

---THESIS---

STUDY OF THE COLORADO AGRICULTURAL COLLEGE  
PLAN OF VOCATIONAL TEACHER TRAINING  
BASED ON THE EVALUATION OF TRADE EXPERIENCE  
IN TERMS OF COLLEGE CREDIT.

1927-1935

Submitted by  
Everett Lawrence Meader

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In Partial Fulfillment of the Requirements  
For the Degree of Master of Science,  
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COLORADO STATE COLLEGE

OF

AGRICULTURE AND MECHANIC ARTS

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August 13 1935

I HEREBY RECOMMEND THAT THE THESIS PREPARED UNDER MY SUPERVISION BY Everett Lawrence Meader

ENTITLED STUDY OF THE COLORADO AGRICULTURAL COLLEGE PLAN OF VOCATIONAL TEACHER TRAINING BASED ON THE EVALUATION OF TRADE EXPERIENCE IN TERMS OF COLLEGE CREDIT. 1927-35.

BE ACCEPTED AS FULFILLING THIS PART OF THE REQUIREMENTS FOR THE DEGREE OF MASTER OF SCIENCE

MAJORING IN TRADE AND INDUSTRIAL EDUCATION

CREDITS 4

*J. B. Spangling*  
In Charge of Thesis

APPROVED

*Geo. T. Avery*  
Head of Department

Recommendation concurred in

Committee on Final Examination

*J. B. Spangling*  
*Geo. T. Avery*  
*Geo. S. Sanders*

Committee on Graduate Work

*D. E. Newson*  
*Alvin Keger*  
*Geo. T. Avery*

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CHAPTER I.

INTRODUCTION.

Background.

Manual training as a form of public education established in the public schools of the United States dates back to 1876.<sup>1</sup> Its objectives were not vocational. Around 1900 the vocational movement started. The older manual training became Industrial Arts and the new movement became Trade and Industrial Education. From 1900 to 1917 was an exploratory period in vocational education that has become known as the Pre- National period.<sup>2</sup> During this period instructors were recruited from the ranks of skilled mechanics, with little thought given to their educational background, because at that time there were no training agencies preparing instructors for this field of education. The instructors were not required to meet general certification requirements, but were given special teaching certificates. Such special certificates were also used for Industrial Arts teachers.

As the program advanced, after 1900, educational requirements were gradually raised for the instructor. Teacher training institutions set up courses for the training of Industrial Arts teachers, and state boards of education began to require Industrial Arts teachers to meet

1/ F. Theodore Struck -- Foundations of Industrial Education Page 33.

2/ Ibid p. 425.

the general certification requirements to teach in secondary schools. Special certificates were becoming no longer valid for teaching Industrial Arts courses in many states. Teachers of special vocational classes were, however, permitted to teach with special teaching certificates.

In 1917 the Smith-Hughes Act was passed, creating the Federal Board for Vocational Education. This board set up qualifications for instructors of Vocational Education. These qualifications barred Industrial Arts teachers from teaching vocational classes when the instructor did not have the required trade experience. This created a problem for schools having a vocational program where the instructor was required to teach both Industrial Arts and Vocational classes. The Vocational instructors found that without a degree, in a vocational school, or in handling work limited to the vocational program, they were generally barred from salary increases and promotions.

These men had had years of very valuable trade experience, and, in many cases, as much as two years of college work and were considered, by school administrators, to be highly valuable to the school system.

It was frequently impossible for these men, this late in life, to attend college for the length of time required to get a college degree. Only one solution to their difficult problem seemed to present itself. There was a logical possibility that the time required to get a

college degree could be definitely shortened by the granting of college credit for trade experience. A few colleges and universities as early as the Pre-National period recognized the needs of vocational instructors and began to consider trade experience in terms of college credit. A survey made in 1931 by the Federal Board for Vocational Education<sup>1</sup> showed that 18 colleges and universities at that time were giving credit for trade experience. In this survey every state was solicited for information relative to the Vocational, Industrial teacher training program carried on by its delegated institutions. It was shown that 15 states had colleges or universities allowing credit for at least one of the following factors of vocational experience: shop teaching experience, related subject teaching experience, supervisory and administrative experience, and trade experience. The states were widespread and represented no one section of the country. They were Colorado, Indiana, Iowa, Michigan, New York, Ohio, Pennsylvania, South Dakota, Tennessee, Texas, Utah, Virginia and West Virginia. No uniform policy had been established by the schools in the states above named in regard to the maximum number of credits allowed for trade experience, nor of the type of test to be used to evaluate trade skill and ability in terms of college credit.

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<sup>1</sup>/ Bulletin 152 Trade and Industrial Series No. 43, Page 22, Federal Board for Vocational Education, Washington D. C., 1931.

THE RELATION OF THE COLORADO AGRICULTURAL COLLEGE  
TO CREDIT GRANTING FOR TRADE EXPERIENCE.

In 1926 the Colorado Agricultural College devised a plan of evaluating trade experience for college credit. It was one of the pioneer institutions in the movement to grant college credit for trade experience to vocational teachers, supervisors and administrators for advanced standing toward the Bachelor's degree.

This school had, by charter, and by designation of the state assembly, become legally and morally bound to offer functioning training to both Mechanic Arts and Trade teachers under:

1. The second Morrill Act: An Act of Congress Oct. 1890 giving an increased portion of the proceeds of the sale of public lands to the more complete endowment and support of the colleges for the benefit of agriculture and the Mechanic Arts. The provisions of the Act were accepted by the State of Colorado.<sup>1</sup>
2. The Nelson amendment: An amendment to the Morrill Act by Congress, approved March 4, 1907, granting an increase annually up to \$50,000 to land grant colleges.<sup>2</sup>
3. The National Vocational Education Act: An Act of Congress to provide for the promotion of Vocational Education. Accepted by the State of Colorado.<sup>3</sup>

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1/ Session Laws 1891 Page 18.

2/ Federal Laws and Rulings Affecting Land Grant Colleges  
1925 Federal Publication Page 7.

3/ Colorado State Plan for the Administration of Vocational  
Education Page 10. 1925.

4/ Session Laws 1917 Page 536 - 538

Before 1926 the only provision for training of mechanic arts and industrial teachers was through the Engineering department. This alone, however, did not permit a student to qualify as a teacher of Trade and Industrial courses, because the policies of the Federal Board for Vocational Education require teachers of trade and related subjects to have had five years experience in the specific trade they are to teach. Few men with five or more years of trade experience have had the opportunity to get a college degree, although, in many cases, they have had as much as two years of college work.

The Problem.- The present study has undertaken two closely related problems:

To determine whether the granting of college credit for trade experience is desirable.

To determine whether the Colorado Agricultural College program of evaluating trade experience in terms of college credit for advance standing for the Bachelor of Education degree for students majoring in Trade and Industrial and Industrial Arts Education is justifiable.

Minor objectives.

It is proposed to justify the program referred to by a study of the following objectives:

1. To learn what type of students are attracted to the Colorado Agricultural College by the program suggested and to determine if they are of a superior type.
2. To learn whether the Colorado Agricultural College is giving such students the type of training that meets their needs as to the standards set up by industry, and at the same time, to enable them to meet the requirements of the public schools for certification.
3. To learn whether students have profited by the training received at Colorado Agricultural College thru one or more of the following measures of success: Promotions, better jobs and increase in salary.
4. To learn whether the training the student received under the above program at the Colorado Agricultural College improved his professional standing and

teaching ability.

5. To learn whether credits given for trade experience in terms of college credit is at variance with the student's ability to successfully carry work of college grade.
6. To learn whether industry approves the type of training represented by that given at the Colorado Agricultural College.
7. To learn whether public school administrators approve of the type of training represented by that given at the Colorado Agricultural College.

Definitions.- For the purpose of the present study, certain terms, used frequently, will carry the specific meaning given here:

"Vocational Industrial Teacher Training Institutions" are to be interpreted as meaning: Those colleges or universities which offer curricula for the preparation of men and women to teach in public Industrial and Vocational schools. Their curriculum consists of professional subjects and not content courses. In order that a person may become a Vocational instructor he must have obtained his training on the job and have had from one to eight years of practical experience.

The term "College Credit," unless otherwise qualified, will refer to professional educational credit, such as may be earned in a university or college of education in any of its departments; credits to be figured on the semester basis.

Methods and Procedure.- Since the investigation deals with two separate but closely related problems and the second problem involves seven different points of attack, as represented by the seven minor objectives, no detailed procedure will be given at this time. The procedure for each of the different sections will be introduced as a part of the discussion of that section.

The general presentation will follow the two divisions of the problem and will be placed under the chapter headings:

"Granting Credit for Trade Experience," and  
"The Colorado Agricultural College Program."

All the data for the present study were secured previous to the official changing of the name of the Colorado Agricultural College to that of the Colorado State College, which occurred Feb. 16, 1935.<sup>1</sup> The former name of the college has been retained throughout the discussion.

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1/ Session Laws 1935, Chapter 90, Page 312.

## CHAPTER II.

### CREDIT GRANTING FOR TRADE TRAINING EXPERIENCE.

The desirability of granting college credit for trade training experience may be examined from several standpoints. The present section proposes to investigate it from the standpoint of the persons who have received such credit toward their college degrees, from the standpoint of school administrators who hire such men for teaching work, from the standpoint of State Boards as agencies for granting teaching certificates, and finally, from that of industry, which would absorb the school-trained boys and girls who had been instructed by such men. In all but the first portion of the section, the desirability of granting college credit for trade training experience has been sought by asking representative school administrators, members of state boards or industrial officials to answer the question:

Who, in your opinion, would make the better teacher of a Trade and Industrial subject; the man who has a college degree based only on college work, this work to include practice in college shops; or the man with practical trade experience, for

which he has been granted, not to exceed 60 college credits, and who has completed his college work leading to a college degree?

Desirability of Credit Granting for Trade Training Experience, from the Teacher's Point of View.- The following

statements represent in a general way, opinions expressed by college officials in those schools granting credit for trade training experience. They also represent the opinions of men teaching Trade and Industrial subjects who have received such credit as a part of the work represented by their college degree.

The instructor who asks for credit based on the evaluation of experience has spent years acquiring knowledge and skills in industry that could never be learned in a college shop. The experience to be gained in the average college shop is very limited, due to the fact that the college shop equipment is generally insufficient and, in many cases, obsolete. Time spent in the college shop by the student is of such short duration that only the fundamentals can be learned, while in many cases, the college shop instructor has been out of direct contact with modern industry for so long a time that he is himself incapable of teaching modern methods and practices.

To determine whether the securing of a college degree by teachers of Trade and Industrial Education did have the results suggested, questionnaires were sent to those who had graduated from the Colorado Agricultural College between the years of 1927-1932, all of whom had received partial credit toward that degree by the evaluation of trade experience in terms of college credit.

Of the 70 questionnaires sent to the graduate students receiving their Bachelor's degree from this particular institution, 58 or 82 percent replied. A follow-up letter was sent to the other 18 percent. It was found, however, that these were either out of the teaching profession or their address was unknown.

Those answering the questionnaire were asked to check as to whether or not the receiving of their college degree had been of direct benefit in any of the following ways:

- a. Securing promotion,
- b. Holding present position,
- c. Increasing professional standing,
- d. Securing a better position outside their own school,

In most cases, it would have been impossible for the instructor, who has spent years in industry acquiring the knowledge and skills so necessary to a successful vocational instructor, to have spent four years in college in order to secure a college degree.

It may be considered, then, that the evaluation of trade experience in terms of college credit would be highly desirable for the Teacher of Trade and Industrial subjects for the following reasons:

It would permit him to secure his degree and so act as a distinct aid in raising his professional standing.

It would remove certain handicaps in relation to promotion and salary increase.

It would, directly or indirectly, be a definite factor in helping him hold his present position, or securing a better position outside his own school.

Table I. Summarizes the results received from the questionnaire. Figure 1 graphically portrays the advantages of having received a degree.

The table shows that those receiving direct benefit from their degree varied from 47 who reported that the degree had increased their professional standing, to 15 who had secured a better position outside of their own school because of the degree. In terms of percentage this represents a range of from 81.8 percent for the first to 25.8 percent for the second. Other direct benefits occupied positions between the two extremes. Approximately one out of every three of the correspondents had secured a promotion or a salary increase as a direct result of securing the degree. Considerably over half (58.6 percent) had been able to retain their positions even in a time of depression. Since the graduations had occurred in that period from 1928 to 1932 and the benefits listed all followed graduation, it is to be recognized that the promotions, salary increases and the influences that caused the retaining of positions took place in spite of the economic conditions that caused sharp retrenchment that was particularly noticeable in the Trade and Industrial field.

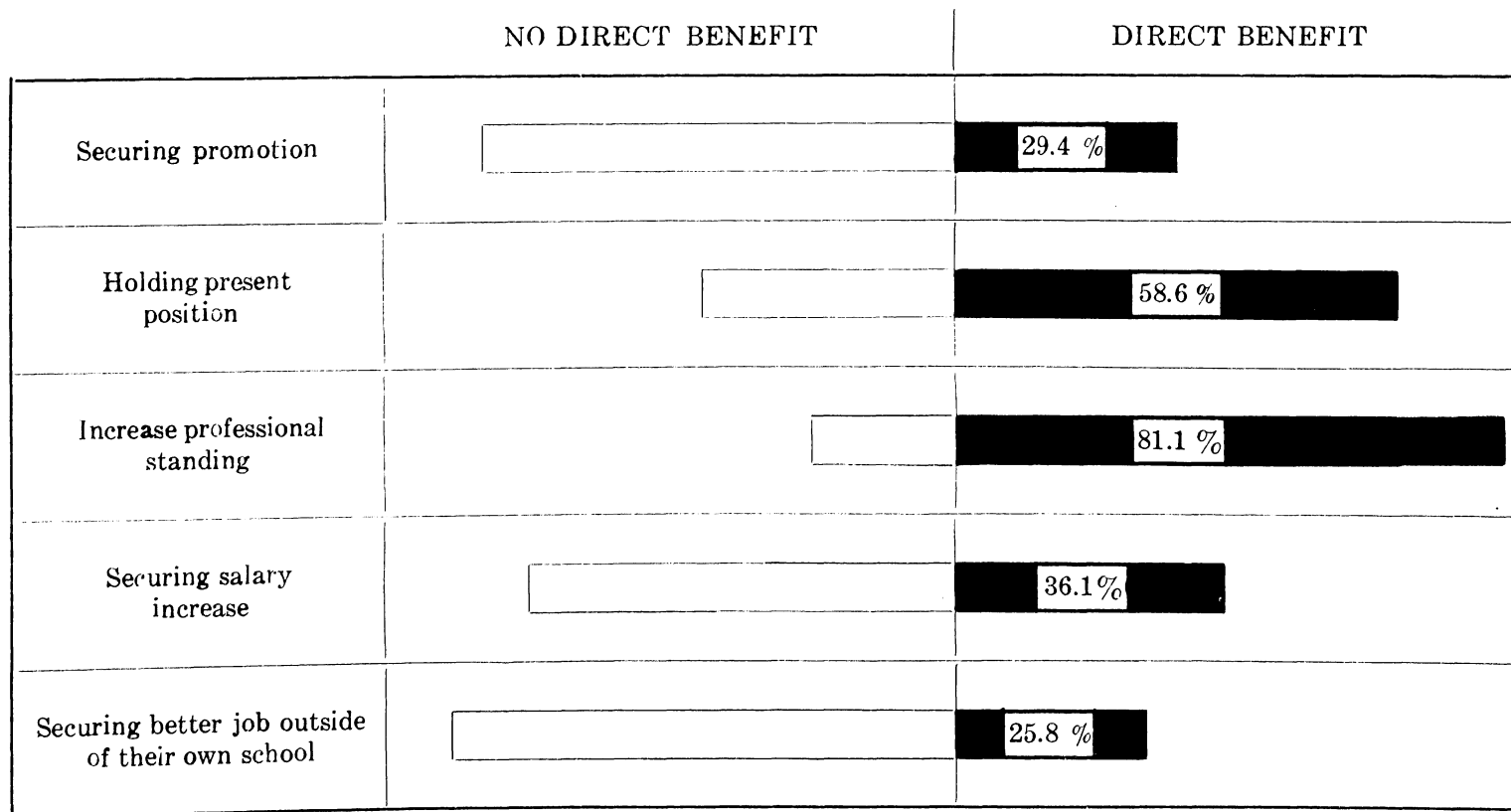
A checking over of the individual questionnaires shows that every one of the 58 correspondents had received direct benefit from one or more of the criteria used for

*Table I Benefits received by securing college degree, credit toward which trade experience was allowed. Based upon 58 graduates of the Colorado Agricultural College, 1927-1932.*

Number of returns			
<i>Suggested benefit</i>	<i>No direct benefit</i>	<i>Direct benefit</i>	<i>Percentage of total receiving direct benefit</i>
<b>A</b> Securing promotion	41	17	29.4
<b>B</b> Holding present position	24	34	58.6
<b>C</b> Increasing professional standing	11	47	81.8
<b>D</b> Securing a better position outside of their own school	43	15	25.8
<b>E</b> Securing salary increase	37	21	36.1

Name changed to Colorado State College, February 16, 1935

*Figure 1 Graphical representation of benefits received by securing college degree, credit toward which trade experience was allowed. Based upon 58 graduates of the Colorado Agricultural College 1927 - 1932.*



Name changed to Colorado State College, February 16, 1935

determining the value of the degree. Neither the summarized statements of the table nor the statement above include indirect benefits that may have been received. That the indirect benefits may have been considerable is not improbable.

