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TRAINING TEACHERS FOR TRADE AND INDUSTRIAL SUBJECTS

by

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TRAINING TEACHERS FOR TRADE AND INDUSTRIAL SUBJECTS

Foreword

THE PROBLEM OF THE UNPREPARED

OR

THE NEED FOR INDUSTRIAL EDUCATION

As an evidence of the great and constantly increasing need for industrial education it is only necessary to note the enormous industrial development of this nation. This was further emphasized during the recent war by the very great demand for skilled mechanics in all occupations. These were needed both in industry and for military service. All nations are looking forward to a period of prosperity following the period of reconstruction. The industrial prestige of the nation will depend not only upon the supply of raw materials, available capital, and facilities for transportation, but to a large extent upon the available supply of skilled labor. Great Britain, early recognizing this situation in the British Empire, passed a measure requiring all youth between fourteen and eighteen years of age to attend continuation schools for eight hours per week and for not less than 320 hours per year.

Those of us who now are engaged in the organization and administration of vocational schools agree that the greatest problem to be solved is "How to secure adequately prepared teachers". Practically no supply exists from which they may be drawn. A few schools have tried

to find college men or graduates of engineering institutions who possessed sufficient trade experience and vocational view point as to enable them to qualify as shop instructors. Others have been forced to employ skilled workers from the trades. The first are not qualified because of a lack of trade experience and the second group often fail, due to a lack of training in the art of teaching. Trade experience and skill in the art of teaching are both necessary qualifications of successful teachers in trade or industrial schools.

The Federal Vocational Act provides that a state must, after the year 1920, engage in the training of teachers, if Federal money is to be used to reimburse schools for the salaries of teachers of vocational classes. It is evident that the framers of the Act, recognized from experience the vital necessity for securing qualified teachers as a means of assuring the success of a vocational program. The importance of good teaching is directly reflected in the success of the pupil after he has entered an industrial pursuit. Too much of public money has in the past been wasted in the employment of poorly trained teachers. While this situation is a well known fact, the responsibility can not be placed upon an individual, but must be placed upon the local community, the state or the nation as being directly responsible for the selection and training of teachers.

There are in general two groups of teachers to which training may be given,-

- a- Those preparing for service as teachers,
- b- Those receiving instruction after employment as improvement in service.

This thesis is not intended to suggest exhaustive subject matter which may be used in classes organized for the above purposes, but rather to set up the conditions of the Federal act, the state act, a plan for the organization of classes and to outline some of the more important subjects which should be included in the course of study of a teacher training program.

Chapter One

THE KINDS OF TRADE AND INDUSTRIAL SCHOOLS WHICH MAY BE ORGANIZED

The state plan as approved by the State and Federal Boards for Vocational Education sets up the types of schools and classes which may be approved for state and federal aid. These types are based upon the provisions of the Federal act and the policies of the Federal Board. Each type is the result of the demand of some form of industry for workers, or as a result of the conditions under which men and women are employed.

- A. Evening Schools, giving instruction in
 - 1. Trade Extension subject matter
 - 2. Related Subjects
- B. Part-time Schools, including
 - 1. Trade Preparatory Courses
 - 2. Trade Extension Courses
 - 3. General Continuation School Courses
- C. All-day Schools, having

1. Unit Trade Courses
2. General Industrial Courses

One of the "mooted" questions under discussion during the past ten years has been the source from which men and women who are to be trained as teachers in vocational schools should be selected, as well as a discussion of the subject matter to be included in teacher training programs; one group maintaining that experienced teachers with a mechanical inclination, when given a short trade course make the most effective teachers, the other taking the position that the first essential in effective teaching of shop classes is a thorough mastery of a trade. It is generally conceded by those who are directly responsible for the success of vocational schools that the latter group presents the most fertile field. In general this is true for two reasons:

1. No teacher can impart to his pupils knowledge and experience which he himself does not know or which he has never experienced.
2. The measuring stick applied to vocational schools will be expected to determine how many of those prepared for entrance into industry actually enter and to what extent those in industry are prepared for more efficient service. Since both of these ends will depend upon the vocational view point of the instructor it is essential that only those be chosen as teachers who are in sympathy with the purpose of the school or class.

Neither of these two importance factors have as a rule been included in the qualifications of the first group of candidates.

Teaching has come to be recognized as a skilled profession. When a man enters this profession from industry, his new job is to produce trained workers. Since in the past he has been responsible for the quality and quantity of the output of manufacturing pursuits he will now find it difficult to adjust his efforts as an instructor in training men and women. He will even then be very closely connected to productive work, since through the use of the productive project new workers can best be trained. In attempting to do this training job, many teachers are unable to disassociate themselves from their former occupation as a producer. To accomplish this is the principal end of teacher training for shop teachers. The job involves an ability to analyze occupations, to analyze jobs, a knowledge of the subject matter, and skill in methods of instruction in class room management.

Few shop teachers selected from industry are able to inventory their fund of information and to catalog the steps, processes and procedure through which a beginner should acquire the same skill and information which they possess. This situation makes necessary as a part of a teacher training course instruction in the analyses of occupations.

The time has long since passed when the conditions of indentured apprenticeship, through which many older skilled workers have passed, enabled them to acquire all of the experiences of the particular trade in which they were engaged. This is due to the great degree to which industry has become specialized. Many experienced machinists through this specialization have never had an opportunity to secure practice in all of the machines commonly used in a machine shop.

Furthermore, the invention of new machines continually increases the difficulties of this situation. It therefore becomes necessary to include in a teacher training program such trade extension subject matter as may be needed to round out the experiences of the individual. The same may be said of the field of science, mathematics and drawing as they are related to the particular occupation.

Assuming that the candidate for a position as shop teacher possesses the ability to analyze his occupation and is qualified in the subject matter of the occupation, he still must be trained in the methods of imparting instruction and in class room management. This involves an ability to arrange the subject matter in an effective instructional order and an ability to organize classes, manage cases of discipline, keep records and make reports in accordance with the requirements of the principal or superintendent under whom he may be employed.

QUALIFICATIONS TO BE CONSIDERED IN THE SELECTION OF CANDIDATES FOR TEACHER TRAINING COURSES

Three types of teachers are in general required in trade and industrial classes.

1. Shop teachers
2. Related subjects teachers
3. Non-vocational subjects teachers

The shop teacher should possess the following qualification, either before employment, or should be required to enroll in training

classes offered for the improvement of those in service.

- 1st. He should be not less than 22, nor more than 40 years of age when beginning to work.
- 2nd. He should be of good moral character.
- 3rd. He should present a certificate of health signed by a reputable physician.
- 4th. He should have an elementary school education, or its equivalent.
- 5th. He should possess a knowledge of the fundamental mathematics of the trade.
- 6th. He should have had at least two years of trade experience beyond the apprenticeship period, including an acquaintance with the best practices of the industry.
- 7th. He should give satisfactory references as to his skill.
- 8th. He should possess teaching ability and understand the organization and purpose of the vocational school.
- 9th. He should be of good personality, habits, and have the ability to deal with adults as well as with youth.

The related subjects teacher employed in a unit trade school or as an instructor in an evening school will of necessity be responsible for the relation of his instruction in drawing, science and mathematics to the shop work. This will require on his part a contact with one or more trades in order that he may possess the view point of production in industry. The state plan of Missouri requires that,

- 1st. He should be not less than 22, nor more than 40 years

of age when beginning to work.

- 2nd. He should be of good moral character.
- 3rd. He should present a certificate of health signed by a reputable physician.
- 4th. He should have at least two years (60 semester hours) of college credit of which 20 hours shall be in technical and scientific subjects.
- 5th. He should have satisfactory trade contact.
- 6th. He should be of good personality and habits.

While the Federal act does not provide funds to be given as reimbursement in classes preparing teachers of non-vocational subjects, it is generally recognized that the qualifications of this group are very important. Few precedents exist in this field in industrial education.

Owing to the reduction in time given to non-vocational subjects, teachers must be able to draw their material for instruction in civics, economics, industrial history, English and mathematics from the field of industry. Trade experience is helpful though not necessarily essential. There should, however, be at least a layman's knowledge of the machines used in the trade processes in which instruction is being given in the school. The most desirable teacher of non-vocational subjects will be secured from the general school and will be selected because of his or her vocational view point and eminent success in teaching. The following table shows the kinds of schools, kinds of teachers, and the types of classes in which each of the above teachers

are qualified to serve as instructors.

In What Kinds of Schools May the Above Teachers be Employed?

Kinds of Teachers	Kinds of Schools								
	Evening	Part-time	All-day	Shop Work	Related Subjects	Trade Preparatory	Trade Extension	General Continuation	Unit Trades
Shop Teachers	Yes	Yes	Yes	Yes	No	Yes	Yes		
Related Subjects	No	Yes (Shop Exp)	Yes	Yes	No	Yes	Yes		
Non-vocational Subjects	No	No	No	No	Yes	Yes	Yes		

THE STATE ORGANIZATION FOR A TEACHER TRAINING PROGRAM

The State Board for Vocational Education has been given the responsibility and the authority to promote teacher training classes in the state of Missouri. This is a responsibility which it can not delegate to any other institution in the State

The State Board may appoint representatives to organize and conduct teacher training classes or it may designate an institution as the agency to organize and conduct teacher training courses, but in either event the responsibility for this important phase of vocational

education rests upon the State Board itself. The organization of this work will usually concern three parties, the local community or the institution, through its school facilities furnishing the equipment such as rooms, light, heat, janitor service, equipment, etc; the state through the State Board for Vocational Education being responsible for the organization, content, and direction of the course; and the Federal government, through the agents of the Federal Board for Vocational Education approving the courses of study, methods of instruction, qualifications of teachers, and matching dollars with the state in the payment of the salaries of teachers and necessary expenses incurred as maintenance: this money to be given as reimbursement under the provisions of the state plan.

The responsibility of the State Director in charge of Vocational Education can only be delegated by the State Board for Vocational Education. He should be a man of broad experience in school administration and one who possesses a fund of knowledge of industrial conditions, labor problems and an ability to preside in conferences attended by trade unionists, employers and local school officials. While he may not be a skilled mechanic, yet he should be familiar with the needs of industry. In general, a broad appreciation of industrial conditions as they relate to the employer and employee will be essential for his success as a State Director. The Federal Board is concerned with the State administration and supervision because it is a cooperative agency with the State Board in the promotion of Vocational Education within the State. The duties of each partner are specified by law and in the State plan. A partnership can not exist without each member being capable of carrying

out its part of the agreement. The provisions which the State Board make for administration and supervision are the best single index of the Board's ability to discharge its obligation under the terms of the partnership. The State Agent in charge of teacher training is charged with certain duties and responsibilities in the organization of the teacher training program. These may be summarized as follows,-

- 1st. To secure cooperation with the institution or school system in connection with which the training is to be given. This will necessitate the use of class rooms, employment of teachers, provisions for janitor service, and opportunities for observation and practice teaching.
- 2nd. To secure recruits for the teacher training courses from the various sources from which they may be drawn.
- 3rd. To examine applicants for the course and pass upon their qualifications for admission.
- 4th. To determine the subject matter to be given and the order in which the subjects shall be presented.
- 5th. To determine the demand for teachers in the community and through out the State.
- 6th. To make provisions for, and to supervise the work in observation and practice teaching.
- 7th. To inspect the classes and advise with the local instructor in the methods of instruction and management.
- 8th. To keep records of the cost of instruction and report to the State Board in accordance with the requirements of the State plan.

The teacher training instructor is charged with a responsibility much greater than that of the usual instructor in teacher training classes. Practically no organized subject matter and precedents are available from which he may draw material in planning his lessons. It is his job to train the individual recruited from industry so that he becomes a new skilled worker, one who now is not only able to engage in industrial production, but one who also is skilled as an instructor in the production of skiller workers. As a worker in an industrial concern he was required to know the kind of a product included in the industrial output; as an instructor he must be equally well informed of the demand, requirements and kind of work for which he is training the individual.

The following comparison made by Charles R. Allen should be carefully considered by every instructor in charge of teacher training.

Building Ships and Instructing Men - A Comparison

The Yard	The Instructor
Turns out a vessel	Turns out an instructed man. (A learner)
Knows what kind of a vessel it is going to turn out.	Knows what kind of work he is training the learner for.
Gets out the ship from specifications and plans from which parts are made and then assembled.	Works from a planned course of instructions made up from definite teaching units. (Lessons)
The shipbuilder knows all the parts that go into the ship.	The instructor knows all the branches and operations of his trade.
The parts of a ship are assembled in the order that will enable her to go up as rapidly and easily as possible.	The course of instruction is put over in an order that will enable the learner to get it as rapidly and easily as possible.

The plan of administration, whether carried out directly by Agents of the State Board or by designated institutions, will, of necessity, include several different types of organization. The particular type to be selected must be governed by the conditions within the state and the community. As a rule, courses will be carried on in one or more of the following types.

