

ABSTRACT OF THESIS

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A PLAN FOR TRAINING  
TRADE AND INDUSTRIAL TEACHERS  
IN NEVADA

Submitted by  
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In partial fulfillment of the requirements  
for the Degree of Master of Science  
Colorado State College  
of  
Agriculture and Mechanical Arts  
Fort Collins, Colorado  
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NEVADA  
ABSTRACT

The following reasons are advanced for undertaking the study of what organization and plan for trade and industrial education is needed in Nevada:

1. The National Vocational Education Act holds the various state agencies administering the act responsible for the efficiency of their teachers.
2. Vocational leaders hold that teacher training is the weakest link in the whole scheme of vocational training.
3. Office of Education encourages state supervisors and research workers to undertake studies and investigations.
4. Office of Education requires a minimum expenditure in each division of 20 per cent of the funds allotted to each state for teacher training.
5. The Nevada State Department of Vocational Education has evidence that a study is needed, inasmuch as difficulties have arisen in the matter of securing trade teachers by local school districts.
6. There is reason to expect that the State Board will put into effect a feasible plan for improving the work of the teachers.

In view of the above, it was decided to undertake a study of the problem which, stated in question form, is, What organization and plan of training trade and industrial teachers is needed in Nevada?

Analysis of the major problem shows that it resolves itself into these subsidiary questions:

1. What types of trade and industrial training classes are offered to students?
2. How many trade and industrial teachers are employed in Nevada?
3. What is the turnover or annual need of new teachers?
4. What are the qualifications and requirements of teachers, as provided in the Nevada State plan?
5. What difficulties have been experienced in securing competent trade and industrial teachers?
6. What specific assistance in organizing content, planning instruction, giving instruction, maintaining personnel relationships, evaluating instruction and growing on the job do trade and industrial teachers in Nevada need?
7. What provisions for training teachers now exist in the Nevada State plan?
8. How are other states exceeding the requirements of the Office of Education meeting their particular training needs?
9. What organization and plan for trade teacher training is needed?

Answers to these questions will be sought in the research literature on the subject. For such questions as are not completely answered therein, the answers will be sought through further research by methods which will be hereinafter described.

Questions 1 to 7 inclusive, are not answered



in any degree by the review of literature. Question 8, is unanswered and constitutes the principal research of this thesis. Question 9 is unanswered, but the answer will be formulated from the data secured in answer to all of the previous questions. It will constitute, also, the solution to the major problem of this thesis.

Data bearing on each of these unanswered questions were secured from the following sources respectively:

No. 1. Nevada State Plan and records in the Nevada State Office of Vocational Education.

Nos. 2, 3, and 5. Records in the Nevada State Office.

Nos. 4 and 7. Nevada State Plan.

No. 6. (a) Local supervisors and school principals.  
(b) Nevada trade teachers.  
(c) Students in Nevada trade classes.

No. 8. (a) Bulletin 17, Office of Education.  
(b) State plans of other states.

Data bearing on the unanswered questions were secured from the sources named above by the following methods:

Nos. 1, 2, 3, 4, 5, and 7, reading Nevada State Plan, consulting Nevada State Office records summarizing and recording data.

No. 6. Interviewing two local supervisors and five school principals, 26 Nevada trade teachers, and 48



students of Nevada trade classes, using interview guide sheets, Forms 1 and 2, and compiling the results in Tables 1, 2, and 3 and Graphs 1, 2, and 3.

No. 8 (a) Reading Bulletin 17, summarizing and recording data on minimum requirements.

(b) Reading State plans of 29 other states, summarizing and recording data of each state in Charts 1, 2, and 3, by checking "x."

Using the above methods the procedures employed in gathering the data were as follows:

Nos. 1, 2, 3, 4, and 5. Securing the Nevada State Plan and consulting records in the Nevada State Office, recording and filing data.

No. 6. Form 1 was tested by submitting it to a group of nine trade teachers, who were asked to consider each question's applicability to its purpose and suggest substitutions where needed. Two local supervisors, five school principals, 26 trade teachers, and 48 trade class students were interviewed during the writer's trip of inspection. Form 1 was used for supervisors, teachers and principals, and Form 2 was used on 48 students.

No. 7. The Nevada State Plan was read and data recorded in Charts 1, 2, and 3, by checking "x."

No. 8. (a) Bulletin 17 was read and the minimum requirements recorded and filed.

(b) State Plans were secured from 29 other states by requesting copies of the trade and industrial section. The data were recorded in Charts 1, 2, and 3. In Charts 1, 2, and 3, the data on the provisions for teacher training and the requirements for certification of Nevada and 29 other states were recorded for each state by checking "x" in such a manner that comparisons of Nevada's provisions and requirements were easily comparable with those of other states and with the average of all of the states. For validity, the data on Questions 4 and 7 were secured from the Nevada State Plan, so its validity is assured. Data on Question 6 were secured from primary sources; namely, two local supervisors, five school principals, 26 trade teachers and 48 trade class students.

For reliability of the methods used, the directed interview is accepted as being reliable, and is much used by research workers. In Forms 1 and 2, the questions being of fact, tended to assure reliability. Bulletin 17 and State Plans being official publications of the federal and state governments, data on Question 8 are, therefore, valid.

The data, whose sources of procurement and methods and procedures used in gathering, have been discussed and will hereafter be presented as findings

as follows:

1. Three types of class organization are included in the Nevada program of trade and industrial education: evening, part-time, and all-day.
2. Teachers are hired from the trades for evening classes.
3. Itinerant teachers are employed in prospector, fire, police, and janitor classes.
4. The greater number of Nevada trade classes are grouped in three districts.
5. The total number of trade teachers in the Nevada program during the five year period, 1935-1940, was 57, eight of which were all-day class teachers.
6. Difficulties in securing competent trade teachers have been experienced by Nevada schools.
7. Qualifications of Shop teachers are: 24 years of age; three years of trade experience; elementary school education; 30 hours of professional training.  
Qualifications of related subjects teachers are: 24 years of age; qualified to teach blueprint reading, mathematics, drawing, and sciences which are related to the trades; one year of trade experience; high school graduate; 36 hours of professional training.
8. Nevada provides teacher training through these agencies; (a) State supervisor, (b) two local supervisors (part-time), (c) Itinerant teacher trainer for the single field of fireman training.
9. Tables 1, 2, and 3 and accompanying Graphs 1, 2, and 3, show the findings on specific items of teachers' needs.



10. In Bulletin 17, pre-employment teacher training and general information and appreciation courses were critically discussed; both were stated to be relatively inefficient, and they had been abandoned by many states. Also, seven types of organization for in-service teacher training were listed. They are:

1. The extension course.
2. The intensive summer course.
3. The regular summer course.
4. Special conferences.
5. Correspondence service.
6. Individual professional improvement.
7. Individual help on the job.

11. The findings derived from the 30 State Plans, including Nevada's, are shown in Charts 1, 2, and 3.

Discussion of all of the above findings from the standpoint of their application in a reorganized plan of trade teacher training in Nevada, taking into account also the review of research on the subject, has led to this conclusion:

The reorganized plan should include in its provisions for trade and industrial teacher training those provisions for trade teacher training utilized by other states which have been shown by the findings to meet the needs in Nevada.

The needs in Nevada have been found to extend preponderantly to evening class teachers, for whom preparatory training is generally impossible. The total number of teachers who would be subject to training is 75. This is a reasonable estimate, after taking into

account the probability of expansion. This number would amply justify provisions for adequate training facilities. The fact that Nevada schools have experienced difficulties also bears out the conclusion that the Nevada program has definite needs for more teacher training than is being furnished by the present agencies of State supervisor, and only limited provisions through the agencies of local supervisors and itinerant teacher trainer.

Since many other states have found pre-employment teacher training unworkable or inefficient, in-service training is concluded to be the particular need in Nevada.

Bulletin 17 outlines seven types of organization for providing in-service teacher training. These are also found to be provided by other states in their plans. Of these seven types of organization there are five which are applicable to Nevada's needs. These are:

1. Extension courses.
2. Special conferences.
3. Correspondence service.
4. Individual professional improvement.
5. Individual help on the job.

These five are, therefore, recommended in the reorganized plan for teacher training in Nevada. They will be provided through the agencies of State supervisor, local supervisors, and itinerant teacher trainer. This will require, not only additional provisions for, but also greater emphasis on, the latter two of these agencies--local supervision and itinerant teacher training.

Itinerant instruction already has been found workable for trade classes in prospecting, firemen, and janitor training, so it is concluded that it would be workable for the important need of teacher training.

The conclusion that the three agencies of State supervision, local supervision, and itinerant teacher trainer would meet the needs in Nevada is prompted by an analysis of, first, Graphs 1, 2, and 3, wherein the specific needs of Nevada trade teachers are shown to be: help in organizing content and in different phases of actual teaching, and the fact that this help can be extended by the three agencies mentioned above, and, second, analysis of Charts 1, 2, and 3 shows that other states utilize an average of 4.2 agencies of teacher training while Nevada utilizes only state supervision, and a limited provision only of local supervision and itinerant teacher training.

In view of the above, the plan and organization for teacher training in Nevada includes an emphasized provision for more local supervision. Through more extensive local supervision, the teachers will be kept alert to their responsibilities through various devices, particularly, "Continuous evaluation," of their programs by the method used in this study, whereby the strong and weak points of teaching are graphically shown.

The increases in the provisions for higher



requirements for teacher trainer are justified by the importance of the job, and by the fact that other states have higher requirements than has Nevada.

By these additional provisions, by the greater emphasis on agencies already provided, and by the higher requirements, it is concluded that adoption of the reorganized plan by the Nevada State Board for Vocational Education, Nevada's program of trade and industrial teacher training will adequately meet the needs.

It is reasonable to expect that the reorganized plan will be favorably accepted and put into effect by the Nevada State Board for Vocational Education.

Other problems have been suggested for study in the course of this investigation. They are:

1. Is there a need for trade schools in Nevada?
2. What should be the policy of reimbursement to schools for promotional purposes in view of the state-wide unit of matching of Federal funds?
3. Should the policy of reimbursement for evening classes be based on attendance records?

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T H E S I S

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August 2 1940

I HEREBY RECOMMEND THAT THE THESIS PREPARED UNDER MY  
SUPERVISION BY DONALD C. CAMERON  
ENTITLED A PLAN FOR TRAINING TRADE AND INDUSTRIAL  
TEACHERS IN NEVADA

BE ACCEPTED AS FULFILLING THIS PART OF THE REQUIREMENTS FOR THE  
DEGREE OF MASTER OF SCIENCE  
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## Chapter I 7

### INTRODUCTION

The national vocation education act holds state boards for vocational education responsible for efficiency in teaching, among other requirements. This necessitates the revising, from time to time, of facilities for the training of teachers, thus giving effect to changing or increasing needs. It is generally agreed that such revisions should be undertaken only after studies have been made to determine the exact nature of existing needs.

There is evidence that the conviction exists among vocational educators that teacher training has not kept pace with other features of vocational education progress. Prosser and Allen (32:289) have stated this view as follows:

. . . It is to be regretted that up to the present time the development of effective training courses for vocational instructors has lagged far behind the development of those material things which facilitate efficient teaching, but cannot replace the efficient teacher. Probably the teacher training programs as generally carried on in this country are the weakest link in our whole scheme of vocational training.

This indictment of teacher training indicates the need for improvement. The Federal Office of Educa-

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tion favors the carrying on of research studies. In Bulletin No. 1 the following statement appears:

State supervisors and members of teacher training staffs including research workers, should be encouraged to undertake studies which are needed in developing their vocational programs. (37:24)

Further evidence of the importance of teacher training is contained in the National Vocational Education Act (36:75-83) passed by Congress in 1917. This Act, controlling vocational education in this country, provides that

. . . not more than sixty nor less than twenty percentum of the money appropriated under this Act for the training of teachers of vocational subjects to any state for any year shall be expended for any one of the following purposes: . . .

The purposes enumerated in the Act were the training of teachers in each of the three major divisions of vocational education.

With such eminent vocational education leaders as Prosser and Allen asserting the inadequacy of teacher training, and pronouncements of the Federal Office of Education advocating research by state departments, the need for a study of teacher training in Nevada has arisen. Evidence of this need is strengthened by the fact that the Nevada State Department of Vocational Education has experienced difficulties in securing competent teachers for trade and industrial classes. This fact convinced members that the facilities for trade and industrial

teacher training in the state were not meeting the needs of the program. These difficulties have extended to all types of classes and may be specifically stated as follows:

1. It has been impossible on occasions to secure teachers with the minimum qualifications required in the state plan.
2. Delays in securing teachers when needed have occurred.
3. Teachers who have been hired by schools often have not been competent.
4. Recourse to hiring out-of-state teachers has been necessary.

In view of the above circumstances, it has seemed desirable to undertake an investigation of teacher training facilities in the State of Nevada. Encouragement for this undertaking is gained through the reasonable expectation that, if a feasible plan can be devised, it will be put into effect by the Nevada State Board for Vocational Education.

With this setting, it is seen that the problem involved in this investigation constitutes part of the problem of teacher training.

#### The problem and its analysis

Stated in question form this problem is:

What organization and plan of training trade and industrial teachers is needed in Nevada?

Analysis of the whole problem shows that it resolves itself into elements which may be represented by



the following subsidiary questions:

1. What types of trade and industrial training classes are offered to students?
2. How many trade and industrial teachers are employed in Nevada?
3. What is the turnover or annual need of new teachers?
4. What are the qualifications and requirements of teachers as provided in the Nevada State Plan?
5. What difficulties have been experienced in securing competent trade and industrial teachers?
6. What specific assistance in organizing content, planning instruction, giving instruction, maintaining personnel relationships, evaluating instruction and growing on the job do trade and industrial teachers in Nevada need?
7. What provisions for training teachers now exist in the Nevada State Plan?
8. How are other states exceeding the minimum requirements of the Office of Education in meeting their particular training needs?
9. What organization and plan for trade teacher training is needed?

#### Definitions

In order to achieve clarity of meaning, certain terms and phrases must be defined. "Trade teacher training" means the plan and system in effect in any state for improving teaching in trade and industrial education. "Office of Education" is that Federal agency having national administration of education. It supplanted the Federal Board for Vocational Education in 1933 in the administration of vocational education.

"State plans" are those statements of each state wherein their provisions for carrying on the various activities of vocational education are systematically described.

#### Delimitation

Although this study includes a description of the facilities for training trade and industrial teachers in Nevada and in other states, the plan that is recommended pertains to Nevada only.

Answers to the problem questions will be sought in the research literature on the subject. The summary of pertinent research appears in the following chapter.

## Chapter II

### REVIEW OF THE LITERATURE

The review of research on methods of training teachers of trade and industrial education has not revealed in any degree answers to the first seven subordinate questions. A partial answer to subordinate question No. 8, "How are other states exceeding the minimum requirements of the Office of Education in meeting their particular training needs?" is, however, contained in a study made by Jackey (13) in 1933. He measured the efficiency of the content of the basic trade and industrial teacher training courses of two teacher training institutions in California. Using in his study the method of check lists applied to 180 trade teachers and 20 supervisors, he found that (1) the content of eight basic courses, as represented in 225 topics for lessons, was inadequate in the judgment of the teachers and supervisors, and that certain content should be added; and (2) that some content was of such low or doubtful value that it should be dropped from the curriculum.

A citation in this investigation is of interest in the present study. In his review of research Jackey mentioned an exhaustive study made by Mallary in 1932.