While the benefit from the degree has been stressed it must be recognized that credit for trade experience enters the picture. The evaluation of trade experience in terms of college credit and applied toward the degree made the degree possible for these men.

It would seem evident from the facts shown that granting credit for trade experience toward a Bachelor of Science degree for teachers is desirable.

#### Reaction of School Administrators.

The reaction of school administrators to the granting of college credit for trade experience was desired as a second phase of the attack upon the general problem as <sup>to</sup> the advisability of granting credit for such experience. Such reactions were secured by communicating with 100 school superintendents in cities of over 25,000 population. (The list of cities and superintendents is given in the appendix.) Replies were received from the entire number of superintendents communicated with; fifteen percent, however, replied that they did not

feel qualified to express an opinion.

The superintendents were asked to express an opinion on three questions having a direct bearing on credit for trade experience in terms of college credit. The replies given for each question will be taken up separately and a general conclusion drawn after the replies to the different questions have been discussed.

Question 1.

"In your opinion is the experience gained in a college shop of equal value, hour for hour, with that gained in industry?"

Of the superintendents answering 66 definitely stated that it was their opinion that the college shop experience gained was not of equal value, hour for hour, with that gained in industry. The following quotations are excerpts from a few of the answers to the above question; they are typical of the replies received:

James E. Dugan, Newark, N. J.

I do not believe the experience gained in a college shop to be of equal value, hour for hour, with that gained in industry, because: Experience gained in a college shop, must, of necessity, be limited to the scope of the project, in the equipment and the materials involved. Also the time element enters, as work done in the college shop is never competitive. The range of work done in the college shop can not be as great as that done in industry.

H. B. Griffith, Utica, N. Y.

Trade experience gained in industry is undoubtedly worth more for trade teaching than the experience gained in a school shop. However, if this is not to be supplemented by some teacher training units, my experience leads me to decide in favor of the school shop trained man. The school shop man is preferable for the Industrial Arts teaching.

George W. Bowman, Marion, Ohio.

Hour for hour, up to a certain point, probably experience in a college shop would be equal to experience in industry, but, it is impossible, in my judgment, for the college shop to compensate wholly, for experience in industry.

Warren E. Bow, Detroit, Mich.

The experience gained in industry is of greater value, hour for hour, than that gained in a college shop.

W. B. Galloway, Dubuque, Iowa.

In answer to that question, I would say, unhesitatingly---no---, as the college shop can never, in any shape or form, duplicate the conditions obtained in industry. Two of the most important conditions which can not be duplicated are production, and the uncertainty of tenure of employment. Those are always in the mind of the worker in industry and have a certain amount of bearing on his work and outlook.

Dr. Edwin W. Adams, Philadelphia, Pa.

Experience gained in a college shop is not equal, hour for hour, with that gained in

industry. Such college shop experience is of value as a supplement to actual trade experience, especially if it is organized from the point of view of trade teaching and if it is rich in informational and scientific content. No school, of whatever grade, can, alone, make a skilled mechanic who is capable of teaching a trade.

H. D. Fillers, Wichita Falls, Texas.

I wish to express the opinion that experience gained in a college shop is not of equal value, hour for hour, with similar experience gained in industry. This statement must be considered, however, with the qualification that experience in industry must be varied experience. A large amount of experience of a highly specialized character would not be of such great value.

As has been pointed out, 66 superintendents stated themselves as favorable to the idea that experience gained in a college shop was of less value hour for hour than that gained in industry as related to the training of the vocational teacher. The various reasons given largely emphasized the difference in outlook or attitude gained in the industrial shop, the scope of the work, the time element and the equipment used. Repeating the words of Dr. Adams, already quoted, "no school, of whatever grade, can, alone, make a skilled mechanic who is capable of teaching a trade."

Replying in the negative, 19 superintendents stated that in their opinion, experience gained in a coll-

ege shop was of greater value, hour for hour, than that gained in industry, without qualifying their statement or discussing the matter.

Table II, under A, and Figure 2 under A, summarizes the opinions of the 58 superintendents and shows 78.8 percent as favorable to the trade training gained in the industrial shop<sup>as</sup> being superior to that of the college shop hour for hour, for training the trade teachers.

Question No. 2.

"In your opinion, who makes the more efficient instructor:

- A. The man who has received all his shop training in college, secured his degree, and is then permitted, by state regulation, to teach Trade and Industrial classes in the public schools, without having had previous experience in industry.
- B. The man who has had years of valuable trade experience in industry, plus an intensive teacher-training course, and the ability to teach the learner."

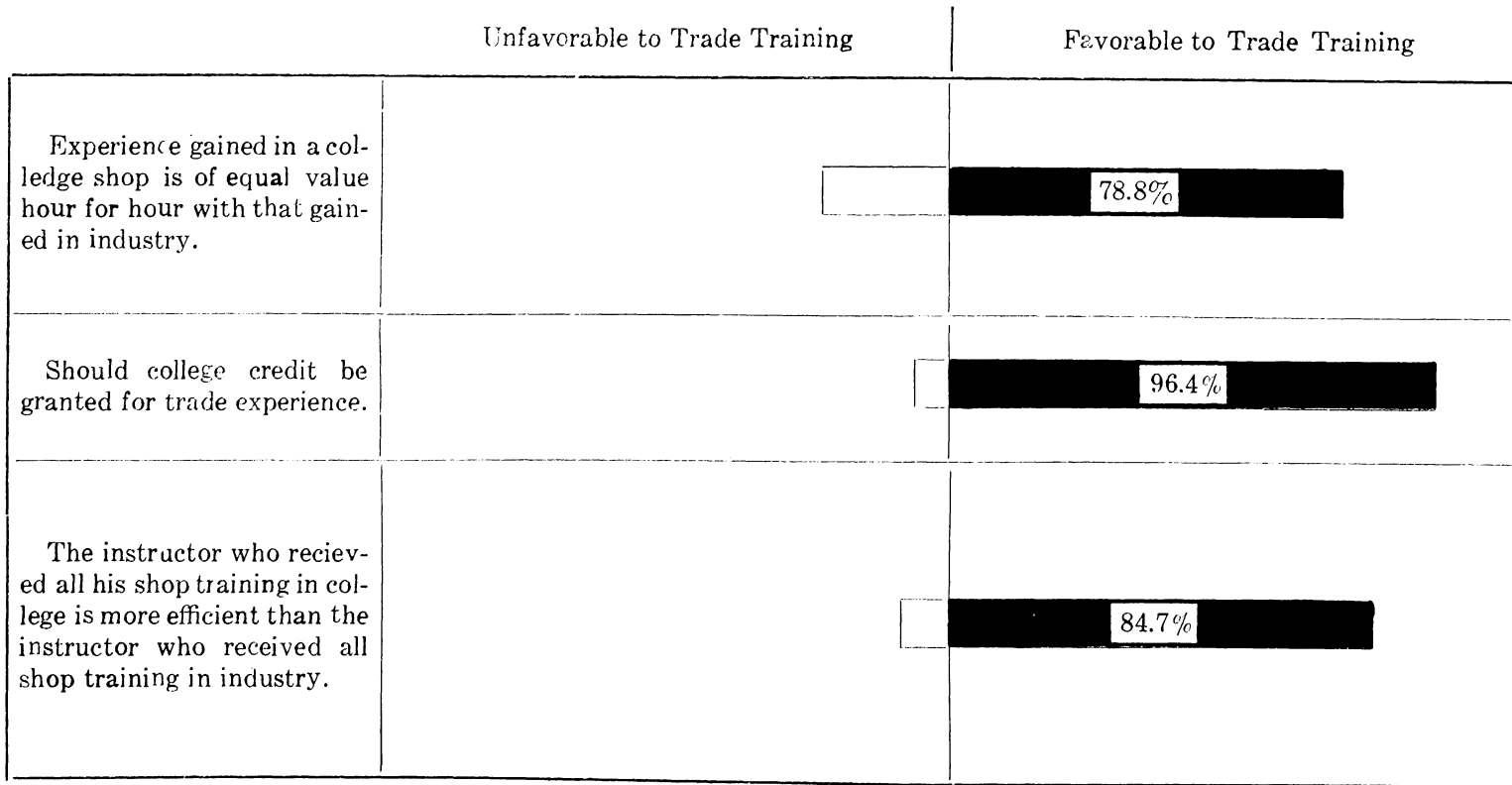
Of the 85 superintendents replying, 82 definitely stated that it was their opinion that "B" was the more valuable instructor.

TABLE *II* Reaction of school administrators to qualifications of shop teachers as related to trade experience in comparison with college shop training based upon opinions of 85 school superintendents in cities of 25,000 population.

NUMBER OF RETURNS			
<i>Suggested qualifications</i>	<i>Unfavorable to trade training</i>	<i>Favorable to trade training</i>	<i>Percentage of total in favor of trade training</i>
Experience gained in a college shop is of equal value hour for hour with that gained in industry.	19	66	78.8
Should college credit be granted for trade experience.	3	82	96.4
The instructor who received all his shop training in college is more efficient than the instructor who received all shop training in industry.	13	72	84.7

Name changed to Colorado State College, February 16, 1935

*Figure 2 Reaction of school administrators to qualifications of shop teachers as related to trade experience in comparison with college shop training based upon opinions of 85 school superintendents in cities over 25,000 population.*



Name changed to Colorado State College, February 16, 1935

The following quotations are excerpts from a few of the answers to the above question. They are typical of the replies received in favor of "B".

C. S. Hubbard, Fresno, Cal.

I would say that "B" makes a more valuable trade teacher; that is the man who has had a successful trade experience plus an intensive teacher-training course. However, the personal equation is important; this tradesman must have an outstanding personality.

Dr. David Weglein, Baltimore, Md.

It has been my experience, over a period of approximately twenty-five years, that a man who has had years of valuable experience in industry, plus intensive teacher-training work, who has the native ability as an instructor, is more efficient in teaching shop work than is the college trained person. I do not feel that the college trained person is even a more efficient instructor for the related subject in connection with Trade and Industrial classes than the other person mentioned.

Wm. D. Wolfe, Atchison, Kansas.

"B" is more valuable. We must keep in mind, however, that valuable trade experience would not come to just any individual who has spent several years in industry.

B. B. Cobb, Waco, Texas.

I favor "B". I have noticed, in my limited experience, that many of the processes taught students by teachers who have had college training only, have to be unlearned when these students go into industry.

H. W. Dodd, Allentown, Pa.

We have tried, on several occasions, to use college trained men in our industrial field and have found them to be failures.

The opinions of the 82 superintendents stating themselves as being favorable to the trade-trained man with teacher-training experience over the college-trained man without trade experience, seems, in part, <sup>to be</sup> based upon their own experiences with the two types of teachers. Only 3 of the entire 85 were favorable to the college-trained shop man, but no reasons were given for the opinions stated. Table II, B, and Figure 2, B, summarize the results of the answer to the question, showing that 96.4 percent of the entire number of superintendents were favorable to the shop-trained instructor.

Question No. 3.

"Is a plan to evaluate the practical man's experience in terms of college credits, not to exceed 60 credit hours---the number of credits to be allowed to be based on the number of successful years, as well as the recency of his experience in industry---possible?"

The replies of the 85 superintendents were as follows:

- 72 Stated definitely that it was their opinion that colleges or universities should recognize trade experience in terms of college credit in varying amounts, depending upon the individual.
- 4 Were definitely opposed to credit being allowed for experience. It was their opinion that trade experience could not be measured in terms of college credit.
- 9 Stated that they were not qualified to answer the question.

Since 84.7 percent of the superintendents were in favor of granting college credits for trade experience, it would seem desirable to do so from the administrators point of view.

Table II under C, and Figure 2, under C, summarize the results.

The following quotations are excerpts from a few of the answers to the above question. They are typical of the replies received in favor of granting college credit for trade experience.

Leonard Young, Duluth, Minn.

I am very strongly of the opinion that college administrators should recognize trade experience in terms of college credit.

J. C. Cochran, San Antonio, Texas.

Regarding the plan to evaluate the practical man's trade experience in terms of college

credit, not to exceed sixty credit hours: I think it is very desirable and should unquestionably be done.

H. B. Griffiths, Utica, N. Y.

I do not think it wise to set up any definite number of credit hours for trade experience in terms of college credit. I would put high school graduation as the first requirement, then a certain number of college credits as background. Then I would let the credits for trade experience fall where they will.

P. S. Daniel, Raleigh, N. C.

I think this could be done and would produce better teachers.

#### Summary of Opinions of School Administrators.

The general opinion of the school administrators indicates that college shop training is not of equal value, hour for hour, with training received in industry; and that the man who has years of valuable trade experience in industry, plus an intensive teacher-training course and the ability to teach the learner, makes a more desirable instructor of shop subjects than the instructor who has had all of his shop training in a college shop.

It is the general opinion of the superintendents replying that it was their experience that instructor<sup>an</sup> having had shop training in industry was more efficient in the teaching of trade subjects than the instructor who received his shop training in college. These superintend-

ents are generally agreed that credit should be granted for practical trade experience in terms of college credit. It is their opinion that credit granted for experience, plus a certain amount of college training, would produce better shop instructors capable of teaching trade subjects that will meet the approval of industry.

