

BASIC PRINCIPLES AND POLICIES INVOLVED IN
ADMINISTRATION AND SUPERVISION OF
VOCATIONAL EDUCATION OF LESS
THAN COLLEGE GRADE

by

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INTRODUCTION

The purpose of this study is:

1. To define Vocational Education not for the mere purpose of making a definition but for the purpose of fixing an objective toward which to steer our program of Vocational Education.

2. To study the problems of Vocational Education in Kansas as affected by possibilities of employment, school organization and school laws, and school attendance.

3. To make an exhaustive study of the literature of Vocational Education and to attempt to interpret it in the terms of the needs and experiences of our own state.

4. To set up certain general policies and make their application to the field of Trade and Industrial Education in Kansas.

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METHOD OF PROCEDURE

Since the enactment of the Smith-Hughes Vocational Education Act in 1917 which created the Federal Board for Vocational Education, the Federal Government through that agency has been attempting to work out a practical program of Vocational Education for the country. Beginning almost simultaneously with the Federal Government each state either designated or created a State Board for Vocational Education which has been cooperating with the Federal Board for Vocational Education for its state. Likewise, thousands of local communities throughout the country have constantly called upon the Federal Board for Vocational Education and the State Board for Vocational Education for assistance in solving the problem of providing a suitable program of Vocational Education in their respective communities.

For nearly six years the writer has been drawing upon the literature of Vocational Education, the experience of the Federal Board for Vocational Education and the various State Boards in attempting to satisfy the needs of Kansas for a practical, workable program of Vocational Education. The purpose of this study then is to study the literature of the field of Vocational Education and to attempt to interpret it in terms of the experience and needs of our

own state; to set up certain general policies and make their application in detail to the field of Trade and Industrial Education in Kansas.

The method of procedure has been to study the various bulletins issued by the Federal Board for Vocational Education and by the various State Boards for Vocational Education. The literature in the field of Vocational Education has been studied exhaustively.

An important part in the method of procedure also has been personal contact with Vocational Education workers representing the Federal Government and many of the states. These important contacts have been made possible through attendance upon Vocational Education conferences and conventions. These personal contacts form no small part of the source of the material which shall go into this thesis for until very recently the literature upon Vocational Education has been so very meager as to have been of no great help.

DEFINITIONS OF VOCATIONAL EDUCATION

For more than a quarter of a century, practically minded sociologists and students of Education have been enthusiasts for a national program of Vocational Education. Because of this attitude various attempts have been made to define Vocational Education. Since the inauguration of a

national program of Vocational Education and the consequent advent of hundreds of workers into the field of Vocational Education, many more definitions have been contributed. Among these are the following significant ones:

A definition of Education coming from the pen of a successful and practically minded business man who is a consumer of large amounts of the product of our schools should arrest the attention and command the respect of any educator. We believe that Mr. Henry Ford had Vocational Education in mind when he gave the following definition of Education: "Education is good only when it furnishes the kind of knowledge which puts a man in full control of his faculties for living a sane, industrious and useful life. . . . It is not good when it merely fills a man's head with a quantity of ornamental but useless information." Voc. Ed. Mag. (II, p.389)

Prosser and Allen (1925) define Vocational Education as follows: "Vocational Education becomes that part of the experience of any individual whereby he learns successfully to carry on any gainful occupation. In a narrower sense, it implies the existence of a series of controlled and organized experiences used to train any person or persons for any given employment."

Eaton (1926) defines Vocational Education in these words: "So far as efficiency and happiness in vocations

are concerned that part of the educative process which directs the activities and controls the environment of the learner to the end that he may acquire the mental attribute and ability which makes him an efficient and happy economic producer is more economical than education for other ends which may yield by-products of value in vocation. . . . We call this part of education 'Vocational Education'."

According to Wright and Allen (1926) Vocational Education means something like this: "Vocational Education comprises that part of the educational program which makes for the conservation of our human and natural resources. The conservation of natural resources because it is only through the application of human knowledge, skill and intelligence that wealth is created from natural resources. The conservation of human resources because these are conserved in proportion as each individual is able to capitalize on his own special aptitudes and abilities and intelligence to the best advantage in the production of wealth."

Kerschensteiner (1914) had the vocational point of view when he gave the following definition of Education: "Education must always have one foot on the ground - the firm ground of work - for it derives its strength only from earnest, intensive, practical productive activity."

Payne (1924) defines Vocational Education in this statement: "Vocational Education is defined as any form of

education whose primary and controlling purpose is to fit us for specific occupations whereby men support themselves in the world of contemporary economic activity."

Bulletin No. 1 (1917), Federal Board for Vocational Education, defines Vocational Education as follows: "Vocational Education as contemplated in the National Vocational Education Act may be any sort of education and training of less than college grade which will fit boys, girls, women and men for the effective pursuit of occupations that they may look forward to following, or if already employed will help them to do better work on their job or to secure training which will assist them to secure better jobs."

Of all the definitions of Vocational Education which we have studied perhaps the clearest and most understandable is that given by Snedden (1920): "Vocational Education is any form of education whether given in a school or elsewhere, the purpose of which is to fit an individual to pursue effectively a recognized profitable employment whether it pursues for wages or otherwise."

Our Definition and Comment

For the purpose of this study an adaptation of the definition of Vocational Education given by Snedden (1920), including a thought from the definition given by Eaton together with that given by the Federal Board for Vocational

Education, shall serve as a basis for our consideration. "Vocational Education is any form of education of less than college grade whether given in a school or cooperatively with industry, the purpose of which is to fit an individual to pursue effectively and happily a recognized profitable employment."