It covered an important phase of teacher training -- the selection of trainees. He evaluated the program for the selection of applicants for trade and industrial teacher training in California. Playing an important role in this program of selection are trade tests. Concerning this program, Jackey said:

The selection is made in terms of training in trade ability, in the trade, and selection from the trade by means of content examinations and trade tests. These tests are (1) mental ability, (2) Iowa High School Content Examination, (3) trade technical examination, (4) oral trade tests, and (5) shop performance test. (18:17)

While this study had for its sole purpose the measuring of the value of content in teacher training courses in institutions, its method and findings are of interest to the present investigation even though the training of trade teachers in Nevada is not carried on, and is not likely to be carried on, in institutions. Lesson material is of such importance that Jackey's findings respecting the characteristics of the content recommended for addition to, and for elimination from, the curriculum are of interest. Particularly is this true where the need for these revisions has resulted from changing conceptions in vocational education. In any event, the findings have a definite application in the setting up of content in any teacher training plan. The basic curriculum studied consisted of eight courses, the titles of which were as follows:

1. Occupational analysis and curriculum construction.
2. Technique of vocational instruction.
3. Vocational guidance.
4. Theory and administration of vocational education.
5. Problems of trade technical instruction.
6. Part-time, cooperative, and trade extension education.
7. Civic and employment relations.
8. Observation and directed teaching.

Analysis of the syllabi of these eight courses yielded 225 topics which became the basis of his check list. For convenience they are listed in the appendix, page 13.

A more detailed summary of the findings follows:

1. There is evidence that two new courses need to be added to the curriculum:
  - a. A course in educational psychology.
  - b. A course in shop and classroom management for trade teachers.
2. The present course in part-time, cooperative, and trade extension education might be eliminated, with the transfer of its desirable content to the course in theory and administration of vocational education, from which many topics might be dropped.
3. The course in civic and employment relations needs revitalizing and bringing up to date, together with better presentation.
4. The course in observation and directed teaching needs more emphasis, including more teaching time and more supervision, particularly at the beginning of teaching.

Another finding resulting from Jackey's study was that the topics shown to be of most importance were contained predominantly in three courses: (1) Occupational Analysis and Curriculum Construction, (2) Technique of Vocational Instruction, and (3) Problems of Trade Technical Instruction. This point is important because it can be used as a basis of selection in setting up content in teacher training courses.

The study made by Welch (42) in 1937 throws further light on question No. 8. He studied the job itself, with regard to duties and responsibilities. Using the method of check lists, he obtained a consensus of judgment from each of two groups: (1) all of the experienced circuit teachers employed in Wisconsin, 13 in number; and (2) ten directors in cities making up the circuits and who, therefore, through having to supervise them, were familiar with the circuit-teachers' jobs. An interesting feature of the study was the use of a general job analysis sheet devised by Prosser (See appendix, p. 4).

This job analysis sheet can be made the basis for analysis of a wide variety of jobs. In it the job is considered under 23 headings, each of which is further subdivided into from six to 12 sub-headings. Additional blank spaces under each head are left for the writing in of further pertinent items. These make the sheet very



adaptable to the varying conditions of practically every type of job. This is of real help in determining requirements of jobs, or qualifications of teachers for the training of whom it becomes necessary to set up training courses. A copy of this job analysis sheet is included in the appendix of this study.

The findings in this study consisted of the general specifications covering the job of circuit teacher in Wisconsin, arranged under eleven heads:

1. Duties.
2. Physical requirements of the job.
3. Physical qualifications.
4. Mental qualifications.
5. General education.
6. Special abilities.
7. Personal abilities.
8. Experience and special training.
9. Conditions of employment.
10. Promotional.
11. Professional training.

In addition to the above general specifications, the special specifications pertaining to each type of teacher, in accordance with his particular line of work, were also listed.

A study carried out by Norton (27) in 1937 as a member of the Regents Committee, which made a most exhaustive study of the whole system of public education in the State of New York, also bears on question No. 8. The method adopted was through information sheets supplied all leading principals and supervisors and local and state educational officials of the state. His findings are of

interest because they carry a recommendation recognizing the need of retraining. The following recommendation in his report is pertinent:

The state should recognize the need for re-training vocational education teachers on account of the changing nature of the occupations which they teach. As part of a retraining program, provision should be made for teachers to attend periodically, as part of their professional work, courses under expert leaders in the technical phases of their trades. (26:247)

This viewpoint, advanced at that time, has proved to be the forerunner of an idea favoring refresher courses, which has since gained general acceptance among vocational educators. His recommendations also have this further to say respecting upgrading of teachers:

All teachers and administrators of vocational courses should be required to do professional improvement work. The work need not be taken in formal classes. It may be either course work, travel, employment, research, or any other type of activity appropriate to the individual's capacity to teach his subject effectively. (26:249)

Further research for additional answers to question No. 8 has led to bulletins issued by the Office of Education. These are basic in that the whole administration of vocational education is controlled by the laws, regulations, and precepts they contain. With this authoritative background for these bulletins, it seems desirable to include in this review such of them as may throw light upon this problem. The most important of these is Vocational Education Bulletin, No. 17 (35).

This bulletin covers the organization, administration, and operation of trade and industrial education under the National Vocational Education Act of 1917 (36). This Act, together with subsequent Acts on the subject passed by Congress, make possible vocational education on a national scale in this country. Bulletin No. 17 is a discussion of standards. As such, it is pre-eminent in this review of research in its bearing upon the solution of the major problem. This is necessarily so, since it defines the standards under which the several states may carry on programs of trade and industrial education.

Among the provisions of the National Vocational Education Act is one stating that every state wishing to cooperate under the Act and share in the distribution of Federal funds must, by legislative enactment, accept the Act and prepare a plan. This plan must be in accordance with, not only the statutory, but also the discretionary provisions of the Act. These provisions are not absolute and fixed by law, but are subject to interpretation in accordance with the obligation to promote the welfare of vocational education. These plans must be approved by the Federal Office of Education before they may become operative.

From the above it is seen that, under the Act, standards fall under two heads:

1. Those which are expressly defined.



2. Those which are not expressly defined but result from interpretations of the Act.

It is with this latter class of standards that this study is chiefly concerned, since the plans of states invariably follow the language of the Act, even though, in practice, some of them exceed the minimum requirements. Further treatment of the subject of State Plans will be deferred until later in the study. It will be referred to again in the discussion in Chapter IV.

For convenience and clearness, Bulletin No. 17 (35) divides the discussion of standards into three parts, each of which covers a specific phase of the standards. Part One discusses legal and administrative standards. Since these must be observed in the State Plans, they are important in this study. Part Two treats the three principal types of class organizations for carrying on trade and industrial education and deals essentially with matters pertaining to efficiency in operation. These three types of organizations were stated to be (1) evening schools, (2) part-time schools, and (3) all day schools. Analysis charts describing each of these types of organizations were given. Part Three covers supervision and teacher training. Each of the principal types of organization for providing teacher training is explained with particular reference to the possibilities of rendering effective service. The more important characteristics of efficient state programs for giving

trade and industrial teacher training are discussed on the basis of an analysis of the needs in any particular situation.

Since the present writer is studying the problem of teacher training needs in a particular situation, Part Three of this bulletin has an important application in the solution of the major problem.

Having an important bearing on the answer to Question I, is Bulletin No. 1 (36). It is a compilation of all of the policies which govern the relations between the Office of Education and the several states. This relation is entirely a matter of cooperation, for the Office of Education as such does not engage in any educational programs. Indeed, policy-making has become established as a cooperative function between the states and the Federal government and no policies are formed nor changed except after consultation and discussion in conferences with vocational education leaders of the states. The bulletin discusses both the mandatory and the discretionary provisions of the creating Acts. A topical outline for the preparation of State Plans is included in the appendix of the bulletin.

It is thus seen that on account of the authoritative nature of Bulletin No. 1, it also will play an important role in the solution of the major problem of what plan for training trade and industrial teachers is

needed in Nevada.

Also contributing to the answer of question No. 8, Bulletin No. 172 (37) supplies valuable information respecting teacher training. It is a publication of the Office of Education in which a committee of four eminent vocational leaders make a symposium report to the American Vocational Association. The topics covered in the reports are (1) the upgrading of vocational teachers in service; (2) methods of selecting persons to be trained as vocational instructors; (3) procedures to be followed in giving attention to individual students in teacher training courses; and (4) a comparative study of the bases and methods for certification of vocational teachers. It covers phases of teacher training which are very pertinent to a study of programs. For in-service training, the practices are gathered from 26 outstanding persons in the industrial teacher training field, and are treated under headings of summer classes, short, intensive conferences, teacher training in institutions within commuting area, itinerant teacher training, correspondence courses from institutions and state departments, training through local supervisors, training through the state supervisor, training by means of conference leadership programs, and training through local superintendents. These headings, which really constitute a summary of the means or agencies through which in-service teacher train-



ing is being carried on elsewhere, constitute a direct answer to question No. 8, and may be accepted as a guide in setting up a teacher training program.

A most important contribution on the subject of trade teacher training is Bulletin No. 150 (16), published by the Federal Board for Vocational Education in 1930. It is a comprehensive treatment of the whole subject of trade teacher training and was published for the purpose of strengthening teacher training programs in the states. It reviews the various types of trade class organizations for which teachers are employed, and points out the fact that teachers of these classes have distinctive needs in the matter of training. The various types of subjects given in teacher training courses are summarized there as follows:

1. Job operation, trade or occupational analysis.
2. Organizing subject matter from the teaching standpoint.
3. Methods of teaching, in both shop and related classes.
4. Use of auxiliary technical material, as job or operation sheets.
5. Courses in vocational guidance.
6. Informational courses, as (a) administration and organization of trade and industrial education, (b) the history of industrial education.
7. Shop organization for instructional purposes.
8. Courses in mental testing.

9. Various types of subject matter courses to build out a teacher's experience or training.
10. Foremanship.

The strength and weaknesses of these various types of courses were pointed out, also that they were largely applicable to institutional training only. The various types of organization for giving trade teacher training were next discussed, and it was in this discussion that the most important application to this study lay. Analysis of these types of organization for giving teacher training follows.

I. For employed teachers.

- A. Extension courses given by teacher trainer in the locality of employed teacher.
- B. Late afternoon, evening, or Saturday classes.
- C. Intensive summer courses.
- D. Regular summer school courses.
- E. Special conferences.
- F. Correspondence courses -- by institution or state office.
- G. Individual help on the job -- by local or state supervisor.
- H. Individual professional improvement -- teacher working on an individual problem.

II. For prospective teachers.

- A. Courses in residence during the regular school year.

B. Extension courses.

C. Summer school courses.

III. Types of organization for administrators.

A. Courses in residence for administrators.

B. Summer school courses.

In the discussion on these types of organizations, the advantages, disadvantages, limiting factors, and points of maximum service were brought out. It developed that the lengthy preparatory courses given by institutions were not highly regarded as methods of training teachers. The reasons were that much of the material was theoretical and not closely tied up with the actual job of teaching. There was also the objection that it had "cold storage" characteristics. The worth of competent teacher trainers was stressed, but it was stated that their greatest opportunity for effective service lay out in the field as itinerant teacher trainers. Also that the local supervisor often was the key man of the whole situation.

Further observations were that the most efficient teacher training was that given on, or very close to, the teaching job; also, that there was no one best way of upgrading teachers in service -- the methods selected should fit the particular cases. Foremanship courses were highly recommended for both their intrinsic training value and their by-product of promotional opportunities.



It is disclosed that many of these observations are in close accord with the views of other authorities. Therefore, this information should be strongly considered in organizing a teacher training program for Nevada.

Question No. 8 is further answered in a study made by Bowler (3), in 1938, by two methods -- interview and questionnaire applied to two groups. The employment conditions in Rhinelander were surveyed by interviewing ten key employers of the city. In this interview a prepared list of 25 questions, covering such points as labor needs of employers, willingness to cooperate, items to be incorporated in an expanded coordination program, and training needs of workers, was used and the answers recorded. The duties and responsibilities of 21 coordinators in other Wisconsin cities were ascertained by submitting to them a check-list while they were assembled in a conference. This list consisted of 30 items in the form of questions which were answered by "yes" or "no," thus obtaining validity. Data bearing on the coordinator's job in Rhinelander were secured by analyzing the job for duties. All of the data were summarized and entered on 17 charts, which were included in the appendix. Two of these were comparison charts showing that coordination in Rhinelander embraced fewer responsibilities than was shown by the composite chart

of the 21 other Wisconsin coordinators.

### Findings

From the data secured and summarized by the methods described above, Bowler found that the 21 other Wisconsin coordinators listed a total of 45 items of service performed by them, and in addition 19 responsibilities for which they were accountable. Of this total of 64 activity items of Wisconsin coordinators, Rhineland already included in some measure 33 in its coordination activity. Also, employers who cooperated in the study favored evening classes, and a more adequate selection of beginning workers, but did not want any apprenticeship plan nor cooperative training sponsored by the school. He also found that 15 of the items of service indicated by the 21 Wisconsin coordinators were of minor importance in a program of coordination.

Using these findings, a tentative list of coordination activities for Rhineland was derived from both sources -- employers' recommendations and Wisconsin coordinators' services. These were subjected to evaluation tests as follows:

1. The employer recommendations were considered from the following four standpoints --
  - a. Value to the youth of the community.
  - b. Time limitations.
  - c. Budgetary limitations.

- d. Desirability of the service to the employers.
2. The Wisconsin coordinators' recommendations were evaluated by these ten checking factors

--

- a. Feasibility in Rhineland.
- b. Value to the youth of the community.
- c. Whether or not the services rendered offset the cost involved.
- d. Use in other communities.
- e. Desirability of the service to the employers.
- f. Approximate time per week which might be given to the services locally.
- g. Whether or not the service was recommended by the State office.
- h. The approximate amount of clerical work involved.
- i. The problem of who can best render the services -- the teacher, the coordinator, or the director.
- j. The approximate amount of time per week which might be given to the services elsewhere.

All of the recommendations which survived the test by these two sets of criteria were formulated into a proposed program of coordination for Rhineland. This program itself is of only passing interest in this study; however, an important point of interest lies in the selection of methods used. It affords a good illustration of the carrying out of a school survey, the ultimate purpose being the improvement of a present



situation. The plan and methods were logical in that, first, the shortcomings of the present situation were shown, and, second, possible remedial items, suggested by those which other cities were presumably successfully using, were advanced tentatively for inclusion in the proposed program. Before final acceptance, these items had to pass the test imposed by the various criteria mentioned above. In regard to respecting the reasoning that items of service which were good in other cities would be good in Rhineland, we are justified, it seems, in inferring they would be, since all places studied were Wisconsin cities. Justification for the inference would have been strengthened if similarity of the cities in the several respects -- size, economic and social aspects, and race -- had been advanced.

Since the problem sought to be solved by this study is similar in that it represents a situation which it is desirable to improve, Bowler's study is extremely pertinent, and so much of his general plan and comparable methods and procedures have been followed in this study.

Further light is shed on question No. 8, "How are other states exceeding the minimum requirements of the Office of Education in meeting their particular training needs?" in a study made by Tannahill (34) in 1935. Using the method of questionnaire applied to 572

girls in high school in freshman classes in home economics in six Texas cities, she (1) determined what 20 personality traits are considered by high school freshman girls to be most worth while, and (2) using these 20 personality traits as a basis formulated a self-analysis scale to aid girls in analyzing the extent to which they themselves possessed these traits. The major purpose of this self-analysis scale was its use as a teaching device in the unit in Personal Relationships in high school home economics classes.

Personality is here considered important enough to high school girls to warrant training for its development. Also, it is universally recognized that personality is a qualification of outstanding importance in the selection of teachers. From these considerations it is evident that Tannahill's work has direct application in the present study. Her findings constitute an authoritative index for use in the selection and evaluation of training courses.