Reaction of State Boards.

The reaction of State Boards of Education toward the granting of college credit for trade experience was secured by sending a questionnaire to such boards in each of the 48 states. The questionnaire was answered and returned from 42 states; follow-up letters were sent to the remaining 6 without result.

In order to secure the desired information the following questions were asked:

1. Does your state grant teachers certificates to applicants to teach Trade and Industrial subjects in the public schools who have received their degree from a teacher-training institute granting credit toward a degree for past trade experience?
  
2. What is the maximum number of credits accepted for past trade experience for

certification, when such credits are given by a teacher-training institution?

Of the 42 states replying, it was found that 34 states granted a teachers certificate to applicants to teach Trade and Industrial subjects in the public schools who have received their degree from a teacher-training institute granting credit toward a degree for past trade experience, and 8 states did not.

The states accepting credit for experience, the amount of credit accepted, and states not accepting credit for experience will be found in Table III. on the following page.

#### Reaction of Industry.

Industry's reaction was secured by communicating with the officials of those 20 industries that are representative of industrial United States and have educational programs of their own. Replies were received from 100 percent of the total. These industries stated that they were greatly interested in the problem and offered their co-operation. It was the general opinion of these manufacturers that to train boys for an industrial career, those men who are teachers must know the practical, as well as the theoretical side, of industrial shop practice. All were agreed that a degree should not

*TABLE III Credit allowed by states for trade experience when included as a part of the certification requirements.*

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*A. States setting a maximum for such credit*

<i>State</i>	<i>Maximum Credit</i>
Colorado . . . . .	12
South Dakota . . . . .	15
Idaho . . . . .	32
Kentucky . . . . .	10
Maine . . . . .	18
Pennsylvania . . . . .	8
Texas . . . . .	20

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*B. States setting no maximum for such credit*

Alabama	Michigan	Ohio
North Carolina	Minnesota	Oregon
California	Mississippi	Rhode Island
Florida	Missouri	Tennessee
Georgia	Montana	Utah
Indiana	Nebraska	Vermont
Kansas	New Hampshire	Washington
Louisiana	New Mexico	Wisconsin
Massachusetts	New York	Wyoming

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*C. States furnishing no information*

Arizona	South Carolina	Virginia
Arkansas	Illinois	West Virginia
Iowa	Delaware	Connecticut
Nevada	Alabama	North Dakota
Oklahoma	Maryland	

be a pre-requisites for teaching Trade and Industrial subjects, but that if it were, trade experience should be recognized. Not all were agreed as to a method of evaluation of trade experience for credit.

The following are general opinions expressed by the manufacturers communicated with as compiled from the answers to the questionnaire:

1. That the ability to teach is not indicated by college credits, although such credits are frequently accepted as qualifications.
2. The college trained instructor in an Engineering field will make a better instructor of theory, only, but he will not present what industry would desire in the way of a practical course.
3. A general educational background, whether acquired in college, or by experience in reading outside of college, is most desirable.
4. A college degree, in itself, indicates no measure of ability to instruct Trade and Industrial classes; it must be supplemented by broad experience in the trades.
5. Experience gained in a college shop, is, by no means, of equal value with that gained in industry.
6. College training, in addition to practical trade experience, is highly desirable.

7. It is much better for the teacher in a vocational school to have a broad background, which can be obtained in the college courses, and to follow this by practical training in industry, before attempting to teach.
8. It is not sufficient for the instructors to teach theory only, but it is very essential that practical application of the theory be given by actual demonstration and instruction on the job and the scholar have the actual opportunity of doing the work.
9. The instructor must know the modern methods now used in industry and this should be first hand knowledge acquired by actual experience and constant contact with the trade being taught.

#### Reaction of Colleges.

The Federal Board for Vocational Education made a survey of 53 Vocational Industrial teacher training centers.<sup>1</sup> Of this number 35 were colleges or universities giving courses in vocational teacher training. Of these colleges or universities 18, or 47.3 percent, were giving college credit for teaching experience, administrative experience and trade experience.

The seeming trend indicated by the survey toward basic educational qualifications of individuals

1. Federal Board for Vocational Education, Bulletin No. 152, Trade and Industrial Series No. 43, Page 22.

preparing to teach vocational classes, may be taken as an indication that colleges and universities are slowly coming to the place where they recognize the need for degree-qualified students, if these institutions are to meet the demands of educators who are demanding teachers with college degrees.

Since this survey was completed, the state teacher-training institutions in Santa Barbara and San Jose, California,<sup>1</sup> and New York University and the Buffalo Normal School in New York,<sup>2</sup> have also instituted a program of vocational teacher training, whereby trade experience is given consideration through evaluation of trade experience in terms of college credit.

Seemingly the trend is upward in the recognition of trade experience for college credit by colleges and universities.

Table IV-D1 indicates what states have colleges and universities granting college credit for trade experience. Table IV-D is reproduced from Bulletin 152, Trade and Industrial Series No. 44, Page 22, Published by the Federal Board for Vocational Education.

1. Personal communication from J. C. Beswick, Sacramento, California, February 25, 1934.
2. Personal Communication from Donald M. Kidd, Syracuse, N. Y., January 17, 1934.

TABLE IV-D\*1

*States having colleges and universities allowing college credit for trade experience; the minimum and maximum number of years for which credit is allowed; and the amount of college credit granted.*

Name of State in which institution is located.	Years required to obtain credit and the amount allowed			
	Minimum number of years for which credit is allowed	Maximum number of years for which credit is allowed	Minimum number of credits allowed	Maximum number of credits allowed
Colorado . . . .	0	0	0	0
Indiana . . . .	0	0	0	0
Iowa . . . . .				
Michigan . . . .	4	4		32
Minnesota . . . .				
New York . . . .	5		2	8
Ohio No. 1 . . . .	3	3	24	24
Ohio No. 2 . . . .	0	0	0	0
Oregon . . . . .				
Pennsylvania No. 1 . . . .	1	6	4	24
Pennsylvania No. 2 . . . .				
Pennsylvania No. 2 . . . .	3	6	10	20
South Dakota . . . .	0	0	0	0
Tennessee . . . .	3		3	
Texas . . . . .	1	5	4	20
Utah . . . . .				
Virginia . . . . .				
West Virginia . . . .	1		5	5

\*1 Bulletin 152, Trade and Industrial Series, number 43, PP 22

In summarizing this chapter on the desirability of granting college credit for trade experience it is found, that from the instructor's point of view, this plan is desirable inasmuch as it was a direct aid in helping 29.4 percent to secure promotion, 58.6 percent to retain present position, 81.8 percent to increase professional standing, 25.8 percent to secure a better position outside their own school and 36.1 percent to secure a salary increase.

In general the reaction of the school superintendents was favorable to trade training for the shop instructor teaching Vocational and Industrial Arts subjects. It was the general opinion of the superintendents that trade training should be supplemented with teacher training and additional college work in order that the shop teacher with trade experience may attain the highest degree of efficiency. They were generally agreed that credit for trade experience should be granted.

Reports received from 42 State Boards of Education show that 34 states recognize trade training in terms of college credit in varying amounts when certifying applicants to teach Trade and Industrial subjects.

Industrial leaders for those industries having their own school shops were generally agreed that college

credit is not an indication of the ability of the instructor to teach trade methods and practice, but knowledge of such methods and practice can only be gained by actual participation in industrial shops. They expressed the opinion that if Industrial and Vocational teachers are required to have a degree to teach, their trade experience should be recognized in terms of college credit.

At the present time there are 37 colleges and universities which are known to recognize trade training in terms of college credit toward a Bachelor's degree.

From the facts found and stated in this chapter, it would seem that trade training evaluated in terms of college credit may be considered to be desirable from the point of view of the teacher, administrator and industry in so far as the trade training is related to making a more efficient instructor of Trade and Industrial courses.

CHAPTER III.

THE COLORADO AGRICULTURAL COLLEGE PROGRAM.

The Program, Previous to 1931.<sup>1</sup>

The plan of evaluating trade experience in terms of college credit for the Bachelor of Science degree was conceived after the Colorado Agricultural College was designated as a teacher training institute to meet the requirements of the National Vocational Education Act.

The request to put in the plan of teacher training was first made by State Director C. G. Sargent and State Supervisor H. A. Tiemann. This request was presented to the Faculty Council January 28, 1926, resulting in the appointment of Dr. Charles Allen, Dr. George Avery and President Charles Lory as a committee to study the possibilities of such teacher training.

As the result of the agreement between the State Board for Vocational Education and the Colorado Agricultural College, courses in teacher training in Trade and Industries were offered in the summer session, beginning with 1926, by men who were usually of the Federal Board staff.

1/ First presented to Faculty Council informally by Dr. Charles A. Lory, January 28, 1926.

The Colorado Agricultural College was then faced with the problem of taking care of students who possessed requirements specified by the State Board for Vocational Education, but who needed further training in technical subjects and in teaching methods.

A committee, composed of President Charles Lory, Dean S. Arthur Johnson, L. D. Crain, and L. R. Davies, requested the Faculty Council to appoint a committee composed of the President, Chairman of the Division of Engineering, State Director of Vocational Education, State Supervisor of Trade and Industries and the Dean with the approval of the Executive Committee to work out a course of study jointly and present a detailed report to the Faculty Council. The Faculty Council acted favorably upon this recommendation and the following committee was appointed: President Charles Lory, Dean S. Arthur Johnson, Professor L. D. Crain, Director C. G. Sargent, Supervisor H. A. Tiemann. <sup>1</sup>

Colorado Agricultural College Program.

The immediate problem was devising a co-operative plan that would enable the Department of Education, the Department of Mechanical Engineering and the Departments of Economics and Sociology to participate in the determination of subjects required for graduation for

for students specializing in Mechanics Arts and Industrial Education. In general the problem involves:<sup>1</sup>

1. Giving careful consideration to admission requirements under a standardized plan, such as is used by many institutions where mature students are admitted. (A great majority of the cases will be high school graduates, but a few exceptions will need special consideration.)
2. Dovetailing college requirements with entrance subjects and permitting equivalent training to be substituted in certain qualified cases.
3. Selecting high-class students who are already in minor executive positions in the public school system, or who are eligible for immediate promotion and who demonstrated that they have outstanding ability in the field of Industrial education.
4. Giving special attention to courses required for graduation on the basis of an analysis of the requirements of Industrial Education teaching, rather than on the basis of Engineering subjects now offered in the college.
5. Devising a plan which may operate on a functional basis, permitting students to take certain courses now offered in other departments; where it is recognized that desirable training for the accomplishment of the objective is found.
6. Arranging a flexible plan that will permit the Mechanics Arts students to select a

1/ Colorado Agricultural College Bulletin "Governing the policies of Selecting Candidates for the Bachelor of Science Degree," Page 3-4.

heavy schedule of shop subjects, while trade teachers (those coming to us with trade experience), may elect a heavy program of related shop, social and economic and industrial education subjects.

7. Establishing additional courses in the near future that are necessary for the well-rounded training of Mechanics Arts and Industrial teachers.

It was the purpose of the committee, in devising a functioning plan of teacher-training to make it possible for men already in the teaching profession to get degrees and improve their professional standing, by evaluating their trade experience in terms of college credit.

The problem involved in establishing the program was that of evaluating practical experience in terms of college credit. Many institutions grant advanced standing to mature students who have had practical trade training, on the basis of the recommendation of the department head. There has been no special method devised to accurately evaluate a man's trade experience in terms of college credit, therefore, it would seem that such evaluation based only upon the recommendation of the department heads would be of little value, inasmuch as the evaluating of trade experience would involve considerable guess work. For that reason it was necessary that several formulae be adopted that could be used to accurately evaluate trade experience, research experience and

administrative experience in terms of college credit that would be reliable and authentic.

In order to carry out the recommendations of the committee relating to the evaluation of trade experience for college credit it became necessary to devise some standard by which this experience could be accurately measured that would eliminate the questionable guesswork of evaluation.<sup>1</sup>

A number of typical cases were selected by the committee so that the committee could study their trade experiences. After a careful study of these experiences the following hypotheses were established:<sup>2</sup>

1. Approximately one-tenth of an individual's time spent in industry is assumed to be devoted to learning the trade, while nine-tenths of this time is spent in practicing the trade. The exact amount of credit is to be determined by the committee from a study of the achievements of the student.
2. In research work in industry, one fifth of the time may be considered to have educational value.
3. For foremanship, experience in industry, or supervisory experience in the public schools, one-fifth of the time may be rated as education.

1/ Information secured in conversations with H. A. Tie-mann, State Director of Vocational Education, in Colorado.

2/ Colorado Agricultural College Bulletin, "Policies Governing the Selection of Candidates for the Bachelor of Science Degree, Page 4.

4. Two credits in practice, observation, or supervised teaching will be allowed for each year of successful teaching experience secured since 1920. A maximum of ten credits will be granted for teaching experience.
  
  5. Under existing regulations of the Faculty Council, 20 credits may be allowed for not less than six months of enlisted World War experience, providing the candidate received an honorable discharge.
- 
- 1.A. An individual doing satisfactory work in industry puts in approximately 2400 hours a year at work, assuming an eight-hour day and 50 working weeks during the year.  
An individual doing satisfactory work (shop) for credit in college, spends 48 actual hours in the shop for one credit. One-tenth of the number of hours spent in production work in industry, divided by 48 hours, which is required for one school credit, equals the number of credits earned by the individual through practical experience in industry.
  
  - 2.A. One-fifth of the number of hours spent in research work in industry, divided by 48 hours, equals the number of credits to be allowed for such experience.
  
  - 3.A. Foremanship and research experience in industry and supervisory work in the public schools, require qualities of leadership, the exercise of judgment and constant planning and study. For this reason one-fifth of the time spent in such positions may be credited as education.
  
  - 4.A. Teaching experience should be rated on the basis of two credits for each year of successful work. Credit allowances for teaching experience are based on the fact

that such experience is equivalent to practice teaching, observation teaching, or supervised teaching, as carried on in the college. The Committee feels that the credit allowance is low for this experience, but this may be justified on the ground that many shop teachers begin to teach without any preparation for teaching, and therefore they do not profit as much from the experience as teachers who have had some professional training prior to their teaching experience.

- 5.A. Credit for World War experience has already been ruled upon by the Faculty Council, 20 credits being allowed for such enlisted experience.

In some cases, where apprentice training is in effect in industry, or where the occupation required considerable research work, it may be necessary for the committee to increase its rating of education value.

The committee believes that this is a very conservative estimate of the training value of practical experience and of industrial research and supervisory, or administrative experience. Even higher ratings might be justified on the ground that experience in any occupation having definite occupational standards that are equal to, or above, the standards required in shop training carried on within a college or school, is education.

In general, the committee proposes to allow:

1. Five credits for each year of successful trade or industrial experience.
2. Two credits for each year of successful teaching experience; maximum, 10 credits.
3. Ten credits for each year of successful research experience in industry, or public schools.
4. Ten credits for each year of supervisory experience in industry or supervisory experience in the public schools.
5. 20 credits for enlisted World War experience.
6. Ten credits per year for administrative experience in the field of education on the basis of leadership, ability to handle men, inspecting, etc.,.