1. Residence courses
2. Extension courses in evening schools.
3. Short courses in residence.
4. Correspondence improvement courses.
5. Itinerant teachers

Whatever the method used, the State Agent in charge must determine the kind of teachers to be trained, how they shall be selected, must provide a teacher training instructor, and arrange accommodations for the course. Each of these types have been found necessary to meet the peculiar needs of the situation in the different states.

Residence courses in institutions can not be expected to train teachers of shop work in unit trade classes, since as a rule institutions of this character are not located in, or adjacent to, industrial centers from which men possessing the requirements as to trade experience may be drawn. Extension courses while they do not give the instructors an opportunity to come into close personal contact with the pupil, do offer an opportunity for reading assignments and lectures of great value to the individual. This is true since all prospective teachers should be familiar with the history of the progress of vocational

education, its administration, principles and policies of the state and Federal Boards, and information related to daily problems in the shop and class room. Through monthly institutes the instructor may, by intensive lectures, maintain interest through a discussion of the problems in the assignment.

Evening schools in local communities may often be regarded as extension courses given by an institution designated for this purpose. It is best, however, to arrange for a local instructor to be in charge. The work then becomes largely of a resident character and can be made very effective.

It is difficult at this time to conceive of the possibilities for correspondence improvement courses. This is especially true since so little subject matter in the way of reference books and outlines suitable for these courses is in existence. Where the number to be trained is not sufficient to warrant the organization of a class, either at an institution or in a community, this method is perhaps the most economical and satisfactory scheme for giving the training. Correspondence courses may be closely correlated with schemes for itinerant teacher training.

The use of an itinerant teacher training instructor is a recognition on the part of the state board or institution of their inability to bring together at a central point those who wish to become teachers and who apply for the instruction. The scheme calls for sending assistance to the teacher either before or after employment, and may therefore be given as preparation for service or as improvement in service. This assistance usually takes the form of sending an individual

who will assist the teacher to improve his methods of instruction, classroom management, and related information. In the sense that the agent or teacher trainer travels from one teacher to another, he becomes an itinerant trainer of teachers. On the other hand, a similar course might be given in classes organized where the pupils at stated periods go from their work to the center, or centers, for instruction. The responsibility of the state board for improvement of teachers already in service makes necessary close supervision and some form of itinerant teacher training. It is practically impossible to separate improvement of these teachers and the inspection of their work, the two functions being so closely allied that the Federal Board has made provision for the use of teacher training funds for supervision in trades and industries. The individual who is not responsible for the inspection of teachers in service can not at the same time be responsible for their improvement, under the present policies of the Federal Board. Individuals or institutions charged with the responsibility of training those preparing to enter service, on the other hand, are not responsible for the supervision, since the individual has not yet been employed. The State Board for Vocational Education must recognize the necessity for securing a trained staff to carry on the teacher training work within the state. The fact that the State Board has not in the past been charged with a similar responsibility does not in any way lessen its obligation for vocational education. In setting up the state plan for itinerant teacher training, a distinct understanding should be made as to the responsibilities to be delegated to the institutions and the responsibilities to be assumed by the State Board through its Agents.

It should also be made clear that whatever responsibility the State Board delegates to an institution is delegated as a responsibility of the State Board and not as a distinct function of that institution.

State Board Responsible for Training Teachers in Service

In a circular letter to State Boards, the Federal Board states:

It has been shown that the State board is responsible for supervision of work within a State. It follows that the improvement of teachers in service is the work of the State board. In the carrying out of this task it may be advisable to have the assistance of a person or persons from a teacher training institution, but the responsibility is still with the State board and its agents for the assistance and guidance of teachers in service.

Use of Teacher Training Funds for Supervision and Training of Teachers in Service.

(a) Conditions stated by the Federal Board for guidance of State Boards.

At the meeting of the Federal Board for Vocational Education on July 11, the following was voted:

That State boards be authorized to use teacher-training funds for the maintenance of teacher training and supervision on the following conditions:

1. That a plan of supervision be set up by the State Board and approved by the Federal Board.
2. That the qualifications of supervisors be set up by the State board and approved by the Federal Board.
3. That all supervisors employed in connection with supervision for the maintenance of which Federal funds are used, shall meet the qualifications set up by the State board and approved by the Federal Board, and that such supervisors shall be employed by and responsible to the State Board for Vocational Education.
4. That not more than 25 per cent of the maximum which may be used for teacher training in any one of the three lines - trades and industries, home economics, and agriculture - be used for the maintenance of supervision in that line.

(b) Suggestions to State boards.

The following suggestions are made to assist State boards in preparing plans for supervision which will include the training of teachers in service:

1. The plan - the plan should provide for-

A. Improvement of teachers in service

- (a) Systematic visitation of teachers or local supervisors for individual help.
- (b) Definite reports from the teachers or local supervisors to the State supervisor on work done and methods of instruction used. In order to have these reports result in benefit to the teacher, the supervisor must provide for careful criticism and reports on the same to be sent back to the teacher or supervisors.
- (c) State and sectional meetings of the teachers at which the supervisor may himself give instruction or provide other instruction.
- (d) A period of professional improvement for teachers.
- (e) Cooperation between teacher-training institutions and the State supervisory staff so that all teacher training may be coordinated.

B. Inspection of schools.

C. Assistance in the establishment of new schools and classes.

D. Preparation of bulletins and other special literature.

The Qualifications of Supervisors

One of the most important functions of the supervisor is assisting teachers in their work. The qualifications of supervisors in any given field then should at least meet the standards set up for teachers in that field. In addition, supervisors should have had at least one year of successful experience in teaching in that line. It is also necessary that supervisors have a knowledge of the field of vocational education and be fully conversant with the latest developments in vocational education.

Supervision a Function of the State Board

If teacher-training funds are to be used for forms of teacher training which include supervision of schools or teachers, the plan of supervision should show that the persons performing this double function are directly responsible to the State Board. The State board can not delegate its supervisory responsibility to an institution or to another board.

The Maximum Amount of Federal Funds to be Used

The maximum amount of the teacher-training fund which may be used in any fiscal year in any one of the three lines is 60 per cent of the total amount allotted to the State for that year for teacher training. Twenty-five per cent of this maximum in any one of the three lines is 15 per cent of the total teacher-training fund.

For example, Suppose the total amount of Federal moneys for teacher training in all lines allotted to a State for a given fiscal year is \$10,000. Since 60 per cent of this, or \$6,000, could, under the act, be used for teacher training in agriculture, or in trades and industries, or in home economics then it is possible under paragraph 4 above to use 25 per cent of this \$6,000 (60 per cent of the total), or \$1,500, for the supervision of instruction throughout the State in agriculture, \$1,500 for the supervision of instruction in trades and industries, and \$1,500 for the supervision of instruction in home economics.

This would give a possible total of \$4,500 for the supervision of teachers in service, leaving \$5,500 for the preparation of teachers for service.

Since the moneys from the teacher-training fund used for the supervision and the training of teachers in service can be used for the same purposes in such supervision, as the moneys used for other forms of teacher training it follows that the teacher-training money used for such supervision may be expended for these purposes: Salaries of supervisors, clerical service, travel, communication, printing and supplies.

RECRUITING THE CLASS

When the arrangements have been completed for opening a class in the community, the selection of suitable candidates should be carefully made. Not every person who responds to the announcement

should be accepted. In the beginning the candidates should be separated into two classes,-

1. Desirable Candidates, including those who appear from an examination of their qualifications, experience, and a personal interview to possess,

- a- An adequate trade training
- b- A desirable personality
- c- Patience and firmness
- d- Qualities of leadership
- e- A high standing among fellow workmen
- f- The endorsement of shop foremen or superintendents

2. Undesirable Candidates, including those who are

- a- Physically sub-normal
- b- Chronically dissatisfied with their jobs and who believe they have an inherent right to any position.
- c- Unwilling to receive special training for the teaching profession.
- d- Addicted to the unrestricted use of alcohol, tobacco, and who are frequent users of profane language, and who lack in personal neatness and personal hygiene.

Public Announcement of the Courses

Public announcement of the teacher training courses should be made through the press, by printed circulars and bulletins, and by addresses to labor organizations. Those who possess the desired qualifications should be given information concerning the purpose of the

class, need for teachers and advantages which may come to those who complete the course. The following information might well be circularized and given to the press as a means of advertising and as information to those who may desire to enroll.

Authority - The University of Missouri has been designated by the State Board of Education, under legislative authority, as an institution to prepare teachers for vocational schools. The courses will be given under the supervision of the State Director for Vocational Education.

Cost - No tuition fee will be charged.

Time - These classes are to be evening classes and will open about October 1 of each year. There will be two meetings per week for thirty weeks. The hours are from 7:00 to 9:00 P.M.

Location - Classes will be located at central points in Kansas City, St. Louis, and as the demand for teachers increases in the State aided vocational schools, in other cities having a population of 75,000.

What is Taught - These classes do not teach trades nor will they deal with matters of general education. The work will be concerned entirely with the art of teaching and with methods of dealing with the problems with which the vocational school teacher must deal in imparting knowledge and will give training in his special need. Opportunity will be given for instruction in related science, mathematics, drawing and in such trade extension shop work as may be found necessary.

Conditions of Admission - The classes are, in general, to be open to any qualified resident of Missouri. They are not to be restricted to residents of the city where they are located, but are open

to any properly qualified person who wishes the instruction and who declares his or her intention to become a teacher in an approved trade or industrial school.

To be eligible for admission the applicant must first show that he or she possesses the qualifications for approval as a teacher in a State aided school except as to the professional training, trade extension and related subjects in which the school is intended to give instruction.

Limitations as to Admission of Qualified Applicants - At times the qualified applicant may not be admitted to a given class because of one or more of the following conditions which may exist,-

1. The class may be already full.
2. The applicant may represent a class or trade for which there is no immediate demand. Among the trades to be taught in State and Federal aided schools are machine shop practice, house carpentry, cabinet making, electrical construction, printing, sheet metal work, house painting, plumbing, masonry, sign writing, dressmaking, millinery work.
3. A sufficient number to meet the probable demands in the applicant's class or trade may have already been admitted.

Desirable Qualifications Include - A wide experience, special skill, and an experience in a great variety of trade processes. While it is necessary that shop teachers of unit trade courses must be specialists in their trade, it is desirable that they possess a trade contact with several other skilled trades. Candidates may be asked to

pass a shop examination in order to determine their trade experience and as a means of selecting the particular trade extension courses which they will be required to take.

A knowledge of such subjects as drawing, ability to make shop calculations, a knowledge of various materials used in the trade, machines and tools, with special devices for carrying on productive shop work under trade conditions will be required. The degree to which the candidate possesses special qualifications may be determined by practical tests or by written examination, or by personal reference to individuals.

A working knowledge of related drawing, as applied to building construction and machine shop practice, an ability to estimate quantities and calculate costs, a knowledge of materials used in building construction and in manufacture, including trade terminology and stock sizes which may be purchased in the market is highly desirable. The successful teacher should also possess intimate knowledge of the machines used in his trade, hand tools, special processes, etc. This information may be obtained through personal conference or by written examination.

The successful completion of special courses through correspondence or evening schools should also be credited to the qualifications of the applicant.

Certification - A special certificate will be granted by the State Board of Education to persons desiring to teach in vocational schools. Students who successfully complete the prescribed course will be certified. In order that the certificate may be granted, the student must have met, to a reasonable degree, the following conditions.

1. Practically continuous attendance in the course.
2. A certificate from the instructor in charge stating that, in his opinion, the student has completed the course and that he will make a successful teacher.

Is a Position Guaranteed? Neither the State University nor the State Board of Education has power to appoint teachers. This is a function delegated to the local community in all cases. Therefore no position is guaranteed to any student, no matter how efficient he may be.

There is, however, a very great need for teachers who possess the qualifications as prescribed for this course and who have completed the subjects contained therein. It is to be expected that teachers in approved vocational schools, where State and Federal aid is received for the salary of the teachers, will receive a wage considerably higher than teachers in general schools.

Trade and industrial schools are now being organized throughout the state. They consist of all-day, part-time and evening schools. These schools offer a very wide opportunity for the employment of additional teachers. It is safe to say that it will be very difficult for a number of years to come to secure adequately trained teachers for these schools, and that the individual who begins now to meet the qualifications required in these schools will be able to take advantage of the situation and secure the best places as the schools are established. While the declared purpose of those enrolling in these classes is to become teachers in State and Federal aided vocational schools,

other opportunities for employment are always present. Among these are the positions as teachers of manual training in high schools, elementary schools, and schools above secondary grade. It is not, however, the purpose of these courses to train individuals for the latter types of schools.

What Salaries are Paid in Day Industrial Schools - Successful teachers in approved classes usually receive from \$1200 to \$1500 per year in the beginning. This salary advances from year to year until, in most cities, after approximately five years' teaching experience, the individual should receive from \$1500 to \$2000. Promotion to department head, where the salary is proportionately larger, is always open to the successful teacher.

Evening shop teachers are usually paid from \$3 to \$5 per night. They are usually employed three nights per week, with approximately 70 nights per year.

Men and women who are skilled in their trade and who complete the above course will, if they do not enter the teaching profession, be better prepared for promotion as foremen or forewomen in the particular industry in which they are employed.