Contributing further in answering question No. 8, "How are other states exceeding the minimum requirements of the Office of Education in meeting their particular needs?" is a study made by Aiken (1). He used the method of questionnaire, applied to three groups -- 12 teacher-coordinators, 5 educators, and 117 student-trainees in training programs of the above teacher-

coordinators in 12 Mississippi cities. Responses to the student-trainees' questionnaires were facilitated through the cooperation of the teacher-coordinators. The questionnaire was unique in that the trainees enumerated their duties, and also the persons with whom they came in contact in discharging their duties. Other sources of data were Mississippi State College records and bulletins; United States Census Report, 1930; and the United States Census of Business, 1935.

From data secured from these sources, Aiken formulated a program of preparatory training for teacher-coordinators at Mississippi State College. The point of major interest in this study was the means the investigator employed to justify his selection of the content of the courses in his proposed teacher training program. Using as a basis the data on duties, functions, and contacts of the teacher-coordinators he reasoned soundly that the nature of the duties and functions of the student-employees, and the types of people with whom contacts were made by the coordinators, should furnish a clue to the kind of subject matter needed in the training of the coordinators. This is sound reasoning in view of the generally accepted objective of industrial teacher training, and is pertinent to the present study.

In pursuing still further the review of research, a report (38) issued by the Office of Education



reveals some valuable information bearing on Question 8. During recent months (1940) there was conducted an inquiry by means of questionnaire check lists. These were put into the hands of evening trade extension teachers and supervisors throughout the country by the several state offices. The teachers and supervisors were asked to check the teaching problems most frequently met on their jobs. A topical outline was provided to make clear the questionnaire. When 150 teachers and 18 supervisors had made returns of more than 2000 problems, a preliminary report was made showing graphically the types of problems mentioned most frequently.

It shows that the most common types of teacher problems were those having to do with organizing content and planning lessons, and those problems which grew out of the ungraded and heterogeneous composition of the student groups. While the report is not yet final, it points out a trend and furnishes valuable information. It will be used in the plan for teacher training in this study.

In conclusion, then, it may be said that certain pertinent questions concerning the problems involved in this study have been asked, and also, to the extent pointed out in this chapter, answered. Earlier work in this field has shown how other states have met their problems of teacher training, and also has indicated

feasible means for Nevada to meet hers. Further answers to the questions under consideration will be sought, by means of the materials and methods indicated in the following chapter.

### Chapter III

#### MATERIALS AND METHODS

As a basis for formulating a plan for teacher training in trade and industrial education in Nevada, it has been necessary to procure and assemble data on certain essential points. These points have been indicated in the subsidiary questions outlined in Chapter I. Data are needed on the following subjects:

1. Types of trade and industrial classes offered to students.
2. Number of trade and industrial teachers.
3. Annual need of new teachers.
4. Qualifications of teachers.
5. Difficulties in securing trade and industrial teachers.
6. Specific items of teachers' needs.
7. Provisions for teacher training now in effect in Nevada.
8. a. Minimum requirements of Office of Education.  
b. Provisions for teacher training in other states.

#### Sources of data

Upon examination of the subjects listed above, the writer found it most feasible to procure data concerning them from the following sources:

Data on subjects enumerated as 1, 4, and 7 were secured from the Nevada State plan, (24) which may be procured by any one who is interested, from the Office of the Nevada State Department of Vocational Education at



Carson City, Nevada. Since the Nevada State plan is the official contract establishing the cooperative relationship between the State of Nevada and the United States Government, through the Office of Education as its agency, and forms the basis for the allocation of Federal funds to Nevada, this source of data is authentic.

Data on Numbers 2, 3, and 5 were obtained from office records (23) of the Nevada State Department of Vocational Education and are entirely objective. The official character of these records, therefore, assures validity for this source of data.

Access to Nevada State office records is through the writer's official capacity as State Supervisor for Trade and Industrial Education.

The data on Number 6 were secured from three classes of persons, all through personal interviews made by the writer:

1. Two local supervisors and five public school principals.
2. Twenty-six teachers of trade and industrial classes in Nevada.
3. Forty-eight students in Nevada trade and industrial classes.

The 26 teachers mentioned above consisted of 20 evening-class and six day-class teachers. They were employed in various schools throughout the state and included all but six such teachers, whom it was impossible to see. These were all evening class teachers whose short-unit classes were not then being offered. Since the teachers were primary sources, and those

interviewed constituted 81 percent of the whole number employed in the program, they should constitute a representative sample. Also, the 26 teachers must be regarded as a proper source of dependable data.

The two local supervisors and five principals constituted the whole number involved. Because of their supervisory capacity, they should be aware of the strength and weaknesses of the teachers. Since the primary reason for these interviews was to find out the strength and weaknesses of teaching, these school heads, being primary sources, may be accepted as valid sources.

The 48 students who were interviewed comprised the total attendance in five classes. Because they are primary sources, the data may be regarded as reliable.

Summarizing, the three classes of persons--teachers, school heads, and students--used as sources of data have been discussed, and reasons for their validity have been pointed out. The number involved is comprehensive enough to preclude the element of bias.

The data on minimum requirements of the Office of Education were secured from Bulletin No. 17, which is the official guide of the Office of Education for the

organization, administration, and promotion of trade and industrial programs in the several states. The official character of Bulletin No. 17 bespeaks its validity as a source.

On "Provisions for teacher training in other states," the data were secured from 29 State plans of other states.

#### Sources of data

The State plans in which the teacher training provisions were summarized are:

California (4); Colorado (5:105-118); Connecticut (6:42-45); Delaware (7:19-25); Hawaii (8:59-62); Idaho (9:57-9); Illinois (10); Indiana (11); Iowa (12:61-72); Kansas (14:29-36); Kentucky (15:30-3); Maryland (17:32-34); Michigan (18); Minnesota (19); Missouri (2:25-31); Montana (21:29-31); Nevada (22:23-26); New Jersey (24:106-120); North Dakota (25:58-62); Ohio (27:64-81); Oklahoma (28:46-58); Oregon (29); Pennsylvania (30:30-41); Puerto Rico (31:37-41); South Carolina (33:25-34); Utah (38:15-17); Vermont (39:35-41); Virginia (40:19-22); Wisconsin (42:37-54); Wyoming (43:19-22). The validity of State plans as sources of data already has been discussed.

Reviewing, then, it has been shown in the above discussions that all of the sources of data possess a high degree of reliability.

#### Methods

The method of securing data from all of the



sources described above, except on Number 6, has consisted of a simple procedure of consulting records or State plans and recording the data needed. In the case of Number 6, however, the method of directed interview was adopted. In this, the interview was given direction by specially prepared guide sheets. Form 1, for teachers, supervisors, and principals, and Form 2, for students, are shown in the appendix, pages 2 and 3. These interview guide sheets were intended to direct the interviews in terms of the teachers's responsibilities. They were developed in 1938 in the class, "Training of Teachers of Trade and Industrial Classes," at Colorado State College summer session.

In the preparation of these guide sheets, the several responsibilities of teachers were grouped under six major heads:

1. Organizing content.
2. Planning instruction.
3. Giving instruction.
4. Maintaining personnel relationships.
5. Evaluating instruction.
6. Growing on the job.

Five questions, each of which was designed to exemplify some attribute of good teaching, were listed under each of these major responsibilities. The manner of using these interview guide sheets in gathering the data of this study will be fully explained later in this chapter under "Procedures."

For reliability, the interview as a data gathering device is accepted by research workers as good

usage, particularly when instrumented by a guide list of directing questions. Bowler (3), in 1938, applied it to ten key employers in Rhinelander, Wisconsin, to ascertain the training needs in that city. All this, accompanied by the fact that the writer's job made it possible without excessive travel, to meet personally the various persons to be interviewed, led to its adoption in this study. Preservation and strengthening of this reliability has been sought in formulating the questions of the interview guide. These questions were so formulated as to be questions of fact.

#### Procedures

Examination of the list of data, and the sources given above, disclosed that data on Numbers 1, 2, 3, and 5 were procurable in the office (23) of the Nevada State Department of Vocational Education. Accordingly, these records were consulted and the data on these four headings, recorded and filed. The Nevada State plan (24) was procured, and its provisions respecting (1) qualifications and requirements of trade and industrial teachers, and (2) provisions for trade teacher training, were recorded and filed.

Form 1 was tested in the following way: It was submitted to a group of nine teachers, assembled in a trade and industrial teachers' conference, most of whom were full-time day class teachers and all of whom were experienced. The purpose of the interview guide was

explained and they were asked to consider each of the 30 questions from the standpoint of its applicability to that purpose, and to suggest substitutions where desirable. After the group had considered them at length, it was the consensus of opinion that each of the questions carried an implication of good teaching and that no substitutions should be made. The names of the nine teachers participating in this test are given in the appendix on page .

The next procedure was the beginning of the interviews of all trade teachers of the state, and the writer's trip of inspection to day schools and full-time schools provided the opportunity for this. On this trip, every day school in which trade work was being carried on, and as many evening classes as were in session along the itinerary, were visited. A typical visitation involved (1) the formal interview of teacher and (2) the formal interview of the class. The purpose of the interview of the teacher, if he were not already informed, was fully explained and his cooperation asked. He was asked the 30 questions on Form 1, and his answer for each was recorded. In the interview of the class, the procedure was similar, except that Form 2 was used, and the students were asked to write in their answers. This interview was carried on while the teacher absent from the room. Forms 1 and 2 were collected and filed. Those remaining of the 6 teachers and 48 students, and the two supervisors and five principals, were interviewed in like



manner, using the appropriate interview guide sheets.

To facilitate interpretation of the data of these interviews the following procedures were employed:

- (1) Those of two local supervisors and five school principals
- (2) Those of 6 trade teachers
- (3) Those of 48 trade class students

Each of the sheets of each group was then marked with a serial number. Then a form for Table 1, shown on page 48, was prepared. This was a tabulation sheet consisting of seven vertical columns or spaces, the one on the left being narrow and headed by "Interview Sheet No.," mentioned above. Each of these six spaces was then divided vertically into two columns, headed by "yes" and "no."

Interview Sheet No. 1 was then read, and the "yes" answers to the five questions under each responsibility were counted and recorded opposite Sheet No. 1 in the appropriate spaces in the six columns. All of the sheets in Group 1 were recorded in like manner, and the totals of the "yes" and "no" columns were computed in percentages of the number 35, which is the total number of responses by the seven interviewed persons of the group to the five questions under each responsibility. The percentages thus found were then recorded beneath the proper "yes" total in each of the six responsibility columns.

Following this, graph No. 1 was constructed

to show graphically the relationship between these percentages recorded in Table I. The method of constructing this chart was the common method of plotting graphs, with the horizontal datum line being laid off into six equal divisions to represent the six major responsibilities. Perpendicular lines were drawn upward from each of the division points. Along the first of these vertical lines a scale was constructed showing the number of percentage points which were contained in each unit of length. In plotting the values of Table I a percentage of 25 is represented by one inch on Graph 1. From this, it is seen that 37, the percentage of "yes" answers in the "organizing content" column, was measured upward from the horizontal datum line, a distance of 1.48 inches. In like manner, the other percentages, 54, 54, 63, 54, and 69, were measured upward along their corresponding vertical lines.

Since procedures identical to these were employed in compiling the tables and constructing the graphs for Groups (2) and (3), they will not be repeated.

Bulletin No. 17, (36:115-123) was read and the minimum requirements of the Office of Education were summarized and filed. Letters were then sent to the Directors of Vocational Education, or proper official, of all of the states, insular possessions, and Alaska, asking each for a copy of the State plan for trade and industrial education in his state. A sample of these letters is included in the appendix, page 108. Thirty

State plans including Nevada's were received in response to this letter. A list of these states has been given above under "Sources." The states which did not send plans sent statements saying they regretted that they could not comply with the request. A sample copy of such statements is included in the appendix, page 109 .

While efforts were made to obtain the State plans from every state and territory, only 30 plans were to be had. Since those obtained represent states having a wide range in both geographical location and in size or extent of trade and industrial programs the sampling is broad enough to cover the needs of this study. Therefore, reliability of these data is not seriously impaired.

The teacher training provisions of these 30 State plans were summarized and filed.

For a more intelligent interpretation of the data on Provisions for teacher training in other states", it was decided to depict them in three charts. The procedures used in the construction of these are described as follows: Chart No. 1, "State Teacher Training Agencies," which is shown on page 58, was of the "box-head" type of construction. A vertical space at the left side of the sheet was made of sufficient width to contain the names of the 30 states, with a column of serial numbers preceding them. The remainder of the space to the right was divided into eight vertical spaces, seven of which had for headings the agencies employed by the v



various states in carrying on their teacher training program. Each state using one of the agencies was checked with an "x" in the proper space below that heading. The eighth space was for totals of check marks for each state. The columns of check marks were totaled vertically and horizontally, and the average number of agencies checked per state was found. Chart No. 2, "Experience Requirements of the States for Teacher Trainers," shows an analysis of the experience requirements of the 30 states for the position of trade teacher trainer respecting the three levels of trade, teaching, and supervision. The names of the 30 states occupied a vertical space at the left of the sheet. The remaining space to the right was divided into three vertical spaces headed by "years in trade," "years of teaching," and "years of supervision," respectively. The "years in trade" space was divided into seven vertical sub-spaces, headed respectively by the descending consecutive numbers: 6, 5, 4, 3, 2, 1, 0. The "years of teaching" space was subdivided into six vertical spaces, headed respectively by the descending numbers: 5, 4, 3, 2, 1, 0. The "years of supervision" space was subdivided in a manner identical to the "years of teaching" space. In filling out the chart from the data secured from the State plans, a checking "x" was entered opposite each state in the appropriate sub-space. The vertical columns of check marks were then totaled. Each of these totals represented the number of states with

requirements corresponding to that column heading.

Chart No. 3, "Educational Requirements of State Teacher Trainers," was constructed as is shown on page 61 . The data on educational requirements in the 30 states were checked in appropriate spaces in a manner similar to Chart No. 2, and the vertical columns were totaled. The sources of procurement and the methods and procedures used in gathering the data of this study having been discussed the data itself will be presented in the chapter following.

## CHAPTER IV

### RESULTS AND FINDINGS

For the purpose of effecting a solution of the major problem of what organization and plan of teacher training for trade and industrial teachers is needed in Nevada, certain results and findings has been deduced from the data. They will be presented here. Each will be applied to some element of the problem, and so contribute to its solution.

Summarization of the data on types of training classes offered to students has led to various findings. Three types of class organization are offered: (1) evening trade extension classes including foremanship training; (2) part-time trade extension and trade preparatory classes; (3) day unit trade and general industrial classes, carried on in the Nevada program of trade and industrial education, with both shop and related subjects classes, in the building trades and mechanical trades, taught by teachers who are employed directly from the trades.

It was also found that itinerant teachers in the fields of prospector, fireman, police, and janitor training are employed.



The data procured from office records also indicate that trade and industrial classes are conducted in communities widely located about the state. The principal communities are as follows:

1. Reno, where 12 trade extension and part-time trade teachers are employed. A local supervisor is employed here on a part-time basis.
2. McGill-Ely-Ruth district, where 12 trade extension teachers are employed. A local supervisor is also employed on a part-time basis in this district.
3. Las Vegas-Boulder City area, where some trade extension classes have been offered, and where an expansion of the trade training program seems likely.

The study also revealed that an apprenticeship program is beginning to function in the state, with local joint trade committees having been named in three places.

Data on the number of trade and industrial teachers and the annual need of new teachers have been compiled into a table which is submitted below. It is shown that in the year ending in 1936 the total number of teachers in the trade and industrial program was 23, and that in 1940 the number of teachers was 41; also, that in 1936 the number of day class teachers was six, and in 1940 the number of such teachers was eight.