The committee recommended that this plan should be tied up with additional college work, and should be operative only to those who were Mechanic Arts or Trade and Industrial teachers, or administrators in such fields, in the public schools, and not operative to those who had merely had trade experience and were not employed in the teaching profession.<sup>1</sup>

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<sup>1</sup>/ Policies Governing the Selection of Candidates for the Bachelor of Science Degree in Industrial Education Page 5-6.

How First Candidates Were Selected.

Candidates for the Bachelor of Science Degree under this first plan were selected by personal interview. No formal examinations were given. The status of the student was evaluated on the basis of his statement to the committee, the documentary evidence he submitted and the recommendations of men who knew his work. The candidate was required to have journeyman's standing in his trade, successful teaching or supervisory experience, and to carry the courses outlined for him by the committee and approved by the Faculty Council. When he had successfully completed those courses he was recommended for graduation.

Credit Allowance for Trade experience.

At this time, 1926, no limit was fixed by the Faculty Council as to the number of credits allowed for trade experience because the training plan was to be based on case studies. The committee presented its findings from time to time and showed the progress made by the individual candidate and made recommendations on each individual case in submitting a candidate for a degree.

As a result of this policy, no definite standards were set up as to maximum credit for trade experience allowed or minimum requirement for work to be completed in residence. As a result of this policy as high as 132

credits were allowed for experience to be allowed toward the Bachelor of Science degree, while as low as 5.15 credits completed in residence was accepted to secure a degree. (The complete record of credits used for graduation by various students is given in the appendix.)

It will be recognized that credits used and credits allowed for evaluation would not always be the same, because in every case the student used only the number of credits needed to secure his degree.

#### Program After 1931.

By past experience on the part of the Faculty Council and the students, there came a conviction that the original plan should be revised and a method devised for accurate measurement of trade proficiency and progress. A suggestion that this be done came informally from the official representative of the North Central Association. Requests from many students were also reviewed.

On the basis of case studies made by the Committee in 1931, the committee was convinced that a maximum of 80 credits for trade experience with a minimum 24 hours residence was a fair allotment. Thus 80 credits was fixed as a maximum that would be accepted for trade experience and 24 hours work in residence required. This was accepted by the Faculty Council until further experience was gained.

In 1932 the Faculty Council became convinced that 80 credits allowed for trade experience was excessive and that a residence requirement of 24 hours was insufficient, as it was felt that the candidate should be in residence for the equivalent of one year to be properly evaluated and show his worth as a student and a candidate for a degree. Residence requirements were accordingly raised to 40 hours and credits allowed for trade experience were reduced to 60.

A special committee, under the chairmanship of Dr. C. A. Prosser and with Dr. Charles A. Allen as a member, was appointed to revise the plan of examination.<sup>1</sup>

Revised Plan.

From the experience accumulated by the Faculty Council and students it was felt that the original plan was inadequate and should be revised and a method devised that would accurately measure trade proficiency and progress. Suggestions along this line came informally from a representative of the North Central Association and from many students.

Under the revised plan<sup>2</sup> the candidate first files a sworn statement of trade experience; this is checked thru references given. He then makes application to

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1/ Faculty Council Record 5, Page 321.

2/ Revised Plan in Detail --- See Appendix.

take examination in trade or supervisory experience; an examining committee is appointed from the summer session faculty in Trade and Industrial education to prepare and administer the examination. The time set is usually during the second of the second three weeks period of the summer session. Outside men, experienced in the trade are called in to prepare the examination, after which the papers are graded and become a part of the point rating system used.<sup>1</sup>

At the present time the examination consists of a written test covering the following phases of the trade; job intelligence, mathematical computation, applied science, drawing, safety, a type job described, excess assets vocabulary, resourcefulness and trouble-shooting. It is not possible, at this time, to include manipulative tests for all trades, therefore the policy is not to use manipulative tests until they can be used for all trades.

After ratings are made and credit allowed, it is approved by the examining committee and passes with their recommendations to the committee on undergraduate work; if approved by this committee on undergraduate work it is then referred to the Faculty Council for final approval, thereafter becoming part of the student's permanent record in the registrar's office. The candidate is then

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1/ Point Rating System in Revised Plan --- See Appendix.

required to take certain qualifying courses, set up by the committee; this places the candidate on probation and helps to determine whether he has the ability to carry work of college grade.

In revising the plan the Faculty Council felt that the degree given should be changed to Bachelor of Education since this work is a major in the field of education.<sup>1</sup> A detailed report of this change will be found in the Bulletin Report to the Faculty Council of the Colorado Agricultural College by the Committee on Prescribing Conditions for Awarding Degrees in Trade and Industrial Education and in Mechanics Arts Education.

Page 4.

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1/ Faculty Council record, No. 5, Page 321.

CHAPTER IV.

EVALUATION OF THE COLORADO AGRICULTURAL COLLEGE  
PROGRAM.

Type of Student attracted.

In making a survey of 58 students receiving their Bachelor of Science degree from the Colorado Agricultural College under the plan of evaluating trade experience for college credit, it was found that the average age at the time of graduation was 42.6 years, with a minimum age of 32 and maximum age of 64. All of these men, without exception, at the time of graduation, were holding responsible positions in the field of education. Of the 70 graduates studied it was found that 53.5 percent were successfully holding administrative positions and 46.5 percent were successfully holding teaching positions at that time. Figure 3 shows the comparison graphically.

It was found that 35.7 percent of these students received an increase in salary after graduation, that 14.2 percent received a decrease in salary and 50 percent maintained their salary schedule. The position and salary of each of these 31 students holding administrative positions is shown in Table IV; those of the 27 students

*Figure 3 Classification of positions held by the 70 students when making application for the B. S. Degree at Colorado Agricultural College under the plan of evaluating trade experience for college credit.*

Position held	Percentage
Teaching	46.5
Administrative	53.5

Name changed to Colorado State College, February 16, 1935

TABLE IV Administrative position held by student when making application for B. S. degree showing increase in salary before and after graduation from the Colorado Agricultural College and year graduated.

Case number	Position held before graduation	Year graduated	Salary before graduation	Salary after graduation	Increase	Decrease
2	Director of Vocational Education	1930	\$3600	\$4500	\$900	
6	Ass't Director Dunwoody Inst.	1931	5000	4500		\$500
11	Supervisor of Commercial Dept.	1931	1650	1530		120
14	Director of Vocational Education	1930	4800	5400	600	
15	Department Head, Electricity	1931	1500	2400	600	
16	Superintendent of Indian School	1930	4000	3800		200
17	Vice-Principal of Trade School	1929	2800	3163	363	
20	Department Head	1931				
22	Ass't Principal Trade School	1930				
25	Department Head in High School	1929	3300	3300		
26	Director of Vocational Education	1932	4000	4050	50	
29	Ass't State Supervisor	1932				
30	Supervisor of Industrial Arts Ed.	1930	2000	2000		
34	State Director Vocational Ed.	1930	3500	3500		
41	State Supervisor of Rehabilitation	1931	2900	3144	244	
43	Director of Vocational Education	1928	2400	4400	2000	
45	Prof. Ind. Ed. University Kentucky	1932	3000	3300	300	
47	Principal, Vocational School	1931	2400	2160		240
49	Chief Ind. Trade U. of Texas	1930	3300	3300		
50	Director of Vocational Education	1932				
51	Principal Girls Vocational School	1931	3500	3625	125	
52	Department Head for Welding	1932	2120	2630	510	
54	State Supervisor T & I Education	1929	3000	3600	600	
56	Director Vocational Education	1932	2700	2650		50
57	Regional Director Federal Board	1932	4800	4800		
59	State Supervisor T & I Education	1931	3000	3000		
60	State Supervisor T & I Education	1931	4000	4000		
62	Dean of High School	1932	2800	2800		
66	Chief Adult and Continuation Ed.	1929	4500	4800	300	
67	Supervisor Vocational Education	1932	2200	3100	900	
69	Department Head I. A. Education	1930	2500	2800	300	

Name changed to Colorado State College, February 16, 1935

TABLE V Teaching position held by student making application for B. S. Degree showing salary before and after graduation and the year graduated from the Colorado Agricultural College.

Case number	Position held before graduation	Year graduated	Salary before graduation	Salary after graduation	Increase	Decrease
1	Instructor of Mechanical Drawing	1930	\$2400	\$2450	\$ 50	\$
3	Instructor of Mechanic Arts	1932	2400	2180		220
4	Instructor of Mechanical Drawing	1932	4558	4558		
7	Deputy Assessor	1931				
8	High School Wood Work Instr.	1930	2300	2100		200
19	Jr. High School Wood Work Instr.	1931	2000	2000		
21	High School Auto Mech. Instr.	1932	2400	2565	165	
23	Instructor of Baking	1931	3000	2700		300
24	High School Mech. Instr.	1928	2400	2500	100	
31	High School Printing Instr.	1931	2250	2880	630	
32	High School Woodwork Instr.	1932	2300	1610		690
33	Vocational Carpentry Instr.	1929	1900	2500	600	
35	Co-ordinator	1930	2500	2500		
36	Machine Shop Instructor	1931	2250	2790	540	
37	Cabinet Making Instructor	1930	2400	2400		
38	Printing Instructor	1932	2200	2200		
39	Shop Instructor Haskell Inst.	1932	2300	2400	100	
42	Welding Instructor	1932	2000	2100	100	
44	Teacher Trainer	1930	2400	3200	800	
46	Cabinet Making Instructor	1930	2500	2200		300
48	Mill Work Instructor	1931	2000	2331	331	
53	Auto Mechanic Instructor	1931				
58	Resigned from teaching	1931				
64	Instructor of Woodwork and Dr.	1930	2800	2800		
65	Instructor of Brick Masonry	1932	2300	2500	200	
68	Instructor of Vocational Ed.	1930	2970	2200		770

Name changed to Colorado State College, February 16, 1935

holding teaching positions are shown in Table V. It will be seen that with two exceptions, Cases 43 and 24, all graduated after 1928 and so the increases were given after the economic depression had set in in 1929.

It would seem that if 35.7 percent of these administrators and teachers were able to secure a salary increase and 50 percent were able to maintain their salary schedule when Boards of Education were making every effort to reduce expenditures, that school superintendents and administrators considered this type of training to be valuable and desirable.

As a part of the survey an attempt was made to determine whether the Colorado Agricultural College plan of granting credit for trade experience had attracted students having previous college training at other institutions. The records show that 67 of the 70 graduate students had successfully carried work of college grade at one or more institutions of higher learning, while only three had no previous college training. This disproves the belief that the Colorado Agricultural College would be flooded by applicants for the Bachelor of Science degree who had no previous college training and who might be considered as inferior material. It will be seen in Table VI that the colleges attended by these students are among the foremost in the United States and are wide-

Table **VI** Colleges students attended before making application for B. S. degree at the Colorado Agricultural College.

<i>Name of College</i>	<i>Students</i>	<i>Name of College</i>	<i>Students</i>	<i>Name of College</i>	<i>Students</i>
University of Wisconsin	5	Iowa State College, Ames	4	Harvard University	1
W. S. C., Colorado	1	University of New Mexico	2	Carnegie Technical Institute	1
University of California	10	University of Alabama	1	Oklahoma A. & M.	1
K. S. T. C., Pittsburg	1	Tulane University	1	Massachusetts Technical Institute	1
C. S. T. C., Greeley	6	Columbia University	3	University of Idaho	1
University of Colorado	1	University of North Dakota	1	College of Idaho	1
Stout Institute, Wisconsin	6	Occidental College	1	University of Oregon	1
Cornell University	1	North Dakota School of Science	1	Northern State Teachers College	1
San Jose S. T. C., Cal.	1	Santa Barbara S. T. C.	2	Texas A. and M. C.	1
University of Minnesota	4	Northwestern University	1	University of Texas	1
University of Kansas	4	University of Texas	1	Berea College	1
University of Missouri	5	University of Utah	1	University of Kentucky	1
New York University	2	Milwaukee State Teacher College	1	Ohio State University	1
University of Florida	1	University of Washington	1	Peabody College	1
Minnesota State Teachers College	1	Michigan State Teachers College	1	University of Wichita	1
North Dakota S. T. C.	1	Oklahoma City University	1	Indiana State Teachers College	2
Leland Stanford University	1	Utah Agricultural College	1	Boston College	1
U. of C., Los Angeles	5	Oklahoma University	1	Simmons College, Boston	1
Kansas City Junior College	2	Oregon Agricultural College	1	North Dakota State Teachers College	1
H. T. C., St. Louis	1	Iowa State Teachers College	1	University of Nebraska	1
Chicago University	1	Denver University	1	University of Arizona	1
Des Moines University	1	Chicago Technical Institute	1		

Name changed to Colorado State College, February 16, 1935

spread, thus representing no one section of the country.

The ability of these students to carry work of college grade is shown in Figure 4, where the distribution is shown in relation to quality points earned.

(This rating is based on quality points earned as follows: C = 1; B = 2; A = 3: The average of quality points per credit was determined for each student.)

It will be seen that the median is 2.2, with a lower limit of 1.5 and an upper limit of 3.0. The median for the regular session students is 1.4 based on the same quality point rating as was used for summer session students.<sup>1</sup>

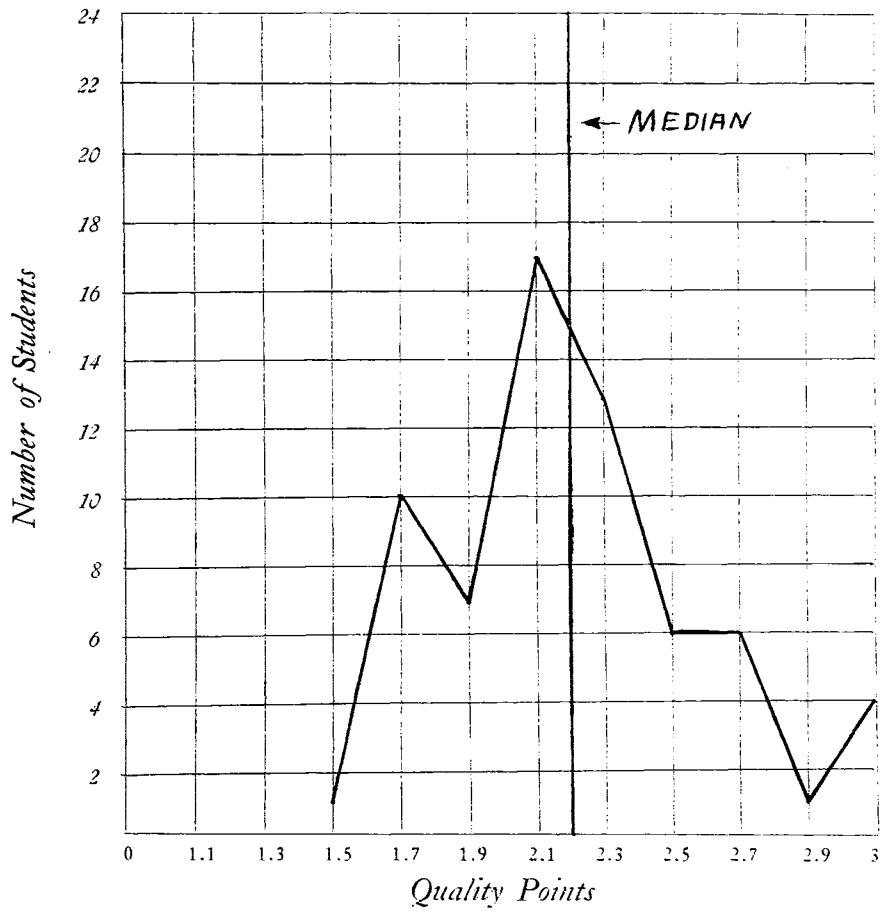
No attempt is made to show a scholastic comparison between the two groups because factors entering into the situation do not necessarily apply alike to both groups of students.

