who had completed professional teacher education, and had the least amount of community college teaching experience. The final step involved randomly drawing the names of two part-time and two full-time instructors from each of the identified subsamples.



Consequently, the names of four instructors from each of the 11 institutions were chosen, with a total of 44 instructors being identified for the present study. Due to unusual circumstances, two instructors were excluded (one part-time and one full-time); thus a total of 42 instructors comprised the instructor sample.

#### Administrative Supervisor Sample

Administrative supervisors were selected on the basis of holding positions as Dean, Department Chairman or Coordinator of industrial or technical programs, and/or the most immediate administrator to whom the part-time instructor reported. Due to the difference in administrative organizational structures among community colleges, the anticipated number of two supervisors per institution was not achieved. Consequently, 20 supervisors were identified.

#### Student Sample

The respondents for this portion of the investigation included those students enrolled in industrial or technical classes being taught by the instructors included in the study. Due to individual instructor preference or institutional policies, some instructors were not represented by student ratings. As a result, 473 student ratings were received from students of 16 part-time instructors and 17 full-time instructors.

### Methods of Collecting Data

With the major problem identified and the sources of data determined, the question arose of which method or combination of methods of gathering data would elicit the kinds of information desired. Review of various research techniques and consultation with research specialists confirmed the belief that the interview would be the most appropriate technique. Other considerations which influenced the choice of the research technique were: (1) personal contact with the instructors and supervisors would permit valuable experience and interaction with field conditions, and (2) the very nature of interaction and discussion of problems and concerns could foster some conscious review and evaluation by instructors and supervisors of their present situations.

### Procedure for Interviews

Vocational-technical deans in the selected community colleges were contacted by letter (Appendix A). The purpose of the letter was: to acquaint the deans with the study, to confirm that they employed part-time instructors, to ask for their participation in the study, and to set a time for the investigator to visit with the dean or his designated alternate. A follow-up phone call was used to confirm the initial visitations.

The purposes of the visitations with the deans were: to explain and clarify the purpose of the study, to

identify the supervisors and instructors to be interviewed, and to arrange the appointments for interviews at a future date and time.

### The Interviews

The actual interviews began in November, 1970, and continued into December, 1970. In most situations the interviews were conducted at the institution, or in some cases, at the local business or industry where the part-time instructor was employed full-time. Before beginning the interview, the interviewer briefly reviewed the purpose of the study and encouraged complete freedom in responding to the questions. The responses were recorded by written notes or checks on the interview schedule form. When completing Part III of the Instructor Interview Schedule (Appendix C), the instructor was asked to rate each problem item in relation to his instructional or institutional situation.

Upon completion of the interview, the instructor was given a packet of Student Instructional Rating Forms (Appendix E) to distribute to one of his classes for completion. The instructors were assured again that this survey was not to be used as an individual evaluation, but as a group evaluation. When completed, the forms were returned to the investigator via stamped, self-addressed envelope.

### Description of the Instruments

The development of a single instrument for collecting data from supervisors, instructors, and students was not considered appropriate nor feasible. As a result, it was necessary to design two data-gathering instruments and to select parts of an existing instrument. The self-constructed instruments were: (1) Instructor Interview Schedule (Appendix C), and (2) Supervisor Interview Schedule (Appendix D). The third instrument selected was the Student Instructional Rating System Form (Appendix E).

#### Instructor Interview Schedule

The first step involved in designing the interview schedules was the identification of the basic questions that would collect the kinds of data sought. The initial step in formulating the questions, once the objectives were formulated, was to review the related literature and interview local community college personnel to establish a preliminary framework of questions. Using this framework, a pilot investigation was conducted during the Spring of 1970, using open-ended opinionnaires which were mailed to part-time and full-time health occupation instructors in Michigan institutions. The preliminary instrument sought information concerning: (1) educational background, (2) teaching and occupational work experience, (3) problems or concerns which involved instructional or institutional

methods or procedures, and (4) recommendations on additional professional education needs. Following the interpretation and analysis of the pilot study data, alterations were considered and adopted. The final analysis provided a composite list of problem areas which later became the framework for the Instructor Rating Form (Part III, Appendix C).

The next step in designing the interview schedules was to classify the problem items into various categorical clusters which would fuse areas of commonality. To accomplish this task, graduate students participating in a curriculum development course at Michigan State University during the summer of 1970 were asked to arrange the items into common cluster areas. Four categorical clusters were established by the graduate students and confirmed by teacher educators. The categorical clusters of items and the statements related to each are as follows:

#### I. Course Organization

1. Organizing and providing sufficient time to cover materials.
3. Developing lectures.
4. Formulating educational objectives.
5. Selecting methods of presenting materials.
6. Selecting and organizing subject matter.
7. Adapting instruction to individual differences.
8. Determining the various competencies required of graduates in my subject area.

#### II. Student-Instructor Interaction

9. Lack of time for student counseling or instructional preparation.

- 10. Motivating and maintaining student interest.
- 11. Establishing effective personal relationships with students.

### III. Institutional Procedures

- 2. Lack of materials such as course outlines, plans, and faculty handbooks, which should be furnished upon appointment.
- 12. Knowing what is expected of me regarding the total amount of my responsibilities to the institution.
- 13. No systematic means of keeping faculty informed about committee or administrative decisions concerning faculty matters.
- 14. Understanding procedures and policies of college.
- 15. Lack of opportunity to be involved in program or course development.
- 16. Lack of involvement with other college faculty.
- 17. Understanding proper channels for securing supplies, resource persons, or instructional aids.
- 18. Lack of orientation to job, facilities, equipment, and materials available to faculty.
- 19. Concern about wages and fringe benefits.
- 20. Coordinating instruction in my class with instruction in other classes or laboratories.

### IV. Evaluation Procedures

- 22. Self-evaluating my effectiveness as a teacher.
- 23. Developing satisfactory tests and examinations.
- 24. Determining how to evaluate students effectively.

The instructors' assignment of ratings to the above items was based on the following five-point scale:

- 1. No Problem
- 2.
- 3. Moderate Problem
- 4.
- 5. Major Problem

### Supervisor Interview Schedule

After consulting with community college administrators concerning the nature of the study, it was determined

to develop an instrument which permitted free and open responses on the supervisors' behalf. The Supervisor Interview Schedule (Appendix D) is divided into two parts: (1) Basic Data, and (2) Problems and Needs. Part I concerns questions which elicit data on the person being interviewed, number of instructors employed, and availability of in-service education programs. Questions in Part II ask for the supervisors' opinions concerning part-time and full-time instructors' responsibilities, areas of success, areas of difficulty, and areas of professional needs.

#### Student Instructional Rating Form

The Student Instructional Rating System (SIRS) was developed at Michigan State University by the Educational Development Program (1967-69), to systematically evaluate instruction.

The SIRS is a rating system for collecting, analyzing, and interpreting student reactions to classroom instruction and course content. The SIRS Form (Appendix E) is important to the present study because of its adaptability and the type of information it elicits. The instrument is designed to be a general, all-course rating report. The form is composed of two major sections: (1) evaluation and biographical items, and (2) written comment area.

The present study was delimited to the first 20 items of the SIRS Form, which pertain to the evaluation of instruction. These 20 items represent five aspects of the learning situation as perceived by the student:

I. Instructor Involvement

1. The instructor was enthusiastic when presenting course material.
2. The instructor seemed to be interested in teaching.
3. The instructor's use of examples or personal experiences helped to get points across in class.
4. The instructor seemed to be concerned with whether the students learned the material.

II. Student Interest

5. You were interested in learning the course material.
6. You were generally attentive in class.
7. You felt that this course challenged you intellectually.
8. You have become more competent in this area due to this course.

III. Student-Instructor Interaction

9. The instructor encouraged students to express opinions.
10. The instructor appeared receptive to new ideas and others' viewpoints.
11. The student had an opportunity to ask questions.
12. The instructor generally stimulated class discussion.

IV. Course Demands

13. The instructor attempted to cover too much material.
14. The instructor generally presented the material too rapidly.
15. The homework assignments were too time consuming relative to their contribution to your understanding of the course material.



16. You generally found the coverage of topics in the assigned readings too difficult.

#### V. Course Organization

17. The instructor appeared to relate the course concepts in a systematic manner.
18. The course was well organized.
19. The instructor's class presentations made for easy note taking.
20. The direction of the course was adequately outlined.

The students' responses to the above items were based on the following five-point scale:

1. If you strongly agree with the statement.
2. If you agree with the statement.
3. If you neither agree nor disagree.
4. If you disagree with the statement.
5. If you strongly disagree with the statement.

#### Treatment of the Data

The basic procedure utilized for analyzing and interpreting the interview response data was to transcribe notes into ordered form for tabulating the frequency of individual responses. This systematic ordering gave some organization and meaning to the data. The second step involved analyzing individual responses for content, and then classifying the items into areas of commonality. Following this step, frequencies and percentages were calculated, where beneficial to the interpretation of data. The results of these various steps in analyzing and

interpreting the interview data facilitated a presentation of the data in tabular form. The final element in processing the interview data involved the selection of illustrative responses to accompany the tabular reporting. These quotations were selected as representative responses to add originality and validity to the information reported in the tables.

The response data contained in the Instructor Rating Form and Student Rating Forms were scored and transferred to key-punched cards at the Michigan State University Evaluation Services Office. A difficulty index score was computed from Instructor Rating Forms for each of the 24 problem areas, by assigning a value of one through five to each instructor's response. The responses were totaled, producing a weighted score for each item. These scores were then divided by the total number of responses for each item, yielding a numerical difficulty index score. The same procedure was followed with the Student Rating Form in computing an agreement index score for student reactions to classroom instruction and course content. Thus, the difficulty index represented a measure of the degree of difficulty of the instructors' perceptions of problems and concerns. The agreement index represented students' reactions to the instructors' instructional situation. These indexes were set up in tabular form for comparison and analysis.

Following consultation with research specialists, it was decided that a multivariate analysis of variance was the appropriate statistical technique to test Hypothesis I. The data were integrated into a program developed by Finn<sup>67</sup> for processing on the Control Data 3600 computer. The remaining hypotheses were tested through the use of a Pearson Product-Moment correlation and Fisher  $r$  to  $Z$  transformation test.

### Summary

This chapter has been concerned with the selection of participants, methods of collecting data, development of data-gathering instruments, and treatment of the data.

The participants in the study included 11 Michigan public community colleges with vocational reimbursed industrial and technical programs, 20 administrative supervisors, 21 part-time and 21 full-time industrial and technical instructors, and 437 students.

The methods used to collect data consisted of interviews and structured rating forms. Interviews were used to gather data from administrative supervisors and instructors. The Instructor and Supervisor Interview Schedules were developed by the researcher. Student

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<sup>67</sup>Jeremy Finn, Multivariate: Fortran Program for Univariate and Multivariate Analysis of Variance and Covariance (Buffalo: State University of New York at Buffalo, 1967).

Rating Forms were used to gather data from students on the instructor's instructional situation. The student rating instrument was developed at Michigan State University.

The last section was concerned with describing the methods for analyzing the interview response data and the statistical procedures used to test the stated hypotheses.

The following chapter provides background information on the respondents who participated in the study.

CHAPTER IV

CHARACTERISTICS OF RESPONDENTS WHO  
PARTICIPATED IN THE STUDY

The purpose of this study was to identify problem areas which may prevail with part-time and full-time industrial and technical education instructors in Michigan community colleges. This chapter presents certain descriptive and factual background information concerning the institutions and personnel who provided data. It was felt that the information presented would be beneficial to filling the information void that exists on part-time and full-time industrial and technical education instructors in Michigan community colleges. Furthermore, it was felt that the information presented is necessary to better understand the institutions and instructors who are represented in this study. In addition, it was needful to identify certain characteristics of the participants in order to make present and future comparisons between similar groups.

Staff Size

A contributing factor leading to this investigation was an awareness of the increasing use by the community

college of part-time instructors recruited directly from business and industry without professional teacher education backgrounds. Table 1 shows some indication of the magnitude of the increasing role part-time instructors are playing in the 11 community colleges which participated in this study. Of the 510 industrial and technical instructors identified, 222 (43.5 per cent) were part-time instructors with no professional teacher education; another 96 (18.8 per cent) were part-time instructors with professional teacher education; and 192 (37.7 per cent) were full-time instructors. The data reveal that part-time instructors represent a significant proportion of the vocational and technical education staff (62.3 per cent).

TABLE 1.--Number of instructors in industrial and technical education for institutions included in this study.\*

Instructor Group	Number	Per cent
Part-time (with no professional teacher education)	222	43.5
Part-time (with professional teacher education)	96	18.8
Full-time**	192	37.7
Total	510	100.0

\*Numbers do not include business and health occupations.

\*\*Number includes those with and without professional teacher education.

Without the services of part-time instructors, the availability and diversity of course offerings would be greatly restricted.

### In-Service Education

Although the importance of ongoing in-service education is being recognized more and more, a lack of systematic effort is still exhibited in this area. Rapid changes in technology and the occurrence of changes in the instructional-learning environment make it mandatory that teacher in-service education become part of the total continuous system of education.