Table 4. -- NUMBER OF TEACHERS EMPLOYED

Year ending	Evening	Part-time	All-day	Total
1936 -	10	7	6	23
1937 -	12	7	6	25
1938 -	19	6	7	32
1939 -	18	8	6	32
1940 -	21	12	8	41

Further findings are that, owing to deaths, and resignations, 16 teachers, who are not represented in the figures of the table, had been employed in the program.

The findings from the data on qualifications of teachers follow:

1. Shop teachers must be 24 years of age, and have had three years of journeyman-ship trade experience. They must have had at least an elementary school education and 30 hours of professional training.
2. Related subjects teachers must be 24 years of age and qualified to teach blueprint-reading, mathematics drawing, and science, which are related to the trade. They must have had one year of practical experience, be high school graduates, and have had 30 hours of professional training.
3. The findings relating to (3) show that Nevada provides trade teacher training through the agencies of state supervisor, local supervisor, and a limited provision by an itinerant teacher trainer in the single field of fireman training. The two local supervisors spend part of the time only in supervision and teacher training.

These difficulties appear because:

1. Schools have been prevented from organizing trade programs.
2. Schools have been obliged to employ insufficiently qualified teachers.
3. Schools have been delayed in offering trade classes.
4. The number of teachers available for jobs has been always too small for proper selection.
5. It has been necessary to hire teachers from outside the state, contrary to departmental policy.

On the specific items of teachers' needs the data have been compiled into tables from which charts were constructed, and these tables and charts are presented below:

Table 1 shows the percentages of "yes" answers of the total of possible answers to the interview questions on Form No. 1 on each of the six major responsibilities of teachers, asked of two local supervisors and five school principals. The major responsibilities follow:

1. Organizing content
2. Planning instruction
3. Giving instruction
4. Maintaining personnel relationships
5. Evaluating instruction
6. Growing on the job

Table 2 shows the results of the same interview questions when applied to 26 trade teachers.



Table 1. THE NUMBER OF "YES" AND "NO" ANSWERS GIVEN BY INTERVIEWEES TO FIVE QUESTIONS ON EACH OF SIX MAJOR RESPONSIBILITIES OF TEACHERS.  
By 2 local supervisors and 5 principals.

Interviewee no.	Organizing content		Planning instruction		Giving instruction		Maintaining personnel relationships		Evaluating instruction		Growing on the job	
	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No
1	1	4	4	1	2	3	3	2	2	3	3	2
2	1	4	3	2	1	4	3	2	2	3	3	2
3	2	3	1	4	2	3	2	3	2	3	3	2
4	2	3	0	5	1	4	3	2	2	3	4	1
5	2	3	4	1	5	0	4	1	5	1	3	2
6	2	3	4	1	4	1	4	1	3	2	4	1
7	3	2	3	2	4	1	3	2	3	2	4	1
Total	13	22	19	16	19	16	22	13	19	16	24	11

Percent 37 54 54 63 54 69

Number of possible "yes" answers for each major responsibility is 35.

Table 2. PERCENTAGE OF "YES" ANSWERS TO INQUIRY GUIDE,  
FORM 1, ON SIX MAJOR RESPONSIBILITIES OF TEACHERS

By 26 Nevada Trade Teachers.

No.	Organizing Content		Planning Instruction		Giving Instruction		Maintaining Personnel Relationships		Evaluating Instruction		Growing on the Job	
	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No
1	1	4	3	2	2	3	4	1	3	2	3	2
2	1	4	3	2	3	2	3	2	4	1	3	2
3	2	3	3	2	4	1	4	1	3	2	4	1
4	1	4	3	2	1	4	3	2	4	1	3	2
5	1	4	3	2	2	3	4	1	4	1	5	0
6	2	3	4	1	2	3	4	1	3	2	5	0
7	1	4	3	2	5	0	5	0	5	0	3	2
8	1	4	3	2	2	3	4	1	4	1	4	1
9	1	4	2	3	2	3	3	2	4	1	3	2
10	2	3	4	1	1	4	4	1	1	4	3	2
11	3	2	2	3	2	3	4	1	4	1	4	1
12	2	3	4	1	2	3	4	1	1	4	3	2
13	0	5	0	5	2	3	1	4	2	3	3	2
14	1	4	4	1	2	3	2	3	3	2	3	2
15	3	2	4	1	4	1	4	1	3	2	4	1
16	1	4	3	2	3	2	3	2	3	2	3	2
17	1	4	3	3	2	3	3	2	2	3	3	2
18	0	5	4	1	2	3	4	1	3	2	1	4
19	0	5	4	1	3	2	2	3	3	2	3	2
20	1	4	2	3	2	3	4	1	4	1	3	2
21	0	5	4	1	3	2	2	3	3	2	3	2
22	1	4	3	2	1	4	3	2	3	2	2	3
23	0	5	4	1	3	2	3	2	3	2	3	2
24	2	3	5	0	4	1	4	1	2	3	3	2
25	1	4	5	0	3	2	4	1	3	2	3	2
26	2	3	5	0	4	1	4	1	2	3	3	2
Total	31	99	86	44	66	64	89	41	79	51	83	47
Number of possible "yes" answers for each responsibility is 130.												
%	24%		66%		51%		68%		61%		65%	

Table 3 shows the percentage of "yes" answers of the total possible answers, to the interview questions in Form No. 2, on each of the six major responsibilities of teachers, when applied to 48 students of trade classes.

Graph 1 shows the comparative effectiveness, as viewed by two supervisors and five school principals, with which the six major responsibilities are being discharged by Nevada teachers. Hence, the low points among these responsibilities--organizing content, planning, and giving instruction--are seen to be specific items of need of Nevada teachers.

The data furnished by Bulletin No. 17 made clear the minimum requirements of the Office of Education in regard to trade teacher training. As the first of these requirements, State Boards in the several states are held responsible for the efficiency of programs of teacher training, even though they may delegate some of their teacher training functions to institutions.

The second of these requirements is that teacher trainers and others who train trade teachers must possess qualifications which meet certain standards. These standards, as laid down for teacher trainers, State and local supervisors follow:



Table 3.1--THE NUMBER OF "YES" AND "NO" ANSWERS GIVEN BY,  
INTERVIEWEES TO FIVE QUESTIONS ON EACH OF SIX MAJOR  
RESPONSIBILITIES OF TEACHERS

By 48 Nevada Trade Class Students

No.	Organizing Content		Planning Instruction		Giving Instruction		Maintaining Personnel Relationships		Evaluating Instruction		Growing on the Job	
	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No
1	1	2	4	1	5	0	4	1	2	1	4	0
2	2	2	1	4	4	1	2	3	3	1	2	2
3	2	1	4	1	5	0	4	0	2	1	4	0
4	3	1	4	1	4	1	3	2	3	1	4	0
5	2	1	4	1	5	0	4	1	3	0	3	0
6	4	0	5	0	5	0	2	3	3	0	4	0
7	2	0	4	1	4	0	4	1	3	0	3	1
8	3	2	4	1	5	0	3	2	3	0	4	0
9	3	0	3	2	4	1	3	2	4	1	3	1
10	3	1	4	1	4	1	3	2	3	0	4	0
11	2	1	4	1	4	1	4	1	2	1	4	0
12	3	1	5	0	5	0	3	2	3	1	4	0
13	2	1	4	1	4	0	4	1	2	1	4	0
14	3	1	4	1	5	0	3	2	3	0	3	0
15	3	0	4	1	5	0	4	1	2	1	4	0
16	4	0	4	0	5	0	3	2	2	0	4	0
17	2	1	5	0	4	1	3	2	3	2	4	1
18	2	1	3	0	4	0	2	3	1	0	1	0
19	4	1	4	1	5	0	4	1	2	2	4	1
20	0	2	2	1	4	0	2	0	1	0	1	0
21	4	1	4	1	5	0	4	1	2	2	4	1
22	2	0	3	1	4	0	2	3	1	0	1	0
23	5	0	4	1	5	0	2	0	4	0	3	0
24	2	0	2	0	4	0	2	3	1	0	1	0
25	4	0	4	1	5	0	3	2	1	2	4	0
26	2	0	3	0	4	0	2	3	1	0	1	1
27	4	1	4	1	5	0	4	1	1	2	4	1
28	2	0	2	0	3	0	4	0	2	3	1	0
29	1	1	4	0	5	0	5	0	4	1	2	2
30	4	1	2	0	3	0	3	1	2	3	1	0

Table 3.--THE NUMBER OF "YES" AND "NO" ANSWERS GIVEN BY INTERVIEWEES TO FIVE QUESTIONS ON EACH OF SIX MAJOR RESPONSIBILITIES OF TEACHERS (continued)  
By 48 Nevada Trade Class Students

No.	Organizing Content		Planning Instruction		Giving Instruction		Maintaining Personnel Relationships		Evaluating Instruction		Growing on the Job	
	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No
Brot. fwd.	81	25	112	24	136	8	99	47	73	27	90	11
31	1	1	4	0	3	2	4	1	4	1	2	2
32	4	1	2	0	3	0	4	0	3	2	1	0
33	1	1	4	1	4	1	5	0	4	1	1	2
34	4	1	2	0	3	0	4	0	2	3	1	0
35	1	1	4	1	4	1	5	0	3	2	1	2
36	4	1	2	0	3	0	3	0	2	3	1	0
37	1	1	4	1	4	1	5	0	4	1	1	2
38	4	1	2	0	3	0	4	0	2	0	1	0
39	1	1	4	1	4	1	5	0	4	1	1	2
40	4	1	2	0	2	1	4	0	3	1	1	0
41	1	1	5	0	3	2	4	0	2	0	2	1
42	3	0	2	0	3	0	3	1	2	3	1	0
43	1	1	3	0	4	1	4	0	3	2	4	1
44	2	1	2	0	3	0	4	0	3	2	1	0
45	1	1	5	0	4	1	3	1	2	1	4	0
46	4	1	2	0	3	0	4	0	5	0	1	0
47	2	0	5	0	4	1	5	0	2	0	2	0
48	4	0	4	1	4	1	5	0	3	2	1	2
Total	123	39	166	29	194	39	170	49	122	51	115	23
%	76%		85%		91%		77%		71%		83%	

Graph 1.

Graph 2.

Graph 3.

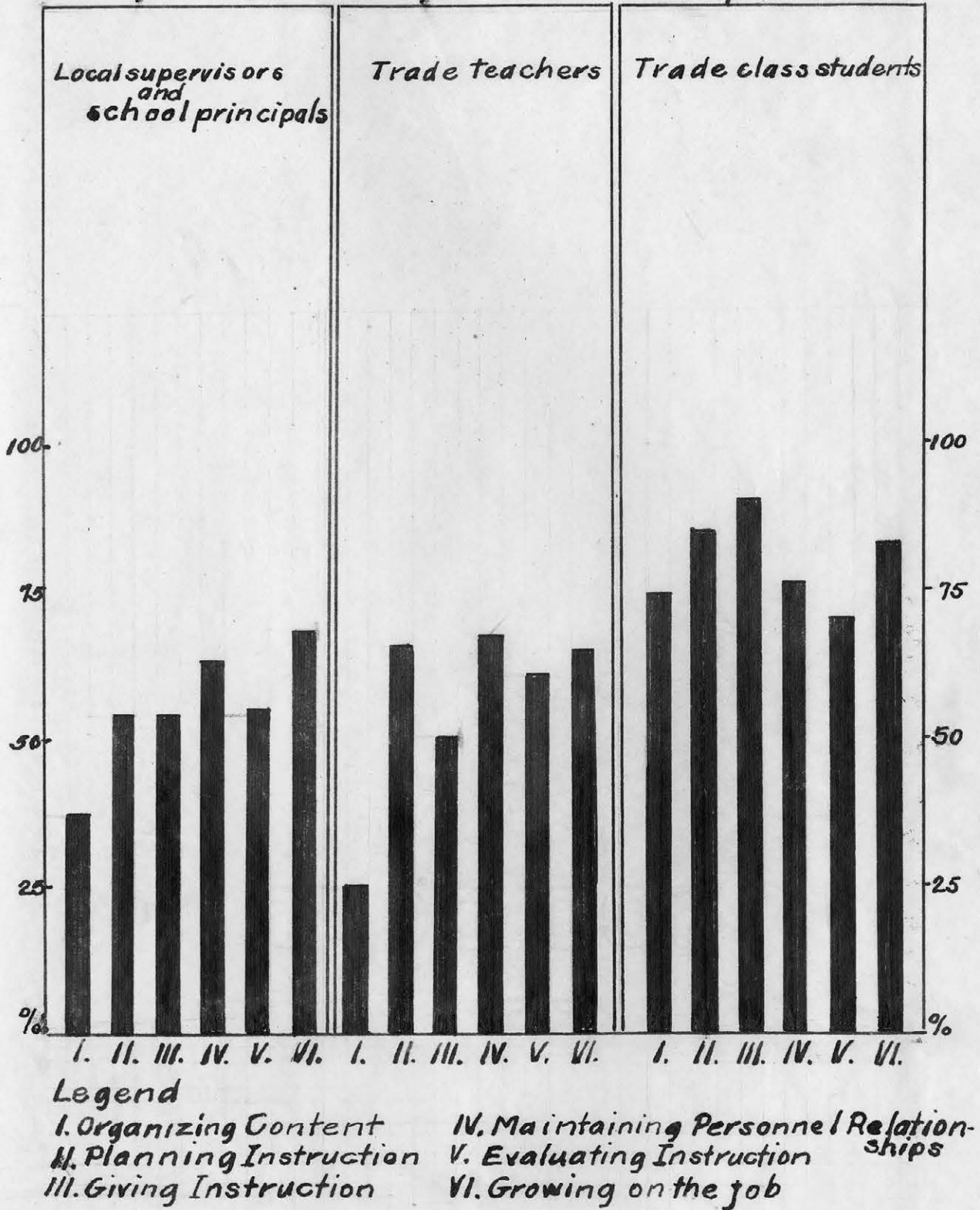


Fig. 1.—Percentages of "yes" answers



1. Experience
  - a. Trade, a minimum of three years
  - b. Teaching, a minimum of two years
  - c. Supervisory, a minimum of three years, except that none is required for local supervisors.
2. Education, professional; 540 clock hours in approved subjects, including:
  - a. Philosophy of vocational education
  - b. Supervision and administration of trade and industrial schools.
  - c. Making of trade and job analyses for training trade teachers and organization of content for trade courses.
  - d. Methods of training trade teachers
 (Note: Only 180 hours of professional education is required of local supervisors)
3. Education, general; no minimum requirement is set.

The third of the requirements under consideration is that a minimum of 20 per cent of the total allotment of federal teacher training funds to any state must be expended for trade teacher training, if trade and industrial classes are reimbursed from federal funds.

Although the above findings are set down as minimum requirements of the Office of Education for teacher training standards, other desirable features of teacher training are discussed. In these discussions, three major conclusions have been noted:

I. The Office of Education recognizes three fields in which teacher training is carried on. These are as follows:

1. Training in-service for employed teachers and supervisors. In this field, seven types of organization are recognized:

- a. The extension course
- b. The intensive summer course
- c. The regular summer course
- d. Special conferences
- e. Correspondence service
- f. Individual help on the job
- g. Individual professional improvement

II. Any one of the seven types of organizations enumerated above will not adequately meet all of the needs of any state.

III. Certain combinations of the above seven types of organization have been suggested by the Office of Education as likely to meet the needs for teacher training service in any state:

- 1. Extension courses, individual help on the job, and individual professional improvement.
- 2. Intensive summer courses, individual help on the job, and individual professional improvement.
- 3. Special conferences, individual help on the job, and individual professional improvement.
- 4. Individual help on the job, correspondence service, and individual professional improvement.