The age of the summer student is such that he has reached the time of life when he realizes the necessity of grasping every opportunity to better his situation; competition in his field of employment coupled with the raising of standards of certifying agencies and Boards of Education, make it imperative that he avail himself of every opportunity to advance professionally if he wishes to maintain his present position or advance to a better one. Usually he is making a financial sacrifice to

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<sup>1</sup>/ Information from S. J. McCracken, Registrar.

FIGURE 4 *Distribution of scholarship ratings in terms of quality points for the seventy students graduating 1927-1932.*



attend college and puts forth his best efforts so that he can make a creditable showing, with the result that this type of student seldom makes a poor showing and is unsatisfied with grades in the lower level.

Value of Trade and Industrial Courses.

The questionnaire sent to those students asked as to whether it would seem that the value of Trade and Industrial courses to the student was high and of more value to him than the traditional academic courses offered him at other institutions. The four specific questions asked and the responses to the questions are shown in Table VII.

On the basis of 58 returns it was the opinion of 55.1 percent that Trade and Industrial subjects were more valuable to them than the traditional college courses they had taken; 98.2 percent rated them more valuable as offering opportunity for individual instruction; 94.8 percent expressed the opinion that Trade and Industrial subjects contained more functioning content and 93.1 percent were of the opinion that Trade and Industrial subjects produced more thinking on the part of the learner than the traditional college courses and were therefore of more value to the learner.

*Table VII An evaluation of trade and industrial subjects taken at the Colorado Agricultural College as compared with other college subjects taken by the 58 graduate students for the Bachelor degree.*

**Number of Returns**

<i>Basis for evaluation</i>	<i>More</i>	<i>Less</i>	<i>Equal</i>	<i>Percentage of returns rating T and I subjects more valuable.</i>
Are trade and industrial subjects more or less difficult than the traditional college courses?	32	13	13	55.1
Do trade and industrial subjects afford more or less opportunity for individual instruction.	57	1		98.2
Do trade and industrial subjects contain more or less functioning content.	55	1	3	94.8
Do trade and industrial subjects make you think more or less than the traditional college subjects.	54	2	2	93.1

Name changed to Colorado State College, February 16, 1935

CHAPTER V.

DISCUSSION..

The present study has undertaken to determine

1. Whether the granting of college credit for trade experience is desirable.
2. Whether the Colorado Agricultural College program of evaluating trade experience in terms of college credit toward the Bachelor's degree for students majoring in Trade and Industrial Education is desirable.

Credit Granting for Trade Experience.

The desirability of granting credit for trade experience was investigated from the standpoint of the persons who received such credit toward their college degree, from the standpoint of school administrators who hire such men for teaching work, from the standpoint of State Boards as agencies for granting teaching certificates and, finally, from that of industry which absorbs the school trained boys and girls who had been instructed by such men.

Since it was impossible to personally interview all of those people the questionnaire method was used. Although 70 students had received from the Colorado Agricultural College, a Bachelor's degree, toward which credit for trade experience had been granted, only 58 returned the questionnaire answered.

The students graduating who received credit for trade experience were asked to check the points under the question following:

Was the degree you received a direct aid in any of the following:

- a. Securing promotion,
- b. Holding present position,
- c. Increasing professional standing,
- d. Securing a better position  
outside your own school,
- e. Securing salary increase?

Results showed that every one of the 58 correspondents received direct benefit from one or more of the criteria, as follows:

- a. Securing promotion, 29.4 percent,
- b. Holding present position, 58.6 percent,
- c. Increasing professional standing, 81.8 per-  
cent,
- d. Securing a better position outside  
their own school, 25.8 percent,
- e. Securing salary increase, 36.1 percent.

The facts show that the degree toward which credit for trade experience was allowed was desirable from the teacher's standpoint.

Reaction of School Administrators.

The reactions of public school administrators as to the value of trade training for preparing trade teachers for public schools, were secured by communicating with 100 school superintendents in cities of over 100,000 population. They were asked to express their opinion on the following questions:

1. In your opinion is the experience gained in a college shop of equal value, hour for hour, with that gained in industry?

Of the 85 superintendents returning the questionnaire answered, 78.8 percent stated that it was their opinion that experience gained in a college shop was not of equal value, hour for hour, with that gained in industry.

2. In your opinion, who makes the more efficient instructor for trade training?
  - a. The man who receives all his shop training in college, secured his degree and is then permitted, by state regulation, to teach Trade and Industrial classes in the public schools, without having had previous experience in industry itself?
  - B. The man who has had years of valuable trade experience, plus an intensive teacher training course and the ability to teach the learner?

Of the 85 superintendents replying 84.7 percent expressed their opinion in favor of "B".

3. Is a plan to evaluate the practical man's experience in terms of college credit, not to exceed 60 credits --- the number of credits to be allowed to be based on the number of successful years as well as the recency of his experience in industry--- to be considered desirable in the preparation of the trade teacher,

The replies show that 96.4 percent of superintendents answering were in favor of granting college credit for trade experience.

#### Reaction of State Boards.

Reports received from State Boards of Education show that 34 states recognize trade-training in terms of college credit in varying amounts when certifying applicants to teach Trade and Industrial subjects.

#### Reactions of Industry.

Industrial leaders communicated with for those industries having their own school shops, were generally agreed that college credit is not an indication of the ability to teach trade methods and practices, that knowledge of such methods and practices can only be gained by actual participation in industrial life. They expressed the opinion that if Industrial Arts and Vocational teachers are required to have a degree, their trade experience should be recognized in terms of college credit.

Reaction of Colleges.

At the present time there are 37 colleges and universities which recognize trade training in terms of college credit toward the bachelor's degree.

Evaluation of the Colorado Agricultural College Program  
As Related to Credit Granting for Trade Experience.

Type of Student Enrolled.

In making the survey of the 58 students receiving their Bachelor of Science degree under the plan of evaluating trade experience for college credit, it was found that the average age at the time of graduation was 42.6 years with a minimum age of 32 and maximum age of 64 for the group. All of the graduates were successfully holding responsible positions in the field of education. It was found that 35.7 percent received the increase in salary after graduation and 50 percent maintained their salary schedule in the face of the economic depression. Of the entire number 55 had successfully carried work of college grade previous to their coming to the Colorado Agricultural College. The ability of these students to carry work of college grade is shown on the basis of quality points earned per credit. The mean for this group was 2.2 and the spread from 1.5 to 3.0. These facts disprove the belief that the Colorado Agricultural College would be flooded with an inferior type of student.

Value of Trade and Industrial Courses.

On the basis of 58 returns it was the general opinion of students graduating under the plan by which they received credit for trade experience, that Trade and Industrial subjects were more valuable to them than the traditional college courses in terms of functioning content and produced more thinking on the part of the student. They also offered more opportunity for individual instruction.

Conclusions as to the Desirability of Granting Credit for Trade Experience Used Toward the Bachelor's Degree.-

Considering the results obtained in the survey of the 70 students graduating, who received credit for trade experience toward their Bachelor's degree, the 100 superintendents who will employ these teachers, and industry who will employ the students trained by these instructors, it would seem that it was desirable to recognize trade experience in terms of college credit toward a Bachelor's degree.

Under the revised plan, now in operation, the Colorado Agricultural College feels that it has made substantial progress in the development of its plan of evaluation of trade experience, supervisory experience and teaching experience in terms of college credit. The results show that the students attracted are of high schol-

astic standing and capable of successfully carrying work  
of college grade.

---APPENDIX---

- A. STUDENTS CONTRIBUTING TO THIS STUDY.
- B. SUPERINTENDENTS CO-OPERATING IN THIS STUDY.
- C. MANUFACTURERS CO-OPERATING IN THIS STUDY.
- D. FORM FOR DATA FROM REGISTRAR'S FILES.
- E. QUESTIONNAIRE TO GRADUATE STUDENTS.
- F. QUESTIONNAIRE TO STATE BOARDS.
- G. LETTER TO SCHOOL SUPERINTENDENTS.
- H. LETTER TO GRADUATE STUDENTS.
- I. LETTER TO MEN IN INDUSTRY.
- J. REVISED PLAN IN DETAIL.
- K. SUMMARY OF CASES GRADUATED.

A.

STUDENTS CONTRIBUTING TO THIS STUDY.

Albrecht, Joseph John	Hargrave, Arthur C.
Altucker, John H.	Holm, Effiel Alfred
Barbour, Harry Forrest	Harris, Lemuel L.
Barker, Chas. E.	Haverty, George William
Barney, Adelbert	Henkle, Otto Ernest
Bass, Moses Reed	Horner, John G.
Beardsley, Eugene D.	Hornung, Wm. A.
Bopp, Frederick William	Hoskins, James A.
Bricker, Wm. F.	Hunsdon, Nelson S.
Carlton, Edmund Virgil	Keys, Walter
Carlson, Jessie Helen	LaVielle, James B.
Challoner, W. Ray	Lawson, Alexander
Clippenger, Fred C.	Lemon, William O.
Coleman, John B.	McCleary, Raymond G.
Cooper, Walter H.	McClure, Ivan Blair
Dale, E. B.	McGraw, Emmett F.
Ellis, John James	McLeod, John
Elvin, Alexander	MacArthur, Allan E.
Fairbanks, Mark Leslie	Martin, Ray L.
Freeling, W. J.	May, Augustus Noah
Goodwill, A. P.	Meador, E. L.
Graves, Oliver R.	Miller, Ernest H.
Hafner, Frank	E. Moery, Raymond
Hammond, Arthur K.	

Murry, Laura

Nel, William

Nourse, Caroline Emma

Orness, Carl Johnson

Owen, Sidney,

Petersen, Edna B. D.

Pitman, John H.

Rakestraw, Clarence

Roberts, Guy

Rocky, Dautin W.

Schott, Henry A.

Shornick, Walter S.

Travers, Louis B.

Turner, Clarence E.

Ward, Ezra H.

Werrell, Angus J.

Whelan, Elizabeth

Shiffer, James Arthur

Odell, Aden G.

Seidel, Roy Henry

Sanders, George S.

Schott, John Gilbert

B.

THE FOLLOWING SUPERINTENDENTS IN  
CITIES OF OVER 25,000 POPULATION WHO CO-OPERATED  
IN THIS STUDY.

1. Edwin W. Adams, Philadelphia, Penn.
2. Ray H. Adams, Dearborn, Mich.
3. Frank E. Allen, South Bend, Ind.
4. I. M. Allen, Highland Park, Mich.
5. Richard D. Allen, Providence, R. I.
6. Carl G. Alverson, Syracuse, N. Y.
7. Homer W. Anderson, Omaha, Nebr.
8. Isaac D. App, Harrisburg, N. Y.
9. Frederick Archer, Louisville, Ky.
10. Arthur D. Arnold, Passaic, N. J.
11. Walter L. Bachrodt, San Jose, Cal.
12. Francis Leonard Bacon, Evanston, Ill.
13. Edward L. Baily, Jackson, Miss.
14. Frederick H. Barbee, St. Joseph, Mo.
15. Richard D. Bardwell, Madison, Wis.
16. Percival S. Barnes, East Hartford, Conn.
17. Nickolas Bauer, New Orleans, La.
18. H. H. Beach, Elmira Heights, N. Y.
19. Wesley B. Beadle, East Grand Rapids, Mich.
20. Hector L. Belisle, Fall River, Mass.

- W
21. William S. Bogan, Chicago, Ill.
  22. Selmer Berg, Rock Island, Ill.
  23. Charles C. Bishop, Oshkosh, Wis.
  24. Frank A. Bouelle, Los Angeles, Cal.
  25. George Bowman, Marion, Ohio.
  26. Walter F. Bays, Galesburg, Ill.
  27. Elmer L. Breckner, Tacoma, Wash.
  28. Edward Brinkley, Norfolk, Va.
  29. Edwin C. Broom, Philadelphia, Penn.
  30. Leslie A. Butler, Grand Rapids, Mich.
  31. Patrick T. Campbell, Boston, Mass.
  32. Arthur E. Claggett, Dayton, Ohio.
  33. Harry H. Clark, Knoxville, Tenn.
  34. Earl D. Cline, Dubuque, Iowa.
  35. Bruce B. Cobb, Waco, Texas.
  36. Chester J. Cochran, San Antonio, Texas.
  37. William G. Coburn, Battle Creek, Mich.
  38. Frank Cody, Detroit, Mich.
  39. Frederick William Cook, Plainfield, N. J.
  40. Hobart M. Corning, Colorado Springs, Colo.
  41. Claude V. Courter, Dayton, Ohio.
  42. L. H. Coward, Springfield, Mo.
  43. Norman H. Crozier, Dallas, Texas.
  44. Wilbur R. Curtis, Alton, Ill.
  45. P. S. Daniel, Raleigh, N. C.

46. Arthur Deamer, Cedar Rapids, Iowa.
47. John A. DeCamp, Utica, N. Y.
48. John C. Diehl, Erie, Penn.
49. H. W. Dodd, Allentown, Pa.
50. Charles Michael Donovan, Waterbury, Conn.
51. Ellis H. Drake, Kalamazoo, Mich.
52. John H. Dyer, Scranton, Penn.
53. E. A. Elliott, Joplin, Mo.
54. Russell H. Erwine, Steubenville, Ohio.
55. Leon H. Farrin, Athol, Mass.
56. L. W. Feik, Sioux City, Iowa.
57. Herbert D. Fillers, Wichita Falls, Texas.
58. Henry B. Fisher, Streator, Ill.
59. William D. Gamble, Sharon, Penn.
60. John Arthur Gibson, Butler, Penn.
61. William E. Givens, Oakland, Cal.
62. Chas. B. Glenn, Birmingham, Ala.
63. Thomas W. Gosling, Akron, Ohio.
64. J. W. Gowans, Hutchinson, Kansas.
65. Ben G. Graham, Pittsburgh, Penn.
66. William M. Green, Fort Worth, Texas.
67. Harry E. Gress, Lancaster, Penn.
68. William C. Griggs, Mobile, Ala.
69. J. M. Gwinn, San Francisco, Cal.
70. R. C. Hall, Little Rock, Ark.

71. J. J. Hagan, Rock Island, Ill.
72. Ernest C. Hartwell, Buffalo, N. Y.
73. Shattuck O Hartwell, St. Paul, Minn.
74. W. B. Hatcher, Baton Rouge, La.
75. Walter R. Hepner, San Diego, Cal.
76. O. S. Hubbard, Fresno, Cal.
77. Chas. C. Hughes, Sacramento, Cal.
78. Allen Hughey, El Paso, Texas.
79. Robinson G. Jones, Cleveland, Ohio.
80. John Francis Keating, Pueblo, Colo.
81. Claude L. Kulp, Ithaca, N. Y.
82. L. H. Lamb, Flint, Mich.
83. Elbridge G. Littlejohn, Galveston, Texas.
84. John Hubbard Logan, Newark, N. J.
85. F. M. Longanecker, Racine, Wis.
86. Ralph H. Longfield, South Bend, Ind.
87. John D. Loper, Phoenix, Ariz.
88. Jesse H. Mason, Canton, Ohio.
89. L. W. Mayberry, Wichita, Kansas.
90. Chas. S. Meek, Toledo, Ohio.
91. George E. Melcher, Kansas City, Mo.
92. Leonard Young, Duluth, Minn.
93. Wm. D. Wolfe, Atchison, Kansas.
94. Fred D. Wish, Hartford, Conn.
95. Herburt S. Weat, Rochester, N. Y.