As Table 2 illustrates, there is an opportunity for more institutions to develop or make provisions for ongoing in-service education programs for their personnel.

TABLE 2.--Number of institutions providing in-service programs for instructors.

Response	Part-time Instructors		Full-time Instructors	
	Number	Per cent	Number	Per cent
Yes	2	18.2	3	27.3
No	<u>9</u>	<u>81.8</u>	<u>8</u>	<u>72.7</u>
Total	11	100.0	11	100.0

In-service education programs identified by the institutions were: instruction in the use of learning resource center, work in industry when needed, part-time and full-time instructors meeting and developing course syllabus, short sessions on organizing course materials, and departmental meetings to discuss curriculum organization.

In-service education is one means of maintaining and improving the quality of instruction and the training being offered. Furthermore, due to the increasing number of individuals who lack certain desired educational or occupational background experiences, instructor in-service training becomes a very important factor in assuring that quality instruction will be forthcoming.

#### Orientation Programs

Orientation programs are an important means, whereby lines of communication, policies, and procedures between instructional staff and administrators can be initially implemented. The understanding and rapport which are established among all personnel are an important benchmark in establishing a viable and effective educational program.

However, several institutions often overlook this means of opening communication channels and establishing rapport. Considering the case of the part-time instructor, the importance of orientation procedures cannot be



overlooked just because he was employed on short notice or employed for only one term or semester.

As Table 3 indicates, a majority of institutions studied had some form of orientation procedure for both part-time and full-time instructors.

TABLE 3.--Availability of orientation programs.

Response	Part-time		Full-time	
	Number	Per cent	Number	Per cent
Yes	8	72.7	10	91.7
No	3	27.3	1	8.3
Total	11	100.0	11	100.0

In most cases, orientation procedures consisted of one or more activities, such as tours of facilities; meetings with the board members; meeting the president; conferences with the dean or department chairman; instruction on procedures, policies, and philosophy of the college; assignment of classrooms or laboratories; distribution of faculty handbooks or course outlines; assignment of co-workers in the buddy system; and tours of the local area. It must be emphasized that the orientation procedures which were identified for part-time instructors were very minimal in content.

### Instructor Responsibility

Table 4 illustrates that 90 per cent of the supervisors interviewed did recognize a difference between the part-time and full-time instructors' responsibilities. However, upon clarifying their remarks, the supervisors indicated no differences in responsibilities existed in regard to classroom instruction. The supervisors' remarks are best exemplified by the following statements:

The responsibilities of part-time instructors differ only on such matters as office hours and contractual matters established by the administration with full-time faculty. Classroom responsibilities remain the same for both part-time and full-time instructors.

The difference between part-time and full-time instructor responsibilities exists outside the classroom, such as: curriculum development, committee meetings, pre-enrollment, and planning budgets.

TABLE 4.--Do the responsibilities of a part-time instructor differ from those of the full-time instructor?

Supervisor Response	Number	Per cent
Yes	18	90.0
No	2	10.0
Total	20	100.0

### Degree Earned

Table 5 indicates there is considerable variation in the degrees earned by part-time and full-time industrial

and technical instructors. Over 42.8 per cent of the part-time instructors in the survey had less than a Bachelor's degree. Furthermore, of that 42.8 per cent, 28.5 per cent indicated their highest level of formal education was the high school diploma. Of the remaining part-time instructors, 47.6 per cent had earned a Bachelor's degree, as compared with 52.4 per cent of the full-time instructors. Only 4.8 per cent of the part-time instructors had earned a Master's degree or above, as compared with 47.6 per cent of the full-time instructors. One can conclude from the data that advanced degrees are not always a prerequisite for part-time teaching in community college vocational-technical education programs.

TABLE 5.--Highest degree earned by instructors.

	Part-time		Full-time	
	Number	Per cent	Number	Per cent
High School Diploma	6	28.5	--	--
Junior College Degree	3	14.3	--	--
Bachelor's Degree	10	47.6	11	52.4
Master's Degree	1	4.8	9	42.8
Doctoral Degree	--	--	1	4.8
Other	1	4.8	--	--
Total	21	100.0	21	100.0

### Sources of Education

The instructors were asked to identify the source or sources through which they had received their education or training. Table 6 contains a tabulation of their response to this question. Fifty-two per cent of the part-time instructors had received their education through the four-year college or university, as compared with 95.2 per cent of the full-time instructors. Thirty-eight per cent of the part-time instructors identified the junior or community college as a source, compared with 14.3 per cent of the full-time instructors. Thirty-eight per cent of the part-time instructors identified the apprenticeship program

TABLE 6.--Sources of education and training.\*

Sources	Part-time		Full-time	
	Number	Per cent	Number	Per cent
Junior or Community College	8	38.1	3	14.3
Four-year College or University	11	52.4	2	100.0
Industrial or Technical Trade School	3	14.3	2	9.5
Military Service	2	9.5	3	14.3
Apprenticeship Program	6	28.6	3	14.3
Other	4	19.0	7	33.3

\*Instructors were permitted to mark more than one source.

as a source, as compared with 14.3 per cent of the full-time instructors. Thirty-three per cent of the full-time instructors indicated "other," compared with 19.0 per cent of the part-time instructors. When identifying "other," the instructors further clarified this to mean training received from business, industry, or military sources. As one full-time instructor phrased it, "Where else can I receive the latest technical knowledge and skills pertaining to my subject area?"

#### Enrollment Status

Table 7 shows 87.7 per cent of the part-time instructors were not presently enrolled for additional education, as compared with 52.4 per cent of the full-time

TABLE 7.--Distribution of instructors as to enrollments to achieve higher degrees.

	<u>Part-time</u>		<u>Full-time</u>	
	Number	Per cent	Number	Per cent
Not Enrolled	18	87.7	11	52.4
Junior College Degree	1	4.8	--	--
Bachelor's Degree	--	--	--	--
Master's Degree	2	9.5	7	33.3
Doctoral Degree	--	--	2	9.5
Other	--	--	1	4.8
Total	21	100.0	21	100.0

instructors. The 52.4 per cent of the full-time instructors not enrolled correlates very closely with the 47.6 per cent of the full-time instructors holding a Master's degree or above. Furthermore, the remaining 47.6 per cent of the full-time instructors seeking Master's degrees or above correlates very closely with the 52.4 per cent holding the Bachelor's degree.

#### Nonteaching Occupational Work Experience

Occupational work experience is often a major consideration for employing part-time and full-time vocational and technical instructors. Table 8 shows the years of occupational work experience completed by the instructors surveyed. The mean is 11.3 years work experience for

TABLE 8.--Years of work experience in occupational area being taught.

Years	Part-time		Full-time	
	Number	Per cent	Number	Per cent
0-2	3	14.3	6	28.6
3-5	2	9.5	6	28.6
6-8	2	9.5	--	--
9-11	6	28.6	5	23.8
12 or more	8	38.1	4	19.0
Total	21	100.0	21	100.0
Mean	11.3		7.5	

the part-time instructors, as compared with 7.5 years for the full-time instructors. Nearly 66.7 per cent of all part-time instructors had more than nine years of work experience, as compared with 42.8 per cent of the full-time instructors. Furthermore, 57.1 per cent of all full-time instructors had less than five years work experience, as compared with only 19 per cent of the part-time instructors having equivalent years of experience.

#### Professional Course Work Completed

Table 9 gives some indication of the type and amount of professional teacher education the instructors had completed.

TABLE 9.--Distribution of instructors by type of professional teacher education courses and semester hour credits completed.

Type of Course	Semester Hour Credits	Part-time Instructors		Full-time Instructors	
General Teacher Education Courses	None	21	100.0	--	--
	1-6	--	--	1	4.8
	7-12	--	--	3	14.3
	13 or more	--	--	17	80.0
Total		21	100.0	21	100.0
Specific Education Courses in Major Subject Area	None	21	100.0	2	9.5
	1-6	--	--	1	4.8
	7-12	--	--	7	33.3
	13 or more	--	--	11	52.4
Total		21	100.0	21	100.0

The part-time instructors sampled had not taken professional teacher education courses, as compared with full-time instructors, who had completed a minimum of 6 semester hour credits or more.

### Teaching Experience

Table 10 reveals that full-time instructors had more total teaching experience than the part-time instructors. This might be expected because of the very nature of part-time employment in teaching and the desire of administrators to secure full-time instructors with prior teaching experience. Full-time instructors with eight or more years of teaching experience constituted the largest group, or 33.3 per cent of the full-time instructors, while only 9.5 per cent were in the 0-1 year experience

TABLE 10.--Classification of instructors by total number of years teaching experience.

Years	Part-time		Full-time	
	Number	Per cent	Number	Per cent
0-1	9	42.9	2	9.5
2-4	10	47.6	6	28.6
5-7	2	9.5	6	28.6
8 or more	--	--	7	33.3
Total	21	100.0	21	100.0
Mean	2.1		6.9	



group. Part-time instructors had the largest number of respondents, or 47.6 per cent in the 2 to 4 year group, and another 42.9 per cent in the 0 to 1 year group. The full-time instructor sample had a 6.9 year experience average, compared with a 2.1 year average for the part-time instructor sample.

Because of the stipulation of selecting only those instructors with the least amount of teaching experience in their present teaching position, data in Table 11 cannot be considered representative of all community college industrial and technical instructors. The full-time instructors in the sample group had held their teaching positions for a longer period of time, or 3.3 mean years,

TABLE 11.--Classification of instructors by tenure in present teaching position.

Years	Part-time		Full-time	
	Number	Per cent	Number	Per cent*
0-1	11	52.4	7	33.3
2-4	9	42.8	9	42.8
5-7	1	4.8	3	14.3
8 or more	--	--	2	9.5
Total	21	100.0	21	99.9
Mean	1.8		3.3	

\*Detail may not add to 100.0 per cent because of rounding.

as compared with 1.8 mean years for the part-time instructors. Further analysis reveals that 52.4 per cent of the part-time instructors had been in their present teaching positions for less than one year, as compared to 33.3 per cent of the full-time instructor sample. However, the 2-4 year groups, full-time and part-time instructors, numbered the same.

#### Subjects Taught

What subjects are part-time industrial and technical instructors being employed to teach? Table 12 shows the subjects taught by the part-time and full-time instructors sampled. The courses identified represent subjects to which the greatest proportion of the instructors' time was devoted. Part-time instructors sampled were not concentrated in one specific subject area. Basic electricity represented the largest concentration of part-time instructors, with four of the 21 respondents. Full-time instructors were concentrated in three subject areas of automotive, mechanical drafting, and machine shop. Combined, these three areas represented 76.2 per cent of the full-time instructor group. The specialized nature of subjects identified as being taught by part-time instructors gives some indication of the reasons for employing part-time instructors. In many cases, part-time personnel are employed where it is impossible to locate or economically

not feasible to employ full-time staff to teach specialized subjects.

TABLE 12.--Distribution of instructors by subject taught.

Subject Area	Part-time	Full-time
	Number	Number
Automotive	1	4
Electronics	2	1
Drafting	1	5
Metallurgy	2	1
EDP	1	1
Numerical Control	1	1
Air Conditioning and Refrigeration	-	1
Hydraulics	1	-
Technical English	-	1
Machine Shop	-	6
Strength of Materials	1	-
Shop Theory	1	-
Basic Electricity	4	-
Architectural Drafting	1	-
Technical Mathematics	1	-
Welding (Arc & Gas)	2	-
Machinists Handbook	1	-
Die Design	1	-
Total	21	21

Part-Time Instructors' Full-  
Time Occupations

What occupational areas and expertise are being brought into the classrooms from business and industry on a part-time basis, through the use of part-time instructors, by our community colleges? Table 13 shows the occupational fields in which part-time instructors reported working full-time. Nearly 57.1 per cent of all part-time

instructors surveyed held the classification of Engineer. Some of the engineering titles given were: Product Engineer, Development Engineer, Product Design Engineer, Process Development Engineer, and Electrical Engineer.

TABLE 13.--Full-time occupational classification of part-time instructors.

Occupational Classification	Number
Engineer	12
Programmer N/C	1
Electronic Repair Service	1
Architect	1
Consultant EDP	1
Metallurgist	1
Quality Control	1
Welder	1
Other	2
Total	<u>21</u>

#### Vocational Certification

Table 14 is concerned with instructors' vocational certification. For institutions to be eligible for partial reimbursement of vocational and technical instructors' salaries, the instructor must be vocationally certified by the State Division of Vocational Education. The vocational certification issued to post-secondary personnel

is classified as Community College Approval. Table 14 shows 76.1 per cent of the full-time instructors were approved, compared with 61.9 per cent of the part-time instructors.

TABLE 14.--Number of instructors with vocational certification.

	Number of Instructors	
	Part-time	Full-time
Yes	13	16
No	8	5
Total	21	21

#### Interest in Professional Upgrading

Table 15 shows that part-time instructors in the sample were interested in upgrading their professional teaching competence. Nearly 85.7 per cent indicated they would be willing to participate in in-service education

TABLE 15.--Part-time instructors' desire for in-service programs.