How to Apply for Admission - Application for admission may be made either to _____, the local instructor in charge of the class at _____, or to the State University, _____ Department, Columbia, Mo. If a personal application is impossible, written application should be sent to the State University. In either case an application blank will be furnished to the applicant. Applicants who are admitted will be notified in advance.

Where will Classes be Opened? - At present it is planned to open the following classes _____.

Kansas City Apply to _____ at _____

St. Louis Apply to _____ at _____

APPLICATION BLANK

The following blank may be used to obtain from the candidate specific information as to his qualifications for admission to the teacher training class.

_____ 19 _____

To _____

Dear Sir:

I hereby make application for admission to the Class for Training Shop Teachers for Trade and Industrial subjects, to be located in _____, and I submit the following information as to my educational preparation, trade experience, and character.

Educational Preparation

1. Name _____
2. Date of birth _____ Weight _____ Height _____
3. What is your Trade? _____
4. What is your present employment? _____
5. Name of your employer _____
6. Address of your employer _____ Tel. No. _____
7. Name of your foreman or superintendent _____
8. Are you willing that reference should be made to your employer for information as to your work? _____

9. What is your general education:

Elementary School _____ Years, Completed _____

High School _____ Years, Completed _____

Evening School _____ Years, Instruction was
obtained in _____

Correspondence School, Instruction was obtained in _____

Trade or Technical School _____ Years, including the following
principle courses _____

10. Technical Qualifications

Can you read working drawings? _____

For what trades? _____

Can you make shop sketches? _____

Do you consider yourself a good draftsman? _____

Are you able to solve the mathematical problems related to your
trade? _____

Have you ever studied the scientific principles related to your
trade? _____

Experience in the Trade

1. Apprenticeship

a- Did you serve a regular indentured apprenticeship? _____

b- With whom? _____

c- Where? _____

d- How long? _____

e- What kind of work? _____

f- If you did not serve a regular indentured apprenticeship, how did you enter the trade? _____

g- Have you served an apprenticeship in more than one trade?

Specify _____

2. Trade Experience

(Give under a, b, and c information relating to the principal jobs where you have worked at your trade.)

a- Name of employer? _____ Years _____

Where located _____

Kind of work? _____

What wage did you receive? _____

How long were you so employed? _____ Years

Why did you leave? _____

b- Name of employer? _____ Years _____

Where located _____

Kind of work _____

What wage did you receive? _____

How long were you so employed? _____ Years

Why did you leave? _____

c- Name of employer? _____ Years _____

Where located _____

Kind of work _____

What wage did you receive? _____

How long were you so employed? _____ Years

Why did you leave? _____

d- As a foreman, assistant foreman or superintendent

Name of employer? _____ Years _____

Where located _____

Kind of work _____

How long were you so employed? _____ Years

Why did you leave? _____

How many men were under you? _____

Describe the kind of work _____

e- In charge of apprentices or helpers

Name of employer _____ Years _____

Where located _____

How long were you so employed? _____ Years

Why did you leave? _____

How many men were under you? _____

Describe the kind of work _____

f- Have you ever had any experience in dealing with young people, such as boys' clubs, Boy Scouts, athletic teams, etc?

Character References

Name _____	Address _____	Tel. No. _____
Name _____	Address _____	Tel. No. _____
Name _____	Address _____	Tel. No. _____
Name _____	Address _____	Tel. No. _____
Name _____	Address _____	Tel. No. _____

Experience in a number of the states has shown that the most satisfactory method of obtaining suitable candidates for courses training men for shop teachers is through personal interviews with the leaders of organized labor and through public addresses given to labor organizations. It has been found that employers do not always encourage their foremen and master workmen to become recruits for teaching positions.

An administrative problem will always confront the state in the organization of these classes. Since industry is made up of an almost unlimited number of occupations for which men must be trained, it becomes increasingly difficult to separate the workmen of one craft from those of another when giving preparation for teaching positions. To a certain degree, the class can be made up of men from different trades. This applies to certain mechanical trades, and building trades where the conditions of employment and the trade subject matter has a reasonable amount of similarity. It is, however, difficult to conceive of a class composed of workers in trades such as printing, millinery, dressmaking, carpentry work, machine shop, building construction, architectural or mechanical draftsmen, all to be enrolled in the same class through out

the entire period of instruction. The director of teacher training should therefore arrange to group members of the class so far as possible according to occupations, and at the same time arrange to select subject matter for mixed classes that is common to all groups. It may be found necessary to modify the composition of the class by breaking it up into two or more divisions for certain parts of the course.

A second administrative problem confronting the agent in charge of training is the selection of suitable instructors of teacher training classes. The individual should be able to qualify as an instructor in a day industrial school. This includes a successful first hand experience in some occupation. He should also have had experience in teaching industrial subjects, preferably in a school of secondary grade. He should also have had experience of an administrative character as a supervisor or director, or head of a department. In addition to the above experience, he should be of an analytical type of mind, with an ability to adapt himself to the needs of his pupils.

A recent analysis made at Pratt Institute showing the qualifications actually possessed by a group of sixty men admitted to the trade teaching class is of great interest, in that it shows the personal qualifications of the men enrolled. Of the total number the following conditions were found to maintain:

- (a) They are the better men in their trades; 70 per cent are foremen or shop superintendents.
- (b) They have been in the trade long enough to learn it thoroughly; an average of 13 years.
- (c) All are at least elementary school graduates; a number have spent one or two years in secondary schools.

- (d) They are as a rule conceited about their knowledge of their trades.
- (e) They are conscious of a lack of book knowledge, but consider themselves well informed about practical things.
- (f) It is difficult to approach these men through existing educational channels; they are out of touch with our schools.
- (g) As their tastes are decidedly practical, they must be approached on the practical side.

Testing vocational experience

(The following suggestions are based on a number of years of experience with classes at Pratt Institute.)

- (a) Trade skill: Should be tested on a real job, by a practical shop man accustomed to sizing up workmen. It is important to note how the candidate goes about his work. The instructor who is to have charge of the teacher-training class should be present at the test.
- (b) General knowledge of the trade: Should consist of an oral test, by means of a trip through a commercial plant of the kind which the candidate should be familiar. The examiner should ask questions about equipment, trade processes, shop methods, etc, to determine the breadth of the candidate's shop experience and training.
- (c) Knowledge of drawing: Should consist of an oral test,
 - 1- On ability to read conventional blue prints
 - 2- On ability to make rough sketches illustrating some part of a machine.
- (d) Knowledge of shop calculations: Should be a written test on a few practical questions, such as calculation of amount of stock needed for a job, cost of labor, etc.
- (e) Knowledge of English: Although opinion on this point may be expressed with caution, it is believed that if the candidate, otherwise well qualified, can talk clear, forceful English, we need not be too much concerned over occasional grammatical errors. In most cases the individual will brush up on the fine points when he begins to associate with teachers. To test power of expression, the candidate should be asked to write out a shop order, with bill of materials, for a given job.

Estimates of others

The teacher in charge of the training class should obtain personal estimates of each candidate from men who have worked with them.

Interviews important

The best way to form an estimate of the ability and fitness of the prospective teacher is by a personal interview.

Means for testing educational and professional training

There appear to be three reasons assigned by appointing authorities for setting up some system of examining applicants:

1. As a measure of self-protection; to have something to show to a man's political friends as a reason for not giving him a job.
2. To serve as a screen, to eliminate the unfit.
3. To select the good teachers.

Experience shows that it is difficult, if not, impossible, to set up a satisfactory scheme for testing education. Graduation from high school has not much bearing on this part of the problem.

To establish a minimum educational requirement has some negative value, but it is just as likely to eliminate some desirable candidate as to keep them in.

Testing ability to teach

Among the qualifications to be tested here are:

1. Knowledge of the principles of education as applied to industrial work; to be tested by means of written examination and credentials.
2. Knowledge of industrial school organization and management to be tested by written examination and credentials.
3. Thorough mastery of the art of teaching shopwork; to be determined by actual teaching demonstration, written test, and credentials.

There is only one infallible test of ability to teach-- actual teaching on the job.

The successful teacher has a high ideal of social obligation and social service. Looking for the possession of this quality is one way to test the real teacher. The same applies to ambition, and other qualities of this kind.

The time element is an important factor in the test under actual teaching conditions. From three to six months are actually necessary with careful observation.

More emphasis should be placed on the training of teachers in service. Further study should be made of the qualifications which would be acceptable in the teachers who may be employed with the idea of pursuing training in service.

The Federal Board, the State and the local community each have a large responsibility in the preparation and selection of these prospective teachers, and the responsibility of the local community, even in cases where the State and Federal Board organize, conduct and pay the expenses of the course, is by no means the least. The local community must assume the responsibility of the final selection of the teacher. Too often the local community will bring pressure for the employment of local, professional teachers. This situation is quite well presented by H. B. Smith in his book on "Establishing Industrial Schools".

"The danger is, however, that for financial or other reasons the community will seek to employ these professional teachers in giving the actual trade training. In such cases the element of atmosphere, and all that it stands for, is lacking. It is like a picture or a play; it only represents real life. Even though the professional teacher has gone into the industry and learned it, if he was a teacher when he did so he never got the viewpoint of the apprentice and journeyman who lived in that trade, by that trade, and never expected to work in any other trade. Let the school man give such related class room work as he can do best; but place the high grade mechanic or trade worker in charge of all work that must be an exact duplicate of the work done commercially."

CERTIFICATION OF TEACHERS

The Missouri State Board of Education proposes that all teachers of vocational subjects be certified for the State by the State Superintendent of Public Schools under such conditions as may be named by him with the approval of said Board, and of the Federal Board for Vocational Education. He will prescribe such tests or examinations as may be necessary to ascertain the qualifications of teachers as defined in the above plans, and will issue certificates to such as pass such tests or examinations entitling them to teach trade and industrial subjects in the public schools of Missouri.

Traditional methods of certificating teachers are inadequate to meet the needs of industry. As a rule the tests given are usually limited to qualifications of teaching ability in general education. In general the following points should be considered in certificating teachers for trade and industrial classes,-

1. Provision should be made for testing the knowledge of the individual in the processes of his trade, skill in performance of these processes, and his knowledge of related science, drawing, and mathematics.
2. Special attention should be given to practical tests demonstrating the individual's skill in teaching, including class room management, methods of instruction, organization and administration.
3. An investigation should be made as to the individual's personal characteristics.

Much of this information may be obtainable through a probationary period of training, and care should be taken that the examiner meets the qualifications set up for the certificate to be issued. A graduation from a given course warranting the issuance of a certificate should depend upon,

1. Regular attendance
2. Completion of the written work including,
 - A- A complete set of forms giving the analysis of the trades represented.
 - B- The required number of acceptable lesson plans
3. The completion of the required number of hours of observation and practice teaching.
4. The passage of a satisfactory oral or written examination.

RELATED SUBJECTS TEACHERS

But little has been said in this article concerning the teacher of related subjects. In so far as the qualifications of the teacher of related subjects correspond to the trade qualifications of the teacher of shop subjects, the training may be given in the same classes. It is recognized, however, that the teacher of related subjects will be required to show a much greater ability in related drawing, science, and mathematics than may be expected of the shop teachers. The related subjects teachers in all-day and part-time schools are not required to possess the same degree of trade skill as the shop teacher. They are, however, required to give related instruction to pupils from a number

of trades. This will necessitate on their part a training of a much broader character in the different phases of industry. As a rule, the engineering department of universities and colleges can be relied upon to give this instruction. The courses can be organized as residence courses since the qualifications do not make necessary a journeyman's experience in the trade. Upon completion of either of the prescribed courses the candidates should automatically be certificated as a teacher of shop work in the general industrial school or as a teacher of related subjects in the all-day, part-time or evening school, depending upon the course completed. A scheme of probational certificates should be designed to secure the future development and growth of the teachers. This may be accomplished by making the certificate probational and requiring the holder to return to industry during a given portion, (from six to ten weeks) every three years.

Chapter Two

OUTLINE OF SUBJECT MATTER FOR TRAINING SHOP TEACHERS IN UNIT TRADE CLASSES

The problem of the instructor in charge of teacher training differs only in subject matter from the problem of the teacher in charge of any class of pupils. It is assumed that the members of the class are as a rule without teaching experience and that few, if any, have ever had the advantage of educational opportunities beyond that of the elementary school, with the information and experience to be obtained

through correspondence schools, evening schools and the school of experience. The successful teacher will find it necessary to plan each lesson very carefully. The entire course should be based upon,

- 1st. Preparation
- 2nd. Presentation
- 3rd. Application
- 4th. Tests of ability to apply the principles included in the course of instruction.

The field of training teachers for vocational schools is relatively new. Few precedents may be found upon which to establish procedure. States and institutions have been compelled to make up their curricula largely by experiment. Several courses of study will be given here as a comparison of the experiences in the different states. In the State of Indiana the following division of time has been made.