96. David Weglein, Baltimore, Md.
97. Worcester Warren, Bridgeport, Conn.
98. Frank T. Vasey, Springfield, Ill.
99. A. L. Threlkeld, Denver, Colo.
100. A. I. Tiss, Fort Madison, Iowa.

C.

MANUFACTURERS CO-OPERATING IN THIS STUDY.

1. Cincinnati-Bickford Tool Company.
2. Coleman Lamp and Stove Company.
3. The Lunkenheimer Company.
4. Continental Motors Corporation.
5. Ford Motors Company.
6. Ohio Mechanics Institute.
7. L. S. Starrett Tool Company.
8. Century Electric Company.
9. National Metal Trades Association.
10. General Motors Institute.
11. The Falk Corporation.
12. Wm. Sellers & Company.
13. The Cleveland Twist Drill Corporation.
14. Cutler-Hammer, Inc.
15. Santa Fe Railway.
16. Shaw Manufacturing Company.
17. Goodyear Rubber Company.
18. General Electric Company.
19. Baldwin Locomotive Company.
20. DuPont DeNemours.

D.

FORM USED IN COMPILING DATA  
FROM REGISTRAR'S FILES.

Name \_\_\_\_\_ Age \_\_\_\_\_  
           Last    First    middle            month    day    year

Trade experienced in \_\_\_\_\_ No. years in trade \_\_\_\_\_  
 No. years as journeyman \_\_\_\_\_ No. credits granted \_\_\_\_\_  
 No.   "       " foreman \_\_\_\_\_ No. credits \_\_\_\_\_  
 No.   "       " supervisor \_\_\_\_\_ No. credits \_\_\_\_\_  
 No.   "       " research \_\_\_\_\_ No. credits \_\_\_\_\_  
 No.   Y teaching experience \_\_\_\_\_ No. credits \_\_\_\_\_  
 No.   " administrator in school \_\_\_\_\_ No. credits \_\_\_\_\_  
 Total No. credits for experience \_\_\_\_\_  
 Total No. credits used for degree \_\_\_\_\_  
 Type of administrative position held \_\_\_\_\_  
 No. of credits earned in residence at  
                                   Colorado Agricultural College \_\_\_\_\_  
 No. Credits earned in other institutions \_\_\_\_\_  
 No World War credits granted \_\_\_\_\_  
 Total credits earned \_\_\_\_\_

TYPES OF CREDENTIALS OFFERED TO CERTIFY TRADE EXPERIENCE

No. of letters of recommendation "To whom it may concern" \_\_\_\_\_  
 No. of letters of recommendation sent directly to  
                                   Colorado Agricultural College \_\_\_\_\_  
 No of letters of recommendation sent directly to  
   employee \_\_\_\_\_  
 No. of letters verifying trade experience \_\_\_\_\_

TYPES OF LETTERS OFFERED CERTIFYING  
CHARACTER AS QUALIFYING FOR TEACHER.

Letters from Supervisors \_\_\_\_\_ Superintendents \_\_\_\_\_ Directors \_\_\_\_\_

Types of research \_\_\_\_\_  
(describe fully) \_\_\_\_\_

Subjects pursued in residence at Colorado Agricultural  
College for degree. \_\_\_\_\_

E.

QUESTIONNAIRE SENT TO GRADUATE  
STUDENTS.

Name \_\_\_\_\_ Age \_\_\_\_\_  
(last) (first) (middle)

1. Are you classified as Industrial Arts? Trade and Industrial? \_\_\_\_\_
2. What position did you hold before coming to Colorado Agricultural College \_\_\_\_\_  
What was your salary \_\_\_\_\_
3. What is your present position? \_\_\_\_\_  
What is your present salary? \_\_\_\_\_
4. Has the degree you received at the Colorado Agricultural College helped you in any of the following ways:
  - a. Securing promotion \_\_\_\_\_ Yes \_\_\_\_\_ No \_\_\_\_\_
  - b. Holding the present position you have, Yes \_\_\_\_\_ No \_\_\_\_\_
  - c. Increasing your professional standing, Yes \_\_\_\_\_ No \_\_\_\_\_
  - d. Securing a salary increase, \_\_\_\_\_ Yes \_\_\_\_\_ No \_\_\_\_\_
  - e. Securing a better position, \_\_\_\_\_ Yes \_\_\_\_\_ No \_\_\_\_\_
  - f. Making your work easier because of a better understanding of objectives and methods, Yes \_\_\_\_\_ No \_\_\_\_\_
5. Have you done work for credit at other colleges? If so give names of colleges or universities. \_\_\_\_\_
6. Did you find the work given at Colorado Agricultural College to be of higher or lower standard than other institutions you have attended? Higher \_\_\_\_\_ Lower \_\_\_\_\_
7. Compare Trade and Industrial subjects pursued at the Colorado Agricultural College with other college subjects you have taken.
  - a. Are Trade and Industrial subjects more, or less difficult? \_\_\_\_\_ More \_\_\_\_\_ Less \_\_\_\_\_
  - b. Do Trade and Industrial subjects contain more or less functioning content? \_\_\_\_\_ More \_\_\_\_\_ Less \_\_\_\_\_
  - c. Are Trade and Industrial subjects more or less valuable socially? \_\_\_\_\_ More \_\_\_\_\_ Less \_\_\_\_\_
  - d. Do Trade and Industrial subjects afford more or less opportunity for individual instruction? \_\_\_\_\_ More \_\_\_\_\_ Less \_\_\_\_\_
  - e. Do Trade and Industrial subjects afford more or less opportunity for self-expression \_\_\_\_\_ More \_\_\_\_\_ Less \_\_\_\_\_

f. Do Trade and Industrial subjects make you think more or less than the traditional college subjects? \_\_\_\_\_ more \_\_\_\_\_ Less

8. Did you find any snap courses in the work you took at Colorado Agricultural College? \_\_\_\_\_ Yes \_\_\_\_\_ No

a.If so, give title of course \_\_\_\_\_

b.Were you dissatisfied with any of the courses? \_\_\_\_\_ Yes \_\_\_\_\_ No

c.If so, Why?

9. Was the instruction you received at Colorado Agricultural College useful to you on your job? \_\_\_\_\_ Yes \_\_\_\_\_ No

10. Was the degree you received at Colorado Agricultural College questioned by your local or state board \_\_\_\_\_ Yes \_\_\_\_\_ No

a. Were the objections raised by the local or state board? Local \_\_\_\_\_ State \_\_\_\_\_

b. What were the objections raised, if any?\*\*\* \_\_\_\_\_

c. Were you able to overcome the objections? \_\_\_\_\_ Yes \_\_\_\_\_ NO

d. Were you questioned as to methods of evaluating your trade experience? \_\_\_\_\_ Yes \_\_\_\_\_ No \_\_\_\_\_

e. What were their objections? \_\_\_\_\_

11. In pursuing advanced work at other institutions have you had any difficulty in having your degree accepted? \_\_\_\_\_ Yes \_\_\_\_\_ No \_\_\_\_\_

a. What objections were raised, if any? \_\_\_\_\_

b. Were you able to overcome their objections? \_\_\_\_\_ Yes \_\_\_\_\_ No \_\_\_\_\_

12. Do you feel that there is discrimination in grading students where teachers and supervisors are participating as students in the same class? \_\_\_\_\_ Yes \_\_\_\_\_ No \_\_\_\_\_

13. Are you continuing with your professional improvement since receiving your Bachelor of science degree from Colorado Agricultural College? \_\_\_\_\_ Yes \_\_\_\_\_ No \_\_\_\_\_

a. At what institution?

14. Please list suggestions and constructive criticisms of the work you took at Colorado Agricultural College.

Suggestions

Constructive criticisms

⋮  
⋮  
⋮

F.

QUESTIONNAIRES SENT TO STATE BOARDS  
OF EDUCATION...

1. Do you grant a teacher's certificate to applicants to teach Trade and Industrial subjects in the public schools of your state, who have received their degree from a teacher-training institution, granting credit toward a degree, for past trade experience?

Yes \_\_\_\_\_ No \_\_\_\_\_

2. In your opinion, is the experience received in a college shop, for which credit is given and generally accepted without question when an applicant is issued a certificate to teach Trade and Industrial subjects, equal in value, hour for hour, to experience gained as a journeyman in the trade?

Yes \_\_\_\_\_ No \_\_\_\_\_

3. If you certificate an applicant whose transcript includes credit for trade experience, what is the maximum accepted on his transcript for such credit given by the teacher-training institution?

\_\_\_\_\_ College Hours.

4. What, in your opinion, is the minimum trade experience an applicant should have to teach Trade and Industrial classes?

\_\_\_\_\_ Years-minimum.

# WICHITA PRE-VOCATIONAL SCHOOL

324 NORTH EMPORIA  
E. L. MEADER, HEAD  
WICHITA, KANSAS

E. L. MEADER  
Machine Shop  
C. C. WILSON  
Woodwork  
J. F. WESTERDALE  
Electricity  
F. L. NOVASCONE  
Sheetmetal  
A. E. DINSMORE  
Printing

HARRY E. SHULER  
English, Civics  
WM. R. BERGES  
Mathematics  
ORVIL J. PIERCE  
Mathematics  
H. D. UNRUH  
Mechanical Drawing

## G. LETTER SENT TO SCHOOL SUPERINTENDENTS.

Dear Mr. -----

I am doing some research for the Colorado Agricultural College on "Who Makes an Efficient Instructor for Trade and Industrial Classes in the Public Schools".

I have been in correspondence with the heads of our major industries in the United States, industries that are national and international in scope: I have received their whole-hearted support in this study, and many excellent, constructive criticisms have been offered.

I would greatly appreciate it, if you would express your opinion on the following topics, and give me permission to quote you.

1. In your opinion, is the experience gained in a college shop, of equal value, hour for hour, with that gained in industry?
2. In your opinion, who makes the best instructor:
  - a. The man who has received all his training in college, secured his degree, and is then permitted, by state regulation, to teach Trade and Industrial classes in the public schools, without having had previous trade experience in industry?
  - b. The man who has had years of valuable trade experience, plus an intensive teacher-training course, and the ability to teach the learner?
3. A plan to evaluate the practical man's trade experience in terms of college credits, not to exceed sixty credit hours, seems expedient: The number of credits to be allowed to be based on the number of successful years, as well as the recency of his experience, spent in industry.

(College administrators disagree on this; some are in favor of it, while others say it can not be done).

## WICHITA PRE -VOCATIONAL SCHOOL

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Woodwork

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Electricity

F. L. NOVASCONI  
Sheetmetal

A. E. DINSMORE  
Printing

The basis for the evaluation of trade experience in terms of college credits, is as follows:

- a. Number of years as an apprentice,
- b. Number of years as a journeyman,
- c. Number of years as a foreman,
- d. Number of years as an administrator,
- e. Number of years spent in research for industry.

The engineering curriculum does not serve the purpose of training shop instructors, because the policy of the Federal Board for Vocational Education requires that trade instructors have five years experience in the trade, before they are permitted to teach that trade, or its related subjects. This is at variance with school authorities, who, in most cases, require their shop instructors to have a degree in order to meet state certification requirements.

Men with five, or more, years of college experience seldom have had the opportunity to get a college degree, although, in many cases, they have had ten or more years of college work.

Since training received in industry is recognized by school authorities as producing excellent instructors, it would seem that this fact should be recognized by college administrators, and something be done by way of evaluating trade experience in terms of college credits.

There seems to be a feeling in industry that the schools are not training students effectively, to meet the demands of industrial life.

I am sure that you are interested in the schools securing the type of instructor who can teach Trade and Industrial subjects that will prepare the student to effectively enter industry. His work will reflect credit, or discredit, upon the institution in which he received his training, with the result that we either gain, or lose, support from the industries of that community.

Very sincerely yours,

-81-

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 Mathematics

ORVIL J. PIERCE  
 Mathematics

H. D. UNRUH  
 Mechanical Drawing

G.

LETTER ACCOMPANYING QUESTIONNAIRE SENT  
 TO THE SEVENTY GRADUATES MAJORING IN TRADE AND  
 INDUSTRIAL, AND INDUSTRIAL ARTS EDUCATION.

Dear Friend:

After conference with President Lory, Director Tiemann, and others, I decided to make a study of all the students who have received their Bachelor of Science degree, majoring in Trade and Industrial Education at the Colorado Agricultural College in preparation for my Master's degree.

I expect to trace the development of the evaluation of trade experience in terms of college credits, and show the educational principles involved and the results obtained.

In this I need your assistance, and knowing your interest in the Trade and Industrial program at our Alma Mater, I feel sure that I can count on your help.

You will assist both the institution and a fellow worker if you will give the enclosed questionnaire your careful consideration and return to me as soon as possible.

With best wishes for your continued success, I am,

Sincerely yours,

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(School administrators differ widely on these two points).

3. A plan to evaluate the practical man's trade experience in terms of college credits, not to exceed sixty credit hours, seems expedient: The number of credits to be allowed to be based on the number of successful years, as well as the recency of his experience in industry.

(School authorities disagree on this; some are in favor of it, while others say it can not be done.)

-83-

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Men with five, or more, years of trade experience seldom have had an opportunity to get a college degree, although in many cases they have had two or more years of college work.

Since training received in industry is recognized by school authorities as producing excellent instructors, it would seem that this fact should be recognized by college administrators, and something be done by way of evaluating trade experience in terms of college credits.

There seems to be a feeling that the schools are not training students to meet the demands of industry; I feel that effective training could best be accomplished by having qualified instructors who are trained in the ways, and know the needs of industry, by having had actual participation in industrial plant life.

I am sure that you are interested in the training of America's future men of industry, and trust that you will give this letter your most earnest consideration,

Yours very sincerely,

J.

July 19, 1932

A PLAN ADOPTED BY THE CENTRAL COMMITTEE  
FOR THE CREDIT RATING OF APPLICANTS FOR  
THE BACHELOR OF EDUCATION DEGREE IN  
TRADE AND INDUSTRIAL WORK.

At a meeting of this committee on July 19th, 1932 the plan described herein was adopted for use by the Summer Session Faculty and its Subcommittees for the credit rating of applicants for the B. E. degree in Trade and Industrial work, summer of 1932, subject to the approval of such ratings by the Summer Session Faculty as the recommendation of that Faculty to the Council Committee.