	Number	Per cent
Yes	18	85.7
No	3	14.3
Total	21	100.0

if it were designed to meet specific identified needs. Only 14.3 per cent indicated no interest or time available to participate in such programs. From this it may be concluded that if viable programs were developed and directed toward part-time instructors' specific needs, they would participate in the programs.

### Summary

This chapter has attempted to present factual and descriptive data on part-time and full-time industrial and technical instructors. Evidence is clearly shown that part-time instructors are playing a significant role in post-secondary vocational education. Of the 11 institutions surveyed, 62.3 per cent of the industrial and technical faculty were part-time instructors. Furthermore, of this 62.3 per cent who were part-time, 43.5 per cent had completed no professional teacher education. Of the part-time instructors in the present study, 42.8 per cent had less than a Bachelor's degree. The full-time instructors were represented by 52.4 per cent with Bachelor's degrees and 47.6 per cent with Master's degrees or above. Furthermore, there was an apparent lack of interest in achieving higher degrees on the part of part-time instructors, with 87.7 per cent not pursuing further degrees.

The major sources of professional training for both part-time and full-time instructors were four-year colleges and universities. The community or junior

college was identified as a source of training by 38.1 per cent of the part-time instructors and 14.6 per cent of the full-time instructors. An apprenticeship program was part of the preparation for 28.6 per cent of the part-time instructors and 14.3 per cent of the full-time instructors.

The mean number of years of nonteaching work experience related to the subject taught was 11.3 years for part-time instructors, compared with 7.5 years for full-time instructors. Each mean is significantly higher than the two-year minimum requirement for vocational certification. The mean of the total number of years teaching experience for part-time instructors was 2.1 years, compared with 6.9 years for full-time instructors. The mean years of experience in present teaching positions showed 3.3 years for full-time instructors, compared with 1.8 years for part-time instructors. This possibly can be interpreted to mean that increased numbers of part-time instructors are being employed, rather than full-time instructors.

The courses being taught by the part-time instructors were not concentrated in specific subject areas, but rather were in specialty areas. Full-time instructors were concentrated in three subject areas of automotive, mechanical drafting, and machine shop. A survey of the full-time occupations of the part-time instructors revealed over 57 per cent were classified as engineers.

Supervisors believed there were no differences between part-time and full-time instructors' classroom responsibilities. The majority of the community colleges are attempting orientation programs, but are failing to establish ongoing in-service education programs. However, 85.7 per cent of the part-time instructors would participate in in-service programs that were directed to specific identified needs.



## CHAPTER V

### ANALYSIS OF THE FINDINGS

The previous chapter discussed the educational and occupational backgrounds of the instructors surveyed in the study. In this chapter the findings pertaining to the basic problem areas are presented and analyzed. The findings consist of opinions and perceptions obtained through interviews with 20 administrative supervisors and 42 instructors in 11 Michigan community colleges. Additional data were collected from 473 students, through the use of a student rating form.

The analysis of data is presented in four main sections of this chapter. The first three sections parallel the principal data sources used in the study. The first section is concerned with the situation as perceived by the administrative supervisors. The second section deals with instructors' perceptions of the situation. The third section sets forth the instructors' instructional situations as perceived by the students. The fourth section reports the tests of the hypotheses. The data were analyzed according to the plan outlined in Chapter III.

The Situation as Perceived  
by the Supervisors

Problem Areas

It was the purpose of this phase of the study to investigate the supervisors' opinions and observations concerning part-time and full-time instructors' problem areas, success areas, and areas in which additional in-service education would be beneficial to the instructors. The opinions of the supervisors represent an understanding which is based on working relationships with the instructors.

A major question of the study was, "What kinds of problems do part-time and full-time instructors have, according to the perceptions of the administrative supervisor?" To answer this question, the supervisors were asked to cite the areas in which part-time and full-time instructors experienced the most difficulty. Appendix F contains a summarization of the identified problem areas. Analysis of the supervisors' responses revealed 23 different problem areas distributed between the part-time and full-time instructor groups. On the basis of frequency, four problem areas were selected for discussion, as they relate to the part-time instructor. The four problem areas, with supporting statements by supervisors, are as follows:

1. Lack of understanding of the methods and procedures in selecting and organizing course materials. This problem area was mentioned by 60 per cent of the supervisors as a problem for many part-time instructors. Supervisors' statements took the following forms:

The part-time instructor knows his technical material well, in most cases; but he often may tend to omit intermediate or basic understandings or procedures when organizing and presenting the material.

They know their subject matter, but how to organize and present it is a problem.

2. Lack of understanding of the methods and procedures in grading and evaluating students. Forty per cent of the supervisors indicated that part-time instructors experience some difficulty in this area. Direct and to-the-point responses denoted that "evaluating" and "grading" were two of the difficulties which part-time instructors face. Other supervisors indicated they were often asked "how to figure grades and how many A's, B's, C's, and D's should be given."
3. Lack of understanding and skill in developing test materials. This problem area was mentioned by 20 per cent of the supervisors as a problem for part-time instructors. Some typical statements are as follows:

In the preparation of tests, the part-time instructor may vary in degree as to the intensity of subject matter and consistency between what he has covered in class and for what he is testing.

Rather than developing testing materials suited to their situation, they select tests which are readily available in the textbook.

4. Lack of understanding in the selection, design, and use of teaching aids and related materials. Twenty per cent of the supervisors felt that this was a problem. A supervisor reported that "the part-time instructors are reluctant or unable to develop or use modern teaching hardware (teaching aids) as a part of their teaching process."

Full-time instructors' problem areas, as reported by the supervisors, were extremely varied. There were no predominate problem areas, as compared with the part-time instructor group. Appendix F lists the problem areas which were identified by the supervisors. In a majority of the situations, the supervisors felt they were able to hire qualified and competent full-time instructors.

#### Success Areas

Having identified the areas in which instructors were experiencing the most difficulty, the supervisors were asked to cite the areas in which they felt instructors were having the most success. Ten areas were identified between the part-time and full-time instructor groups. These areas are summarized in Appendix G. Fifty-five per cent of the supervisors believed the part-time instructors had their greatest success in bringing current information and knowledge into the classroom, which was reflected in their instructional procedures and information. Thirty per cent of the supervisors believed the part-time instructors' instructional success was exemplified by their competence in demonstrating manipulative skills and/or relating to specific trade or occupational situations. The next highest ranking area identified was part-time instructors' competence in relating with the students and identifying individual needs and abilities.

The full-time instructors' highest success area, as perceived by their supervisors, was relating with students and identifying individual needs and abilities. This area was recognized by 20 per cent of the supervisors. The second highest area, bringing new ideas, innovations, and enthusiasm into the teaching situation, was identified by 15 per cent of the supervisors.

#### Professional Education Needs

The supervisors were asked, "What suggestions do you have for assisting in the preparation and upgrading of part-time and full-time instructors which would be beneficial in eliminating the problem areas identified thus far?" Sixteen broad areas of instruction were identified (see Appendix H). Sixty per cent of the supervisors believed part-time instructors could benefit from additional instruction in the methods of selecting, organizing, and presenting course materials. Thirty per cent of the supervisors believed additional training in evaluation procedures and selecting and developing tests was needed. Other areas identified by 10 per cent or more of the supervisors include philosophy of vocational-technical education, fundamentals of learning theory, selecting and using related materials, developing visual aids, incorporating teaching innovations into their teaching, and maintaining adequate records.

Supervisors were far less consistent on what is needed to assist the full-time instructor. Three areas of instruction recommended by 10 per cent of the supervisors were methods of selecting, organizing, and presenting materials; application of visual aids in the classroom; and additional technical subject content. Thus, the evidence shows there are some areas of need which were identified by a small percentage of the supervisors.

The Situation as Reported  
by Instructors

Problem Areas

Part-time and full-time instructors' reactions to the areas in which they experienced instructional or institutional difficulties were determined on the basis of self-ratings of individual items on the Instructor Rating Form (Appendix C, Part III). Difficulty index scores, frequencies, percentages, and rank order were determined for each item, as outlined in Chapter III.

To determine those problem areas which were common to a majority of the instructors, the individual items were analyzed on the basis of having 50 per cent or more of the respondents indicate for that item a rating of three or above on the difficulty index scale. Using this criterion, three problem areas were identified for the part-time instructor group (Appendix I):

- |  |       |
|--|-------|
| 1. Lack of materials, such as course outline, plans, and faculty handbook, which should be furnished upon appointment. | 61.9% |
| 2. Self-evaluating my effectiveness as a teacher.  | 57.1% |
| 3. Adapting instruction to individual differences.   | 52.4% |

Considering the short-term employment of part-time instructors and the lack of systematic in-service procedures by the institutions, it would have been surprising if the part-time instructors had not rated item one as a significant problem area. Moreover, this problem was rated as a "major" problem by 19 per cent of the part-time instructors.

The same procedure, as explained above, was used to determine those problem areas which caused difficulty for a majority of the full-time instructors (Appendix J). Six significant problem areas were expressed by the full-time instructors:

- |   |       |
|---|-------|
| 1. Determining how to evaluate students effectively.                              | 71.5% |
| 2. Self-evaluating my effectiveness as a teacher.                                 | 57.2% |
| 3. Adapting instruction to individual differences.                                | 57.1% |
| 4. Determining the various competencies required of graduates in my subject area. | 57.1% |

- |   |       |
|---|-------|
| 5. Keeping abreast of current ideas and trends in my occupational area. | 57.1% |
| 6. Developing satisfactory tests and examinations.                      | 52.4% |

Three of the above problem areas concerned methods and procedures of evaluation. Combined, they were rated as a "major" problem by 33.4 per cent of the full-time instructors.

Table 16 shows the difficulty index score and rank order for each item by part-time and full-time instructor groups. Problem area 8, "Determining the various competencies required of graduates in my subject area," had the greatest variation (.91) between the part-time instructor group, with a difficulty index score of 1.76, and the full-time instructor group, with a difficulty index score of 2.67. This would indicate that full-time instructors are less familiar with the occupational competencies for employment in the world of work.

The second highest difference between the two groups occurred on item 23, "Developing satisfactory tests and examinations." The part-time instructor group rated this problem noticeably lower than the full-time instructor group. It must be remembered that the part-time instructor group had not experienced professional teacher education; consequently, they may not have been aware of or using known evaluation techniques.



TABLE 16.--Difficulty index and rank comparison of problem areas of part-time and full-time industrial and technical instructor groups.

Problem Areas	Part-time		Full-time	
	Difficulty Index**	Rank	Difficulty Index	Rank
*2. Lack of materials such as course outlines, plans, and faculty handbooks, which should be furnished upon appointment.	3.14	1	2.38	8
7. Adapting instruction to individual differences.	2.67	2	2.81	3
22. Self-evaluating my effectiveness as a teacher.	2.67	2	2.48	7
24. Determining how to evaluate students effectively.	2.43	3	3.14	1
9. Lack of time for student counseling or instructional preparation.	2.43	3	2.19	11
12. Knowing what is expected of me regarding the total amount of my responsibilities to the institution.	2.38	4	1.95	13
16. Lack of involvement with other college faculty.	2.29	5	2.57	5
14. Understanding procedures and policies of college.	2.24	6	2.00	12
20. Coordinating instruction in my class with instruction in other classes or laboratories.	2.24	6	2.00	12
10. Motivating and maintaining student interest.	2.10	7	2.33	9
18. Lack of orientation to job, facilities, equipment, and materials available to faculty.	2.10	7	1.62	16
4. Formulating educational objectives	2.05	8	2.52	6
5. Selecting methods of presenting materials.	2.05	8	2.00	12
15. Lack of opportunity to be involved in program or course development.	2.05	8	1.52	17
13. No systematic means of keeping faculty informed about committee or administrative decisions concerning faculty matters.	1.95	9	2.19	11
17. Understanding proper channels for securing supplies, resource persons, or instructional aids.	1.86	10	1.62	15
23. Developing satisfactory tests and examinations.	1.81	11	2.67	4
1. Organizing and providing sufficient time to cover materials.	1.81	11	2.29	10
8. Determining the various competencies required of graduates in my subject area.	1.76	12	2.67	4
11. Establishing effective personal relationships with students.	1.76	12	1.42	18
6. Selecting and organizing subject matter.	1.71	13	2.00	12
3. Developing lectures.	1.50	14	1.67	14
21. Keeping abreast of current ideas and trends in my occupational area.	1.43	15	2.95	2
19. Concern about wages and fringe benefits.	1.38	16	2.19	11

\*Numbers are consistent with Appendix C, Part III.

\*\*See page 71 for computation procedure.

Item 2, "Lack of materials such as course outlines, plans, and faculty handbooks, which should be furnished upon appointment," received the highest difficulty score of any item for the part-time instructor group; whereas item 24, "Determining how to evaluate students effectively," received the highest rating by the full-time instructor group. The part-time instructors' major problem may not be attributable to their lack of training, but to the institutions' lack of systematic in-service education. The full-time instructors' problem of evaluating students may well be attributed to a need for additional training in evaluation procedures.