Trade English	30 hours
Trade Science	30 "
Trade Mathematics	30 "
Trade Drawing	30 "
Theory and Organization of Industrial Education	30 " "
Theory of Teaching Trades	30 "
Practice Teaching	80 "

This division of time corresponds closely to that followed in the State of Ohio. A number of the states in the middle west have included as a part of their state plans for the training of teachers,

Mechanics of Teaching	60 hours
Related Instruction	120 "
Observation and Practice Teaching	60 "
Follow-up supervision period after employment	2 years

The following statement appears in the Massachusetts State Plan.

Teacher Training Courses for Shop Teachers

Outline of Work for 20 Weeks' Course

2 nights each week

	Hours
1. What is vocational education	2
2. Types of schools	2
3. Observation work in schools	2
4. The value of an analysis	6
5. Analysis of a trade for purpose of making out a course of study	24
6. The relative order of theory and practice	2
7. Interest and interest factors	2
8. Related work, trade-technical work, etc	2
9. Methods of instruction and the art of teaching)	52
10. Lesson planning and demonstration teaching)	
11. Classroom management, discipline, etc	4
12. Organization	2
Phase and project scheme	
Records	
Rating of teachers and pupils	
Relation of State to schools	
13. Practice teaching	20
Total	<u>120</u>

Provisions for Observation and Practice Teaching

Provisions for observation and practice teaching have been made with the authorities in the various training centers. Members of the teacher training classes are:

1. Assigned to small groups in day or evening industrial schools under the supervision of the regular teacher in charge of the class.
2. Assigned as substitutes when occasion arises.
3. Assigned in regular day or evening technical high schools or

day prevocational or practical arts classes.

The present assignment is made for 20 hours. This may be increased as opportunity affords.

A SUGGESTED COURSE OF STUDY FOR THE STATE OF MISSOURI

- I. Trade Analysis 20 hours
 - 1. Trade Qualifications
 - 2. Technical Qualifications
 - 3. General Information

- II. Related Instructional Content as determined by the Trade Analysis 40 hours
 - 1. Trade Jobs
 - 2. Technical Jobs
 - 3. General Information

- III. Educational Subjects 60 hours
 - 1. Methods of Instruction or the Mechanics of Teaching
 - 2. Administration of Vocational Education
 - 3. Observation and Practice Teaching

- IV. "Follow-up" and Supervision after employment and Improvement in Service 2 years

The above curriculum is recommended for a one-year teacher training program given in an evening school. The work should be organized on a basis of 2 hours per night for a term of 60 nights.

It is apparent from the titles given to the above courses that the subject matter must bear closely upon the problems of industry. It is doubtful whether for many years we may expect to find subject matter

suitable for these courses printed in books and suitable to all kinds of classes. The Agent in charge of training will find it necessary to assist the teacher training instructor in selecting and classifying the content of the course. It will be necessary in the beginning to recognize that in all probability the classes will be made up of persons of varying degrees of ability, some having no experience, some little experience, and others who have already demonstrated considerable ability as teachers. This situation will make necessary the division of the course into more or less "short units" adaptable to the needs of the class. The following outlines of subject matter may be used as an aid to the instructor in charge of teacher training.

(Wherever it has been found necessary to apply the subject matter to some given occupation, the carpentry trade has been used.)

TRADE ANALYSIS

The following analysis of the occupation of carpentry is used as a typical example of the character of similar analyses which should be made of every occupation for which teachers are being trained.

Kindred Occupations.- Cabinet maker, rough framer, inside finisher, floor layer, floor scraper, shingler.

Description of Occupation.- The duties of a general carpenter are to engage in the construction of wooden buildings of many different types.

Qualifications.- Must be thoroughly experienced in the use of architect's plans, detailed drawings and specifications in

estimating quantities and billing material on the job. He should have a working knowledge of the care and use of all carpenter's tools, and be able to operate woodworking machines commonly used on construction jobs. These include planer, shaper, mortiser, power saws, cut-off saws, jointers, boring machines, sanders, and the operation of electric motors and gas engines. He must be able to lay out all floor and wall work, cut and set in place all timbers in the rough frame work of the house. He must know rough framing, stair building, roofing, both inside and outside finishing, floor laying and scraping, and be a fair workman in the construction of "built-in" cabinets. All this involves a thorough knowledge of building material, including kinds, grades, prices, uses, durability, trade name and how to order.

Technical Qualifications

Trade Functions, - A general carpenter should know the basic principles of mechanical drawing in so far as they relate to the use of the T square, triangle, drawing instruments and conventions. He should be well prepared to read blue prints and working drawings of building construction projects and be able to quickly and accurately make free hand sketches of floor plans, window details, moldings, cornices, etc. This involves an ability to reduce free hand drawings to scale, using the above named instruments. The carpenter should also understand the elementary principles of architectural drawing, making and interpreting specifications as related to the requirements of the building code.

Trade Mathematics, - The journeyman carpenter should possess

a common school knowledge of arithmetic dealing with the fundamentals in fractions, factoring, mixed numbers, simple percentage, proportion, square root, and weights and measures. A considerable part of his working knowledge of mathematics should have to do with mensuration as applied to estimating, measuring, use of hand books, figuring cost of materials in carpentry projects and problems dealing with elementary strength of materials in building construction. But very little knowledge of algebra as such is necessary. It is desirable, however, that he be able to understand and use simple equations involving one unknown quantity. Related geometry can be given to a considerable extent in so far as related to the theory and application of right triangles, similarity of plain figures, etc.

Trade Science, - The occupation of carpentry does not involve a very considerable knowledge of science. Most of the mechanical problems related to processes in the carpentry trade are commonly known as mechanics, involving the simple machines including practical applications of the lever, inclined plane, wheel and axle, jack screw, wedge and pulley. There are, however, certain principles of electricity with which all workmen engaged in building construction should be familiar. These have to do with electric conductors, dangers from fire due to short circuits, starting and operating electric motors, etc. The field of science may also be made to cover elementary strength of materials, safe loads which may be applied to beams, columns and floor areas under given conditions, the relative strength of beams due to the shape and position of the cross section. All laboratory experiments should be made from a qualitative, rather than a quantitative standpoint. Some

time should be devoted to a study of metals, including tempering, different grades of steel, and to the properties of building materials.

General Information

Every general carpenter should be familiar with the names of tools, the operation of machinery, local customs, and the building code common to the industry in the particular community.

A knowledge of grading rules as applied to building material, finished sizes which may be found in stock in building material establishments, units of measurement, how to order, working properties, preservation, and current costs.

Most trades, such as carpentry, have acquired a large number of so called "shop kinks". These are short cut methods of operation and oftentimes are peculiar to the locality, the industry or the individual. Very few of these can be found illustrated or described in publications. As a rule they have been handed down from journeyman to apprentice, and are the result of the ingenuity of individuals. The ability of the worker to use these short cuts or "shop kinks" oftentimes is a measure of his skill as a workman.

The carpenter has a large number of edged tools which must be used in his trade. These tools require care in their preservation and a knowledge of tool grinding and filing.

"Safety first" principles have within recent years been recognized as a necessary part of the knowledge of all employees. The responsibility of workmen in building construction is very great. This is especially true since most building codes require that safeguards be

provided to prevent injury to fellow workmen, to the public or the individual himself. These safeguards affect the preparation of the building site, wrecking buildings, excavating, blasting, hoisting, storage of materials, scaffolding, electric wiring, accidents, fire risks during building construction, and emergency treatment. The carpenter is usually looked to in small building construction as the man responsible for the general care and protection of building materials delivered on the job. He is also expected to construct scaffolding for other workmen and therefore occupies a position of greater responsibility than other workmen.

INSTRUCTIONAL CONTENT AS DETERMINED BY THE TRADE ANALYSIS

Trade Jobs, - It can not be expected that every applicant for instruction as a teacher will be fully prepared in all of the jobs which the occupation embraces. This is especially true since modern industrial conditions tend to produce highly specialized workers. It is the ambition of labor to broaden the experiences of all workmen in order that they may not be compelled to limit their activities to certain specialized machines or fields of employment. The teacher training instructor should therefore include as a part of his instruction such supplementary shop training as may be necessary to make an all-around shop man. This may require shop work on any one of the processes known as a trade job. In the case of a carpenter which has been used through out this thesis for illustration, these jobs may consist of leveling sills; framing sills; cutting joists; sizing, leveling, cutting and placing bridging, rough floors, floor plates; laying out partitions;

spacing, studding and openings; shingling; flooring; inside finishing, or any of the trade requirements for carpenters. The members of the class should be required to show through some selected test their degree of skill in some typical trade job.

Technical Jobs, - In most cases the applicants for instruction as teachers have been found to be deficient in technical information. Many have acquired considerable information through experience in the occupation, or through attendance on evening schools or by correspondence. The courses in drawing, mathematics and science related to the several occupations for which teachers are being trained should be taught by an instructor who is not only skilled as a draftsman, but one who has had practical experience in one or more of the occupations. This is the best safeguard against instruction of an academic character. It has been found that journeyman workers selected from the trade will not, and can not, receive the instruction which requires a well developed background of academic experience, leading through courses in science, mathematics and drawing of a secondary grade.

Trade Drawing, - Every member of the class should be required to demonstrate his or her ability in drafting related to the occupation. In the case of drawing for carpenters, the trade specifications have been given. Subject matter should be based upon the requirements of the trade. The individual should not be expected to produce drawings which compare in technique with those of day school students pursuing courses for mechanical or architectural draftsmen. In the case of carpentry, this would involve billing material from plans, drawing details to full scale, laying out foundations, preparing plans in pencil,

using T-squares, triangles and instruments, details of moldings, window frames, rafters, hips, valleys, cornices and the making of simple elevations.

Trade Mathematics, - Here again the teacher training instructor can not be selected from the regular teaching force, but must be one who understands the application of mathematics to the occupation. From the standpoint of carpentry, the instruction would involve problems in board measure, square root, estimates of quantities, involving decimals, calculations of surfaces, volumes, simple equations and a limited amount of geometry in so far as it relates to the right triangle.

Trade Science, - In making up the subject matter for the course in science, the teacher should have recourse to the trade specifications, and through the use of practical laboratory equipment, demonstrate the principles of science in a qualitative degree.

General Information, - This should be given largely through the reading and discussion of books on "Safety first", State Factory Law, building codes, lectures by city building inspectors, contractors, builders, architects, and through treatises dealing with the problems of workers in the industry represented.

EDUCATIONAL SUBJECTS

METHODS OF INSTRUCTION OR THE MECHANICS OF TEACHING

It will be the problem of the teacher training instructor as a part of his job to convince the members of his class that there is a skilled occupation known as teaching. Most workers in industry do not realize that there is a difference between knowing and being able to

impart what you know to others. This will require demonstration on the part of the instructor that he can do something which the pupil can not do, and that he is able to do this because of the fact that he is trained as a teacher. The individual should be impressed with the fact that after he has completed the course in teacher training he will have acquired an additional trade, in that he is now skilled in the art of teaching. The methods of instruction as listed in this course include a study of the instructing process, interest factors, classroom management, art of teaching, use of the productive project, and lesson planning.

In attempting to suggest subject matter for a teacher training course giving preparation to those who expect to become teachers of shop subjects, there is very little material in print to which reference can be made. At the present time the most valuable treatise on this subject is "The Instructor, the Man and the Job" by Charles R. Allen. Mr. Allen, through many years of experience in training teachers of shop subjects in the State of Massachusetts has gathered together and formulated many principles which will be of very great benefit to the teacher training instructor. In his book he treats somewhat extensively the analysis and classification of trade knowledge and the establishment of an instructional order. This involves a number of steps essential in the carrying out of any teacher training program, such as,

- 1st. Getting out a line of instruction
- 2nd. The classification of what must be taught
- 3rd. The determination of "blocks" or an inventory of
production jobs, trade terms, safety first principles, etc.
- 4th. The determination of difficulties which the learner must

meet in his progress through the line of instruction from any one "block".

5th. The determination of a difficulty scale for one "block".

6th. Applying the scale to one "block".

7th. Getting the actual teaching jobs into an effective instructional order.

Since the functions of the instructor in charge of teacher training is not one requiring an output in the production of industry, but rather an output in men and women qualified to train unskilled workers to become producers, the subject matter suggested is intended to be such as will enable the instructor in charge to call the attention of his pupils to the necessity of planning the course of study, and the lessons in accordance with the previous ability of his pupils. Under this heading a number of the "trade jobs" which a carpenter is expected to perform are listed. Each job occupies a peculiar situation in the difficulty scale on the part of the learner. It will not always be possible for the teacher to so classify the jobs and parts of jobs so that each one may be taken up at the ideal period in the course of instruction. Each instructor in charge of a class of beginners should prepare for his use when planning lessons,-

- A- Trade specification cards, showing the kindred occupations, description of the occupation and qualifications of the worker,
- B- Productive Project cards, indicating the projects from which the school may draw to give the pupil the practice and experience in the operations in which he is expected

to become adept,

- C- The Job Analysis card on which the various experiences and processes offered by the project are listed and on which these same processes are rearranged in an instructional order.
- D- Related Instruction cards on which the related drawing, science and mathematics for each project is listed and used by both the shop teacher and the teacher of related subjects, as a means of close correlation of work and as an assurance that the pupil receives well balanced instruction.
- E- Lesson Plan card, on which the instructor will show his plan of work under preparation, presentation, application and testing as a means of efficient instruction. This involves,

1. Preparation, or laying out the foundations of the lesson,
2. Presentation, in which new ideas are put before the pupil,
3. Application, the preliminary try-out,
4. Testing, the final try-out or inspection of the finished product, viz., the pupil-teacher.