Rating Plan

- I. A Central Committee is created on the rating of Credits consisting of Messrs. Coleman, Chairman, Allen, Tiemann, Watson, Quigley and Prosser, ex-officio as chairman of the Summer School Faculty. The duties of this Rating Committee will be as follows:
  1. Adopt a point rating system for use by the subcommittees on industrial and educational experi-

ence. (See Exhibit A)

2. Appoint a statistician to devise a graphical analysis chart for the purpose of rapidly, impersonally and accurately transferring the point rating of the applicant into his credit allowance (See Exhibit B.) The Chairman of the Summer Session Faculty has appointed Mr. Edward Watson as such statistician.
3. Approve the point ratings on each applicant made by subcommittees and transmit the same to the statistician for evaluation along with all the papers of every kind used by the subcommittees.
4. Pass on the credit allowance so made.
5. Recommend these allowances to the Council Committee on the B. E. Degree in Trade and Industrial work.
6. Note: The subcommittees are not expected to verify any statement made by the applicant concerning his experience, by any practical test of his skill. They are not expected to conduct any investigation back home of his record or to make any effort to secure additional credentials of the applicant other than those he has available with him. It should be remembered that with the

time available at least the Summer School Faculty have only undertaken to express an opinion regarding credit allowances. The responsibility for verifying the statements of the applicant rests with the Council Committee.

7. For the purpose of computing credits on the point system hereafter described, the following policies are adopted for 1932:

- a. Six credits are to be given for the minimum teaching experience required in the catalog. Success on this item to be rated proportionately from superior school officers of the applicant, if the committee so desires.
- b. Basis of computing trade experience credits to be the maximum of 50.
- c. Basis of computing supervisory experience credits to be the maximum of 50.

## II.

### The Work of the Subcommittees on T. & I. Applicants.

1. They are to use the point system adopted by the Central Rating Committee. (See Exhibit A)
2. They are to secure the data necessary from each applicant to evaluate his standing on each point in the point system. (See Exhibit A)

3. They are to caution the applicants regarding the necessity for accuracy in all statements.
4. They are to have a written statement made by each applicant covering all data necessary to his point rating including written test performance as provided in the point order system.
5. These written statements are to be made in the presence of some member of the appropriate subcommittee.
6. Because of the brief time available, all applicants should be assembled at one time for each piece of written work.
7. The statements of each applicant should also be checked, cleared up, amplified and the like, by a personal interview held by at least one member of the proper subcommittee.
8. The subcommittee will rate each applicant on each point of the point rating system for industrial or educational experience, respectively.
9. These ratings, together with all papers in the case will be transmitted to the Central Rating Committee.
10. All the foregoing is to be done not later than noon of Monday July 23, 1932.

EXHIBIT A

THE POINT RATING SYSTEM TO BE USED BY THE  
SUBCOMMITTEE ON TRADE EXPERIENCE OF THE SUMMER SCHOOL FAC-  
ULTY, ON THE TRADE EXPERIENCE OF APPLICANTS FOR THE B. E.  
DEGREE IN T. & I. WORK. A

A-1

The Main Points to be Covered

Each applicants is to be given a point rating on each of  
the following main points:

- I. As to length of experience
- II. As to progression in the trade
- III. As to total content of the trade
- IV. As to spread of experience
- V. As to way trade was learned
- VI. As to the relation of his experience to his  
educational job.
- VII. As to the continuous character of his industrial  
experience
- VIII. As to the relative degree of technical knowledge  
required in the trade.
- IX. As to his test performance.

A-2

The Detailed Point System

For Rating Applicants on Trade Experience

	Maximum Points
I. <u>Length of trade or industrial experience</u> 100 (10 years maximum as a basis; 10 points off for each year less than ten years.	
II. Progression in the trade. Maximum of 40 for advancement as a workman; 20 points additional for assistant foreman; 20 for foreman; 10 for general foreman; and 10 for superintendent.	100
III. Relative total demand (M & T) of the trade on the worker. Here an arbitrary maximum rating on this point has ben set up for certain illustrative trades and occupations as follows. The method of using the list is described in the code. (Exhibit C)	100
1. Electricity - 100 points	
2. Printing	
3. Machine Shop	
4. Baking	
5. Cabinet Making	
6. Carpentry	
7. Sheet Metal	
8. Auto Mechanics	
9. Cosmetology	

- |                                  | Maximum points. |
|----------------------------------|-----------------|
| 10. Commercial Photography       |                 |
| 11. Dressmaking                  |                 |
| 12. Millinery                    |                 |
| 13. Textiles                     |                 |
| 14. Structural Steel - 10 points |                 |

See Section C. Attached for explanatory Code.

- |  |     |
|--|-----|
| IV. <u>Spread of experience</u> within the trade               | 100 |
| (See Exhibit C)  |     |
| 1. Specialization  | 10  |
| 2. Specialized shop experience                                 | 30  |
| 3. General job shop  | 70  |
| 4. High grade general work                                     | 100 |
| V. <u>Way the trade was learned</u>                            | 100 |
| 1. Learned in school and shop<br>by the part time plan         | 100 |
| 2. Learned as an apprentice as<br>a definite plan              | 75  |
| 3. Learned by the pick-up method                               | 40  |
| 4. Learned in a school alone                                   | 10  |
| VI. <u>Relation of experience to educational job</u>           | 100 |
| 1. Experience in the trade taught                              | 100 |
| 2. No experience in trade taught                               | 0   |
| 3. Experience in some trade and<br>present supervisory service | 100 |

Maximum Points -

VII. Continuous character of journeyman experience 100

- 1. Uninterrupted experience 100
- 2. Interrupted experience ---

To find this proceed as follows:

Find the percentage of his time out to total number of years of time in and out of the trade.

Deduct this percentage from 100

VIII. Relative degree of technical knowledge required 100

In the trade. Here again it was necessary to set up an arbitrary maximum rating for different trades and occupations. The methods of calculating the points for each line is given in the code. (See Exhibit C)

- 1. Electricity - 90
- 2. Sheet Metal
- 3. Auto Mechanics
- 4. Baking
- 5. Machine Shop
- 6. Printing
- 7. Cosmetology
- 8. Cabinet Making
- 9. Carpentry
- 10. Commercial Photography
- 11. Dressmaking
- 12 Millinery

13. Structural Steel

14. Textiles (weaving) 10

IX. As to his last performance 200

Ten written questions - Maximum points on each 20. See Code (Exhibit C) and type questions (Exhibit D) Written examination.

Total number of maximum points 1000

Total number given to applicant, the sum of all ratings as made by the subcommittee on the point items listed above

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Exhibit A-3

A code giving Explanations Regarding the Point Rating Work to be Done by Subcommittee on Trade Experience. (T & I)  
(See Exhibit A). The Roman numbers and items correspond TO THE SAME NUMBERS AND ITEMS IN Exhibit A.

I. Length of experience. Applicant must have five years of experience in one trade or occupation as a minimum. Ten years set up as a maximum basis for calculating points under this head. This ten years may be in different lines but five must be in one line. Method of figuring points described for this item in Exhibit A-1.

II. Progression on the trade. Here the points are cumulative. A workman, to illustrate, who had jumped from journeymanship to foreman would be entitled to

40 for journeymanship; 20 for assistant foremanship; 20 for foremanship; 100 points in all including 10 for General Foreman; 10 for Superintendent.

III. Relative Total demand (M&T) of the trade. This would

be figured as follows: The total difference between electricity rated as 100 points and structural steel rated at 10 points is 12 positions and 90 points.

These twelve positions are spread over 12 lines of work, an average difference let us say of  $7\frac{1}{2}$  points. Take carpentry to illustrate; it occupies position No. 6 which is 5 places below electricity as 100. Multiply 7.5 by 5 which gives 37.5. Subtract from 100. The Rating of carpentry becomes 62.5.

If any trade or occupation is to be rated for the applicant which is not covered by the list of 14 lines given in Item III of Exhibit A, it should be identified as on the same level as to total demand of content on the worker and figured accordingly.

IV. Spread of experience within the trade. Point credits are allocated for this item in Exhibit B. In rating, the applicant should be credited for only the highest type (spread) of work he has done and given corresponding points not to exceed 100.

V. Way the trade was learned. The ratings are not cumulative but separate and distinct. A man can not learn a trade two times; at least he does not.

VI. Relation of experience to educational job. Where the applicant is teaching the trade or occupation he followed, he receives 100 points on this item. If teaching a different trade, he receives no point credits. If he has had five years or more of experience in one trade or occupation, but is now supervising in industrial education, he receives 100 points.

VII. Continuous character of trade experience. Here supervisory experience is not included but only the two questions. Did he serve continuously in the trade or only intermittently?

VIII. Test performances. A written test is to be given the applicant on his technical knowledge and job intelligence in the trade which will cover the following items: An illustrative list of questions covering these items is attached hereto for automotive repair. (See Exhibit B-L attached.)

1. Job intelligence.
2. Mathematical computation.
3. Applied science.
4. Drawing (sketch, blue print or diagram reading; and applied art where it is a factor.)
5. Safety.
6. Description of the performance of a specific (type) job.

7. Excess assets other than M & T. & I.
8. Vocabulary - meaning of trade terms to be explained.
9. Resourcefulness in meeting situations.
10. Trouble-shooting to locate cause of trouble - when in non-mechanical occupations could <sup>be</sup> a personnel problem.

11

EXHIBIT A-4

Information to be Used by Committee

For Granting Credit for Trade Experience.

- I. Determine years of trade experience by available evidence.
- II. By consultation or otherwise, determine how far he progressed in his trade - this refers to his promotions.
- III. Refer to code on total content of trade and determine his point rating by this code.
- IV. By consultation or otherwise, determine the type industries he has worked in and refer to code for point rating.
- V. Determine by available evidence how he learned his trade and refer to code for point rating.
- VII. If his experience in his trade has been interrupted, determine length and type of interruptions and refer to code for point rating.
- VIII. Refer to code on point rating as applies to his tech-

nical responsibilities in his trade.

- IX. Test is to be given in the presence of member of committee on trade experience.

General information - Give applicant a point rating on each of the type situations. Total these points and return signed report to statistician.

EXHIBIT A -4

Illustrative Questions for a Test Performance.  
by the Applicant for Credit Rating in Automotive Repair.

1. Job intelligence. How much out of round must the cylinders become on an automobile engine before it becomes advisable to regrind and fit new piston?
2. Mathematical computation. The original bore of a cylinder was  $3 \frac{7}{8}$ ". You have reground the cylinder so that .015 of an inch has been removed. The piston for this engine requires a skirt clearance of .003 of an inch. What sized piston meets the requirements?
3. Applied Science Questions. Why is it the usual practice to give the exhaust valve more clearance than the intake valve?
4. Drawing. Give the applicant a diagram of the electrical system of a standard type of car and have him trace one circuit.
5. Safety. Name a safety precaution in connection with removing the rear axle assembly.
6. A type job described. The applicant is required to

describe how he would do a specific type job.

7. Excess assets. The applicant is asked to describe at least one new device now in process of experimentation which he thinks will become standard automotive equipment.
8. Vocabulary. Explain the meaning of these terms:
  1. Focal length.
  2. Spider.
  3. Shunt.
  4. Ground.
  5. Female.
  6. Toe.
  7. Camber.
  8. Torque.
  9. Vapor lock.
  10. Shimmy.
9. Resourcefulness. You have burned out one connecting bearing 50 miles from nearest repair station. No method of communication. What might you do to get to the station on your own power?
10. Trouble Shooting. A six cylinder motor has pronounced knock at idling speed. State the procedure you would use in locating the cause of the knock.

The Work of the Subcommittee on Education and Supervisory Experience.

- I. A maximum of six points is allowed for teaching experience. Inasmuch as this simplifies the work of this subcommittee as compared with that of the other subcommittee which will make the point rating on the trade experience of the applicant, as the time is short, and as therefore the task must be better distributed between the committees, this subcommittee is also assigned the task of making the point rating for experience in supervision of the applicant in both industry and education.
- II. Teaching experience. There is no necessity for the Committee to make any report of point rating on this item. On the face of the record, each applicant is entitled to 6 credits who has taught three or more years subject to deduction if work has not been successful, this deduction, if any, to be made by the Council Committee on the basis of statements made by a superior officer or officers of the applicant in his teaching work. All the committee needs to do is to report on his number of years of teaching service as distinguished from his supervisory service.
- III. Ratings on points for each applicant are to be reported to the statistician together with all papers in the case used by the subcommittee.

IV. Supervisory experience. The thing it is proposed to test is the supervisory and administrative ability of the applicant in industry and education as a whole. (See Exhibit B) For this purpose the following general items are to be used for point rating.

	Max. points
1. Length of service (supervisory and administrative)	100
2. Progression in such service	200
3. Spread of experience	200
4. Continuous character of experience	100
5. Test performance rating	300
6. Grade and amount of responsibilities discharged	100
Total possible number of points	1000
Number of points allowed applicant	?

EXHIBIT B.

The Detailed Point System for Rating Supervisory Experience (Industry and Education Combined).

I. Length of service (administrative and supervisory) 100  
 Base of ten years - 10 points off for each year less than 10. Total counted for both fields.

II. Progression.

<u>A. IN Industry</u>	<u>b. in Education</u>
1. Asst Foreman 80	1. Department head 80
2. Foreman 120	2. Principal or supervisor 120
3. Gen. foreman 160	3. Local, state or Nat'l supr. 160
4. Superintendent 200	4. Local or state director. 200

If experience includes both columns, add total score and divide by two.

III. Spread of experience.

- a. Both fields . . . . . 200
- b. School field alone . . . . . 130
- c. Industrial field alone 150

IV. Continuous Character of experience. . . . . . 100

- a. Uninterrupted experience . . . . . 100
- b. Both supervisory and administrative included.
- b. Interrupted experience. Calculate in this way. Use total experience as in and out of supervisory and administrative work as a base. Find the percentage of time out to this base. Deduct this percentage from 100

V. As to his best performance. Grade made . . . . . 300

VI. Grade and amount of responsibilities discharged 100  
SCHOOL.

- VII. a. Number of school people handled . . . . . 25
- b. Spread of the program (variety) . . . . . 25
- c. Size of the community . . . . . 25
- d. Occupational progression (See Item 2) 25

- INDUSTRY.
- a. Number of people handled . . . . . 25
- b. Largest plant served . . . . . 25
- c. Occupational progression (See Item 2) 25
- d. Character of the plant output . . . . . 25

If experience is in both school and industry add total sum and divide by two.

Total possible score . . . . . 1000  
Total as allowed the applicant . . . . . ?

EXHIBIT B-1.

A Code of Explanations Regarding the Point Rating Work to be Done by the Subcommittee on Education and Supervisory Experience (Industry and Education)

The Roman numbers and items correspond to the same numbers and items in Exhibit B. above.

- I. Length of experience. Ten years are set up as a maximum basis for calculating points under this head. This ten years may be the total of all supervisory

experience of all grades in supervision or administration or both and also both in trade and industry.

- II. Progression. Here the points are not cumulative. A supervisor, to illustrate, who had jumped from assistant foreman to superintendent would be given 200 points; a department head in a school who became a local supervisor would be given 100 points.
- III. Spread of experience. The distribution of points needs no explanation.
- IV. Continuous character of experience. Experience will be considered continuous as between trade and school, supervision and administration and promotion from one job to another in the supervisory field.
- V. Test performance. Ten questions to be answered in writing under supervision of some member of the subcommittee should be given to all applicants at the same time, to save effort and speed the rating work. Questions attached for use and marked as B-2.
- VI. Grade and amount of responsibilities discharged. The subcommittee should feel free to arrive at a decision of a composite point rating on this item. The detailed points are merely inserted as a guide. In no case should the point rating given exceed 100.
- VII. Test performance. Ten questions, maximum points 200. Maximum of 20 points on each question. See Exhibit B-1 attached for the specific questions to be used.

B-2

Test Performances.