Item 19, "Concern about wages and fringe benefits," had the lowest index score for the part-time instructor group, whereas item 11, "Establishing effective personal relationships with students," was ranked as the least problem for the full-time instructor group.

#### Part-Time Instructor Recommendations

The part-time instructors were asked, "What kinds of procedures or education do you suggest which would be most helpful in your present position?" The most frequently mentioned items were:

1. Provide texts and appropriate class materials prior to start of term.

2. Provide an orientation program which brings part-time and full-time instructors together and also covers policies and procedures of the community college.
3. Provide work sessions in which part-time and full-time instructors are able to work together on course content problems and teaching problems.
4. Provide the opportunity for new staff to observe other instructors' methods and techniques.

Other less frequently mentioned areas included instruction in understanding the student, psychology of learning, public speaking, coordination and execution of group exercises, and the development and use of visual aids.

#### Student Ratings of Instructors

The third source of data for this study was students of instructors involved in the study who permitted the administering of a Student Instructional Rating Form (see Appendix E). Student ratings were received from 209 students of 16 part-time instructors and 264 students of 17 full-time instructors. The ratings represented students' evaluation of their instructors' instructional situation.

Table 17 shows an item-by-item breakdown by mean and standard deviation for the two instructor groups. Examining the items on an individual basis, item 18, "The course was well organized," had the greatest mean

TABLE 17.--Comparison of student ratings of part-time and full-time industrial and technical instructors.

Item	Part-time		Full-time	
	Mean	S.D.	Mean	S.D.
1. The instructor was enthusiastic when presenting course material.	1.70	.67	1.72	.70
2. The instructor seemed to be interested in teaching.	1.68	.69	1.50	.60
3. The instructor's use of examples or personal experiences helped to get points across in lecture.	1.94	.88	1.72	.74
4. The instructor seemed to be concerned with whether the students learned the material.	1.76	.79	1.72	.77
5. You were interested in learning the course material.	1.68	.69	1.75	.74
6. You were generally attentive in class.	1.77	.65	1.80	.61
7. You felt that this course challenged you intellectually.	2.02	.95	2.06	.86
8. You have become more competent in this area due to this course.	1.98	.83	1.69	.65
9. The instructor encouraged students to express opinions.	2.09	.89	2.13	.87
10. The instructor appeared receptive to new ideas and other's viewpoints.	1.99	.88	2.10	.86
11. The student had an opportunity to ask questions.	1.48	.63	1.40	.59
12. The instructor generally stimulated class discussions.	2.14	.85	2.08	.88
13. The instructor attempted to cover too much material.	3.35	1.12	3.47	.98
14. The instructor generally presented the material too rapidly.	3.41	1.10	3.45	.95
15. The homework assignments were too time consuming relative to their contribution to your understanding of the course material.	3.55	1.01	3.64	1.01
16. You generally found the textbook's coverage of topics too difficult.	3.55	1.01	3.66	.91
17. The instructor appeared to relate the course concepts in a systematic manner.	2.22	.79	2.04	.70
18. The course was well organized.	2.29	.89	1.89	.78
19. The instructor's lecture presentations made for easy note taking.	2.22	.94	2.20	.88
20. The direction of the course was adequately outlined.	2.27	.86	1.97	.76

Note: Lower score equals better rating for items 1-12, 17-20.  
Higher score equals better rating for items 13-16.

difference between part-time and full-time instructor groups. The findings indicate that full-time instructors were better organized in the classroom than were part-time instructors. The second highest mean difference between instructor groups on item 20, "The direction of the course was adequately outlined," favored the full-time instructor group. It appears that the full-time instructors informed their students of the sequence of events that would be covered during the course better than did the part-time instructors.

Students' evaluations of their personal achievements in the course, item 8, "You have become more competent in this area due to this course," indicated higher achievement when taught by full-time instructors. This finding indicates that full-time instructors' students believed they personally achieved more from the course taught by the full-time instructor, than students in similar courses taught by part-time instructors. Students' ratings indicated that full-time instructors used more "examples and personal experiences to help get points across in lectures," than part-time instructors (item 3). Furthermore, students perceived part-time instructors to be less interested in teaching than the full-time instructors (item 2).

Further analysis of the items was completed by grouping the items as outlined in Chapter III and testing

for significant differences between part-time and full-time instructor groups. The grouped items represent the various aspects of the instructors' instructional situation. The four selected instructional dimensions investigated were: Instructor Involvement (Items 1-4), Student-Instructor Interaction (Items 5-8), Course Demands (Items 13-16), and Course Organization (Items 17-20). The one dimension not investigated was Student Interest (Items 9-12).

The findings pertaining to the tests for significant differences between the groups are reported in the section that follows.

#### Test of the Main Hypotheses

This section is devoted to a presentation of the results of the analysis in relation to the stated hypotheses. The design for this study was an 11 x 2 crossed but not balanced design, and the data were analyzed using a multivariate analysis of variance, with eight dependent variables. In order to ascertain if there were significant differences between the part-time and full-time instructors relative to the students' ratings of their instructors' instructional situations and the instructors' self-ratings of their institutional and instructional problem areas, it was hypothesized that:

Hypothesis I: There are significant differences between full-time industrial and technical instructors with professional teacher education and part-time industrial and technical instructors without professional teacher education on eight dependent variables. Instructor-Rated Variables: Course Organization, Evaluation Procedures, Student-Instructor Interaction, Institutional Procedures; Student-Rated Variables: Course Organization, Course Demands, Student-Instructor Interaction, Instructor Involvement.

The overall multivariate test of this hypothesis indicates that there is no difference between the part-time and full-time instructors relative to the students' ratings of their instructors' instructional situations and the instructors' self-ratings of their institutional and instructional problem areas. The computed result from the multivariate analysis is:

$$\text{for } H_0 \quad F = 2.2982 \quad D.F. = 8, 13 \quad P < .088$$

The word "indicate" should be emphasized at this point, since the computed significance level ( $P < .088$ ) is very close to the generally accepted level of .05. It is recommended that the hypothesis of no difference be held in abeyance rather than rendered true. The original purpose of the study data was not to extend theory, but to be used in decision making for adopting a course of action in planning training programs and procedures for part-time and full-time instructors. Consequently, the remarks that follow will explicate the trend that this study shows under the assumption that the reader will in part determine the "significance" level of the findings.

It was possible to examine the subhypotheses related to each of the eight dependent variables to determine which were most significant on an individual basis. The variable which most greatly influenced the part-time and full-time dichotomy was that generated by students' ratings of course organization. Thus, on the basis of the analysis, Subhypothesis B is accepted.

Subhypothesis B: Students' ratings of course organization indicate that full-time instructors have better course organization than do part-time instructors.

The study indicates a significance level of .005 for this variable. The data supporting this claim are found in Table 18.

One may observe whether part-time instructors rated higher than full-time instructors on the variables of interest by inspecting the sign of the least square estimate. This estimate essentially is found by subtracting the "mean of the scores" of the full-time instructors from the "mean of the scores" of the part-time instructors. If this difference is positive (+), then the part-time instructors have a higher score. If the difference is negative (-), it indicates that full-time instructors received a higher score than part-time instructors.

Table 19 also shows that there was no significant difference on the remaining seven variables (Subhypotheses



TABLE 18.--Least squares estimates (L.S.E.) of the differences between part-time and full-time instructors on the dependent variables.

Variable	L.S.E. of Difference	Standard Error of L.S.E.	Significance at .05 level
Student Rated			
A. Course Demands	-.0514	.1246	No
B. Course Organization	.2217	.0708	Yes
C. Student-Instructor Interaction	-.0187	.0578	No
D. Student-Instructor Involvement	.1061	.0594	No
Instructor Rated			
E. Course Organization	-.2885	.2393	No
F. Evaluation Procedures	-.4682	.2719	No
G. Student-Instructor Interaction	.1240	.2277	No
H. Institutional Procedures	.1580	.2523	No

A, C, D, E, F, G, and H). The subhypotheses related to these findings may now be stated as:

Subhypothesis A': Students' ratings of Course Demands indicate that full-time instructors do not have higher course demands than do part-time instructors.

Subhypothesis C': Students' ratings of Student-Instructor Interaction indicate no difference between part-time and full-time instructors.

Subhypothesis D': Students' ratings of Instructor Involvement indicate no difference between full-time and part-time instructors.

Subhypothesis E': Self-ratings of Course Organization indicate that part-time instructors do not experience greater difficulty in course organization than do full-time instructors.

Subhypothesis F': Self-ratings of Evaluation Procedures indicate that part-time instructors do not experience greater difficulty in evaluation procedures than do full-time instructors.

Subhypothesis G': Self-ratings of Student-Instructor Interaction indicate no difference between part-time and full-time instructors.

Subhypothesis H': Self-ratings of Institutional Procedures indicate that part-time instructors do not have greater difficulty in Institutional Procedures than do full-time instructors.

However, this study does show (Table 19) that there is a tendency for full-time instructors to see course organization and evaluation procedures as a greater problem than do part-time instructors. Part-time instructors, however, see student-instructor interaction and institutional procedures as greater problems than do full-time instructors.

Students' perceptions indicated that part-time instructors were rated lower than full-time instructors on instructor involvement, course demands (higher score equals better rating), and course organization. However, part-time instructors were rated slightly higher on student-instructor interaction.

### Tests of Relationships

Of secondary interest to the study were the relationships between ratings by instructors and ratings by their students on the variables Course Organization and Student-Instructor Interaction. Pearson Product-Moment Correlation coefficients were computed for the ratings by the instructors and students in the part-time and full-time instructor dichotomy. The statistic used to test the difference between the ratings was a Fisher  $r$  to  $Z$  transformation test (see Hays, pp. 506, 533).

Table 19 shows the results from the test of significance of linear relationships. This study indicates there is a significant relationship between ratings

TABLE 19.--Analysis of tests of significance of linear relationships.

Hypothesis	$r$	$Z$	Confidence Interval	Result
II	.428	.455	+.007 +.907	Significant
III	.036	.036	-.414 +.486	Not Significant
IV	.322	.333	-.117 +.783	Not Significant
V	.143	.145	-.305 +.595	Not Significant

Note:  $\alpha = .05$      $Z(\alpha/2) = 1.96$      $N = 21$

by part-time instructors and ratings by their students on the dependent variable Course Organization.

This would indicate that part-time instructors and their students have a consensus on the instructors' instructional situations pertaining to course organization. On the basis of this analysis, Hypothesis II is accepted as follows:

Hypothesis II: There is a significant positive correlation between self-ratings of part-time instructors and students' ratings of part-time instructors on the variable Course Organization.

There is no statistically significant relationship within the three remaining hypotheses. The data supporting this claim are found in Table 19. The statements deduced from Table 19 may now be stated as follows:

Hypothesis III: There is no significant correlation between self-ratings on difficulty of Course Organization by full-time instructors and students' ratings of full-time instructors' course organization.

Hypothesis IV: There is no significant correlation between self-ratings on difficulty of Student-Instructor Interaction by part-time instructors and students' ratings of part-time instructors' student-instructor interaction.

Hypothesis V: There is no significant correlation between self-ratings on difficulty of Student-Instructor Interaction by full-time instructors and students' ratings of full-time instructors' student-instructor interaction.

### Summary

This chapter has presented the findings of the problems of part-time and full-time instructors as perceived by administrative supervisors, instructors

themselves, and students. The supervisors perceived the part-time instructors' main difficulty developed from their lack of understanding of the methods and procedures of selecting and organizing course materials. However, the supervisors did not recognize a predominate problem area with the full-time instructors.

A majority of the part-time instructors perceived their major problem developed from the lack of materials, such as course outlines, plans, and faculty handbook, which should be furnished upon appointment. The majority of the full-time instructors perceived their main problem was that of not knowing how to evaluate students effectively.

Supervisors believed part-time instructors need additional preparation in selecting, organizing, and presenting course materials; and in evaluation procedures.

A multivariate analysis of variance was used to determine if differences existed between part-time and full-time instructor groups. It was found that full-time instructors had better course organization than did part-time instructors, when rated by students. There was a tendency for full-time instructors to rate course organization and evaluation procedures as greater problems than part-time instructors. Part-time instructors rated student-instructor interaction and institutional procedures as greater problems than full-time instructors.

Students rated part-time instructors lower than full-time instructors on instructor involvement, course demands, and course organization. By a very small margin, part-time instructors were rated slightly higher on student-instructor interaction.

A comparison of relationships of ratings by instructors and ratings by their students was made with a Pearson Product-Moment Correlation and a Fisher  $r$  to  $Z$  transformation test. A relationship was found between part-time instructors' ratings on difficulty in course organization and their students on the instructors' course organization. No other relationships were found between students' and instructors' ratings.

## CHAPTER VI

### SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS

Within this chapter a general summary, conclusions relative to the findings, and recommendations are presented.