In regard to the training of prospective teachers, the findings showed that the three types of organizations listed below are recognized by the Office of Education:

- 1. Residence courses
- 2. Extension courses
- 3. Summer courses

Study of Bulletin No. 17 also revealed that difficulties and drawbacks in the operating of programs of training prospective trade teachers have led to their abandonment by many states.

The findings showed that general informational and appreciation courses are not regarded by the Office

of Education as being effective means of doing real teacher training.

From the data contained in the State plans of other states, and also that of Nevada, the three charts given below have been constructed by the writer. Charts 1, 2, and 3, are submitted as the findings which have been determined from the data on these 30 State plans.

Chart No. 1 shows the different agencies made use of by these various states in providing trade teacher training service, and the number of states employing each of the agencies. The total agencies utilized by each state and the number of states utilizing each agency are also shown.

Chart No. 2 shows the number of years of trade, teaching, and supervisory experience required for certification for employment as trade teacher trainer in each of these states. The number of states requiring each standard unit of experience is also shown.

Chart No. 3 shows the educational requirements for certification of trade teacher trainers in each of these 30 states, and the number of states requiring each standard unit of schooling.

The above findings, which serve as a basis of formulating a plan for teacher training in trade and industrial education, will be discussed in the chapter following.





Chart No. 1.

State Teacher Training Agencies  
(continued)

No.	Agency giving Teacher Training	Total No.	State Supervisor	Regional Supervisor	Local Supervisor	Local Teacher Trainer	Designated Institutions	Itinerant Teacher Trainer	Director of Research
17	Nevada	3	X		**X			*X	
18	New Jersey	5	X		X	X		X	X
19	No. Dakota	4	X			X	X		X
20	Ohio	5	X		X		X	X	X
21	Oklahoma	4	X			X	X		X
22	Oregon	6	X		X	X	X	X	X
23	Pennsyl- vania	4	X		X		X		X
24	Puerto Rico	3	X		X			X	
25	So. Carolina	5	X		X		X	X	X
26	Utah	5	X			X	X	X	X
27	Vermont	4	X		X	X	X		
28	Virginia	5	X		X	X	X		X
29	Wisconsin	6	X		X	X	X	X	X
30	Wyoming	4	X		X			X	X
No. of states providing:		127	30	2	23	11	22	16	23

Average number of agencies  
per state 4.2\*In fireman training  
field only\*\* Part-time employment  
only.

Chart No. 2.

## Experience Requirements of States for Teacher Trainers

No.	State	Years in Trade							Years of Teaching							Years of Supervisory						
		6	5	4	3	2	1	0	5	4	3	2	1	0	5	4	3	2	1	0		
1	California				x						x						x					
2	Colorado		x									x					x					
3	Connecticut				x							x					x					
4	Deleware				x							x					x					
5	Hawaii				x						x						x					
6	Idaho		x								x						x					
7	Illinois				x						x						x					
8	Indiana				x				x								x					
9	Iowa				x						x						x					
10	Kansas				x						x						x					
11	Kentucky					x			x								x					
12	Maryland				x				x								x					
13	Michigan				x						x							x				
14	Minnesota				x				x								x					
15	Missouri				x						x						x					
16	Montana				x							x					x					
17	<u>Nevada</u>				x							x					x					
18	New Jersey			x							x					x						
19	North Dakota				x				x								x					
20	Ohio				x							x					x					



Chart No. 2.

Experience Requirements of States for Teacher Trainers  
(continued)

No.	State	Years in Trade							Years of Teaching							Years of Supervisory						
		6	5	4	3	2	1	0	5	4	3	2	1	0	5	4	3	2	1	0		
21	Oklahoma				x							x					x					
22	Oregon				x							x					x					
23	Pennsylvania				x							x					x					
24	Puerto Rico				x						x						x					
25	South Carolina			x								x					x					
26	Utah					x					x								x			
27	Vermont	x								x								x				
28	Virginia	x									x						x					
29	Wisconsin				x						x						x					
30	Wyoming				x						x						x					
Totals		2	2	2	2	2	0	0	5	1	14	10	0	0	0	1	26	2	0	1		

Chart No. 3

## Educational Requirements of State Teacher Trainers

No.	State	Professional Clock Hours							General Years in College H.S.					Factory Labor Hours
		600	540	480	396	324	270	225	4	3	2	1	4	
1	California				x				x					
2	Colorado	x							*x					
3	Connecticut		x			x								x
4	Deleware			x					x					
5	Hawaii		x						x					
6	Idaho		x						x					
7	Illinois		x											x
8	Indiana		x						x					
9	Iowa		x											x
10	Kansas		x						x					
11	Kentucky		x						**x					
12	Maryland		x									x		
13	Michigan		x						x					
14	Minnesota		x						*x					
15	Missouri		x						x					
16	Montana		x						x					
17	<u>Nevada</u>		x								x			
18	New Jersey		x						x					
19	No. Dakota		x						x					

\* Major in Trades and Industry

\*\* Undergraduate minor, graduate major in designated courses.

Chart No. 3

Educational Requirements of State Teacher Trainers  
(continued)

No.	State	Professional Clock Hours						Approved Courses	General Years in					Satisfac- tory Authorities	
		600	540	480	396	324	270		College				H.S.		
									4	3	2	1			4
20	Ohio		x												x
21	Oklahoma		x							x					
22	Oregon		x							x					
23	Pennsylvania		x							x					
24	Puerto Rico		x							*x					
25	So. Carolina							x		x					
26	Utah			x						x					
27	Vermont		x							x					
28	Virginia							x		x					
29	Wisconsin	**								x					
30	Wyoming						x			x					
Totals		2	21	2	1	1	1	2	24	0	1	0	1	1	4

\* Major in Trades and Industry

\*\* Undergraduate minor, graduate major in designated courses.



## Chapter V

### DISCUSSION

The findings presented in the previous chapter will be discussed insofar as they materially aid in the formulation of a plan for trade and industrial teacher training in Nevada. The principal aim in this discussion will be to point out wherein the findings relate, first, to the needs for teacher training in the Nevada program and, second, to a comparison of the provisions for teacher training in Nevada with those in other states.

The findings have shown that teachers are needed in Nevada for three types of classes: (1) evening trade extension classes, (2) part-time trade extension classes, and (3) all-day trade preparatory classes. The two former types far outnumber the latter type. Having a particular bearing on the solution of this major problem are the findings respecting the distribution of classes throughout the state. It is found that trade classes are offered at many widely scattered schools, but that there are three principal areas in which most of the trade and industrial training activities are grouped. In two of these, local supervisors are employed on a part-time basis.

Table 4, page 46, shows that 41 teachers were employed in the Nevada program during last year, and that 57 had been in the program in the past five years. It also shows that the program is increasing. Therefore, it may be assumed that in the near future there will be 75 trade teachers in the Nevada program, and that this number may be taken as a numerical measure of the probable need for teacher training. It is reasonable to say this number will justify the provision for adequate training. Since most of these will be evening class teachers with little opportunity for preparatory teacher training, the greatest need will be for in-service training.

The Nevada requirements for certification are:

Shop teachers must be 24 years of age, have had at least three years of journeymanship trade experience, have had 30 hours of professional training and an elementary school education.

Related subjects teachers shall be 24 years of age and shall have had at least one year of trade experience. They must be able to teach blueprint reading, mathematics and drawing, which are related to jobs of students in trade classes. They shall have had at least a high school education and a minimum of 30 hours of professional training.

NOTE: In cases when persons meeting the above requirements for shop and related subjects teachers cannot be secured, the State Board may grant temporary certificates.

These requirements, while rather low, meet particular conditions where the preponderant need is for evening class teachers who are selected directly from the

trade. The 30 hours of professional training can be given through adequate supervision early in a tradesman's teaching career.

Bearing on this question of needs are the difficulties of securing teachers. It is doubtful if these difficulties would entirely disappear under any plan of teacher training, but there is no doubt that provision for the in-service training of teachers would remove many of the difficulties of the teachers' and, likewise, those of the school.

Tables 1, 2, and 3, and the accompanying graphs indicate specific items of Nevada teachers' needs.

Interpretation of these throws light on the solution of this major problem. Table 1, page 48 , shows that the percentage of "yes" answers to questions bearing on "Organizing content" is 37. In absolute value this may not be of too great importance. Its significance is shown when one consults the accompanying Graph 1, page

It is seen that "organizing content" and the related responsibilities having to do with actual teaching are "low" points. The significance of this is heightened by the fact that the responding group of two supervisors and five school principals are competent to judge critically these points.

Tables 2, page 49 , and 3, page 51 , and accompanying Graphs 2 and 3, in general, show the same facts, although in absolute values, both are higher.



The values represented by the 26 teachers' answers are somewhat higher, and those represented by the 48 students are highest of all. This apparent discrepancy is perhaps to be expected. Possible explanations are: in the case of the teachers, the natural tendency is to rate one's own work rather high as compared to the cold critical evaluation of a supervisor. In the case of the 48 students, two factors may have operated to elevate their appraisals--their failure to grasp the full implications of all of the questions, and their desire to have their teacher adjudged favorably. That the former factor was operative is attested by the students' failure to write in answers to all of the questions.

It will be seen from Table 3 that the 48 students failed to answer all of the questions. This was due to the fact that not all of the questions were applicable to students in all types of classes. However, the validity of these data is not impaired, since the percentages are based on the total number of questions answered.

A noteworthy point brought out by the graphs is that "Evaluating Instruction" is relatively a "low." This is probably explained by the fact that in both evening classes and day shop classes on practical work it is not generally feasible to set up elaborate testing and rating systems.

Having a bearing on the specific needs of teachers, is a study carried out by the Office of

Education in 1940, in which the findings of Averill (39) agree very closely with those of this study. Averill reports that, throughout the states, the problems of trade extension teachers having to do with (1) determining what to teach, (2) what to teach first, (3) using illustrative materials, and (4) dealing with "misfits," were the ones most frequently mentioned. Thus, his findings tend to confirm those of this study.

The Nevada program is shown by the findings to include in its provisions for trade and industrial teacher training only three agencies--state supervisor, local supervisor with limited functions, and a limited service by an itinerant teacher trainer in the single field of firemen training. A comparison of these provisions with those of other states is best made through reference to Chart 1, page 57. Here it is shown that (1) seven different agencies of teacher training are utilized in the programs of 30 states; (2) the number of agencies utilized by the several states varies from two, in a single state, to six, in three states; (3) the average number of agencies utilized by all of the states is 4.2; (4) all of the states make the state supervisor responsible for teacher training in response to a requirement of the Office of Education in consideration of the use by the states of teacher training funds for the salaries of supervisors; (5) the next greatest used

agency is local supervisor, being used by 23; (6) designated institutions is the next most popular agency, with 22 states making use of it; (7) the special teacher training agency of director of research is a factor in the programs of 23 states; (8) the other three agencies--itinerant teacher trainer, local teacher trainer, and regional supervisor--range downward in use from 16 states for the first to two for the last.

The most significant fact contained in these findings is the comparison of Nevada's utilization of three agencies, with limited functions, with those of other individual states, and particularly with the average of 4.2 for all of the states. This comparison will be referred to again in discussion of the proposed plan and organization for teacher training in Nevada.

Chart 2, page 59 , shows that 22 of the 30 states, including Nevada, have the minimum requirement of the Office of Education--three years of trade experience for teacher trainers. Six states exceed this minimum, and two have less.

In teaching experience of teacher trainer, ten states, including Nevada, make their requirement the same as the Office Education's minimum of two years, while 20 states exceed that figure.

In supervisory experience of teacher trainers, 26 states, including Nevada, make their requirement the



same as the Office of Education's minimum of three years. One state exceeds this, and three have less.

In professional education of teacher trainers, 21 states, including Nevada, have the same requirements as the Office of Education's minimum of 540 clock hours of training in specified courses. Two states exceed and seven fall under this minimum. Two states specify an unstated amount of approved courses. The specified courses include:

- a. Philosophy of vocational education.
- b. Supervision and administration of trade and industrial education.
- c. Making and utilizing trade and job analyses for training trade teachers and organization of content for training courses.
- d. Methods of training trade teachers.

In general education of teacher trainers, 24 states require the equivalent of a bachelor of arts degree. Four of these states require this a major in trade and industrial education. One state requires high school graduation only. Nevada requires two years of college work. The Office of Education does not specify a fixed requirement of general education for teacher trainers.

In the review of research, it was found that the fields in which teacher training is carried on cover pre-employment training, in-service training, and general information and appreciation courses. The first of these, preparatory training before employment, has not been found efficient in many states. It is better suited to

the larger programs of those states where many teachers are employed on a full-time basis. Hence, many states have abandoned efforts to provide this pre-employment training. With this in view, it will not be worth considering for Nevada's scant need of full-time teachers, or for the few whose employment in evening classes can be foretold.

Likewise, the offering of general information and appreciation courses appears unnecessary. This view is prompted by the fact that the objectives of these courses are too general and the practical results too small to preclude these as part of a worthwhile program of teacher training. If a sufficient number of school administrators could be enrolled, such courses might be justified, but a review of Nevada conditions does not advance this hope.

#### In-service training

The above discussion, then, leaves in-service training of employed teachers as a single type of training that is needed to prepare trade teachers for Nevada vocational education programs.

In the findings of Chapter IV, seven different types of organization for giving in-service teacher training were named. They are:

1. Extension course.
2. Intensive summer course.
3. Regular summer course.
4. Special conferences.

5. Correspondence service.
6. Individual professional improvement.
7. Individual help on the job.

Of these, Numbers 2 and 3, being summer school courses, could not be attended by evening class teachers. Hence, they would not be suitable for the Nevada teacher training program. The remaining five types of organization, Numbers 1, 4, 5, and 7 are well adapted to the particular needs of Nevada teachers.

1. Establishment of extension courses would provide opportunities for employed teachers to meet certification requirements by enrolling in these courses. They would be conducted by the itinerant teacher trainer in centers where six to ten teachers could meet in a group at opportune times.

4. Special conferences would provide suitable means for teacher training of full-time teachers. When such a conference would be called by the State Board, these teachers would respond. They would assemble for a week or ten days and analyze and discuss specific problems encountered in their work. They would pool their experiences in seeking the solutions of those problems. This type of organization would be workable in Nevada. The Office of Education permits the use of Federal teacher training funds in reimbursement to local schools for the travel and subsistence cost of their teachers in attending such conferences. The advantages of the conferences as a means of training teachers are: in promoting critical



thinking, in establishing professional attitudes on the part of the teachers, and in developing initiative.

5. Correspondence service, conducted by the state supervisor, would be a valuable part of teacher training, particularly for those teachers in isolated places in Nevada where other types of service are not practicable.

6. Individual professional improvement provides opportunities for teachers to get help in working on problems of particular interest to them. This help can best be given by the state supervisor or through research facilities of the state office.

7. Individual help on the job provides one of the most effective measures of giving teacher training. It makes possible assistance at the time when the teacher needs it and, hence, contributes to the maintenance of high morale among the teachers of the program. Individual help on the job requires extensive provisions for local supervision. Since the local supervisor can play such an important role in building a successful program, his employment is amply justified.

The above discussion of findings has been a review of the needs of the program of trade and industrial teacher training in Nevada and the ways in which other states are meeting their particular needs. Since other states use in some manner all agencies which are approved

by the Office of Education, it is accepted that the solution of this major problem--the organization and plan of trade and industrial teacher training needed in Nevada, must be found among the agencies and in the types of organization adopted by these other states. Also, since the Office of Education( 35:140-1) has stated that combinations of various types of organization are necessary to meet adequately all of the needs of any one state, it is likewise accepted that the solution of this problem for Nevada will embrace a combination of these various types of organization.