For experience in Supervision - including  
Both Supervision and Administration in both  
Industry and Education.

- I. Should there be the right of appeal by a subordinate official or workman from the decision of his immediate superior officer to the proper higher authority? Under what conditions, if any, should such action be taken?
- II. You have to establish a training program either in a corporation or a public school system for adults. It need not be vocational, but may be. What information would you want as the base of your planning?

- III. You have supervision over a school or a department in an industrial plant. An employee is incompetent and holds his position because of his relation to his immediate superior officer who is your subordinate. How would you handle the case so as to get rid of the man?
- IV. State your main responsibilities and powers in your present supervisory job in education or in the last supervisory job in education or in the last supervisory work you did in industry. Are or were your powers adequate for the proper discharge of these responsibilities? If you were free to do so, what changes would you make in either responsibilities or powers?
- V. State five duties in which you consider you have recommending responsibility and five in which you have direct responsibility.
- VI. In your supervision in education or in industry, you delegated or have delegated duties and responsibilities to subordinates. State which devices you use or have used for determining whether these duties and responsibilities have been properly performed.
- VII. What points do or did you use in measuring the efficiency of your subordinates?
- VIII. You come on to a supervisory or administrative job and find a very bad situation due to the incompetency of your immediate predecessor. In improving the situation, which would be your policy; a. protecting your predecessor, who has left the company; b. immediate vs. prolonged treatment.
- IX. As a supervisor or administrator you have or had responsibility for keeping down costs. How did you do it?
- X. During your supervisory experience in industry, what organizations did you join, and with what organizations or agencies did you co-operate. State separately the additional organizations and agencies for your supervisory work in education?

*Table VIII Summary of Cases Graded on the Council's Approval of the Recommendations of the Committee on Prescribing Conditions for Awarding Degrees in Trade and Industrial Education and in Mechanic Arts Education.*

K

Case No.	Age of Student	Advanced Standing Granted for Trade Experience					World War	Credits Earned			Total
		Trade	Research	Teaching	Super. and Admin.	Advanced standing used		Other Institutions	C. A. C.		
1. I. A.	44	55	0	10	20	0	83.9	48.8	27.3	76.1	
2. T. I.	44	30	0	10	60	0	80.6	44.8	24.6	79.4	
3. I. A.	43	10		10	0	0	20	104.7	36	140.7	
4.	37	45	0	10	0	20	47.4	68.6	24	47.4	
5.	39	0	0	0	0	20	0	147.6	20	187.6	
6. T. I.	45	7	0	8	89	0	104	32	24	56	
7.	47	0	0	0	0	0	0	133.3	29	162.33	
8. I. A.	40	15	0	10	75	0	100	36.4	24	60.4	
9.	43	37.5	0	30	0	0	52.35	91.5	16.15	107.65	
10.		45	0	10	50	0	99	37	24	61	
11. T. I.	38	0	0	10	15	0	25	117	18	135	
12.	51	68	0	10	37	0	115	21	24	45	
13.	60	101	0	10	0	0	110.7	25.3	24	49.3	
14. T. I.	43	15	0	10	91	0	116	20	24	44	
15. T. I.	40	53	0	10	0	0	54	78	28	106	
16. I. A.	36	52	0	10	30	0	92	26	42.15	68.15	
17. T. I.	48	20	0	10	10	0	37.6	102.21	20.2	122.41	
18. T. I.	42	55	0	10	40	0	104	32	24	56	
19.		60	0	10	0	0	70	58	32	90	
20.	42	108 en bloc					108	28	24	52	
21. T. I.	47	0	0	0	104	0	103	28	29	57	
22. T. I.	38	25	0	6	15	0	43.1	91.9	25	116.9	
23. T. I.	48	80 en bloc					79.9	40	40.1	80.1	
24.	42	40	0	8	0	20	45.8	74	20.2	114.2	
25. I. A.	38	15	0	0	30	0	30.5	111	18.5	129.5	
26.	40	31 en bloc				20	20.9	95.1	24	139.1	
27.	47	0	0	8	0	0	7.4	130	22.6	152.6	
28.	32	62 en bloc					61.5	74.9	24	98.9	
29. T. I.	33	20	0	10	70	0	95.6	40.4	24	64.4	
30. I. A.	39	0	0	0	0	0	0	145.15	24.2	169.35	
31. T. I.	64	110	0	10	0	0	117.7	0	42.3	43.3	
32. I. A.	60	76 en bloc					76	60	24	84	
33. I. A.	38	5	0	16	0	20	0	128.8	15.45	164.75	
34. T. I.	61	31	0	10	25	0	65.2	76	18.8	94.8	
35. T. I.	32	15	0	8	0	0	17.16	107.33	35	142.33	
36. T. I.	55	65	0	10	67	0	132	0	28	28	
37. T. I.	59	96	0	10	0	0	106	30	24	54	
38. T. I.	32	0	0	0	0	0	0	143	24	167	
39.	32	30	0	7	0	0	37	99	24	32	
40.	38	0	0	10	0	0	10	138	12	150	
41. T. I.	39	10	0	0	0	20	8.4	106.6	25	151.6	
42. T. I.	56	103 en bloc					103	33	24	57	
43. T. I.	42	84.24	62.5	0	0	0	102.5	44.5	13	57.5	
44. T. I.	40	17	0	0	10	0	26.7	109.34	24	133.34	
45. T. I.	56	38 en bloc					38	98	24	122	
46.	43	46.25	0	14	0	0	48	93	18.9	111.9	
47. T. I.	41	38	0	10	30	0	78	58.6	24	82.6	
48. I. A.	37	15 en bloc					15	112.83	32.15	144.98	
49. T. I.	52	10	0	10	25	0	45	97	18	115	
50. T. I.	43	75	0	10	20	0	103.4	8	48.6	56.6	
51.	44	46 en bloc					43	93	24	117	
52. T. I.	57	120 en bloc					120	0	40	40	
53. T. I.	34	23	0	10	5	0	37.7	96.3	26	122.3	
54.		32.5	0	5	70	0	94.1	42.2	27.3	65.9	
55.	32	10 en bloc					1	133	26	159	
56.	34	16	0	10	20	0	19.3	120.5	20.2	140.7	
57. T. I.	41	76 en bloc				20	75.5	40	24.5	84.5	
58.		0	0	6	0	0	5.8	112	42.2	154.2	
59. T. I.	52	35 en bloc					33	113	14	127	
60. T. I.	41	10	0	10	0	0	18.4	113.68	28	141.68	
61.		0	0	0	0	0	0	211	5.15	216.15	
62. I. A.	39	12 en bloc					11.7	124.3	24	148.3	
63.	46	32 en bloc					28	108	24	132	
64. I. A.	41	0	0	0	0	20	0	190.5	6	216	
65. T. I.	47	85 en bloc					83.8	50	26.2	76.2	
66.	40	33	0	4	60	0	46	94	20	114	
67. T. I.	37	2.8	0	12	0	20	1.6	127	11.40	158.4	
68. T. I.	39	17.5	0	10	14	20	40.5	67.8	32	119.8	
69. I. A.	38	0	0	0	0	20	0	124.72	16	160.72	
70.	51	80	0	10	0	0	87.2	29.4	43.40	72.80	

-105-

Legend:

T. I.—Trade and Industrial Teachers  
 I. A.—Industrial Arts Teachers  
 World War Credits are counted as Credits Earned

ABSTRACT OF THESIS

STUDY OF THE COLORADO AGRICULTURAL COLLEGE PLAN  
OF VOCATIONAL TEACHER TRAINING BASED ON THE  
EVALUATION OF TRADE EXPERIENCE IN TERMS

OF COLLEGE CREDIT

1927-1935

Submitted by E. L. Meader

---ABSTRACT---

The Problem

The present study has undertaken two closely related problems:

1. To determine whether the granting of college credit for trade experience is desirable.
2. To determine whether the Colorado Agricultural College program of evaluating trade experience in terms of college credit toward the Bachelor's degree for students majoring in Trade and Industrial Education is justifiable.

It is proposed to justify the program referred to by a study of the following minor objectives:

1. To learn what type of students are attracted by the Colorado Agricultural College by the program suggested and to determine if they are of a superior type.
2. To learn whether the Colorado Agricultural College is giving such students the type of training that meets their needs as to the standards set up by industry and at the same time to enable them to meet the requirements of the public schools for certification.
3. To learn whether students have profited by the training received at Colorado Agricultural College through one or more of the following measures of success: Promotion, better jobs, salary increase.
4. To learn whether credits given for trade experience in terms of college credits were at variance with the student's ability to successfully carry work of college grade.
5. To learn whether industry approved the type of training represented by that given at the Colorado Agricultural College for preparing teachers for Trade and Industrial work.
6. To learn whether public school administrators approve of the type of training represented by that given at the Colorado Agricultural College

for preparing trade teachers for public schools.

Methods and Procedure: Since the investigation deals with two separate but closely related problems and the second problem involves seven different points of attack as represented by the minor objectives the procedure for each of the different sections will be introduced as a part of the discussion of that section.

The general presentation will follow the two divisions of the problem and will be discussed under the two headings:

"Granting Credit for Trade Experience",

"The Colorado Agricultural College Program".

Credit Granting for Trade Experience:

The desirability of granting credit for trade experience was investigated from the standpoint of the persons who received such credit toward their college degree, from the standpoint of school administrators who hire such men for teaching work, from the standpoint of State Boards as agencies for granting teaching certificates and, finally, from that of industry which absorbs the school trained boys and girls who had been instructed by such men.

Since it was impossible to personally interview all of those people the questionnaire method was used. Although 70 students had received from the Colorado Agricultural College, a Bachelor's degree toward which credit for trade experience had been granted, only 58 returned the questionnaire answered

The students graduating who received credit for trade experience were asked to check the points under the question following:

Was the degree you received a direct aid in any of the following?

- a. Securing promotion.
- b. Holding present position.
- c. Increasing professional standing.
- d. Securing a better position outside your own school.
- e. Securing salary increase.

Results showed that every one of the 58 correspondents received direct benefit from one or more of the criteria, as follows:

- a. Securing promotion, 29.4 percent.
- b. Holding present position, 58.6 percent.
- c. Increasing professional standing, 81.8 percent.
- d. Securing a better position outside their own school, 25.8 percent.
- e. Securing salary increase, 36.1 percent.

The facts show that the degree toward which credit for trade experience was allowed was desirable from the teacher's standpoint.

#### Reaction of School Administrators:

The reactions of public school administrators as to the value of trade training for preparing trade teachers for public schools, were secured by communicating with 100 school superintendents in cities of

over 100,000 population. They were asked to express their opinion on the following questions:

1. "In your opinion is the experience gained in a college shop of equal value, hour for hour, with that gained in industry?"

Of the 85 superintendents returning the questionnaire answered, 78.8 percent stated that it was their opinion that experience gained in a college shop was not of equal value, hour for hour, with that gained in industry.

2. "In your opinion, who makes the most efficient instructor for trade training?"
  - a. The man who receives all of his shop training in college, secured his degree and is then permitted, by state regulation, to teach Trade and Industrial classes in the public schools, without having had previous experience in industry?
  - b. The man who has had years of valuable trade experience, plus an intensive teacher-training course and the ability to teach the learner?

Of the 58 superintendents replying 84.7 percent expressed their opinion in favor of "b"

3. Is a plan to evaluate the practical man's experience in terms of college credit, not to exceed 60 credits - the number of credits to be allowed to be based in the number of successful years as well as the recency of his experience in industry - to be considered desirable in the preparation of the trade teacher?

The replies received show that 96.4 percent of superintendents answering were in favor of granting college credit for trade experience.

### Reaction of State Boards:

Reports received from State Boards of Education show that 34 states recognize trade-training in terms of college credit in varying amounts when certifying applicants to teach Trade and Industrial subjects.

### Reactions of Industry:

Industrial leaders communicated with for those industries having their own school shops, were generally agreed that college credit is not an indication of the ability to teach trade methods and practice, that knowledge of such methods and practice can only be gained by actual participation in industrial shops. They expressed the opinion that if Industrial Arts and Vocational teachers are required to have a degree, their trade experience should be recognized in terms of college credit.

### Reaction of Colleges:

At the present time there are 37 colleges and universities which recognize trade training in terms of college credit toward the Bachelor's degree.

### The Colorado Agricultural College Program

Is a historical outline of the Colorado Agricultural College program of evaluating credit for trade experience in terms of college credit previous to 1931. The request for the plan was first made by State Director Sargent and State Supervisor Tiemann, resulting in the appointment of Dr. Allen, Dr. Avery and President Lory

as a committee to study the possibilities of such teacher training.

The immediate problem was the devising of a functioning plan that would enable the Department of Education, Mechanical Engineering and Economics and Sociology to participate in the determination of subjects required for graduation for students specializing in Industrial Education and Mechanic Arts. It was then necessary to devise a functioning plan of accurately evaluating trade experience in terms of college credit.

#### How Candidates Were First Selected:

By personal interview, documentary evidence he submitted and recommendations.

#### Credit Allowance for Trade Experience:

At first no limit was fixed by the Faculty Council as to maximum, nor a minimum set for credit hours. This was later changed, setting 80 credits allowed for trade experience and 24 hours in residence as a minimum.

#### Plan Revised, 1932:

Examination was to be required of all candidates, rating to be based on point system, credit allowance reduced to a maximum of 60 and residence requirement raised to 40 hours.

#### Selecting Candidates:

The candidate files a sworn statement as to trade experience then makes application to take trade tests which are written. If he passes these tests, he must

take certain qualifying courses which places him on probation until he has passed them.

Evaluation of the Colorado Agricultural College  
Program as Related to Credit Granting  
For Trade Experience

Type of Student Enrolled:

In making the survey of the 58 students receiving their Bachelor of Science degree under the plan of evaluating trade experience for college credit, it was found that the average age at the time of graduation was 42.6 years, with a minimum age of 32 and a maximum age of 64 for the group. All of the graduates were holding responsible positions in the field of education. It was found that 35.7 percent received the increase in salary after graduation and 50 percent maintained their salary schedule in the face of the economic depression. Of the entire number 55 had successfully carried work of college grade previous to their coming to the Colorado Agricultural College. The ability of these students to carry work of college grade is shown on the basis of quality points earned per credit. The mean for the group was 2.2 and the spread from 1.5 to 3.0. These facts disprove the belief that the Colorado Agricultural College would be flooded with an inferior type of student seeking a degree.

Value of Trade and Industrial Courses:

On the basis of 58 returns it was the general opinion of students graduating under the plan by which they received credit for trade experience, that Trade and Industrial subjects were more valuable to them than the traditional college courses in terms of functioning content and produced more thinking on the part of the student. They also offered more opportunity for individual instruction.

Conclusions as to the Desirability of Granting Credit For Trade Experience Used Toward the Bachelor's Degree:

Considering the results obtained in the survey of the 70 students graduating, who received credit for trade experience toward their Bachelor's degree, the 100 school superintendents who will employ those teachers, and industry, who will employ the students trained by these instructors, it would seem that it was desirable to recognize trade experience in terms of college credit toward a Bachelor's degree.

Under the revised plan, now in operation, the Colorado Agricultural College feels that it has made substantial progress in the development of its plan of evaluation of trade experience, supervisory experience and teaching experience in terms of college credit. The results show that the students attracted are of high scholastic standing and capable of successfully carrying work of college grade.