#### Summary

In recent years, there has been a notable increase in the number of individuals being employed as part-time vocational-technical instructors in community colleges. Part-time instructors are being employed from many phases of the world of work, such as business, industry, health, and public service occupations. Many of these individuals have no teaching experience, college degree, and/or professional teacher education. Recently, state-wide attention has focused upon the need for providing professional development opportunities for the nondegree or noncertified full-time and part-time vocational education instructor.

There can be little doubt as to the importance for administrators, teacher educators, and state departments of education to become cognizant of the part-time instructors' problems and professional needs which are associated with their transition into the classroom environment. This

study was an investigation of those problems and needs. More specifically, the purposes of the study were: (1) to identify problems of part-time and full-time industrial and technical instructors, as perceived by their supervisors, the instructors themselves, and their students; (2) to identify procedures which supervisors and part-time instructors recognize as being helpful in solving these problems; and (3) to formulate recommendations which will assist the part-time instructors.

The review of literature and research focused upon the vocational-technical instructor, Michigan community colleges, problems of beginning instructors, and the part-time instructor. The literature revealed that most educators believe some professional teacher education is beneficial to supplementing vocational instructors' technical subject matter competence. Initial research findings indicated no difference in student achievement, when taught by the experienced teacher and by tradesmen.

Very few studies have focused upon the problems and needs of beginning community/junior college instructors. Far less attention has been shown to the post-secondary vocational-technical education instructor.

The current study was conducted in 11 Michigan community colleges. The respondents were 21 part-time and 21 full-time industrial-technical instructors, and 20 of their immediate supervisors. Additional data were



collected from 473 of the instructors' students. The instructor sample was stratified on the randomly selected institutions. The sample was composed of two part-time instructors without professional teacher preparation and two full-time instructors with professional teacher preparation from each of the 11 institutions. The student sample was composed of students in classes taught by instructors who were interviewed and who permitted the administering of a student rating form.

Data on instructors' problems were gathered through structured interviews with supervisors and with the instructors themselves. Students' reactions to their instructors' instructional situation were gathered through administering a student rating form. The data were subjected to descriptive and statistical analyses in order to answer the questions posed. Differences between part-time and full-time instructor group ratings of problem areas and students' ratings of instructors' instructional situation were determined by means of a multivariate analysis of variance. The Pearson Product-Moment Correlation and Fisher  $r$  to  $Z$  transformation were the statistical tools used to determine correlations between instructors' ratings of problem areas and students' ratings of instructors.

Part-time instructors represented a large proportion of the community college vocational-technical education staff. In the 11 institutions surveyed, 62.3 per cent

of the industrial and technical faculty were part-time instructors. Furthermore, of this 62.3 per cent who were part-time, 43.5 per cent had completed no professional teacher education.

Approximately 43 per cent of the part-time instructors had less than a Bachelor's degree, and 28.5 per cent had a high school diploma as their highest level of formal education. Only 47.6 per cent of the part-time instructors had earned a Bachelor's degree, as compared to 52.4 per cent of the full-time instructors. Less than 5 per cent of the part-time instructors had earned a Master's degree or above, as compared with 47.6 per cent of the full-time instructors.

The part-time instructors had an average of 11.3 years of nonteaching-related work experience, as compared with 7.5 years for the full-time instructors. The full-time instructor group had an average of 6.9 years of teaching experience, compared to 2.1 years for the part-time instructor group. Approximately 57 per cent of the part-time instructors worked full-time as engineers. The courses most often taught by the part-time instructors involved basic electricity or electronics.

Although the importance of ongoing in-service education is being recognized more and more, there is still a delay by community colleges to implement systematic programs to upgrade their staffs. Only 18.2 per

cent of the institutions were providing in-service education for part-time instructors, and 27.3 per cent for the full-time instructors. Approximately 86 per cent of the part-time instructors indicated an interest in in-service education.

Supervisors most often reported that the problem with which part-time instructors experienced difficulty was selecting, organizing, and presenting course materials. This problem was expressed by 60 per cent of the supervisors. The next most commonly reported problem was understanding the methods and procedures of grading and evaluating students, which was identified by 40 per cent of the supervisors. The third highest ranking problem was the part-time instructor's difficulty in developing test materials. The fourth area of difficulty was selecting, designing, and using teaching aids and related materials.

Although some problems were identified by supervisors with respect to full-time instructors, there was no consistency of those problems. Supervisors agreed that in most cases they were able to hire competent and qualified full-time instructors.

A majority of the part-time instructors believed their most notable problems were: (1) lack of materials such as course outlines, plans, and faculty handbook, which should be furnished upon appointment;

- (2) self-evaluating my effectiveness as a teacher; and
- (3) adapting instruction to individual differences.

A majority of the full-time instructors believed their most notable problems were: (1) determining how to evaluate students effectively, (2) self-evaluating one's effectiveness as a teacher, (3) adapting instruction to individual differences, (4) determining the various competencies required of graduates in one's subject area, (5) keeping abreast of current ideas and trends in one's occupational area, and (6) developing satisfactory tests and examinations.

A multivariate analysis of variance was used to measure significant differences between part-time and full-time instructor groups on the eight dependent variables. The overall multivariate test of Hypothesis I (page 108) indicated there were no differences at the .05 level between the part-time and full-time instructor groups relative to the students' ratings of their instructors' instructional situations and the instructors' self-ratings of their institutional and instructional problem areas. However, the computed significance level was  $P < .088$ , which is very close to the generally acceptable level of .05. Holding Hypothesis I in abeyance, rather than rendering it true, each dependent variable was tested independently. On the basis of these analyses, the variable which yielded a significant difference ( $P < .005$ )

between the part-time and full-time instructor groups was the variable generated by students' ratings of instructors' course organization. It was:

Subhypothesis B: Students' ratings of course organization indicate that full-time instructors have better course organization than do part-time instructors.

Although the statistical analysis did not find significant differences on the seven remaining dependent variables, the data, however, did indicate directional trends. This study did show that there was a tendency for full-time instructors to see course organization and evaluation procedures as greater problems than did part-time instructors. Part-time instructors, however, saw student-instructor interaction and institutional procedures as greater problems than did full-time instructors. Students' ratings indicated that part-time instructors were rated poorer than full-time instructors on instructor involvement, course demands, and course organization. Students rated part-time instructors slightly higher on student-instructor interaction.

The data revealed a positive relationship between part-time instructors' self-ratings and ratings by their students on the dependent variable Course Organization. This relationship was shown in the following hypothesis:

.. Hypothesis II: There is a significant positive correlation between self-ratings of part-time instructors and students' ratings of part-time instructors on the variable Course Organization.

This tends to indicate that part-time instructors' self-ratings and their students' ratings are supportive of each other. For example, if the students rated the part-time instructors' course organization as poor, it is most likely that the part-time instructors would rate themselves as having difficulty in course organization.

### Conclusions

A summary of the findings to the posed questions was presented in the previous section. A number of general conclusions appear to be warranted from this study.

Based upon the fact that a larger percentage of part-time than full-time instructors is employed by community colleges, it may be concluded that part-time industrial and technical instructors are providing a valuable service to the community college, and without their services program flexibility and availability would be greatly restricted.

In view of the finding that supervisors and students perceived part-time instructors to have more instructional difficulties than full-time instructors, it might well be concluded that many part-time instructors need additional professional preparation for teaching. Supervisors suggested that part-time instructors need additional instruction in the methods of selecting, organizing, and presenting course materials; selecting and developing tests; and evaluation procedures. Other areas of

difficulty mentioned included philosophy of vocational education, fundamentals of learning theory, selecting and using related materials, developing visual aids, and maintaining adequate records.

Results indicated that part-time and full-time instructors had experienced similar difficulties with evaluation procedures. It would appear that additional instruction concerning evaluation would be beneficial, and would be accepted by the part-time and full-time instructors.

In view of the finding that a large percentage of the selected institutions had minimal orientation and in-service education programs which represented part-time instructors' major areas of concern, it may be concluded that the selected institutions need to evaluate their individual situations and take necessary steps to implement ongoing orientation and in-service education programs to meet identified needs.

#### Recommendations

Based upon the findings and conclusions, several recommendations are presented which have relevance to part-time instructors. It is hoped that the reader will interpret the comments in the context of the findings upon which they were based.

In light of problems created by temporary employment and diversity of part-time instructors' levels of

education, efforts should be made by community college administrators to provide orientation and in-service education experiences which will adequately inform and prepare part-time instructors for carrying out their instructional responsibilities. Upon their appointment, part-time instructors should be given complete and appropriate information about the course outlines, lesson plans, course objectives, texts, a list of available resource materials, and the availability of audio-visual aids. Furthermore, a comprehensive faculty handbook which covers institutional philosophy, policies, and procedures pertinent to the part-time instructors should be provided.

Designated supervisors or full-time instructional personnel should be available for consultations to aid inexperienced or nondegree part-time instructors.

University-based teacher educators should develop patterns of in-service education for part-time instructors, utilizing modern techniques such as programmed learning and video taping.

Universities should provide in-service education for administrators, supervisors, or their designated representatives regarding local institutions' in-service education strategies.

In view of the full-time instructors' expressed difficulty in keeping abreast of current skills, ideas, and trends in their occupational areas, it is suggested



that community colleges and teacher education institutions consider enlarging or implementing a system of recurrent training in industry as one phase of in-service or pre-service vocational teacher education.

Organization and content of future in-service education programs must be derived directly from the types of problems participating instructors are experiencing. Though in-service experiences can and should be based on acceptable teacher education techniques, they must be applicable to the individual participants' areas of difficulty and teaching situations.

Due to the changing and diverse educational needs of instructors, it is suggested that community colleges cooperate with appropriate resource persons or institutions to provide in-service education programs designed to upgrade part-time and full-time instructors in specific areas of need. It is at this point that the state can assist local institutions in personnel development by providing supplemental funds for in-service education expenses. The state can further assist by providing the leadership and encouragement to local institutions to implement personnel development activities.

#### Recommendations for Further Study

In the course of this study, a number of additional questions were raised which underscore the need for further research concerning the following items:

1. An experimental study to determine the feasibility and effectiveness of preparing and upgrading part-time instructors for teaching through the use of programmed self-study teacher education courses.
2. A comparison of teaching proficiency between part-time instructors without teacher education and part-time instructors with teacher education, based upon student achievement.
3. An appraisal of the impact of increasing utilization of part-time instructors on vocational-technical programs and full-time instructor demand.
4. A study of full-time faculty, student, and supervisor attitudes toward and acceptance of part-time instructors.
5. An analysis of the factors which are influencing the continued utilization of part-time instructors.
6. An additional study should be made to determine if in-service and pre-service education would eliminate the identified problems facing the part-time instructor.
7. Community college administrators should reassess and evaluate the current practice of continually re-employing the part-time instructor who has no degree or professional teacher education, without requiring the completion of a minimal amount of in-service professional teacher education. The same review and consideration should be given to the practice of employing full-time instructors who have no degree or professional teacher education.

SELECTED BIBLIOGRAPHY

## SELECTED BIBLIOGRAPHY

### Books

- Cooley, William W. Multivariate Procedures for the Behavioral Sciences. New York: John Wiley and Sons, Inc., 1965.
- Downie, N. M., and Heath, R. W. Basic Statistical Methods. 2d ed. New York: Harper & Row Publishers, 1965.
- Garrison, Roger H. Junior College Faculty: Issues and Problems. Preliminary National Appraisal. Washington, D.C.: American Association of Junior Colleges, 1967.
- \_\_\_\_\_. Teaching in a Junior College. Washington, D.C.: American Association of Junior Colleges, 1968.
- Gowin, D. B., and Daigneault, George H. The Part-Time College Teacher. Chicago: Center for the Study of Liberal Education for Adults, 1961.
- Hays, William L. Statistics for Psychologists. New York: Holt, Rinehart and Winston, 1965.
- Howsam, Robert B. Who's a Good Teacher? Problems and Progress in Teacher Evaluation. Burlingame, Calif.: Joint Committee on Personnel Procedures of the California School Boards Association and the California Teachers Association, 1960.
- Moss, Jerome, Jr. Review of Research in Vocational-Technical Teacher Education. Minneapolis: Minnesota Research Coordinating Unit, 1967.
- Swanson, Chester J., and Kramer, Ernest G. "Vocational Education Beyond High School." Vocational Education. Sixty-fourth Yearbook of the National Society for the Study of Education. Chicago: University Press, 1965.
- Venn, Grant. Man, Education and Work. Washington, D.C.: American Council on Education, 1968.