The following forms are offered for use in connection with the above suggestions.

Form A

Lathrop School of Mechanical Trades
Kansas City, Mo.

Trade Specification Card

Name _____

Date _____

Unit Trade of _____

1. Kindred Occupations

2. Description of Carpentry

3. Qualifications

4. Schooling

Form B

Lathrop School of Mechanical Trades

Kansas City, Mo.

Selection of Productive Projects

Name James Clute

Date March 19, 1917

Unit Trade Course in Carpentry

Name of Project	Where Made
1. Carpenter's Benches	In shop
2. Repair work on buildings	On building
3. Playground and Gymnasium apparatus	In shop
4. Building Construction	
* a- Wall and floor framing	In shop and on site
* b- Roof framing	On site
* c- Door and window frames	In shop
d- Boxing	On building
e- Sheathing	" "
f- Papering	" "
g- Lathing	" "
* h- Stair framing	In shop and on job
i- Wall shingling	On building
j- Siding	" "
k- Roof shingling	" "
l- Floor laying	" "
m- Floor scraping	" "
n- Casing interior doors and windows	" "
o- Interior trim	" "
* p- Stair building	" "
* q- Column and panel work	" "
* r- Cabinet work	" "

* These projects may be carried on during the school year in the shop in anticipation of the actual construction of the project on the building site.

5. Ladders, wall	In shop
6. Ladders, step	" "
7. Shelving for storage rooms	Where needed

Form C

Lathrop School of Mechanical Trades

Kansas City, Mo.

Job Analysis Card

Name James Clute

Date March 19, 1917

Unit Trade Course in Carpentry

Job - Making a Window Frame, using Architect's F. S. D.

Analysis

Arranged in order for Instruction

Selecting stock	1. Reading blue print
Estimating	2. Billing material
Reading blue print	3. Estimating
Billing material	4. Selecting stock
Cutting members to rough lengths	5. Routing through milling machine
Jointing	6. Cutting members to rough lengths
Routing through milling machine	7. Jointing
Plowing for stop	8. Sizing
Cutting to lengths	9. Planing
Sizing	10. Cutting dado
Planing	11. Plowing for stop
Fitting Sill	12. Cutting to lengths
Fitting casing	13. Fitting pulleys
Cutting dado	14. Assembling jambs
Cutting stop	15. Fitting casing
Squaring frame	16. Fitting sill
Hanging frame in building	17. Nailing
Fitting casing	18. Cutting stop
Fitting pulleys	19. Squaring frame
Nailing	20. Hanging frame in building

Form D

Lathrop School of Mechanical Trades

Kansas City, Mo.

Related Instruction Card

Name James Clute

Date March 19, 1917

Unit Trade Course in Carpentry

Job - Making a Window Frame

I. Related Drawing

1. Make full size detail sections of sides, head and sill for given frames.
2. Make detail drawing of sections of side, head and sill showing frames for brick buildings, brick veneer walls, stucco walls and for patent lathed walls, using stock window frame stuff.

II. Related Science

1. Heat losses through convection, radiation and transmission
2. Selecting wood. Why?
3. Wood shrinkage due to moisture, wood decay.
4. Oils and paints

III. Related Mathematics

1. Estimating quantities and costs of material in frame
2. Calculation of size of rough opening in wall to receive

a frame having double sash, glass, and stiles, sizes being given.

3. Calculation of sash opening from glass size.
4. Calculation interior wall surface required by trim from given glass size.
5. Calculation of height of head mold from floor having given height of stool from the floor.
6. Determination of size weights to be used on double hung window.

IV. General Information

1. Placement of windows for best lighting
2. Size and shape of windows for a given purpose.
3. Kinds of window glass.
4. Glazing
5. Kinds of window cord and chain.
6. Safety first principles in use of tools.
7. Care of tools and equipment.

Form E

Lathrop School of Mechanical Trades

Kansas City, Mo.

Planning the Lesson Card

Name James Clute Date March 19, 1917

Unit Trade Course in Carpentry

Job - Making a Window Frame - Related Drawing

Preparation

1. What is the necessity for working drawings?
2. What does this drawing tell you about the window?
3. What is the relative shape of the opening?
4. What determines the kind of building in which this frame will be used?
5. If you are asked to make a window frame what must you know?

Presentation

1. What scale has been used in this detail?
2. Draw a sketch showing a F.S.D. of the jamb?
3. How will the workmen know what finish to give each member?
4. A student should read the blue print to the class.

Application

1. Looking at drawing point to pulley, side stile, head stile, parting stop, sub-sill and main sill.
2. Lay out a F.S.D. of the pulley stile, parting stop and

Form E, continued

hanging stile. Cut out and assemble.

3. Check the dimensions given with a similar frame.
4. What is the size of the glass opening?
5. How may we determine the size of the rough wall opening?
6. Using these principles make a drawing of a different window having glass size given.

Testing the Student

1. Go to the stock room and get the material for the head jamb.
2. Lay out the head jamb and test its section on a F.S.D.
3. Select short lengths of material for jamb, stop, blind stop, and hanging stile and assemble. Test the assembly on a F. S. D.

ADMINISTRATION AND SUPERVISION OF VOCATIONAL EDUCATION

It has been found to be just as important to prepare efficient directors and supervisors of vocational schools as to prepare instructors in vocational classes. The scope of administration and supervision in any state system of industrial education is of such importance that every state plan should provide for a systematic study of the functions which devolve upon those responsible for the promotion of vocational education within the state. The following outline is submitted,-

Scope of Administration and Supervision in a State

System of Industrial Education

The following list of functions would devolve upon the staff officers responsible for administration of vocational education, as defined by the Smith-Hughes Act.

1. Initiating and superintending the establishment of schools.
2. Supervising the administration of established schools.
3. Preparing instructors for placement in established schools and professional improvement of teachers engaged in the instruction of pupils in established schools.
4. Report upon the status of schools in quantitative and qualitative terms.

A State System of Industrial Education

1. Should have a program based upon standards.
2. Should have agents who know the standards and who have informed themselves and the office in a constructive way

as to the workings and carrying out of the state program.

3. Teachers should be given special training for carrying out the program, both before and after employment.
4. From time to time, carefully prepared qualitative reports should be prepared.

After the organization of the state office by functions the special parts which should receive the attention from the office may be considered. These should embrace,

1. A character of local organizations
2. Location of schools
3. Equipment, kind and use
4. Organization as to
 - A- Advisory Committee
 - B- Director and Supervisors
 - C- Departments organized
 - D- Size of classes, length of units, terms, etc.
 - E- Allotment of time
 - F- Advancement of pupils
5. Courses of Study
 - including aim, scope, contact, and order of presentation
6. Methods of Instruction
 - including projects, productive work, etc.
7. Qualifications of Teachers
 - School preparation, trade experience and professional improvement
8. Admission of pupils
9. Employment of pupils

Several states are offering special courses, either by the extension lecture method or by short summer schools, on the administration and supervision of vocational education.

The University of Washington through its Extension Service has issued a leaflet describing Smith-Hughes Extension Courses in Trades and Industries. The leaflet states,-

"The course is designed to give definite information concerning the Smith-Hughes Act and the method in which it is to be administered. It is open to Superintendents, Principals, and others interested in this progressive step in education. This may include members of the Board of Education, labor organizations, foremen, and heads of departments in commercial and industrial organizations, and civic and social workers."

"Nine monthly meetings will be held, beginning in September. The meeting place will be decided by local authorities and be made as central as possible. Each meeting will consist of a lecture and discussion and will require some outside reading and reference work. Those doing the required outside work will receive three hours of University credit (Education)."

The course includes nine lectures given monthly as follows:

1. Interpretation of the Smith-Hughes Act.
2. Teacher training under the Smith-Hughes Act.
3. History of Vocational Education.
4. Part-time work.
5. Trade Analysis and Unit Method of Organizing Shop Courses.
6. Related Subject Matter.
7. Promotion of Vocational Education by the War Emergency.
8. Methods of Teaching Trades.
9. The Industrial Survey and Placement Work.

Courses of a similar nature have been conducted in the State of California.

Announcement has been made of courses in the administration of vocational education to be given in the summer session, 1919, of Teachers' College at New York. The course includes lectures and discussions covering a wide range of subjects. Among these are,

Group 1

1. Organization and Administration of work of the Federal Board.
2. State Supervision, Organization and Administration.
3. The Regional Agent and the State Agent.

Group 2

1. State Legislation affecting Vocational Education.
2. State Plans for Industrial Education.

Group 3

1. Teacher Training based upon a typical state plan.

Group 4

1. Evening Vocational Schools and Classes.
2. Buildings and Equipment for Industrial Schools and Classes.
3. Shop work on a Useful and Productive Basis.
4. Shop records and accounts.
5. Supervision - Records, Reports.
6. Part-time Schools and Classes.
7. The General Industrial School.
8. Industrial Education for Girls and Women.
9. The General Continuation School.

Group 5

1. Developments in Trade and Industrial Education.
2. Special Vocational Classes - Example from Mining
3. " " " " " Textile Industry.

Group 6

1. Home Economics Education and Trade and Industrial Education.
2. A State Program for Home Economics Education.
3. Supervised Practical Work.

Group 7

1. Agricultural Education.
2. The Agricultural Part-time School.

OBSERVATION AND PRACTICE TEACHING

No plan for training teachers should be regarded as complete unless adequate provision has been made for observation and practice teaching. Each student should be provided with an opportunity and required to do not less than 20 hours of this work, under the immediate direction and supervision of the teacher training instructor or agent in charge of the work. Both the practice teaching and observation should be carried on as near as possible in classes similar to those for which the individual is preparing himself as a teacher. They may be evening classes already organized or special classes organized for this purpose. The student teacher should be required to outline and plan his lesson in accordance with the instruction which has previously been given in methods and management. This should be submitted to the teacher training instructor for approval before being given to the

class. Frequent meetings should be held in which the student observer and the instructor discuss with the teacher in charge not only the mistakes made in the class room but also the things which he has been able to put over successfully. Where the teacher training program is given under conditions which do not permit of practice teaching, arrangements should be made by the teacher training instructor for careful supervision of the teacher's work after he has entered employment. This may well comprise a part of the supervision of the State Agent. Reports of such supervision should be made regularly to the teacher training instructor on suitable blanks. Observers should be required to make written reports to the instructor of all the points, both good and bad, covering the lesson plan, preparation, presentation, application and testing, together with a discussion of the assistance given to the pupils, character of the assignment and suitability of the subject matter.

In the discussion of these reports, care should be taken to secure absolute frankness on the part of all members of the class. This should be secured without any member feeling that he is being criticised from a destructive or critical attitude, rather than from a constructive or helpful viewpoint. At the conference, the discussion might well be somewhat as follows,

1. Is the subject matter well adapted to the needs of the individual?
2. What changes would you suggest in the character of the subject matter?
3. Has the subject matter a practical application to the needs of the individual when employed in industry?

4. What reasons control the selection of the particular subject matter?
5. Was the lesson plan well organized?
6. Did the plan contain the essential features of all principles?
7. Did the instructor succeed in "putting over" the main issue of the plan?
8. Was the instructor able to command the undivided attention of the pupils during the entire lesson?
9. What additional means could have been used to demonstrate more clearly the principles involved?
10. Did the instructor test the pupils to determine whether or not the work was effective?
11. Did the teacher try to promote originality on the part of the individual, or was the instruction given by the lecture method?
12. What methods were used to secure and maintain interest on the part of the pupils?
13. Did the teacher preserve order and command the respect of the pupils during the lesson? If not, what was the contributing causes to the disorder or lack of attention?
14. Were the pupils inclined to be industrious?
15. Did the lesson plan provide for an assignment of work to be prepared for the following day?
16. Was any attempt made to assist the pupils over the difficult situations in the lesson assigned?

The above questions should be grouped under appropriate headings and certain members of the observation class required to report on each particular group. These groups might well include appropriateness of the subject matter, organization, methods of instruction, and classroom management.

FOLLOW-UP TRAINING AND SUPERVISION PERIOD AFTER EMPLOYMENT
GIVEN AS IMPROVEMENT IN SERVICE.

This is perhaps the most important part of the teacher training scheme, since it is much easier to make direct application of the principles when the individual has an opportunity to apply these principles in his daily work. This period should cover at least two years and reports of the supervision should be submitted to the teacher training instructor by the state supervisor. These reports will be of assistance to the teacher training instructor in calling the attention of others to the mistakes made by those in service, as well as in calling their attention to successful methods of instruction. One of the conditions of certification ought to depend upon the character of the reports submitted by the supervisor in charge of this supervision work.