Therefore, a plan embracing these five types of organization for giving trade and industrial teacher training in Nevada has been formulated and is submitted as a solution to this problem. These five types of organization for teacher training will be included in the duties of the state and local supervisors and itinerant teacher trainer. This reorganized plan for teacher training is to be submitted to the Nevada State Board for Vocational Education for approval.

A RECOMMENDATION TO THE NEVADA STATE BOARD FOR VOCATIONAL  
EDUCATION FOR TEACHER TRAINING IN TRADE AND INDUSTRIAL  
EDUCATION

1. Federal funds allotted for maintenance of teacher training in trade and industrial education will be apportioned to the following uses:
  - a. State supervision--approximately 40 percent
  - b. Local supervision--approximately 40 percent
  - c. Organized teacher training by the State Board--20 percent.

2. Qualifications of teacher trainers:

a. Experience:

- (1) Trade: At least three years of practical working experience of journeymanship level in a trade or industrial occupation.
- (2) Teaching: At least three years of successful experience as a teacher of approved trade preparatory or trade extension classes. This is an increase of one year over the present plan. Twenty states out of 30 have this requirement or exceed it.
- (3) Supervisory: At least three years of experience in a responsible administrative or supervisory capacity in the field of trade and industrial education or vocational grade.

b. Education:

- (1) Professional: At least 540 clock hours of training in approved vocational educational education subjects including the following:
  - (a) Philosophy of vocational education.
  - (b) Supervision of trade and industrial schools.
  - (c) Making and using trade and job analyses for training trade teachers and the organization of content for training courses.
  - (d) Methods of training trade teachers.
- (2) General: The equivalent of a bachelor of arts degree. The present requirement is two years of college work. Twenty-four states require a college degree.

3. Organized trade and industrial teacher training to be undertaken by each teacher training organization.

a. By State Board for Vocational Education

- (1) For shop teachers'
  - (a) By itinerant teacher trainers

An itinerant teacher trainer may be employed to visit cities or districts



where several trade and industrial teachers offer classes. When so employed, he will organize classes in those districts to give the professional training required of such teachers as qualifications for certification.

1. Duties of itinerant teacher trainer

The itinerant teacher trainer shall direct his activities to in-service training. He shall visit the districts as designated by the State supervisor and organize classes for employed teachers. Such classes will be held in evening sessions and at other times as the daily employment of the teachers makes possible. So far as possible, he will meet these teachers in classes for group instruction. However, in certain circumstances, he may find it necessary to work with individual teachers, extending to them the help they need in their teaching work.

2. Entrance requirements

Enrollment in teacher training classes shall be limited to employed teachers. Under special circumstances, other persons who may have prospective employment as teachers may be admitted.

3. Length of course.

The time to be devoted to the teacher training work will be determined according to the needs of the teachers of the group. However, in all cases, the amount of training in any district will be sufficient to meet the requirements for certification of teachers in that district. The contemplated plan to be followed the first two years requires the teacher trainer to remain in a district on his first visit for a period of five weeks. He will

hold teacher training classes for three 2-hour sessions each week or a total of 30 clock hours during the visit. At the end of this time, he will move to another district. Provision for return visits will be made, depending upon further needs of the teachers. In this way the teachers will have opportunities of applying and testing out what has been taught in the course prior to the next visit of the teacher trainer.

#### 4. Course of study.

The course of study will provide for instruction in four courses:

1. Methods of training trade teachers.
2. Making and utilizing trade and job analyses.
3. Organization of instructional material for trade courses.
4. Philosophy of vocational education.

The teaching topics of these courses are contained in the list of topics found in the content of the basic teacher training courses in California. See appendix, Page 111.

Included in the content of the course of study, three forms developed by Prosser will be used as devices to promote more accurate placement of students and better selection of teachers. They are "Job Analysis Sheet," Appendix, page 3, "Job Specifications," Appendix, page 4, and "Individual Check Sheet," Appendix, page 5.

#### 5. Plan for giving training.

While the above courses will be covered during the later visits of

The teacher trainer, his first visit or two to any district will be devoted to "first aid" to the teachers. In this, the immediate needs of the teacher will be the determining factor in the selection of course material. During these early visits it is planned that the teacher trainer will make extensive use of the principles of teacher training for inexperienced teachers which are expounded by Bass, (2).

(b) By State conferences.

The State Board for Vocational Education may call, at opportune times, conferences of vocational trade and industrial teachers of the State. The purposes of these conferences will be to provide opportunities for these teachers to analyze and discuss specific problems connected with their work and to pool their experiences in the solution of these problems. When such conferences are called, Smith-Hughes and/or Goerge-Deen teacher training funds will be used for reimbursement of local schools for the travel and subsistence expense of teachers in attending.

1. Entrance requirements

Employment or probability of employment as vocational trade and industrial teacher.

2. The length of course will be one week to ten days.

3. Plan for giving training.

The conference technique will be used. The state supervisor of trade and industrial education will serve as conference leader, or he may be assisted by an outstanding leader in the trade and industrial teacher training field. The group of teachers will study and analyze problems which have occurred in their work and by pooling their



experience, endeavor to work out solutions to them.

#### 4. Course of study.

There will be no formal course of study for these conferences. However, in addition to the analysis of individual problems of teachers of the group as mentioned in 3, pre-arranged programs involving teacher training subjects will be carried out. Such topics as trade and job analysis, organization of courses of study and methods of teaching trade and industrial subjects will be discussed. Some time will be devoted to demonstration teaching of lessons planned and developed by members of the group. An insight into methods of measuring the efficiency of teaching will be given. There will be particular reference to the method adopted in this study whereby specific needs of Nevada trade teachers were determined. By use of this device teachers may apply it often to their own jobs and thereby have a system of "continuous evaluation." Full-time attendance of all day class teachers will be required to meet approval of their school for reimbursement of their yearly salaries. Evening and part-time teachers will be encouraged to attend.

#### (2) For related subjects teachers.

The plan for training will be the same as for shop class teachers.

4. All teacher training work will be under the direction and supervision of the State supervisor for trade and industrial Education. He will ascertain the needs of trade teacher training and, in those districts where needs are found, he will schedule courses to be given by the teacher trainer as described above.

#### 5. Local supervision

The State Board for Vocational Education recognizes the importance of maintaining high standards of

instruction and, to that end, will cooperate with local school boards in maintaining a local supervisor in those districts where it is desirable. The principal purpose of local supervision will be the improvement of the teaching within the district. Under this plan, local supervisors will be held strictly responsible for that improvement. It may be necessary in some districts with only a few teachers to maintain Supervision on a part-time basis only. In such cases, the fractional time devoted to supervision must be sufficient to insure adequate help to the teachers. During the first year of the operation of this plan, local supervisors will be required to put into effect devices for evaluating the work of their teachers. The State supervisor will instruct the local supervisors in the use of the scheme used in this study, for graphically showing the strong and weak points of their teachers. They will be required to carry on a survey and work out a graph sheet, page , for each teacher. Aside from the value of this checking in showing the quality of the teaching, it will afford local supervisors a valuable means of doing some very effective teacher training. Their teachers, thereby will be given a fuller appreciation of their various responsibilities.

6. The State Board will maintain teacher training in the field of firemen training. An itinerant teacher trainer will be employed to visit local fire departments and instruct the chiefs and officers in methods of instructing their men. He will also help these chiefs to organize instructional material to be used in training classes in their departments.
7. The State Board will, as the needs arise, undertake research and investigations. These will be conducted by the State supervisor, but if deemed necessary, another qualified person may be employed. Such research will include studies and surveys to determine the needs of training in different communities, or the efficiency of going programs, and ways and means of improving them. If a person is employed for research work, his qualifications must be at least equal to those given in 2, a and b, for teacher trainer.
8. Training conference leaders is recognized as a responsibility of the trade and industrial teacher training service, and the State supervisor, subject to the approval of the State Director of Vocational Education, will arrange for the training of such leaders as may be necessary to meet the needs of the program.

A most important feature of this reorganized plan is the "continuous evaluation" artifice which supervisors will apply to teachers and programs under their supervision. This artifice is the device used in this study to indicate the "high" and "low" points of teaching. Through its frequent use supervisors attain a double objective: first, they obtain an evaluation of their teachers' work in terms of strong and weak points, and second, they keep their teachers constantly alert to their responsibilities.

In this reorganized plan certain revisions in the requirements for certification of teacher trainers and provisions for teacher training have been proposed. In all such cases the measures proposed are those which are being used in successful programs of other states. There is every reason to believe that they will materially aid in advancing Nevada's trade and industrial program.

In furtherance of the continued progress of the Nevada program, it is recommended that the following problems be investigated:

1. Should reimbursement of evening classes be dependent upon attendance records?
2. In what kinds of jobs do boys of Reno and Sparks find employment?
3. What trade should be included in all-day general industrial shop courses for boys of the McGill-Ely-Ruth-Kimberly district?
4. Is a part-time cooperative D. O. plan indicated for the better educational serving of Ely youth?



5. In view of the state-wide unit of matching of Federal funds, what should be the policy of reimbursement of local schools at a higher rate for promotional purposes?
6. Would state trade schools be justified in Nevada?
7. What plan should be adopted for the more efficient selection of teachers in states where no pre-employment training of teachers is carried on?

In concluding this discussion, the solution to the problem of formulating a plan and organization for trade and industrial teacher training in Nevada having been found, the steps involved in the whole study will be summarized in the next chapter.

## Chapter VI

### SUMMARY

The National Vocational Education Act provides that states cooperating with the federal government must maintain in their programs adequate facilities for the training of teachers. In order to keep pace with growing programs and changing conditions, the states should conduct studies from time to time to determine the necessary revisions.

Vocational educators maintain that teacher training has not kept abreast of progress in other phases of vocational education. Bearing out this conviction Prosser and Allen (32) make an indictment of teacher training with the observation that it is probably the weakest link in the whole scheme of vocational training. At the same time, the Office of Education, through its publication (36:81), has stressed the important place that teacher training should occupy in vocational programs, and has also advocated (36:24) that the states carry on research investigations. In addition to these circumstances is the fact that Nevada schools experienced difficulties in securing competent trade and industrial teachers. With this setting, it

has been deemed desirable to undertake a study to formulate a plan for trade and industrial teacher training in Nevada. This decision has been encouraged by the fact that the Nevada State Board for Vocational Education will be inclined to adopt a feasible plan for improving the program.

This problem involves a study to ascertain, first, the facilities for teacher training now being used in Nevada, and, second, the facilities for teacher training in other states, and by comparison of them, to devise a plan for trade and industrial teacher training in Nevada. The expectation is that other states, in the aggregate, are utilizing many more agencies of teacher training than is Nevada. It is reasoned that in this excess of agencies used by other states those which would meet the needs of the program in Nevada would be found.

The problem, then when expressed in the form of a question is, What organization and plan of training trade and industrial teachers is needed in Nevada?

Analysis of this major question shows that it resolves itself into a number of elements, each of which may be represented by one of the following subordinate questions.

1. What types of trade and industrial training classes are offered to Nevada students?



2. How many trade and industrial teachers are employed in Nevada?
3. What is the turnover or annual need of new teachers?
4. What are the qualifications and requirements of teachers as provided in the Nevada State plan?
5. What difficulties have been experienced in securing competent trade and industrial teachers?
6. What specific assistance in organizing content, planning instruction, giving instruction, maintaining personnel relationships, evaluating instruction, and growing on the job do trade and industrial teachers in Nevada need?
7. What provisions for training teachers now exist in the Nevada State plan?
8. How are other states exceeding the minimum requirements of the Office of Education in meeting their particular training needs?
9. What organization and plan of trade teacher training is needed?

Answers to these questions will be sought in the research literature bearing on this subject and in the principal research of this problem using the materials and methods hereafter described.

In seeking a solution to the major problem of this study, it has been necessary to procure data bearing on each of the subordinate questions outlined in Chapter I. The data are needed in regard to the

following subjects:

1. Types of trade and industrial classes offered to students.
2. Number of trade and industrial teachers.
3. Annual need of new teachers.
4. Qualification of teachers.
5. Difficulties in securing trade and industrial teachers.
6. Specific items of teachers' needs.
7. Provisions for teacher training now in effect in Nevada.
8. a. Minimum requirements of Office of Education.  
b. Provisions for teacher training in other states.

#### Sources of data

The above specific items of data were procured from these sources: Data on Nos. 1, 4, and 7 were secured from the Nevada State office. Data on Nos. 2, 3, 5, and additional data on No. 1 were secured from Nevada State office records. Data on No. 6, were secured from three classes of persons, all through personal interviews by the writer:

1. Two local supervisors and five public school principals, making up the whole number involved.
2. Twenty-six trade teachers in Nevada.
3. Forty-eight students in Nevada trade and industrial classes.

The 26 teachers were made up of 20 evening class and six day class instructors. This is the entire number of Nevada teachers, except six who could not be interviewed, or 81 per cent of the whole number, so it may be regarded as a representative sample. The 48 students constituted the entire attendance in the five classes which it was possible to interview. All three classes of persons are primary sources--hence--valid sources of data.

Data secured from the Nevada State plan and Nevada State office records are entirely objective, and the official character of the sources assures their reliability.

Bulletin No. 17 (35:115-123) was the source of data on the minimum requirements of the Office of Education. Its official character is assurance of dependability as a source.

In gathering data on No. 6 the interview method was used, because of its accepted value as a data gathering device and because under the plan of the study it was feasible to make the personal interviews. All of the remaining data were obtained by the simple process of copying records and provisions of the State plans. The interview guides shown in the appendix on page 97 , were lists of questions of fact intended to show to what extent each of the six



major responsibilities of teachers was being discharged.

These six major responsibilities are:

Organizing content.

Planning instruction.

Giving instruction.

Maintaining personnel relationships.

Evaluating instruction.

Growing on the job.

Five questions were formulated bearing on each of them.

### Procedures

Records and reports in the Nevada State office were consulted and data on Nos. 1, 2, 3, and 5 were recorded and filed. The interview guides were verified for the suitability to their purpose by nine trade teachers meeting in a conference. The data were gathered by the writer in a trip of inspection to trade classes.

In the interviews each person was asked all of the 30 questions of the interview guide, and his answers recorded on the sheet, except in the case of the 48 students. The persons interviewed wrote their own answers to each question as it was read and briefly explained by the writer. The sheets were collected and filed.

The results were obtained by compiling in

Tables 1, 2, and 3, indicated on page 48 , and show the percentages of the "yes" and "no" answers from each of the three classes of interviewees.

These classes or groups of interviewees were:

1. Two local supervisors and five school principals.
2. Twenty-six trade teachers.
3. Forty-eight students in trade classes.

The percentages of "yes" answers were computed as percentages of the total of possible "yes" answers to questions bearing on each responsibility by all of the interviewees of each group. Graph 1, shown on page 53 , shows the percentages of "yes" answers in Tables 1, 2, and 3.

Data on the minimum requirements of teacher trainers were summarized from Bulletin No. 17, (36:115-123), and filed. The State plans of 30 states were consulted, and the provisions covering teacher training were compiled and shown in Charts 1, 2, and 3. These provisions cover, first, the different agencies of teacher training utilized by each of the 30 states, and, second, the qualifications needed by teacher trainers for certification in these states. These qualifications cover the number of years of trade, teaching, and supervisory experience and professional and general educational attainments.

### Findings

The findings which have been determined from the foregoing data are now summarized as follows:

Evening trade-extension, part-time, and all-day preparatory trade classes are offered in the Nevada program, and teachers are hired directly from employment in the trades.

Itinerant teachers are employed in prospecting, fireman, police, and janitor training, and an apprenticeship program is being established in the larger communities.