Periodicals

- Brian, George. "Evaluating Teacher Effectiveness." National Education Association Journal, LIV (February, 1965), 36.
- Cashin, John H. "Some Attitudes Toward Instructor Preparation." Junior College Journal, XXXIX, 6 (March, 1969), 31-34.
- Cohen, Arthur M. "Teachers Preparation: Rationale and Practice." Junior College Journal, XXXVII, 8 (May, 1967), 21-25.
- Dapper, Gloria, and Murphy, Judith. "Part-Time Teachers and How They Work." Education Digest, XXXV, 3 22.
- Dobrovolsky, Jerry S. "Staff Qualifications for Technical Education Programs." Industrial Arts and Vocational Education, VIX, 1 (January, 1970), TE 2-3.
- Ellis, Ellmer G., and Wootton, Lutian R. "Valid Evaluation of Teaching Is Imperative." Kappa Delta Pi Record, VII (April, 1970), 139.
- Eurich, Alvin C. "Staffing the Junior Colleges." Junior College Journal, XXXIII (March, 1963), 8.
- Garrison, Roger H. "Professional and Philosophical Faculty Attitudes." Junior College Journal, XXXVI, 5 (February, 1966), 18.
- Hamachek, Don. "Characteristics of Good Teachers and Implication for Teacher Education." Phi Delta Kappan, L, 6 (February, 1969), 344.
- Ivey, Nathan A. "The Part-Time Instructor and Effective Teaching." Junior College Journal, XXXI (September, 1960), 40.
- Kennedy, Gerald. "Preparation, Orientation, Utilization and Acceptance of Part-Time Instructors." Junior College Journal, XXXVII, 7 (April, 1967), 14-15.
- Kuhns, Eileen P. "Part-Time Faculty." Junior College Journal, XXXIII, 5 (January, 1963), 10.
- Larson, Milton E. "Community Junior College Teachers--Some Characteristics of Excellence." Journal of Industrial Teacher Education, III, 2 (Winter, 1966), 11-16.

- Litt, Sheldon, and Margoshes, Adam. "The Marginal College Teacher." Journal of Higher Education, XXXVII, 8 (November, 1966), 451.
- Maul, Ray C. "The Biggest Problem Finding Good Teachers." Junior College Journal, XXXVI, 4 (December, 1965), 6.
- Metzner, Seymour. "The Teacher Preparation Myth a Phoenix Too Frequent." Phi Delta Kappan, L, 1 (September, 1968), 105-106.
- "News and Trends." Today's Education, VIX, 3 (March, 1970), 4.
- Popham, James W. "Validation Results: Performance Tests of Teaching Proficiency in Vocational Education." Paper Abstracts 1969. American Educational Research Association, 1969.
- Stratton, Alan G. "Needed: The Doctor of Arts in College Teaching." Junior College Journal, XXXIX, 8 (May, 1969), 23.
- Vairo, Philip D. "Faculty Quality: A Challenge to the Community College." Journal of Higher Education, XXXVI (April, 1965), 217.

State Government and University  
Publications

- A Position Paper by the State Board of Public Community and Junior Colleges. Lansing, Michigan: Michigan Department of Education, 1967.
- Barlow, Melvin L., and Reinhart, Bruce. Profiles of Trade and Technical Teachers--Comprehensive Report. Sacramento: California State Department of Education, 1968.
- Byrd, Flossie N. The Role of Teacher Education Institutions. Selection of Teachers Basic Competencies Needed. Columbus, Ohio: Ohio State University, Center for Vocational and Technical Education, March, 1966.
- Evaluation Services, Michigan State University. Student Instructional Rating System. East Lansing, Mich.: Michigan State University, 1969.

Finn, Jeremy. Multivariate: Fortran Program for Univariate and Multivariate Analysis of Variance and Covariance. Buffalo: State University of New York at Buffalo, 1967.

Martorana, S. V. The Community College in Michigan. Staff Study No. 1, Michigan Legislative Study Committee Study on Higher Education, Lansing, Michigan, 1957.

Michigan Department of Education. A Position Statement Concerning the Development of Area Vocational and Technical Education Programs in Michigan. Lansing, Michigan: Michigan Department of Education, 1967.

\_\_\_\_\_, Division of Vocational Education. State Plan for Vocational Education. Lansing, Michigan: Michigan Department of Education, 1969.

\_\_\_\_\_. Enrollments in Michigan Colleges and Universities. Lansing, Michigan: Michigan Department of Education, Fall, 1970, p. 3.

\_\_\_\_\_. Objectives and Goals for Vocational Education in Michigan. Lansing, Michigan: Division of Vocational Education, 1970.

\_\_\_\_\_. State Plan for Higher Education in Michigan. Lansing, Michigan: Michigan Department of Education, 1969.

\_\_\_\_\_. Vocational Education Services of the Michigan Department of Education. Lansing, Michigan: State Board of Education, 1970.

Smith, Harold T. Education and Training for the World of Work: A Vocational Education Program for the State of Michigan. Kalamazoo, Michigan: W. E. Upjohn Institute for Employment Research, 1963.

\_\_\_\_\_. State Plan for Higher Education in Michigan. Lansing, Michigan: Michigan Department of Education, September, 1968.

State of Michigan. Constitution, Article VIII, Section 3, 1963.

U. S. Government Publications

U. S. Department of Health, Education and Welfare, Office of Education. Administration of Vocational Education, Rules and Regulations. Vocational Education Bulletin No. 1. Washington, D.C.: Government Printing Office, 1967.

\_\_\_\_\_. Meeting Critical Shortages of Classroom Personnel. Education Professions Development Act State Grants Program. Washington, D.C.: U. S. Department of Health, Education, and Welfare, Office of Education, 1970.

\_\_\_\_\_. The Education Professions, 1969-1970. Washington, D.C.: Government Printing Office, September, 1970.

\_\_\_\_\_. Vocational Education: The Bridge Between Man and His Work. Washington, D.C.: Advisory Council on Vocational Education, 1968.

Manuscript Collections

Report of the Attorney General of Michigan, 1961-1962 Biennial Period, January 1, 1961 to December 31, 1962, Frank J. Kelley, Attorney General. Lansing, Michigan: Speaker-Hines and Thomas, Inc., 1963.

Unpublished Materials

Cotrell, Calvin J. "Model Curricula for Vocational and Technical Teacher Education." Paper presented at the Fourth Annual National Vocational-Technical Teacher Education Seminar, St. Louis, Missouri, November 1-4, 1970.

Holman, Holger Emanuel. "Professional Problems of Trade and Technical Education Teachers in the Fifteen Area Post-Secondary Schools of Iowa with Implications for In-service Teacher Education." Unpublished Ed.D. dissertation, University of Missouri, 1969.

McCall, Harlan Richardson. "Problems of New Faculty Members in North Central Association Colleges and Universities of Less Than 3,000 Enrollment." Unpublished Ph.D. dissertation, Michigan State University, 1961.



- Messerschmidt, Dale Harvey. "A Study of Part-Time Instructors in Vocational-Technical Education Among Community Colleges in Michigan." Unpublished Ph.D. dissertation, Michigan State University, 1967.
- Musgrove, William R. "Relationships of Occupational Experience, Teaching Experience, Technical Training and College Training to Rated Teaching Effectiveness of Vocational Electronics Teachers." Unpublished Ph.D. dissertation, University of Missouri, 1968.
- Rodehorst, Wayne. "An Analysis of the Introduction of Vocational-Technical Education Programs in Michigan Community Colleges Established Before 1930." Unpublished Ph.D. dissertation, Michigan State University, 1964.
- Ryan, Chester M. "An Analysis of the Preparation, Selection, and Training of Teachers in the Trade and Industrial Education Programs of North Carolina with Implications for the Future." Unpublished Ph.D. dissertation, University of North Carolina, Chapel Hill, 1963.
- Siehr, Hugo Emil. "Problems of New Faculty Members in Community Colleges." Unpublished Ph.D. dissertation, Michigan State University, 1962.

APPENDICES

APPENDIX A

LETTER TO VOCATIONAL-TECHNICAL  
EDUCATION DIRECTOR

September \_\_, 1970

Mr. \_\_\_\_\_, Dean  
Vocational-Technical Education  
\_\_\_\_\_ Community College  
\_\_\_\_\_, Michigan \_\_\_\_\_

Dear Mr. \_\_\_\_\_:

I am writing to ask for your assistance on a research study, which is being completed at Michigan State University by Carlos Schmitt. The study involves part-time industrial-technical instructors in the community college.

The phenomenal growth of the two-year college movement and the increased demand for occupational education have brought to the forefront a concern by teacher educators and community college personnel in maintaining the quality of vocational instruction. The concern evolves from the need for training the occupationally qualified person who has been recruited by community colleges on a part-time basis and often a full-time basis, directly from business and industry; but who has had a minimum or no preparation or experience as a teacher. The purpose of the study is to gain an insight into the types of problems and needs that these part-time instructors may have.

It is our belief that this knowledge concerning their problems and needs will provide an insight that will be of value to teacher educators and community college administrators in assisting and preparing the occupationally qualified person to perform effectively in his new role as a teacher.

The study will involve interviewing the persons responsible for supervising part-time instructors, part-time instructors themselves, and new industrial-technical instructors. The data that are collected will be used for purposes of this study and will not represent an evaluation of your institution or personnel. We hope, therefore, that you are willing to participate. We have assumed that you are employing at least two part-time instructors as described above.

Mr. Schmitt would like to meet with you to explain in more detail the nature of the study on \_\_\_\_\_, October \_\_\_\_, 1970, at \_\_\_\_\_ a.m. He would like also to meet those persons responsible for supervising the industrial-technical part-time instructors in your college at that time. If you are able to comply with this request, we will be most appreciative. Mr. Schmitt is a most capable and pleasant young man to work with and I am sure that his study will make a fine contribution. Please let us know if the date and time are inconvenient so he can make other arrangements.

Sincerely,

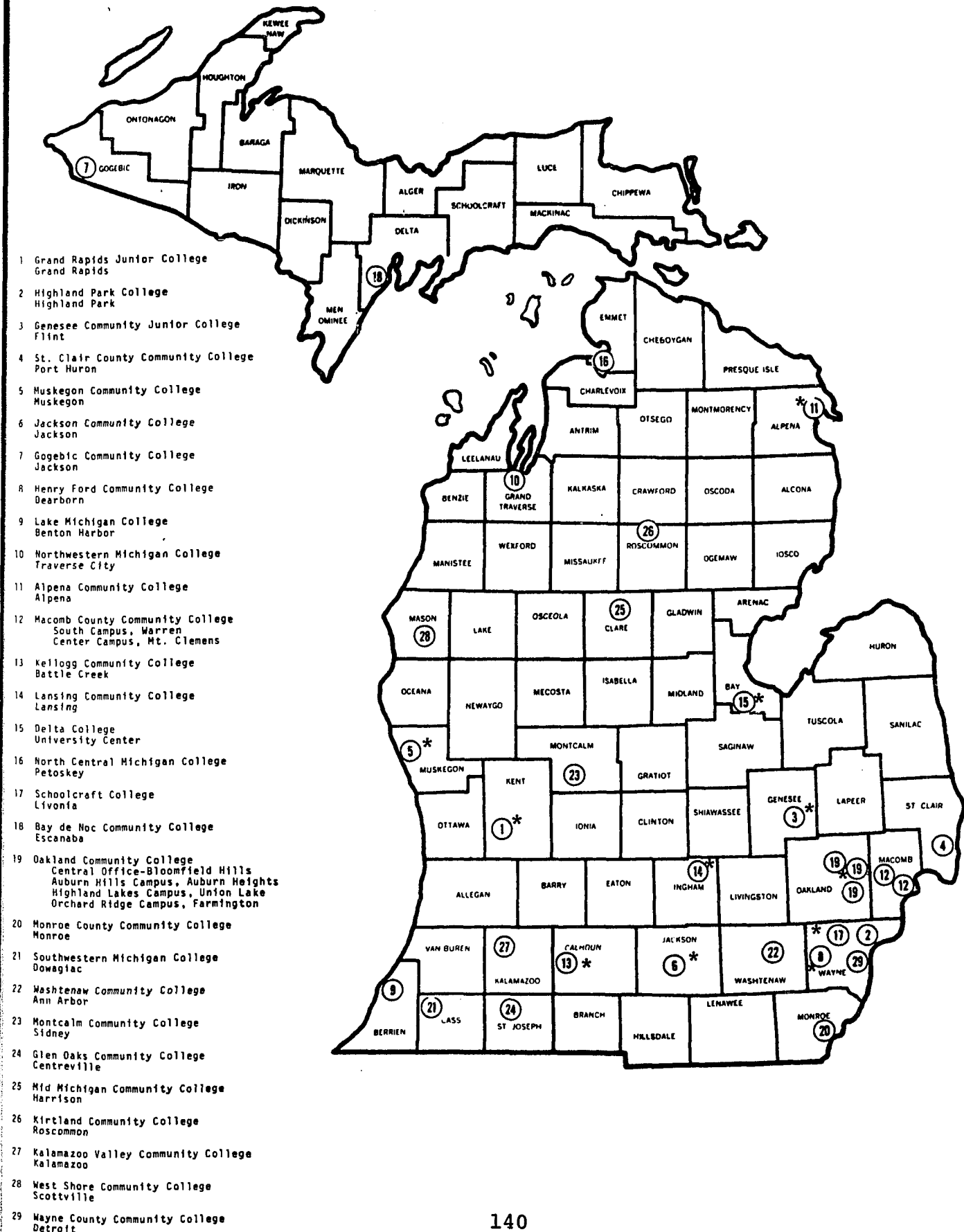
Max R. Raines  
Professor  
Higher Education

MRR:ag

APPENDIX B

MAP OF MICHIGAN PUBLIC COMMUNITY  
AND JUNIOR COLLEGES 1969-70

# MICHIGAN PUBLIC COMMUNITY AND JUNIOR COLLEGES 1970-71



APPENDIX C

INSTRUCTOR INTERVIEW SCHEDULE

(FORM A)



## APPENDIX C

### INSTRUCTOR INTERVIEW SCHEDULE FORM A

#### Part I. Basic Data

**DIRECTIONS:** Complete every item as it applies to the individual being interviewed. Either check or write in the appropriate response.