Chapter Three

TEACHERS OF SHOP WORK IN THE GENERAL INDUSTRIAL SCHOOL AND
TEACHERS OF RELATED SUBJECTS IN BOTH THE GENERAL INDUSTRIAL
SCHOOL AND THE UNIT TRADE SCHOOL.

Teachers of Related Subjects - The all-day school requires teachers for related drawing, science and mathematics. Those who possess a broad technical preparation are usually better prepared to teach these

subjects than the shop teacher of the unit trade course. Where men and women can be found in the trades who possess the technical training in addition to their shop experience they of course are to be preferred. This is especially true of evening classes in which the instruction is supplementary to the daily employment of the pupil. The teacher must be prepared to relate the drawing, science and mathematics to all of the more common kinds of shop work taught in the school and therefore should know not only machine design, but also the elements of architectural drawing, the application of the development of surfaces to sheet metal problems and the conventions used in all of the building trades, such as plumbing, electrical construction and heating.

Shop Teachers in the General Industrial School,- Since the related subjects teacher may become a shop teacher in the general industrial school, he must also have had shop training in the more common shop subjects. As the general industrial school will usually be organized on a two year basis, it is not improbable that the shop teacher will be required to teach the principles of as many as four trades, such as Carpentry, Cabinet Making, Concrete Work and Sheet Metal Work. In the general industrial school the shop work must also be on a useful or productive basis and must be carried on under conditions parallel to those of the industrial plant. The teacher then should have a trade "point of view", such as can be obtained only through a contact with the trade itself, and through direct experience in the methods used in actual productive work, and through associations with skilled mechanics, either as a helper or as a journeyman.

Entrance Requirements,- The entrance requirement to courses preparing teachers for the above positions should be the completion of a standard four year high school. Candidates who have acquired experience as a,-

1. Teacher of Manual Training
2. Trade experience in the industry, and who are of a mature age should be preferred.

Length of the Course,- The work should be offered in two and four year courses. The two year course should contain a much larger per cent of related subjects and shop work while the four year course may closely follow the usual four year course in mechanical, civil or electrical engineering. In either course the work should be planned to give the pupil a vocational point of view, a knowledge of the professional subjects in industrial education, a thorough course in shop and related subjects and practice teaching.

Suggested Courses of Study,- The following course of study is suggested as a typical two year course, and is intended to show the relative amount of time to be spent in non-vocational, professional, technical and shop work subjects, and a provision for securing adequate trade contact.

Two Year Course

	Number of Hours	Approximate per cent of Total
<u>Non-Vocational Subjects</u> - - - - -	320	12 %

(60 min. Hours)

English	160
Science, Chemistry, or Physics	160

	Number of Hours	Approximate per cent of Total
<u>Professional Subjects</u> - - - - -	480	18 %
(60 min. Hours)		
Educational Psychology	80	
History of Industrial Education	80	
Organization and Administration of Industrial Education	80	
Methods of Teaching in Vocational Schools	80	
Observation and Practice Teaching	80	
Elective	80	
 <u>Related Technical Subjects</u> - - - - -	 -800	 30 %
Drawing - Elementary Architectural including Freehand sketching	200	
Drawing - Machine Design including Freehand Shop Sketching	200	
Shop Mathematics	200	
Elementary Mechanics and Strength of Materials	200	
 <u>Practical Shop Work</u> - - - - -	 1000	 40 %
Woodworking (Carpentry and Cabinet Making)	200	
Electrical Construction	100	
Machine Shop	200	
Forging	100	
Sheet Metal	100	
Wood Turning and Pattern Making	100	

Modern Building Construction, including
 Building Codes, and Drafting
 conventions for Carpentry, Electric
 Wiring, Plumbing, Sheet Metal, Masonry 100

Auto Mechanics - Gas Engines and Automobile
 Work 100

Total Hours in Residence - - - - - 2600

Trade Contact - 20 weeks - - - - - 880

Shop Work, as a carpenter, machinist, plumber, sheet
 metal worker, electrical construction, mason or
 auto mechanic, not more than ten weeks in one
 trade, taken during summer vacation or after the
 course has been completed.

Total Hours for Graduation - - - - - 3480

In order that teachers of Manual Training who wish to qualify as vocational teachers may take the above, provision should be made for giving certain courses each summer session. This will also provide an opportunity for shop teachers now teaching in vocational schools to extend their qualifications.

The above curricula and courses of study can be modified if conditions are found to warrant such a revision. It is recognized that in the beginning of a vocational program certain difficulties are found to interfere with decided changes in the program of an institution.

As a means of close correlation between engineering courses and a course intended to prepare teachers of related subjects and teachers of shop work in general industrial schools, the following short course is suggested as one to be built upon the regular mechanical engineering curriculum. The students in the four year engineering course should be released from eight semester hours of regular college

work and be required to substitute therefor twelve hours of professional instruction as follows,-

First Year Regular Engineering Work

Second Year - 1st Semester - Industrial and Economic History 2 hours

2nd Semester - History and Principles of Industrial Education 2 hours

Third Year - 1st Semester - Mechanical Drawing with Principles of Teaching the same in Trade Schools 2 hours

2nd Semester - General Shop Mathematics with Principles of Teaching the same in Trade Schools 2 hours

Fourth Year - 1st Semester - Methods and Mechanics of Teaching 2 hours

2nd Semester - Practice Teaching in Trade and Industrial Classes 2 hours

These courses should be regarded as suggestive and used only in the beginning of a teacher training program. As the work develops at the institution the tendency should be towards a modification which will approach the requirements of the first type.

Chapter Four

IMPROVEMENT OF TEACHERS IN SERVICE

It is not the intention of the Smith-Hughes Act to Federal aid vocational classes in any state which does not provide in some way for adequate supervision. In states like Missouri, this will require the services of at least one man on a full time basis. The duties of a supervisor in trade and industrial education may be stated as follows,-

1. To assist the Director in outlining policies relating to

Trade and Industrial Education for presentation to the State Board, assist in the preparation of state plans, in the promotion and organization of schools in local communities, in the preparation of forms for reports from the local community to the State Board, and in the organization of teacher training classes.

2. The chief duty of the State Supervisor should be to inspect schools after their organization. This inspection should be based upon constructive leadership and reports made both from a qualitative and quantitative standpoint.
3. To assist teachers in improving their methods of instruction and class room management. This will make necessary holding conferences either with individuals or with groups in the community. These conferences should be held as frequently as possible and matters having to do with the "improvement of teachers in service" should be taken up. This improvement of teachers in reality becomes a follow-up plan of supervision in teacher training and can only be given by the individual responsible for supervision, since the subject matter of the conferences will largely be drawn from the observations of the supervisor when inspecting the work of the teacher. As stated in an earlier part of this thesis, the Federal Board for Vocational Education, recognizing the connection between supervision and improvement of teachers in service, has made provision for the use of teacher training funds in payment of a part of the salary and expenses of the supervisor.

It is important for the State Supervisor of Trades and Industries to work in close cooperation with the Agent in charge of Teacher Training in the improvement of teachers in service, and important for the State Board in selecting a State Supervisor to consider the qualifications required of the individual who is to be responsible for the improvement of teachers in service. These qualifications should be superior to those of the usual inspector.

HOW ASSISTANCE MAY BE GIVEN TO TEACHERS

The relation of the supervisor to the teacher in the class room should not be of a critical nature, but rather a spirit of helpfulness should prevail at all times. The following suggestions are intended to indicate some of the ways through which assistance may be given,-

1. The supervisor should assist the teacher in outlining his courses and in the preparation of typical lessons, selection of productive projects, job analyses, trade analyses and in the selection and arrangement of the equipment in the shop. The greatest difficulty which confronts the shop teacher is not due to a lack of skill in the occupation but due to a lack of knowing how to transfer his skill to the pupils in an effective way. The supervisor should be able to advise the teacher as to the sequential order in which the different degrees of skill should be given.
2. It is also a function of supervision for the supervisor to bring to teachers new ideas of methods, plans and equipment gathered from other schools. This enables the teacher to profit by the success and experiences of others.

3. The supervisor of Trades and Industries should also bring to the attention of teachers and principals in trade and industrial schools publications as texts or as reference material dealing with the problems of the school. These may be given through correspondence, through suggestion, or in conference of groups of teachers. At least one conference of all of the teachers, local supervisors and principals within the state should be held each year. At this conference the policies of the State and Federal Board may be discussed.
4. It is a responsibility of the State Supervisor to bring to the attention of Superintendents and principals the necessity of providing increased equipment where needed and the necessity of paying salaries which will enable them to compete with the wages paid by industry.

Since the problem of supervision is so closely connected with improvement of teachers in service, it is most important that this course be included in the state program.

ITINERANT TEACHER TRAINING

It will not always be found possible to secure a sufficient number of persons in a given community to form a formal class in teacher training. This may make necessary the formulation of a plan known as itinerant teacher training, in which the instructor may go from one community to another, giving courses to smaller groups of individuals.

CORRESPONDENCE COURSES

It has been demonstrated in other states that effective instruction may be given in certain courses through the medium of correspondence. This will necessitate the careful preparation of lesson material in advance. The qualifications of those who are to enter these courses should be even more carefully considered than are the qualifications of those who enter residence or extension courses, since the instruction when given by correspondence is of a much less personal character.

Through the medium of correspondence it is possible to give effective instruction in the following subjects,-

History of Education

History and Organization of Vocational Education

Methods of Instruction

Class Room Management

Studies of Industries and Materials and Trade Analysis

Plan Reading and Estimating

Applied Mathematics

Applied Science

Applied Drawing

Chapter Five

PROVISIONS OF THE VOCATIONAL EDUCATION ACT AND

POLICIES OF THE FEDERAL BOARD

The Provisions of the Act Sec. 12 - That in order for any State to receive the benefits of the appropriation in this Act for the training of teachers, supervisors, or directors of agricultural subjects, or of teachers of trade, industrial or home economics subjects, the State

board of such State shall provide in its plan for such training that the same shall be carried out under the supervision of the State board; that such training shall be given in schools or classes under public supervision or control; that such training shall be given only to persons who have had adequate vocational experience or contact in the line of work for which they are preparing themselves as teachers, supervisors, or directors, or who are acquiring such experience or contact as a part of their training; and that the State board, with the approval of the Federal Board, shall establish minimum requirements for such experience or contact for teachers, supervisors, or directors of agricultural subjects and for teachers of trade, industrial, and home economics subjects; that not more than sixty per centum nor less than twenty per centum 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; For the preparation of teachers, supervisors, or directors of agricultural subjects, or the preparation of teachers of trade and industrial subjects, or the preparation of teachers of home economics subjects.

The following memorandum shows the allotment of money which Missouri may receive under the Federal Act for Vocational Education. It shows the disbursements between the years 1917-18 and 1925-26. After the allotments in each fund have reached the maximum indicated for the year 1925-26, they continue at this maximum allotment thereafter. *

Year	Salaries of teachers of Agricultural subjects	Salaries of teachers of Trade, Industrial and Home Economics subjects	Moneys for preparation of teachers	Total
1917-18	\$ 19,200	\$ 16,400	\$ 17,900	\$ 52,500
1918-19	28,800	24,600	25,060	78,460
1919-20	38,400	32,800	32,220	103,420
1920-21	48,000	41,000	35,800	124,800
1921-22	57,600	49,200	35,800	142,600
1922-23	67,200	57,400	35,800	160,400
1923-24	76,800	65,600	35,800	178,200
1924-25	86,000	82,000	35,800	203,800
1925-26	115,200	98,400	35,800	249,400
	\$537,200	\$467,400	\$289,980	\$1,294,580

* Based on Federal census 1910

Policies of the Federal Board -

(Bulletin No. 1)

"XI. May an institution use Federal moneys both for teacher

training and for the salaries of teachers of vocational subjects in the same line? For example, may an institution train teachers of home economics, and at the same time operate a secondary school or class in home economics?

Answer. Yes, subject to what follows:

- (a) All instruction for teacher-training classes should be divorced from classes of secondary grade using Federal funds, and a separate accounting should be required for each. The classes, courses of study, and organization must be distinct.
- (b) No school can claim money for the support of any class from both the teacher-training fund and the corresponding fund for the salaries of teachers.
- (c) Where the dominant purpose of such a class is in doubt the authorities of the school must define it as one thing or the other, and reimbursement must be made accordingly.
- (d) Where an institution asks Federal aid for a class the declared aim of which is to fit for useful employment for a productive vocation, but the real purpose of which, for example, is to prepare teachers for rural schools, Federal moneys under the Smith-Hughes Act should not be given.

XII. What is meant by the expression "not less than 20 per cent shall be expended for any one of the following purposes", as contained in section 12 of the statute?

Answer. The appropriation for the preparation of teachers is to be used for the training of teachers in the subjects of agriculture, trades and industries, and home economics. In order that some of the appropriation may be expended for the fitting of teachers in all three subjects, the restriction is made that not more than 60 per cent nor less than 20 per cent shall be applied to the training of any one of the three classes of teachers. It is believed by the board that this means that an agricultural State, for example, may spend 60 per cent of the money for the training of teachers of agriculture, 20 per cent for trade and industry teachers, and 20 per cent for home economics teachers.