Trade training classes are offered in widely located places, but these are mostly grouped in three areas, in two of which local supervisors are employed on a part-time basis. There were employed in the Nevada program during the past year 41 teachers, 8 of whom taught day, or full-time classes. There were also 16 teachers who had been employed within the past five years and who are not included in this number.

Nevada teachers must have these qualifications:

Shop teachers: 24 years of age or over; at least three years of journeymanship trade experience, an elementary school education, and 30 hours of professional training in teaching subjects.



Related subjects teachers: 24 years of age or over; one year of trade experience; must be a high school graduate; and have had 30 hours of professional training in teaching subjects.

Difficulties have been experienced by Nevada schools in securing trade teachers.

Specific items of teachers' needs are shown in Tables 1, 2, and 3, and in Graph 1. These show the strong and weak points of the teachers' work in terms of the degree to which the teachers are discharging their major responsibilities:

1. Organizing instruction.
2. Planning instruction.
3. Giving instruction.
4. Maintaining personnel relationships.
5. Evaluating instruction.
6. Growing on the job.

Table 1, page 48 , shows the findings as determined from interviewing two local supervisors and five school principals. Table 2, page 49 , shows the results when 26 trade teachers were interviewed, and Table 3, page 51 , gives the results when 48 trade class students were interviewed. Graphs 1, 2, and 3 show graphically the results seen in Tables 1, 2, and 3, for purposes of comparison.

The data furnished by Bulletin 17 made clear the minimum requirements of the Office of Education in regard to trade teacher training. As the first of these requirements, State Boards in the several states are held responsible for the efficiency of the program of teacher training, even though they may delegate some of their teacher training functions to institutions.

The second of these requirements is that teacher trainers and others who train trade teachers must possess qualifications which meet certain standards. These standards, as laid down for teacher trainers, state and local supervisors, follow:

1. Experience
  - a. Trade, a minimum of three years.
  - b. Teaching, a minimum of two years.
  - c. Supervisory, a minimum of three years, except that none is required for local supervisors.
2. Education, professional: 540 clock hours in approved subjects, including:
  - a. Philosophy of vocational education.
  - b. Supervision and administration of trade and industrial schools.
  - c. Making of trade and job analyses for training trade teachers and organization of content for trade courses.
  - d. Methods of training trade teachers.

Note: Only 180 hours of professional education is required of local supervisors.

3. Education, general; no minimum requirement is set.

The third of the requirements under consideration is that a minimum of 20 per cent of the total allotment of federal teacher training funds to any

state must be expended for trade teacher training, if trade and industrial classes are reimbursed from federal funds.

In addition to these minimum requirements, further findings concerning types of teacher training organizations which have been discussed in Bulletin No. 17 follow:

1. Five types of organization have proved successful in the programs of other states.
2. In-service training is the most effective (35:141-142), and pre-employment training has been abandoned by many of the states.
3. Combinations made up of several types of organization are required to meet all of the needs in any state.

Data from the State plans of Nevada and 29 other states have produced findings which are shown in Charts 1, 2, and 3, pages 57-61). These charts facilitate comparisons of the provisions for teacher training in Nevada and in other states.

The findings just presented are discussed because they aid in formulating a plan for trade and industrial teacher training in Nevada.

The need for teacher training is indicated by the fact that approximately 75 trade teachers will be employed in the Nevada program in the next few years. Most of these will be teachers of evening classes. From this it is inferred that Nevada's



greatest teacher training need will be one for in-service training. These needs are already evidenced by the fact that difficulties have arisen in filling trade teaching positions in the schools of the State.

Showing specific needs of Nevada trade teachers, Tables 1, 2, and 3 and the accompanying graphs show that "Organizing Content" and those responsibilities having to do with teaching are weak points among Nevada teachers. A study, being carried on by the Office of Education at the present time, gives advance indication of close agreement with the findings of this study.

A comparison of the provisions for teacher training in Nevada and in other states shows that Nevada provides teacher training through the agencies of State supervisor, limited provisions for local supervision, and itinerant teacher trainer, while the average number of agencies utilized by 30 states is 4.2.

In the review of Office of Education bulletins, it is stated that pre-employment teacher training is of low value, and that in-service training is the field in which the most effective training can be carried on. In Bulletin No. 17, five types of organization which would meet the needs of the Nevada program are outlined as follows:

1. Extension course.

2. Special conferences.
3. Correspondence service.
4. Individual professional improvement.
5. Individual help on the job.

All of these types of organization for teacher training can be carried on through the agencies of State supervisor, local supervisor, and itinerant teacher trainer. Therefore, the plan and organization for trade and industrial teacher training in Nevada include these agencies: State supervisor, local supervisors, and itinerant teacher trainer. Among these agencies, supervision, particularly local supervision, will be emphasized. In those districts now employing local supervisors on a part-time basis, recommendations will be made for additional time to be devoted to closer supervision and up-grading of the teachers. Also, efforts will be made to have local districts employ local supervisors where none is now employed. It is reasonable to conclude that, as a result of these recommendations, the Nevada program of trade and industrial teacher training will be decidedly strengthened.

The working out of a solution to this problem has suggested other problems for investigation and research:

1. What plan for the more efficient selection of trade teachers should be adopted in those states where no training for prospective teachers is carried out?

2. In view of the operation of the state-wide unit of matching federal funds, what should be the policy of reimbursement of local schools at a higher percentage for promotional purposes?
3. Are state trade schools needed in Nevada?



APPENDIX

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Interview guide, Form 1- - - - -	
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Letter, R. B. Jeppson to the writer- - - - -	
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Teachers participating in the test of inquiry guide- - - - -	
225 topics of lesson content of teacher training courses in California - - - - -	

Appendix Page 2--Sample Copy of Interview Guide,  
Form No. 2, Used as the Method of Gathering  
Data from Two Local Supervisors, Five School  
Principals and Twenty-six Teachers.

Form No. 1--Interview Guide

Yes No Organizing Content.

1. Does he make use of a standard trade analysis?
2. Does he prepare his own analyses?
3. Does he have an adequate supply of job sheets?
4. Are job sheets filed for easy finding?
5. Does his organization of content permit individual progress?

Planning Instruction.

1. Does he plan lesson in advance?
2. Does he use a written plan?
3. Are teaching points well chosen?
4. Does he use functioning content?
5. Does he provide for suitable methods and devices?

Giving Instruction.

1. Does he make use of all of the 4 steps?
2. Does he keep to his topic?
3. Does he ask questions and get student response?
4. Does he make free use of illustrations?
5. Does he use an efficient system of student accounting?

Maintaining Personnel Relationships.

1. Do outside "key men" visit the class?
2. Does teacher observe written and unwritten rules and so cooperate with the administration?
3. Does he manage students so as to preserve proper shop or classroom atmosphere?
4. Does he encourage and help with boys' club work?
5. Do boys like him?

Appendix Page 2--Sample Copy of Interview Guide,  
Form No. 2, Used as the Method of Gathering  
Data from Two Local Supervisors, Five School  
Principals and Twenty-six Teachers. (Continued)

Form No. 1--Interview Guide

Yes No Evaluating Instruction

1. Do most of the students complete the course?
2. Does progress chart show a satisfactory pattern?
3. Are students employed after finishing the course?
4. Does he maintain the interest of students?
5. Does he give tests and rate students periodically?

Growing On The Job.

1. Does he work at his trade during vacations?
2. Does he keep in touch with industry and keep his teaching up to date?
3. Does he attend summer school?
4. Does he attend conferences called by the State Board?
5. Does he subscribe to and read professional and trade magazines?



Appendix Page 3--Sample Copy of Interview Guide,  
Form No. 2 Used as the Method of Collecting  
Data from Forty-eight Trade Class Students

Form No. 2--Interview Guide

Yes   No   Organizing Content.

1. Is the teaching content based on trade analysis?
2. Is the content kept abreast of demands of your job?
3. Is the content selected to best suit your needs?
4. Is the content adequate to put over the lesson?
5. Does the teacher have sufficient job sheets, etc., on hand to permit individual progress?

Planning Instruction.

1. Is teacher's lesson planned in advance?
2. Does he use a written plan?
3. Are the teaching points well chosen?
4. Does the plan provide for effective methods and devices?
5. Do classes proceed smoothly without loss of time?

Giving Instruction.

1. Does he adhere to his plan?
2. Does he make the lesson clear?
3. Does he ask questions and get student response?
4. Does he make free use of illustrations?
5. Does he adhere to the scheduled time for beginning classes?

Maintaining Personnel Relationships.

1. How often do "key men" visit the class?
2. Does he manage students so as to maintain a proper shop or classroom atmosphere?
3. Does he encourage and help with boys' club work?
4. Does he show interest in students by visiting at their homes?

Appendix Page 3--Sample Copy of Interview Guide,  
Form No. 2 Used as the Method of Collecting Data  
from Forty-eight Trade Class Students (Continued)

Form No. 2--Interview Guide

Yes   No   Maintaining Personnel Relationships.

5. Does he in the early days of the class try to find out the real needs of each individual student?

Evaluating Instruction.

1. Do most of the students complete the course?
2. Does the progress chart show a satisfactory pattern?
3. Can you make use of the instruction in your daily work?
4. Has the instruction been effective in leading to promotion?
5. Does the teacher keep close check on the progress of each student?

Growing on the Job.

1. Does the teacher keep in touch with industry?
2. Does he revise his instruction content frequently in line with the above?
3. Does he make use of new devices, slides, movies, etc., in his classes?
4. Does he take an interest in community affairs?
5. Does he give support to and attend meetings, conferences, and conventions called for professional improvement?

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FORT COLLINS, COLORADO



## JOB ANALYSIS SHEET

Job No. \_\_\_\_\_ Job Name \_\_\_\_\_ Company \_\_\_\_\_  
Department \_\_\_\_\_ Occupation \_\_\_\_\_ No. employed on Job \_\_\_\_\_  
Prepared by \_\_\_\_\_ Date Made \_\_\_\_\_

JOB DESCRIPTION OF  
WHAT WORKER DOES

<b>I. CHARACTER OF JOB</b> 1. Routine 2. Repetitive 3. Automatic 4. Slow 5. Medium 6. Rapid 7. Varied tasks <b>II. TYPE OF WORK</b> 1. Heavy 2. Light 3. Medium 4. Inside 5. Outside 6. Hazardous <b>III. EXPOSURE</b> 1. Heat 2. Cold 3. Dry 4. Wet 5. Smoke 6. Oil 7. Fumes 8. Explosives 9. Dust 10. Acids 11. Altitudes 12. Special <b>IV. HEALTH HAZARDS</b> 1. Poisons 2. Vibrations 3. Noise 4. Nerves 5. Eyestrain <b>V. PHYSICAL REQUIREMENTS (JOBS)</b> 1. Standing 2. Sitting 3. Moving 4. Stooping 5. Walking 6. Climbing 7. Reaching 8. Lifting 9. Rapid temperature changes <b>VI. PHYSICAL REQUIREMENTS (personal)</b> 1. Weight 2. Height 3. Strength 4. Eyesight 5. Hearing 6. General Health 7. Sex 8. Age preferred <b>VII. MENTAL REQUIREMENTS</b> 1. Read 2. Write 3. Spell 4. Mathematics 5. Write English 6. Speak English	<b>VIII. ABILITIES - EXECUTIVE</b> 1. Instruct others 2. Handle men 3. Leadership 4. Supervisory <b>IX. ABILITIES-MANIPULATIVE SKILL</b> 1. Skilled 2. Semi-skilled 3. Unskilled <b>X. ABILITIES-TECHNICAL KNOWLEDGE</b> 1. Drafting 2. Blueprints 3. Technical instruments 4. Engineering 5. Materials 6. Equipment 7. Supplies 8. Business <b>XI. ABILITIES-CLERICAL</b> 1. Typing 2. Dictation 3. Bookkeeping 4. Filing 5. Telephone 6. Multigraph 7. Mimeograph 8. Adding machine 9. Addressograph 10. Comptometer 11. Dictaphone <b>XII. PREVIOUS EXPERIENCE REQUIRED</b> 1. Nature 2. Length 3. Degree of skill <b>XIII. TIME TO TRAIN</b> 1. Experienced workers 2. Inexperienced workers <b>XIV. TRAINING AVAILABLE</b> 1. None 2. Limited 3. Complete 4. Available elsewhere <b>XV. GRADE OF INTELLIGENCE REQUIRED</b> 1. High 2. Medium 3. Low <b>XVI. PERSONAL QUALITIES</b> 1. Accuracy 2. Neatness 3. Speed 4. Initiative 5. Personality 6. Honesty 7. Reliability 8. Appearance 9. Promptness	<b>X. Leadership</b> 11. Tact 12. Aggressiveness 13. Alertness <b>XVII. RESPONSIBILITIES</b> 1. Handle money 2. Records 3. Equipment 4. Routine 5. Directed 6. Follow orders only 7. Supervisory <b>XVIII. CONTACTS</b> 1. With public 2. Other workers 3. Correspondence 4. Telephone <b>XIX. EMPLOYMENT CONDITIONS</b> 1. Permanent 2. Part Time 3. Temporary 4. Intermittent <b>XX. PERSONAL EQUIPMENT REQUIRED</b> 1. Tools 2. Clothing 3. Other equipment <b>XXI. WORKING CONDITIONS</b> 1. Hours per day 2. Starting time 3. Quitting time 4. Wages a. Per hour b. Per day c. Per week d. Piece work e. Bonus f. Commission 5. Wages-when paid a. Daily b. Weekly c. Semi-monthly d. Monthly <b>XXII. PROMOTION</b> 1. Eligible 2. Possible 3. Not likely 4. Time 5. Next job <b>XXIII. EDUCATIONAL REQUIREMENTS</b> 1. Grade School 2. High School 3. Vocational 4. Technical 5. College <b>XXIV. MISCELLANEOUS</b>
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REMARKS: (Here should be stated anything needed to explain or extend any check or statement made in the foregoing analysis to make it clear or furnish needed facts. In doing this the specific item in the above form should be referred to by the title; by the proper Roman and Arabic numerals; and by the alphabet number. At least one inch of space here should be available.)  
Follows directions of numerous persons but also must exercise initiative; plan work and make decisions. (See XVII on responsibilities)

(6426-40)



Job. No. \_\_\_\_\_ Job Name \_\_\_\_\_ Company \_\_\_\_\_  
 Department \_\_\_\_\_ Occupation \_\_\_\_\_ No. Employed on Job \_\_\_\_\_  
 Prepared by \_\_\_\_\_ Date \_\_\_\_\_

1. DUTIES

2. PHYSICAL  
REQUIREMENTS OF  
JOB

3. PHYSICAL  
QUALIFICATIONS

4. MENTAL  
QUALIFICATIONS

5. GENERAL  
EDUCATION

6. SPECIAL  
ABILITIES

7. PERSONAL  
QUALIFICATIONS

8. EXPERIENCE AND  
SPECIAL TRAINING

9. CONDITIONS OF  
EMPLOYMENT

10. PROMOTION

11. NATIONALITY  
PREFERRED

12. REMARKS

Job No. \_\_\_\_\_

Form No. 3

Company \_\_\_\_\_

INDIVIDUAL CHECK SHEET

Name of Job \_\_\_\_\_

re \_\_\_\_\_

Date \_\_\_\_\_

Case No. \_\_\_\_\_

QUALIFICATIONS FOR EMPLOYMENT

in \_\_\_\_\_

Prepared by \_\_\_\_\_

Name of Case \_\_\_\_\_

A SPECIFIC JOB

	Good	Fair	Unsatisfactory
Physical qualifications			
Mental qualifications			
Special abilities			
Personal qualifications			
Previous experience			
Special training			
General education			

REMARKS:

NEVADA STATE BOARD FOR

104

VOCATIONAL EDUCATION

R. B. JEPPSON  
STATE DIRECTOR

CARSON CITY

Copy of letter to Nevada State

Director of Vocational Education

June 19, 1940

Mr. R. B. Jeppson  
State Director of Vocational Education  
Carson City, Nevada

Dear Mr. Jeppson:

In pursuance of my study of teacher training in trade and industrial education in Nevada the fact that difficulties in securing trade and industrial teachers by our schools have been had, is an important point. Will you, therefore, give me such facts on this subject as have come to your knowledge in the past three or four years?