1. Institution \_\_\_\_\_
2. Instructor's name \_\_\_\_\_
3. Instructor classification  
Full-time. . . . . ( )  
Part-time. . . . . ( )
4. What is the highest level of formal education you have completed as of this date?  
High School Diploma. . . . . ( )  
Junior College Degree. . . . . ( )  
Bachelor's Degree. . . . . ( )  
Master's Degree. . . . . ( )  
Doctor's Degree. . . . . ( )  
Other. . . . . ( )
5. Are you currently enrolled for more formal education?  
Not enrolled . . . . . ( )  
Junior College Degree. . . . . ( )  
Bachelor's Degree. . . . . ( )  
Master's Degree. . . . . ( )  
Doctor's Degree. . . . . ( )  
Other. . . . . ( )
6. What is the approximate number of semester hours in the following areas?  

	0	1-6	7-12	over 13
--	---	-----	------	------------

  
General Teacher  
education courses . . ( ) ( ) ( ) ( )  
Specific education  
courses in major  
subject area . . . . ( ) ( ) ( ) ( )  
Technical courses  
directly related to  
subject being taught ( ) ( ) ( ) ( )

## APPENDIX C (Cont'd.)

7. Are you Vocationally Certified for the area you are teaching?  
 Yes. . . . . ( )  
 No . . . . . ( )
8. Through what source or sources did you receive preparation in the subject area you are teaching?  
 Junior or Community College . . . . . ( )  
 Four-Year College or University. . . . . ( )  
 Industrial or Technical Trade School . . . . . ( )  
 Military Service . . . . . ( )  
 Apprenticeship Program . . . . . ( )  
 Other. . . . . ( )
9. What is the total number of years teaching experience? . . . . . ( )
10. What is the total number of prior years teaching experience, if any, for each of the following types of employment?
- |   | 0   | 1-2 | 3-5 | more than<br>6 |
|---|-----|-----|-----|----------------|
| Four-year College or University . . . . . | ( ) | ( ) | ( ) | ( )            |
| Junior or Community College ( )           | ( ) | ( ) | ( ) | ( )            |
| High School . . . . .                     | ( ) | ( ) | ( ) | ( )            |
| Other. . . . .                            | ( ) | ( ) | ( ) | ( )            |
11. What is your present teaching assignment? \_\_\_\_\_
- 
12. How long have you held this position?  
 Years ( ) . . . . . Months ( )
13. What is the approximate number of years of work experience in the occupation you are teaching?  
 None . . . . . ( )  
 Years . . . . . ( )
14. (Part-time only) What is your present full-time position?  
 Position \_\_\_\_\_  
 Firm \_\_\_\_\_  
 How long \_\_\_\_\_
15. (Part-time only) Would you be willing to participate in pre-service or in-service programs if they were available?  
 Yes. . . . . ( )  
 No . . . . . ( )

## Part II. Problems and Recommendations

1. For the next part of the interview I will present you with a list of problems and concerns (Part III) which have been identified by instructors such as yourself. I would like for you to indicate the difficulty of these problems and concerns based upon your past and/or present experience. Furthermore, as you proceed through the items would you express in more detail your own experiences concerning the item, if it has been or is a major problem or concern.

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2. Do you know of other problems or concerns which should be added to this list?

A. 

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B. 

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C. 

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D. 

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E. 

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3. (Part-time instructor) Drawing from your experience as a community college teacher, what suggestions do you have for assisting in the preparation and orientation of future part-time community college teachers?

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4. (Full-time instructor) Drawing from your experience as a community college instructor, what suggestions do you have for assisting in the preparation and orientation of future full-time community college instructors?

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## INSTRUCTOR RATING FORM

## Part III. Problems and Concerns

The items listed below have been identified as problems by instructors such as yourself. Please circle one of the five numbers (1 2 3 4 5) on a scale from no problem to a major problem.

1-No Problem  
2  
3-Moderate Problem  
4  
5-Major Problem

KEY 1 2 3 4 5

- |   |                  |
|---|------------------|
| 1. Organizing and providing sufficient time to cover materials.   | <u>1 2 3 4 5</u> |
| 2. Lack of materials such as course outlines, plans, and faculty handbooks, which should be furnished upon appointment.     | <u>1 2 3 4 5</u> |
| 3. Developing lectures.   | <u>1 2 3 4 5</u> |
| 4. Formulating educational objectives.  | <u>1 2 3 4 5</u> |
| 5. Selecting methods of presenting materials.   | <u>1 2 3 4 5</u> |
| 6. Selecting and organizing subject matter.   | <u>1 2 3 4 5</u> |
| 7. Adapting instruction to individual differences.  | <u>1 2 3 4 5</u> |
| 8. Determining the various competencies required of graduates in my subject area.   | <u>1 2 3 4 5</u> |
| 9. Lack of time for student counseling or instructional preparation.  | <u>1 2 3 4 5</u> |
| 10. Motivating and maintaining student interest.  | <u>1 2 3 4 5</u> |
| 11. Establishing effective personal relationships with students.  | <u>1 2 3 4 5</u> |
| 12. Knowing what is expected of me regarding the total amount of my responsibilities to the institution.                    | <u>1 2 3 4 5</u> |
| 13. No systematic means of keeping faculty informed about committee or administrative decisions concerning faculty matters. | <u>1 2 3 4 5</u> |
| 14. Understanding procedures and policies of college.   | <u>1 2 3 4 5</u> |
| 15. Lack of opportunity to be involved in program or course development.  | <u>1 2 3 4 5</u> |
| 16. Lack of involvement with other college faculty.   | <u>1 2 3 4 5</u> |
| 17. Understanding proper channels for securing supplies, resource persons, or instructional aids.                           | <u>1 2 3 4 5</u> |
| 18. Lack of orientation to job, facilities, equipment, and materials available to faculty.                                  | <u>1 2 3 4 5</u> |
| 19. Concern about wages and fringe benefits.  | <u>1 2 3 4 5</u> |
| 20. Coordinating instruction in my class with instruction in other classes or laboratories.                                 | <u>1 2 3 4 5</u> |

## Part III (Cont'd.)

- |   |                  |
|---|------------------|
| 21. Keeping abreast of current ideas and trends<br>in my occupational area. | <u>1 2 3 4 5</u> |
| 22. Self-evaluating my effectiveness as a teacher.                          | <u>1 2 3 4 5</u> |
| 23. Developing satisfactory tests and examinations.                         | <u>1 2 3 4 5</u> |
| 24. Determining how to evaluate students effective-<br>ly.                  | <u>1 2 3 4 5</u> |

APPENDIX D

SUPERVISOR INTERVIEW SCHEDULE

(FORM B)

APPENDIX D

SUPERVISOR INTERVIEW SCHEDULE  
FORM B

Part I. Basic Data

1. Name \_\_\_\_\_
2. Position Title \_\_\_\_\_
3. Length of time in present position . . . . . (    )
4. Institution \_\_\_\_\_
5. How many instructors do you have?  
Part-time (with no professional teacher  
preparation) . . . . . (    )  
Part-time (with professional teacher  
preparation) . . . . . (    )  
Full-time . . . . . (    )
6. Do you provide an orientation program for:  
Part-time instructors. . . Yes (    ) No (    )  
Full-time instructors. . . Yes (    ) No (    )  
If yes--Describe \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_
7. Do you provide an in-service program for:  
Part-time instructors. . . Yes (    ) No (    )  
Full-time instructors. . . Yes (    ) No (    )  
If yes--Describe \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Part II. Problems and Needs

8. Consider the part-time instructors you have had in  
your program:

- A. In what aspects, if any, do you feel the part-time instructors have had the greatest difficulty? \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_

- B. In what aspects do you feel the part-time instructors have had the greatest success?
- \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_

9. Now, consider the new full-time instructors you have had in your program:

- A. In what aspects, if any, do you feel they have had or are having the greatest difficulty?
- \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_

- B. In what aspects do you feel the new full-time instructors have had the greatest success?
- \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_

10. Do you feel the responsibilities of a part-time instructor differ from those of the full-time instructor?

Yes. . . . . ( )

No . . . . . ( )

If yes--in what way? Describe \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_



11. What expectations do you hold for the part-time instructor as a member of the faculty? \_\_\_\_\_

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12. With your experience in working with part-time and full-time instructors, what suggestions do you have for assisting in the preparation and upgrading of part-time and full-time instructors, which would assist in eliminating, the existing difficulties, if any?

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(Full-time) \_\_\_\_\_

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APPENDIX E

MICHIGAN STATE UNIVERSITY STUDENT  
INSTRUCTIONAL RATING SYSTEM FORM

# MICHIGAN STATE UNIVERSITY

## STUDENT INSTRUCTIONAL RATING SYSTEM FORM

For each item, respond by marking the space through the appropriate category of the key;

e.g., ☐ SA ☐ A ☐ N ☐ D ☐ SD

Please omit any of the items which do not pertain to the course that you are rating. For example, if you have had no homework assignments in this course omit (leave blank) those items pertaining to homework. With a pencil respond to the items using the KEY.

SA - If you strongly agree with the statement

A - If you agree with the statement

N - If you neither agree nor disagree

D - If you disagree with the statement

SD - If you strongly disagree with the statement

KEY

SA A N D SD

1. The instructor was enthusiastic when presenting course material.-----
2. The instructor seemed to be interested in teaching.-----
3. The instructor's use of examples or personal experiences helped to get points across in class.-----
4. The instructor seemed to be concerned with whether the students learned the material.-----
5. You were interested in learning the course material.-----
6. You were generally attentive in class.-----
7. You felt that this course challenged you intellectually.-----
8. You have become more competent in this area due to this course.-----
9. The instructor encouraged students to express opinions.-----
10. The instructor appeared receptive to new ideas and others' viewpoints.-----
11. The student had an opportunity to ask questions.-----
12. The instructor generally stimulated class discussion.-----
13. The instructor attempted to cover too much material.-----
14. The instructor generally presented the material too rapidly.-----
15. The homework assignments were too time consuming relative to their contribution to your understanding of the course material.-----
16. You generally found the coverage of topics in the assigned readings too difficult.-----
17. The instructor appeared to relate the course concepts in a systematic manner.-----
18. The course was well organized.-----
19. The instructor's class presentations made for easy note taking.-----
20. The direction of the course was adequately outlined.-----
21. You generally enjoyed going to class.-----

1.	SA	A	N	D	SD
2.	SA	A	N	D	SD
3.	SA	A	N	D	SD
4.	SA	A	N	D	SD
5.	SA	A	N	D	SD
6.	SA	A	N	D	SD
7.	SA	A	N	D	SD
8.	SA	A	N	D	SD
9.	SA	A	N	D	SD
10.	SA	A	N	D	SD
11.	SA	A	N	D	SD
12.	SA	A	N	D	SD
13.	SA	A	N	D	SD
14.	SA	A	N	D	SD
15.	SA	A	N	D	SD
16.	SA	A	N	D	SD
17.	SA	A	N	D	SD
18.	SA	A	N	D	SD
19.	SA	A	N	D	SD
20.	SA	A	N	D	SD
21.	SA	A	N	D	SD
22.	SA	A	N	D	SD
23.	SA	A	N	D	SD
24.	SA	A	N	D	SD

22. \_\_\_\_\_

23. Instructor may insert three (3) items in these spaces.

24. \_\_\_\_\_

STUDENT BACKGROUND: Select the most appropriate alternative.

25. Was this course required in your degree program?-----
26. Was this course recommended to you by another student?-----
27. What is your overall GPA? (a) 1.9 or less (b) 2.0-2.2 (c) 2.3-2.7 (d) 2.8-3.3 (e) 3.4-4.5-----
28. How many other courses have you had in this department? (a) none (b) 1-2 (c) 3-4 (d) 5-6 (e) 7 or more-----

25.	SA	A	N	D	SD
26.	SA	A	N	D	SD
27.	SA	A	N	D	SD
28.	SA	A	N	D	SD
29.	SA	A	N	D	SD
30.	SA	A	N	D	SD

29. Instructor may insert two (2) items in this space.

30. \_\_\_\_\_

DO NOT WRITE BELOW THIS LINE UNLESS THIS COURSE HAS LABORATORY OR RECITATION SECTIONS

LABORATORY or RECITATION: (fill in your recitation or lab number at the bottom)

31. The laboratory or recitation instructor clarified lecture material.-----
32. The laboratory or recitation instructor adequately prepared you for the material covered in his section.-----
33. You generally found the laboratories or recitations interesting.-----

31.	SA	A	N	D	SD
32.	SA	A	N	D	SD
33.	SA	A	N	D	SD
34.	SA	A	N	D	SD
35.	SA	A	N	D	SD

34. Instructor may insert two (2) items in this space.

35. \_\_\_\_\_

### IMPORTANT

WRITE and MARK in the boxes to the right your recitation or laboratory section number. Section number 1 would be written and marked 001; section number 15 would be written and marked 015. If you do not have a recitation or lab section leave this area blank.