XIII. Where one and the same person supervises the work of the State and conducts teacher-training work, how may the board satisfy itself that money expended for travel was used in connection with teacher - training rather than with supervision:

Answer. Where money is being used for such dual task, traveling expense ought to be paid only when it can be clearly shown that each trip was exclusively connected with teacher-training work.

This rule, however, should not be pressed as to prevent the supervision of work on a trip primarily undertaken for teacher-training work, when no extra expense is involved.

XXIII. Is selection and placement of teachers a legitimate part of the expenditures for maintenance of teacher-training?

Answer. Yes: but its cost must not be in unreasonable proportions. In the training of teachers of shopwork, where it is difficult to get men of experience to prepare for teaching, the cost of selection is a legitimate item of expense. Moreover, this work of selection is largely a day activity, while that of training shopwork teachers is largely an evening class activity carried on in industrial centers after working hours.

XXIV. May the State legislature require a State board to designate a particular institution as the place for teacher-training, in so far as Federal funds are concerned in the maintenance of that teacher-training?

Answer. The State legislature can control the actions of the State board and require it to designate any institution it may deem proper. The Federal board is directed to approve plans only in the event that such plans conform with the provisions and purposes of the Act; hence it may refuse to approve plans unless it is satisfied that the kinds of schools for which it is proposed that the appropriations of the act are to be used are such as were intended to be aided by the Federal Government.

XXV. Assuming that the institution with the highest standards in the State has been approved by the State board for teacher-training and that the State is able to supply all the qualified teachers needed, would the Federal Board approve of the use in addition of Federal moneys in an institution or institutions of lower grade, in the same State, for the training of teachers of the same vocational subjects as those for which teachers are trained in the institution of higher standards?

Answer. No, because if enough teachers of superior qualifications can be secured, no others should be trained or employed. In determining whether the approved institution is able to supply all the teachers needed three factors must be considered:

1. The amount of money to be used in the State for the payment of salaries of teachers in the vocational subjects concerned.

2. The number of schools actually in operation which will probably qualify to receive Federal moneys toward the salaries of vocational teachers.

3. The facilities for training the number of teachers required and the probable registration of prospective teachers for this work.

XXVI. What is the policy of the board toward the question of the certification of teachers in the States?

Answer. The practices of the several States in certificating teachers necessarily affects the standards and policies of the State in certificating teachers of vocational subjects.

The State board may use Federal moneys for teachers of vocational subjects if they meet the qualifications agreed upon by the two boards even though such teachers may not have been certified to teach under the State laws. In most States however, teachers must hold certificates before they can legally be paid for their services by the State or community. The Federal board views certification from the standpoint only of a device which may assist or may handicap the State board in securing and holding competent instructors.

The situation as to certification varies widely among the States. In States where the legislature has prescribed in detail the subjects in which teachers must be examined for every kind and grade of license and has left practically no power in the hands of the State educational authorities to issue special licenses for teachers giving instruction in vocational education, The Federal Board will make such adjustments as it deems necessary. Should it be of the opinion that the system of certification used interferes with the proper selection and employment of teachers receiving Federal moneys, it will give notice that at the next session of the State legislature remedial legislation should be introduced.

Where the chief school officer of the State of a certificating board is empowered to issue special certificates, this authority should be used so as to establish flexibility in employing and certificating vocational teachers.

Since the State laws governing the examining and licensing of teachers were in most instances framed before the rise of vocational education, few of them are adapted properly to meet the task of selecting and testing teachers for this new field. New standards and requirements are demanded. Experience along practical lines must be measured. Mechanical skill and the ability to use technical knowledge in a practical way must be tested. For many positions special skill and technical knowledge rather than general ability must be sought. In many cases practical tests should be given in place of, or supplementary to, written examinations. Evidence of successful experience in a vocation, as well as in teaching, should have large weight. The help of the layman, particularly of the practical man, should be used in determining the standards and tests by which the worth of the applicant for the teaching of any given occupation or trade is to be determined. This is equally true whether it be a question of trades and industries or agriculture or of home economies.

Whether the present State provisions for certification admit of no flexibility, or whether the State superintendent has power to deal temporarily with the difficulty by issuing special licenses, the Federal board is of the opinion that the next session of the legislature in every State should commit the whole matter of examining and certificating teachers of vocational subjects into the hands of the State board for vocational education, giving it power to establish from time to time such standards, tests, rules, and regulations governing certificates as that Board may deem advisable.

XXVIII. For the maintenance of what classes may Federal moneys for teacher-training be used?

Answer. (a) Regardless of whether or not Federal funds are to be used for all the classes or subjects in the course of study it is necessary for a State board to submit the full course for approval by the Federal board under section 8 of the act before Federal money may be used for any of the classes.

(b) The fact that the full course of study has been approved does not mean that Federal money may be used for the maintenance of instruction in all subjects of the approved course.

(c) The board realizes that the students who are being prepared as teachers of vocational subjects will to a greater or less extent be taught in the usual and regular classes of the institution giving technical or pedagogical training to mixed groups of students pursuing the work with different aims. In general, the purpose of the teacher training fund under the Smith-Hughes Act is not to cooperate with the States in the support of customary courses of instruction, but to promote the establishment of courses and subjects having as a distinct aim the preparation of teachers of vocational subjects for service in schools and classes of the type organized under the Smith-Hughes Act. For these reasons Federal moneys for teacher-training may not be used for the maintenance of mixed classes, but only for separate classes.

(d) Federal funds for the training of teachers may be used only on the following conditions:

1. That the classes for which these funds are used are composed entirely of those students who are preparing to teach in vocational schools. Such students must be pursuing the course of study approved by the State and Federal boards.

2. That no separate classes for which Federal funds are used are to parallel other classes being conducted in the institution. When such separate classes are formed it must be clearly shown that they are a necessary addition to classes already in operation for other students. Instruction in these separate classes must be sufficiently differentiated from the regular classes to justify their establishment and maintenance.

XXIX. May any money under this Act be used by the States for commercial education?

Answer. The moneys appropriated are to be paid to the States "for the purpose of cooperating with them in paying the salaries of teachers, supervisors, and directors of agricultural subjects, and teachers of trade, home economics, and industrial subjects, and in the preparation of teachers of agricultural, trade, industrial, and home economics subjects". This purpose does not include the teaching of commercial subjects.

A provision of the Vocational Act has important bearing upon teacher training within the State. It is contained in Section 5, as given above. This provision makes mandatory the use of at least the minimum twenty per cent appropriated for the training of teachers of Trade and Industrial subjects by the end of the fiscal year ending June 30, 1920.

Summary, - A brief survey of the progress made in the different states indicates that the greatest need in the field of vocational education is an adequate supply of qualified instructors. For many years normal schools, universities and other institutions have been engaged in the preparation of teachers for efficient service in elementary schools, high schools and colleges. It is equally important, and the situation is at the present time one of immediate necessity, that teachers be trained for employment in vocational schools as provided under the Vocational Act.

The problem is one, not only of "how to instruct", but also one affecting the mental attitude or vocational view point of the instructor. This attitude is one of development and we can not expect to find it existing either in the profession of teaching or in industry. It is an obligation on the part of the state of Missouri to see that

some form of apprenticeship be organized and set in motion which will serve the purpose of preparing individuals for teaching service. This apprenticeship will to a large degree, require a period of service in industry itself.

In the present emergency we are depending almost entirely upon industry to furnish us the teachers whom we are immediately placing in charge of our vocational classes as shop teachers, and then relying upon teacher training schemes for those in service to supply their need for teacher training. Looking ahead into the future, the State must regard this situation as of a temporary nature and make adequate provision for a future supply of trained men and women teachers.

The fact that those in charge of the administration of vocational education through out the country have insisted that shop teachers be selected from the trades, even though they are not trained or experienced in teaching does not mean that these administrators fail to recognize the necessity of some form of training. The establishment of vocational schools necessitates the selection of teachers and as between the manual training teachers who have had experience or training in the art of teaching, but who lack experience in the industry, and the men and women who have demonstrated their efficiency as skilled workmen, the schools have been forced to choose teachers from the latter group.

Salaries must be paid which will meet those paid in industrial fields. The excuse commonly given that salaries in industry exceed those commonly paid to members of the teaching profession is an excuse but not a reason. No producer can long exist unless he is able to "sell his product". It follows that a vocational school which has for

its aim the preparation of boys or girls for advantageous entry into wage earning occupations must "sell its product" in industry. This product can not be sold unless its value can be demonstrated, and in the same sense in which a manufacturer selects highly skilled workmen to turn out a high grade manufactured product, so must the schools select the best qualified teachers in order to assure the most efficient human product.

Chapter Six

BIBLIOGRAPHY OF SUBJECT MATTER TO BE USED IN TEACHER TRAINING COURSES

I. Trade Analysis

1. Trade Specifications and Occupational Index of War Department
2. Descriptions of Occupations - U. S. Department of Labor
3. Training Course for Shipyard Instructors - No. 1, United States Shipping Board, by Chas. R. Allen
4. Training Trade and Industrial Teachers under the Smith-Hughes Law - Indiana University Bulletin No. 10, Vol. XVI.

II. Related Technical Subjects

1. Advanced Shop Mathematics - Norris and Craigo
2. Mechanical Drafting - Chas. B. Howe - Wiley and Sons
3. Shop Mathematics - Norris and Craigo
4. Applied Electricity - Rowland - Wiley and Sons
5. Elementary Strength of Materials - Merriman - Wiley and Sons
6. Occupations - Gowan and Wheatley - Ginn and Company

III. Education

1. The Instructor, the Man and the Job - Chas. R. Allen-
Lippincott and Company
2. Methods in Instruction - U. S. Shipping Board - Chas. R. Allen
3. Instructional Management - U. S. Shipping Board - Chas. R. Allen
4. Federal Board Bulletin No. 27 - Some Problems in State Supervision
5. Problems of Secondary Education - Snedden
6. Learning to Earn - John A. Lapp
7. Richmond-Indiana Survey - R. J. Leonard - National Society for
Vocational Education
8. The Observation of Teaching - Maxwell - Houghton-Mifflin Co.

IV. Organization and Administration

1. Federal Board Bulletins
 - No. 1 - Principles and Policies
 - No. 17- Organization, Trade and Industrial Schools
 - No. 18- Evening Industrial Schools
 - No. 19- Part-time Trade and Industrial Schools
 - No. 20- Buildings and Equipment for Schools and Classes in
Trade and Industrial Subjects
2. National Society for Vocational Education
 - Minneapolis Survey
 - Richmond Survey
3. State Plans for Vocational Education

Massachusetts	Washington
Missouri	Georgia
California	Indiana

Appendix A

Classes for the Training of Vocational Teachers

University of California

Plan giving a general idea of the main topics and the teaching experience in the Smith-Hughes Teacher Training Courses for Shop Teachers. The plan shows the theory and practice designed to parallel each other.

Technique and Theory	Observation and Practice
Hours 72 - - <u>Teaching Technique</u>	Hours <u>Directed Observation</u> - -36
1. Trade study and analysis	1. Topics of observation
2. Methods of teaching	a- Routine features of class management and teaching
a- Types of lessons	b- Methods of discipline
b- Procedure in teaching	c- Activities of the teacher
c- Lesson planning	d- Attitude of the pupils
3. Trade class management	e- School shop equipment
4. School shop organization	f- Materials and supplies
5. Shop course administration	g- Shop lay-out
6. Trade vocational guidance	2. Reports on observation topics
7. Determining teaching achievement	3. Discussions of the reports
8. Course of shop work	
a- Unit groups and blocks	Hours <u>Assistant Teaching</u> - - - -36
b- Logical teaching order	1. Each pupil assigned as helper to an expert teacher of his craft.
9. Legal responsibility, professional requirements, ethical obligation	2. Pupils required to submit weekly reports with personal comments giving observations regarding:
	a- Methods of teaching
	b- Class management
	c- Shop organization
	d- Course of work

Appendix A, continued

Technique and Theory	Observation and Practice
Hours 36 - - <u>Vocational Theory</u>	Hours Supervised Teaching - 72
<ol style="list-style-type: none">1. Place of vocational education in the educational scheme.2. Meaning and aim of vocational, industrial and trade education.3. Types of trade and industrial schools.4. Growth of vocational education in the United States5. Smith-Hughes Act and plan.6. California Application of the Smith-Hughes Act	<ol style="list-style-type: none">1. Provisions made for each student to conduct his own class under close direction of supervisor2. Pupils required to submit to supervisor lesson plans in advance of presentation.3. Supervisor returns plans with constructive comments and suggestions.4. Pupil reports when lesson is to be presented and supervisor arranges to attend5. Class comes at call of the supervisor to teacher meetings. Meetings called more or less often as need arises, at least bi-monthly.
<hr/> Hours 36 - - - <u>Related Subjects</u>	
<ol style="list-style-type: none">1. Subjects this title comprehends2. The content of each subject3. Method of teaching the content<ol style="list-style-type: none">a- As occasion affords as part of the shop courseb- In organized form as a separate subject4. Amount of time each subject deserves5. Ways and means of cooperation<ol style="list-style-type: none">a- With shop workb- With each other	

Appendix B

TEACHER TRAINING PLAN FOR NEGROES

At a conference of Federal Agents, State Agents and representatives of negro institutions of the southern states, the following plan was agreed upon as one which would meet the need for teachers in negro vocational schools and one which the existing agencies in negro education could undertake.