Bespeaking your ready cooperation in furtherance of this needed work, I am,

Very truly yours,

Donald C. Cameron



NEVADA STATE BOARD FOR

VOCATIONAL EDUCATION

105

R. B. JEPSON  
STATE DIRECTOR

CARSON CITY

Copy of letter from Nevada State

Director of Vocational Education

June 23, 1940

Mr. Donald C. Cameron  
Supervisor,  
Trade and Industrial Education  
Carson City, Nevada

Dear Mr. Cameron:

Referring to your letter of June 16, about difficulties of securing competent trade teachers experienced by our schools, I am indeed glad to indorse the purposes of your study and to cooperate in its furtherance. I have reviewed the difficulties we have had in securing competent trade teachers and would say that they fall into the following classes:

1. Schools have found it impossible to get teachers from any source who could meet only our minimum requirement.
2. Schools have been delayed in putting into effect programs of trade work, and in getting evening classes organized and in operation due to difficulties of securing teachers when needed.
3. Trade teachers which have been secured have not been thoroughly competent as revealed by their use of poor methods of instruction.
4. Lists of available teachers having only the minimum qualifications have been so short that schools have not had a chance wide enough to assure satisfactory selection.
5. It has been too often necessary to hire trade teachers from outside the state. Under the expressed policy of the State Board for Vocational Education of giving preference to Nevada-trained teachers, this operates as a serious difficulty.

The foregoing observations are based on specific instances of difficulties experienced in securing trade teachers. They are accepted by me as evidence of the weakness of our trade teacher training program.

Very truly yours,

State Director of  
Vocational Education

STATE OF NEVADA

DEPARTMENT OF EDUCATION

107

CARSON CITY

Copy of letter from Superintendent of  
Public Instruction in Nevada.

June 26, 1940

Mr. Donald C. Cameron  
600 S. Howes Street  
Fort Collins, Colorado

Dear Mr. Cameron:

As executive officer for the Nevada State Board for Vocational Education, I am familiar with the difficulties which have been experienced in securing competent trade teachers for our Nevada schools. This difficulty extends to the full time day classes and the shorter term extension evening courses, including the traveling teachers. As the Nevada State Board for Vocational Education and the taxpayers of this state generally approve our policy of giving preference in employment to teachers trained in this state or to residents of this state, we deplore the necessity of having to go outside the state for many of our trade teachers. Last year we had to secure teachers from other states for trade courses in the Reno high school and the Tonopah high school.

It is sincerely hoped that from your study a plan for training our trade teachers may be evolved which will be feasible in our small program and at the same time assure Nevada students in all trade classes the best in instructional practices.

Very truly yours,

Mildred Bray  
Executive Officer  
State Board for Vocational Education

MB:IF



NEVADA STATE BOARD FOR

VOCATIONAL EDUCATION

108

R. B. JEPSON  
STATE DIRECTOR

CARSON CITY

Sample copy of letters sent to  
State Directors of Vocational Education  
of all of the States

March 31, 1939

Mr. O. D. Adams  
Director of Vocational Education  
Salem, Oregon

Dear Mr. Adams:

I have undertaken the task of getting out a plan for the improvement of trade and industrial teacher training in our state and would like information on what provisions your state makes for this service. Will you, therefore, send me a copy of your trade and Industrial State plan? If it may not be convenient to send the whole plan, a copy of the teacher training section will answer my purpose.

If you will comply with this request, I assure you that the favor will be greatly appreciated.

Very truly yours,

State Supervisor for Trade  
and Industrial Education

STATE OF NEBRASKA

DEPARTMENT OF VOCATIONAL EDUCATION

109

STATE CAPITOL BUILDING  
LINCOLN

Sample copy of letters received from  
State Directors of Vocational Education  
who were not able to send state plans.

April 21, 1939

Mr. Donald C. Cameron,  
State Supervisor, Trade and Industrial  
Education,  
State Board for Vocational Education,  
Carson City, Nevada.

Dear Mr. Cameron:

Your letter under date of March 31 requesting a copy of the Trade and Industrial Section of our State Plan has been received. I am sorry to say that our plan has not yet been printed or mimeographed and a copy of it is not available for distribution. I may say though that thus far no educational institution has been designated as a training school for teachers of trade and Industrial Education. Our work is being done by the state and local supervisors.

As soon as copies of the plan are available for distribution a copy will be sent to you.

Cordially,

Donald C. Cameron

CAF S

## Teachers Participating in Test of Inquiry Guide.

Anderson, G. E. Itinerant Firemen Instructor, Carson City Nevada

Anderson, W. W. Ely Mining School, Ely, Nevada

Brown, G. W. Ely High School, Ely, Nevada

Daugherty, A. G. Las Vegas High School, Las Vegas, Nevada

Hastings, W. E. Sparks High School, Sparks, Nevada

Ihrig, E. W. Reno High School, Reno, Nevada

Kottke, W. F. Battle Mountain High School, Battle Mountain, Nevada

Ward, E. H. Ely High School, Ely, Nevada

Welsch, O. D. Tonopah Mining School, Tonopah, Nevada



Topic  
No.

Topic

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1. Analyze two jobs for trade technical and related technical items of knowledge.
  2. Training in vocational education.
  3. Making the observation report.
  4. Meaning of trade technical and related technical.
  - \*5. Part-time education as a part of vocational education.
  6. Differences in requirements for (a) Trade, (b) Professions, (c) Craft (d) Business.
  7. Analyze jobs into instruction units operational.
  8. Federal and state vocational programs.
  9. Items upon which you, as a teacher, expect a supervisor to rate you.
  10. Definitions of vocational terms.
  - \*11. Part-time continuation as a part of vocational education.
  12. The teacher and his responsibilities.
  13. Analysis of the productive type job.
  14. Objections to continuation education.
  15. Aims and objectives of industrial arts.
  16. Importance and factors of job selection.
  17. Characteristics of the continuation type of students.
  18. Organization of an instruction unit operational (manipulative lesson).
  19. Educational advantage of continuation education.
  20. Social advantages of continuation education.
  21. Economic advantages of continuation education.
  22. Reclassification of the technical items into topics and problem procedure.
  23. Definitions of terms used in trade and related discussions.
  24. Requirements for part-time continuation education.
  25. Types of part-time training.
  26. Organization of trade technical science information unit sheets.
  27. Psychology for the vocational teacher.
  28. Organization of a problem unit.
  29. All-day vocational school teachers' programs.
  30. How to organize trade technical mathematics unit sheets.

\* Nos. 5 and 11 overlap to some extent.

Topic  
No.

Topic

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31. Evening trade extension classes (organization of)
  32. How to index trade technical instruction material.
  33. Importance of maintaining a standardized indexing system.
  34. Teachers and students of evening trade extension classes.
  35. What a vocational teacher should know about psychology.
  36. Part-time trade preparatory classes.
  37. Program for part-time trade preparatory classes.
  38. Organizing a job plan from the master chart.
  39. Characteristics of individuals (individual differences).
  40. How to organize a work study plan for the student.
  41. Part-time trade extension apprenticeship advantages and objections.
  42. Problems in observation and directed teaching.
  43. The job plan sheet.
  44. Part-time trade extension plan and organization.
  45. The teachers relation to principal, to supervisor, and other officers.
  46. The assignment sheet.
  47. Characteristics of apprenticeship training.
  48. Shop management.
  49. The information sheet.
  50. Organization of teaching materials.
  51. Part-time home economics for adults.
  52. Types of job plans.
  53. Reimbursements for different types of Smith-Hughes classes.
  54. Measurement of instructional factors.
  55. Analysis of tool keeping systems.
  56. Cooperative education.
  57. Expanding university source books in trade technical and related technical subject matter.
  - \* 58. Steps in starting classes in cooperative work.
  59. Analysis of the discipline system in your class.
  60. Inventory of trade technical source book.
  61. Trade coordinator.
  62. The teachers' professional improvement.

Topic  
No.

Topic

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63. Analysis of extra-curricular duties.
  64. The general coordinator.
  65. Measuring the results of instruction.
  66. Trade course objectives.
  67. Analyzing a trade into employment levels.
  68. Characteristics of cooperative programs.
  69. Sources of trade technical material.
  70. Types of apprenticeship training.
  71. Laboratory practice on the completion and organization of trade instructional material.
  72. Need for coordination for part-time classes.
  73. Organization for vocational classes.
  74. All-day training vs. cooperative education(alternate weeks at work).
  75. Problems in part-time apprenticeship education.
  76. The organization and operation of advisory committees.
  77. School surveys and how to make them.
  78. Case studies in cooperative, continuation and extension education.
  79. The organization of the teacher training courses.
  80. Guidance, something of its functions and field.
  81. The ancestry of vocational education.
  82. Social and economic facts as to area, population, and density of population of leading countries of the world.
  83. How to take advantage of the course in vocational teacher training.
  84. Guidance and learning capacities.
  85. Objectives of the early program of vocational education in England, France and Russia.
  86. The purposes of government: its basis.
  87. The social idea of democracy.
  88. The decline of the apprenticeship system.
  89. Mental tests in relation to guidance.
  90. The importance of education in a democracy and the necessity for trained teachers.
  91. What is education? The objectives of secondary education.
  92. Factors determining abilities and probable success in learning (cautions necessary).
  93. Vocational education a national responsibility.
  94. Productive and unproductive labor.
  95. The legal requirements of the Smith-Hughes law.
  96. Factors other than intelligence in guidance.



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97. The significance of vocational education.
  98. Analyzing cases and evaluation the various factors to be considered in guidance.
  99. Economic and social justification of vocational education.
  100. Unproductive vs. non-essential occupations.
  101. Vocational and social intelligence.
  102. Organization of program of studies for guidance.
  103. Ways of learning and their significance.
  104. The minimum essentials of a vocational plan.
  105. Basis of wage payment.
  106. Labor: its significance.
  107. Guidance in the newer movement of school organization and curriculum making--abilities vs. faculties.
  108. Industrial arts education.
  109. The time and place of vocational education in the general scheme of education.
  110. Guidance in each stage of growth represented by school divisions 6-3-3 plan.
  111. The relation of capital and enterprise to the changing method of production.
  112. The vocational teacher's job.
  113. Objective and purpose of industrial arts education.
  114. Individual differences and guidance.
  115. Essentials of capital and industry.
  116. Job analysis--determining what to teach.
  117. Vocational agricultural education.
  118. The importance of analysis to the teacher.
  119. Types of agricultural classes.
  120. Determining what to teach classification.
  121. The importance of related knowledge--science, mathematics and drawing.
  122. The difference between the Smith-Hughes and the Smith-Lever Acts.
  123. Blocking one's trade employment levels--block bases.
  124. Capital as the product of labor.
  125. Adjusting education and training to individual capacities for learning.
  126. Putting it over--what is teaching?
  127. Vestibule schools.
  128. Home economics education.

Topic  
No.

Topic

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129. Teaching in relation to highly skilled craftsmanship--training and essential part of each.
  130. The mastery of principles, practices and methods or tools of good teaching.
  131. The values of objectives or goals for each learner.
  132. Management in industry.
  133. Teaching a developing process to cause the learner to think for himself.
  - \*134. Types of part-time education.
  135. Analyzing the teaching job.
  136. Objectives of part-time education.
  137. The lesson unit, the four steps of teaching.
  - \*138. Problems in part-time trade preparatory education.
  139. The five general economic stages.
  140. Guidance in selection of subjects and tests.
  141. Objections to part-time education.
  142. What to observe in a lesson or teaching job.
  143. Cooperative education and labor.
  144. The lesson objective and its importance.
  145. Trends in part-time education.
  146. Coordination in part-time education and the duties of the coordinator.
  147. The industrial revolution.
  148. Evolution of educational guidance its importance and the devices set up to serve it.
  149. Discipline.
  150. Localization of industry.
  151. Division of labor.
  152. Trade and industrial education.
  153. The teaching method and lesson steps.
  154. Placement as a part of vocational education.
  155. Types of trade or industrial schools under the Smith-Hughes law.
  156. Demonstration teaching--preparing to teach a simple lesson.
  157. Vocational education for adults.
  158. Developing the ability to discriminate and use teaching methods according to function of teaching steps.
  159. The factors which affect the rewards of labor.
  160. Guidance in social and civic activities.
  161. Trade and industrial education.

\*Nos. 134 and 138 overlap

Topic  
No.

Topic

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162. Money- commodities.
  163. Visiting evening schools for observational purposes.
  164. How to use the developmental form (lines of approach) in teaching.
  165. Trade ethics and morals.
  166. Relation between price and value.
  167. Guidance in health and physical activities.
  168. Evening trade extension classes.
  169. Classes of lessons and their uses, types, kind, and form.
  170. Case analysis in guidance.
  171. Relation of price to supplying demand of money.
  172. Trends in education for the professions.
  173. Training in judgment and intelligence.
  174. Organization of vocational teacher training.
  175. Learning difficulties and progression factors of learning.
  176. Guidance in worthy use of leisure time.
  177. Index numbers.
  178. The influence of the manual training movement.
  179. Objectives--how to achieve them.
  180. The importance of avocational interests and how guidance can uncover these.
  181. Time and rate basis for pay.
  182. Professional education for teachers in service.
  183. How to make a chart of a block or employment level of a trade and organize it into learning order.
  184. Types of industrial teacher training programs.
  185. The shorter work day.
  186. Avocation vs. vocation.
  187. Cooperative or profit sharing industry.
  188. Vocational rehabilitation of the disabled.
  189. Lesson planning--(a) before teaching, (b) while teaching.
  190. The employer's attitude toward vocational education.
  191. Industrial organization and legislation as they affect relationships in industry.
  192. Guidance in character building activities.
  193. History of American industry.
  194. Labor and vocational education.



Topic  
No.

Topic

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195. Job analysis to determine lesson units.  
196. The law of the labor contract.  
197. Ethical character and the function of guidance in character building.  
\*198. Labor and vocational education.  
199. Lesson planning--making skeleton lesson plans.  
200. The vocational education movement.  
201. Lesson planning--detailed lesson planning.  
202. Forecasts and prophecies in vocational education.  
203. Teaching form detailed lesson plans.  
204. Observing teaching and using critic sheet.  
205. Promotional systems in industry.  
206. Guidance in acquiring vocational information.  
207. Evaluating the efficiency of a vocational training program.  
208. Exhibition of course of training chart, lesson planning book, and detached lesson plans.  
209. Habit psychology and its relation to the acquiring of skill.  
210. Society and attitudes toward laborers.  
211. Guidance and placement.  
212. The relation of vocational education in general education--interdependence.  
213. Organization of guidance.  
214. "Public benefit" labor legislation.  
215. The problem of adult guidance.  
216. Social problems in relation to vocational education.  
217. Collective bargaining.  
218. Vocational counseling.  
219. The California plan for vocational education.  
220. Democracy in industry.  
221. Current problems in vocational education.  
222. The local administration of vocational education.  
223. The use and abuse of standard tests in guidance.  
224. The advantages and disadvantages of union membership.  
225. Personnel relationships in industry.

\*Same as 194 but treated in two separate courses.

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