	RECITATION OR LABORATORY SECTION NUMBER									
1.	0	1	2	3	4	5	6	7	8	9
2.	0	1	2	3	4	5	6	7	8	9
3.	0	1	2	3	4	5	6	7	8	9

One way in which an instructor can improve his class is through thoughtful student reactions. This instructor hopes to use your responses for self-examination and self-improvement. If you have any comments to make concerning the instructor or the courses, please write them in the shaded area below.

[illegible]

APPENDIX F

PROBLEMS AS PERCEIVED BY  
THE SUPERVISORS

APPENDIX F.--Problems as perceived by the supervisors.

Problem Areas	Part-time		Full-time	
	Num- ber	Per Cent	Num- ber	Per Cent
1. Lack of understanding of the methods and procedures in selecting and organizing course materials.	12	60.0		
2. Lack of understanding of the methods and procedures in grading and evaluating students.	8	40.0	1	5.0
3. Lack of understanding and skill in developing test materials.	4	20.0		
4. Lack of understanding in the selection, design, and use of teaching aids and related materials.	4	20.0	1	5.0
5. Lack of flexibility in adjusting to systems other than their own.	3	15.0		
6. Lack of patience and sensitivity to students' inability to perform to instructors' expectations.	2	10.0		
7. Lack of understanding of the learning process.	2	10.0		
8. Difficulty in adjusting materials to differing student abilities.	2	10.0	1	5.0
9. Very structured presentation of materials.	2	10.0		
10. Difficulty in understanding the school budgeting process.			2	10.00
11. Lack of technical and field work experience.			2	10.0
12. Difficulty in understanding the specific objectives of the course taught.	1	5.0		
13. Difficulty in understanding inter-relationships of courses which students are taking.	1	5.0		
14. Difficulty in becoming familiar with the operation of the laboratory equipment.	1	5.0		
15. Difficulty in understanding the community college philosophy.	1	5.0		
16. Difficulty in adjusting instruction, materials, and techniques to the community college setting.			1	5.0
17. Unprepared for class due to multiple preparations.			1	5.0
18. Difficulty in understanding policies and procedures of the institution.			1	5.0
19. Difficulty in presenting materials on a practical level (too theoretical).			1	5.0
20. Difficulty in differentiating the needs of the various age groups of community college students.			1	5.0
21. Difficulty in developing laboratory facilities.			1	5.0
22. Difficulty in keeping abreast of technical changes.			1	5.0
23. Difficulty in developing or suggesting curriculum changes.			1	5.0

APPENDIX G

SUCCESS AREAS AS PERCEIVED

BY SUPERVISORS

APPENDIX G.--Success areas as perceived by supervisors.

Success Areas	Part-time		Full-time	
	Number	Per cent	Number	Per cent
Success:				
1. In bringing current knowledge and skills into the classroom, as reflected in their instructional procedures and information.	11	55.0		
2. In demonstrating manipulative skills and/or relating to specific trade or occupational situations.	6	30.0		
3. In relating with students and identifying individual needs and abilities.	3	15.0	4	20.0
4. In bringing new ideas, innovations, and enthusiasm into the teaching situation.	1	5.0	3	15.0
5. In organizing course materials.			1	5.0
6. In being able to teach more subjects, and establish continuity between courses.			1	5.0
7. In developing and using new teaching aids.			1	5.0
8. In their willingness to learn and to accept new ideas.			1	5.0
9. In understanding the overall objectives of the program.			1	5.0
10. In maintaining organization in grading, evaluation, record keeping, etc.			1	5.0



APPENDIX H

SUGGESTIONS FOR THE PREPARATION AND  
UPGRADING OF INSTRUCTORS AS  
EXPRESSED BY SUPERVISORS

APPENDIX H.--Suggestions for the preparation and upgrading of instructors as  
as expressed by supervisors.

	Part-time		Full-time	
	Number	Per cent	Number	Per cent
Instruction in:				
1. Methods of selecting, organizing, and presenting course materials.	12	60.0	2	10.0
2. Evaluation procedures and selecting and developing tests.	6	30.0	1	5.0
3. The fundamentals of learning theory.	3	15.0	1	5.0
4. The philosophy of vocational-technical education.	3	15.0	1	5.0
5. The application of visual aids in the classroom.	2	10.0	2	10.0
6. Selecting, developing, and using related materials.	2	10.0		
7. How to incorporate and use innovations.	2	10.0		
8. How to develop and maintain adequate records.	2	10.0		
9. Adjusting instruction and materials to individual differences.	1	5.0		
10. Additional technical subject content.			2	10.0
11. How to maintain classroom and laboratory equipment.	1	5.0		
12. How to work with developing budgets.	1	5.0		
13. The philosophy of community college.			1	5.0
14. The procedures of community colleges.			1	5.0
15. Developing course objectives.			1	5.0
16. The needs of the adult student.	1	5.0	1	5.0

APPENDIX I

PROBLEMS OF PART-TIME INDUSTRIAL AND  
TECHNICAL INSTRUCTORS IN SELECTED  
COMMUNITY COLLEGES

APPENDIX I.--Problems of part-time industrial and technical instructors in selected community colleges.

Problem Areas	Degree of Difficulty					Difficulty Index
	1	2	3	4	5	
1. Organizing and providing sufficient time to cover materials.	11* 52.4**	5 23.8	4 19.0		1 4.8	1.81
2. Lack of materials such as course outlines, plans, and faculty handbooks which should be furnished upon appointment.	6 28.6	2 9.5	3 14.3	6 28.6	4 19.0	3.14
3. Developing lectures.	11 52.4	8 38.1	2 9.5			1.52
4. Formulating educational objectives.	9 42.9	6 28.6	4 19.0		2 9.5	2.05
5. Selecting methods of presenting materials.	8 38.1	5 23.8	7 33.3	1 4.8		2.05
6. Selecting and organizing subject matter.	10 47.6	8 38.1	2 9.5	1 4.8		1.71
7. Adapting instruction to individual differences.	5 23.8	5 23.8	6 28.6	2 9.5	3 14.3	2.67
8. Determining the various competencies required of graduates in my subject area.	11 52.4	5 23.8	4 19.0	1 4.8		1.76

APPENDIX I.--Continued.

Problem Areas	Degree of Difficulty					Difficulty Index
	1	2	3	4	5	
9. Lack of time for student counseling or instructional preparation.	10 47.6	2 9.5	3 14.3	2 9.5	4 19.0	2.43
10. Motivating and maintaining student interest.	8 38.1	6 28.6	4 19.0	3 14.3		2.10
11. Establishing effective personal relationships with students.	15 71.4		3 14.3	2 9.5	1 4.8	1.76
12. Knowing what is expected of me regarding the total amount of my responsibilities to the institution.	8 38.1	5 23.8	3 14.3	2 9.5	3 14.3	2.38
13. No systematic means of keeping faculty informed about committee or administrative decisions concerning faculty matters.	13 61.9	2 9.5	1 4.8	4 19.0	1 4.8	1.95
14. Understanding procedures and policies of college.	8 38.1	5 23.8	5 23.8	1 4.8	2 9.5	2.24
15. Lack of opportunity to be involved in program or course development.	12 57.1	2 9.5	3 14.3	2 9.5	2 9.5	2.05
16. Lack of involvement with other college faculty.	8 38.1	6 28.6	3 14.3	1 4.8	3 14.3	2.29

APPENDIX I.--Continued.

Problem Areas	Degree of Difficulty					Difficulty Index
	1	2	3	4	5	
17. Understanding proper channels for securing supplies, resource persons, or instructional aids.	13 61.9	2 9.5	3 14.3	2 9.5	1 4.8	1.86
18. Lack of orientation to job, facilities, equipment, and materials available to faculty.	8 38.1	6 28.6	4 19.0	3 14.3		2.10
19. Concern about wages and fringe benefits.	15 71.4	5 23.8		1 4.8		1.38
20. Coordinating instruction in my class with instruction in other classes or laboratories.	10 47.6	4 19.0	2 9.5	2 9.5	3 14.3	2.24
21. Keeping abreast of current ideas and trends in my occupational area.	13 61.9	7 33.3	1 4.8			1.43
22. Self-evaluating my effectiveness as a teacher.	4 19.0	5 23.8	8 38.1	2 9.5	2 9.5	2.67
23. Developing satisfactory tests and examinations.	10 47.6	5 23.8	6 28.6			1.81
24. Determining how to evaluate students effectively.	5 23.8	8 38.1	3 14.3	4 19.0	1 4.8	2.43

\*Distribution; \*\*Percentage.

APPENDIX J

PROBLEMS OF FULL-TIME INDUSTRIAL AND  
TECHNICAL INSTRUCTORS IN SELECTED  
COMMUNITY COLLEGES

APPENDIX J.--Problems of full-time industrial and technical instructors in selected community colleges.

Problem Areas	Degree of Difficulty					Difficulty Index
	1	2	3	4	5	
1. Organizing and providing sufficient time to cover materials.	9* 42.9**	2 9.5	7 33.3	1 4.8	2 9.5	2.29
2. Lack of materials such as course outlines, plans, and faculty handbooks, which should be furnished upon appointment.	8 38.1	6 28.6	1 4.8	3 14.3	3 14.3	2.38
3. Developing lectures.	11 52.4	8 38.1	1 4.8		1 4.8	1.67
4. Formulating educational objectives.	6 28.6	6 28.6	6 28.6	2 9.5	1 4.8	2.52
5. Selecting methods of presenting materials.	6 28.6	11 52.4	2 9.5	2 9.5		2.00
6. Selecting and organizing subject matter.	9 42.9	7 33.3	3 14.3		2 9.5	2.00
7. Adapting instruction to individual differences.	3 14.3	6 28.6	6 28.6	4 19.0	2 9.5	2.81
8. Determining the various competencies required of graduates in my subject area.	4 19.0	5 23.8	7 33.3	4 19.0	1 4.8	2.67



APPENDIX J.--Continued.

Problem Areas	Degree of Difficulty					Difficulty Index
	1	2	3	4	5	
9. Lack of time for student counseling or instructional preparation.	8 38.1	6 28.6	4 19.0	1 4.8	2 9.5	2.19
10. Motivating and maintaining student interest.	5 23.8	8 38.1	6 28.6		2 9.5	2.33
11. Establishing effective personal relationships with students.	15 71.4	5 23.8		1 4.8		1.42
12. Knowing what is expected of me regarding the total amount of my responsibilities to the institution.	10 47.6	5 23.8	4 19.0	1 9.5	1 4.8	1.95
13. No systematic means of keeping faculty informed about committee or administrative decisions concerning faculty matters.	7 33.3	7 33.3	4 19.0	2 9.5	1 4.8	2.19
14. Understanding procedures and policies of college.	7 33.3	9 42.9	3 14.3	2 9.5		2.00
15. Lack of opportunity to be involved in program or course development.	14 66.7	4 19.0	2 9.5	1 4.8		1.52
16. Lack of involvement with other college faculty.	8 38.1	5 23.8	3 14.3	1 4.8	4 19.0	2.57

APPENDIX J.--Continued.

Problem Areas	Degree of Difficulty					Difficulty Index
	1	2	3	4	5	
17. Understanding proper channels for securing supplies, resource persons, or instructional aids.	13 61.9	6 28.6		1 4.8	1 4.8	1.62
18. Lack of orientation to job, facilities, equipment, and materials available to faculty.	14 66.7	4 19.0		3 14.3		1.62
19. Concern about wages and fringe benefits.	11 52.4	2 9.5	4 19.0	1 4.8	3 14.3	2.19
20. Coordinating instruction in my class with instruction in other classes or laboratories.	9 42.9	7 33.3	3 14.3		2 9.5	2.00
21. Keeping abreast of current ideas and trends in my occupational area.	5 23.8	4 19.0	4 19.0	3 14.3	5 23.8	2.95
22. Self-evaluating my effectiveness as a teacher.	1 4.8	8 38.1	10 47.6	1 4.8	1 4.8	2.48
23. Developing satisfactory tests and examinations.	5 23.8	5 23.8	6 28.6	2 9.5	3 14.3	2.67
24. Determining how to evaluate students effectively.		6 28.6	9 42.9	3 14.3	3 14.3	3.14

\*Distribution; \*\*Percentage.