(Acknowledgement is made to Roy Dimmitt, Federal Agent for Industrial Education for this report.)

I. Conference was held at Tuskegee Institute, Tuskegee, Alabama, February 14 and 15, 1919

II. Present:

L. J. Rowan, President Alcorn A. & M. College, Alcorn, Miss.,
Nathan B. Young, President, Florida A. and M. College, Tallahassee, Fla.,
J. S. Clark, President, Southern University, Baton Rouge, Louisiana,
John M. Gandy, President, Virginia Normal and Industrial Institute,
Petersburg, Va.,
J. G. Osborne, Acting President, Prairie View Normal and Industrial
College, Prairie View, Texas,
W. J. Hale, President, A. & I. State Normal School, Nashville, Tenn.,
R. R. Wright, President, Georgia State Industrial College, Savannah,
Georgia,
Jas. B. Dudley, President, A. & T. College, Greensboro, N. C.,
L. Leonard, Branch Normal College, Pine Bluff, Ark.,
R. R. Moton, President, Tuskegee Institute, Tuskegee, Alabama.

(V. P. McKinley, Professor of Vocational Education,
University of Alabama, University, Alabama,
White (H. O. Sargent, Federal Agent for Agricultural Education,
(Roy Dimmitt, Federal Agent for Industrial Education,
(J. S. Lambert, State Rural School Agent for Negroes,
(Montgomery, Alama.

R. R. Taylor, Director of Industries, Tuskegee Institute
Jas. A. Sears, Head Department Brickmasonry, " "
A. A. Thomas, Head Department Printing, " "
N. E. Wilkins, Teacher, Department Carpentry, " "
Wm. Pearson, Head Department Tinsmithing, " "

Edw. J. Bruce, Teacher Department Printing,	Tuskegee Institute		
Chas. H. Evans, Head Department Carpentry,	"	"	"
Arthur P. Mack, Head Department Plumbing,	"	"	"
J. Perdue, Teacher Carpentry	"	"	"
A. H. Flake, Harness and Shoe Mfg. Dpt.	"	"	"
Wm. A. Hazel, Head Department Architectural and Mechanical Drawing	"	"	"
E. C. Roberts, Director Academic Department,	"	"	"
Miss A. D. Zuber, Director Teacher-Training Home Economics	"	"	"
James A. Wilson, Academic Department,	"	"	"
D. A. Williston, Horticulturist,	"	"	"
J. H. Palmer, Registrar,	"	"	"
M. N. Work, Statistician,	"	"	"
W. D. Allimono, Accountant,	"	"	"
W. A. Richardson, Asst. Director Industries,	"	"	"

III. Subjects discussed:

1. Teacher training for Negroes under Smith-Hughes Act.
2. Designation of institutions and procedure in qualifying.
3. Trade Classes in Negro A. and M. Colleges.

IV. The conference was called by Roy Dimmitt, Federal Agent for Industrial Education, for consideration of teacher training for Negroes, and on the Smith-Hughes Act in general.

V. The following questions and conclusions were discussed in full, and are here condensed in brief form for record:

1. What kinds of schools are we to prepare teachers for?

Day Schools
Part-time Schools
Evening Schools

2. What kind of teachers are necessary for these schools?

Shop teachers
Teachers of Related Subjects
Teachers of Non-vocational Subjects

3. Does the shop teacher for the evening school differ from the shop teacher of the day or part-time school?

For the present the shop teachers may be prepared alike for all three types of schools.

4. Is it necessary to set up a separate scheme of training for non-vocational teachers?

For the present non-vocational teachers may be recruited from the regular teaching force of the State. They should

have contact, however, with industry and be in sympathy with trade education.

5. Based on the prospects for placement, for what trades are Negro teachers needed at the present time?

Carpentry, shoe and harness making, blacksmithing, painting, printing, stationary engineering, moulding, bricklaying, sheet metal working, auto mechanics, drafting, plumbing and pipe fitting, plastering, machine shop, and practical electricians.

6. Are there any trades in the South in which Negroes do not work?

No, in general - local elimination only.

7. How is it determined in each State what institution shall do the teacher training work for that State?

The State board for vocational education in each State officially designates a school, institution, or board to do the teacher-training work for that State.

8. What institutions have been officially designated for Negroes in the Southern States in trades and industries?

Alabama	Tuskegee Normal and Industrial Institute
Arkansas	Branch Normal College
Florida	Florida Agricultural and Mechanical College for Negroes
Georgia	Albany Normal and Industrial School
Louisiana	Southern University
Mississippi	Alcorn Agricultural and Mechanical College
North Carolina	None
South Carolina	State Agricultural and Mechanical College of South Carolina
Tennessee	Tennessee Agricultural and Industrial State Normal School
Texas	Prairie View State Normal and Industrial College
Virginia	None

9. What States have begun this teacher training work in trades and industries this year?

Alabama, Florida, Georgia, and Tennessee. (Note- Some of these have not submitted plans for approval.)

10. What steps should be taken in inaugurating the teacher-training work in trades and industries?

- a. Official designation of the institution by State Board.
- b. The institution should carefully study the State plans with reference to teacher-training.
- c. In accordance with the policies of the State plans, the institution should prepare a course of study and plan for teacher-training in trades and industries.
- d. This plan should be officially submitted to the State board, which in turn submits it to the Federal board.
- e. Upon approval by State and Federal boards the institution proceeds to put the plan into operation.

11. What kinds of teachers are needed by the institution to carry on this work?

Men with,

- a. Training and experience in administration of industrial and vocational schools.
- b. Contact with industry.
- c. Experience as a tradesman.
- d. Emphasis on educational phase, rather than shop, the latter being a foundation for the former.

12. What are the sources from which shop teachers may be secured?

- a. Mechanics in industry, already proficient in the manipulative side of their trades, may be trained in the art of teaching through evening classes in industrial centers of the State.
- b. It is agreed that for the Negroes, trade school graduates could also be used to advantage as shop teachers, provided they were given not less than four session hours (eight semester hours) in professional teaching courses, including practice teaching.

13. From what sources may related subject teachers be secured?

- a. Trade school graduates with the additional professional training indicated under 12, b.
- b. Technical school graduates with trade contact and the above professional training.
- c. High school graduates who have worked in the trades to be taught and completed the professional work above.
- d. Tradesmen with enough general and technical education to successfully handle the related work. The professional work should be required here also.

14. It is understood that the trade schools indicated in 12, b and 13,a above should be schools meeting the standards of the Smith-Hughes Act.
- 1 15. What shall Negro teacher training institutions give in the way of instruction?
- a. Plan I. - For Shop Teachers. Recruit skilled workmen of elementary school education, or above, into evening classes and offer instruction as follows. Total hours of instruction, 80 to 120 hours, divided about equally among Groups A, B, C, D. (See Supplement.)
 - b. Plan II. - For Shop Teachers. Give to trade school graduates not less than 6 session hours (or 12 semester hours), divided about equally between Groups A and C. (See Supplement. Note: Groups B and D will have been taken care of in the trade courses if adequate trade courses are given.)
 - c. Related Subjects Teachers. Trade school graduates, technical school graduates, or high school graduates, who have had trade contact of sufficient duration to understand the problems involved should be given not less than six session hours divided about equally between Groups A and C. (Supplement.)
16. It is understood that the trade courses can not be Federally aided from the teacher-training funds. Only the professional courses (See Supplement) are to be aided.
17. Any teacher training scheme should provide for both shop and related subject teachers.
18. Can the Negro colleges participate in the vocational classes as well as for teacher-training?

Always subject to the approval of the State board. See Federal Board Bulletin 1, Page 26, XI, and Page 36, I.

If other government funds are received by the school, a separate accounting is absolutely necessary. Smith-Hughes funds must not be matched by any other government fund. A separate prorating of teachers' time and salaries are necessary if teachers are used in common for both types of instruction. Pupils of the (1) regular school, (2) the teacher training school, and (3), the vocational school must not be mixed in recitations. Segregated classes are essential for financial accounting, as well as for efficiency in instruction.

19. Attention of the conference was called to the special summer course in teacher training at Hampton Institute under the direction of Chas. R. Allen.

VI. Supplement - Suggestions for content of Courses of Study
(See Question 15, a, b, c, above.)

- Group A. Pedagogy and mechanics for teaching, including the theory of vocational education; the organization of vocational schools under the Smith-Hughes Act and the State school laws; general methods of teaching in vocational schools; special methods for teaching the trades under consideration in the course, with emphasis on the analysis of a trade for instruction purposes made by a master of the trade proficient in teaching; the formulation of courses of study for shop and related work; shop and class discipline; records both of student efficiency and quality of materials and tools, with special reference to tool room and stock room as methods of indirect discipline and instruction.
- Group B. Art in industry, shop mathematics, mechanical drawing and design, study of materials, business methods, factory methods, such as routing work, time cards, job tickets, shop tickets, etc.
- Group C. Practice teaching under trade conditions carefully supervised after lesson plans or project plans have been made out and approved.
- Group D. Observation work and supplementary work in the shop to round out any part of the trade which the mechanic has failed to master during his own experience. Selection of candidates should insure: (1) that no extreme trade deficiency occurs; (2) that an arrangement can be made to supply reasonable deficiency in trade experience by using properly equipped shops in schools or plants for such instruction as part of the course or by recruiting the prospective teacher to get this knowledge in some existing school or plant in addition to the teacher training course. In the latter case the one-fourth time saved may be prorated to other subjects or given to English, especially oral composition and organization of subject matter for oral teaching.

Appendix C.

One of the most important policies of the Federal Board affecting teacher training in Trades and Industries is the ruling contained in C. L. No. 312. This ruling comes from the realization on the part of the Federal Board that its principles and policies and the methods of organization and administration of Vocational Education should be more generally understood by those who are concerned with the training of the worker and those who are concerned with the product of the school.

This ruling is as follows:

C. L. No. 312

March 17, 1919

Sent by: Federal Board for Vocational Education.

Sent to: State Boards for Vocational Education

Subject: Course in organization, administration and supervision of vocational schools and classes for general administrators and laymen.

Several States have included in their plans for training teachers a course for those persons who are at present or likely to be in the near future more or less directly connected with the work of administering vocational education. This includes superintendents, principals, members of boards of education, labor organizations, foremen, heads of departments in commercial and industrial organizations, civic and social workers.

This course does not aim to prepare supervisors or directors as specialists in vocational education, but rather to give to the schoolman and the layman who is concerned or responsible in some way, or may be concerned or responsible for the organization or administration of vocational education in general or in some of its phases, an understanding of the fundamental principles of effective vocational education and the way in which the Federal and State program may be put into operation most successfully.

Frequent inquiry has come to the office of the Federal Board as to whether or not the Federal Board would approve such a course as eligible for reimbursement from Federal funds for teacher training.

The Federal Board will approve of reimbursement for such a course if the course is submitted as a part of the State plan for teacher-training and if the course is to be given in connection with such work.

This ruling is made only for the period from this date to June 30, 1920. During the year the Federal Board will determine whether this policy shall be made permanent or changed to meet conditions which will arise as a result of the experience of the year. If a course is to be given during the summer of 1919 a plan for this work should be included in the plans for the fiscal year ending June 30, 1920, or offered as a supplement to the same.

Since this course deals with the general field of vocational education, neither the content of the course nor the interests of the persons in attendance will be confined to the special field of agriculture, home economics, or trades and industries. At the same time, it is clearly recognized that in some cases the group to be reached will be very largely interested in some particular one of these fields. In such a case reimbursement is made chargeable against the portion of the teacher-training fund represented by that special field; that is, if the persons in the course are for the most part interested in and concerned with agricultural education and the course is designed for such a group, reimbursement would be chargeable against the agricultural portion of the teacher-training fund. Likewise, if the course was given primarily for those interested in trade and industrial education, reimbursement would be chargeable against the trade and industrial fund; and if the group were primarily interested in home economics education, reimbursement would be chargeable to the home economics portion of the teacher-training fund.

In order, however, to lessen administrative difficulties, it is understood that in all cases where a general group is to be reached, reimbursement for such a general course is to be made chargeable against the trade and industrial portion of the teacher-training fund and the plan is to be included in the trade and industrial section of the State plan.

In setting up the plan for this course, the following points should be covered:

- A. Aim of the course.
- B. For whom designed.
- C. Length of course in total hours of instruction, indicating number of meetings, length of meeting, and number of weeks over which course extends.

- D. Topical outline of course of instruction.
- E. Relation to regular teacher-training course of State supervision plan.
- F. By whom instruction is to be given, with qualifications.

Very truly yours,

C. A. Prosser,

Director

University of Missouri - Columbia



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