We emphasize the fact that this study concerns itself with "education of less than college grade" for the reason that the Federal Vocational Education Act specifies that the fund which it provides is to be used for Vocational Education of less than college grade.

We call especial attention to fitting individuals to pursue "happily a recognized profitable employment," for we believe that no individual is ever at his best except when pursuing some employment in which he enjoys maximum happiness and satisfaction.

Possibilities of Employment in Kansas

The Kansas Daily Newspaper Advertising Association (1926) reports that of the 1,769,257 people in Kansas, 902,321, or 51%, of them live in cities and towns; while 866,936, or 49%, live in rural districts. It is the primary purpose of this study to give consideration to the problems involved in the organization and administration of Trade and Industrial Education for the 51% of our population

who live in cities and towns. A study of the 1920 census reports indicates that more than 41% of the urban population of the state live in villages of less than 4,000 population. As the community decreases in size, the problem of organized instruction in Trade and Industrial Education becomes increasingly difficult. It is generally considered that in a town of less than 4,000 population, organized instruction in Trade and Industrial Education is rarely practicable. Only in the case of such a town with a single industry is organized instruction possible and there is no such community in Kansas. This brings us to a consideration of the possibilities of organizing Trade and Industrial Education for the 530,565 people living in towns of 4,000 population or more.

Table I shows the distribution of the population among the thirty-seven towns in Kansas of 4,000 population or more.

Table I.-Kansas Towns 4,000 and Upward
(Listed in order of size)

1920 Census		
1. Kansas City.....	101,177	3 in 50,000 class and
2. Wichita	72,217	over, 25% of urban
3. Topeka	50,022	population
4. Hutchinson	23,298	4 in 16,000 to 23,000
5. Pittsburg	18,052	class, 8% of urban

6. Leavenworth.....	16,912	population.
7. Parsons	16,028	
8. Salina	15,085	4 in 12,000 to 15,000
9. Coffeyville	13,452	class, 5.8% of urban
10. Atchison	12,630	population
11. Lawrence	12,456	
12. Independence	11,920	3 in 11,000 class, 3%
13. Emporia	11,273	of urban population.
14. Arkansas City	11,253	
15. Eldorado	10,995	3 in 10,000 class, 3.4%
16. Fort Scott	10,693	of urban population.
17. Chanute	10,286	
18. Newton	9,781	3 in 8,000 to 9,000
19. Ottawa	9,018	class, 3% of urban
20. Iola	8,513	population.
21. Manhattan	7,989	
22. Winfield	7,933	5 in 7,000 class, 4% of
23. Rosedale	7,675	urban population.
(Part of Kansas City Public School System)		
24. Junction City	7,533	
25. Wellington	7,048	
26. Pratt	5,111	3 in 5,000 class, 1.6%
27. Dodge City	5,061	of urban population.
28. Fort Leavenworth .	5,000	
29. Abilene	4,895	

30. Osawatomie	4,772	
31. Concordia	4,705	
32. Cherryvale	4,698	10 in 4,000 class, 5%
33. McPherson	4,595	of urban population.
34. Great Bend	4,460	
35. Augusta	4,219	
36. Herington	4,065	
37. Horton	4,009	
38. Fredonia	3,954	

By reference again to Table I it will be seen that 25% of the total urban population of the state live in three cities; namely, Kansas City, Wichita and Topeka. A brief description of these cities will give further information on the problem.

The Situation in Kansas City

Kansas City is essentially a city of homes rather than of industry. This fact has been verified by reference to the attendance records in the Kansas City Schools and by an examination of records of evening classes conducted in Kansas City. Predominant among the industries of Kansas City are the meat packing plants and the flour mills. Meat packing plants employ for the most part low skilled labor. Therefore, our field for Vocational Education among the workers is decidedly limited.

The flour mills represent a high type of industry with large capital investment and large output but employ relatively few workers. Thus, the two predominant industries in Kansas City are practically eliminated so far as the organization of Vocational Education is concerned.

Another limiting factor in the situation is the fact that the major part of the workers living in Kansas City, Kansas, are actually employed in Kansas City, Missouri. This makes the necessary cooperative arrangement between the school and industry increasingly difficult, if not entirely impossible.

The Situation in Wichita

It has been urged upon us by the local school authorities and verified by our own observation that Wichita has no predominant industry; it being largely a distributing center for the southwest. A developing industry of Wichita, however, is that of airplane manufacturing. In any city without a predominant industry the problem of organizing Vocational Education to meet the needs is complicated by the smallness of the groups in any given trade activity.

The Situation in Topeka

Aside from the Santa Fe Shops in Topeka, the town is

essentially an office workers' town. The Santa Fe Railroad Company strictly and rigidly maintains its well known policy of conducting its own educational activities. This precludes the possibility of any considerable amount of cooperation on the part of any outside educational agency. The fact that Topeka is predominantly an office and clerical workers' town further complicates the problem of organizing Trade and Industrial Education, for commercial education is not included under the Smith-Hughes Vocational Education Act.

An examination of Table II further emphasizes the facts which have just been brought out with respect to Kansas City, Wichita and Topeka; namely, that they are not industrial centers.

Table II. - Kansas City, Wichita and Topeka Compared with Rest of State

	Kansas City		Wichita		Topeka		Balance of State	
	Male	Female	Male	Female	Male	Female	Male	Female
All ten years and older	41,774	39,480	29,386	30,351	19,651	21,787	629,686	545,130
All occupations	34,757	9,222	22,862	7,008	15,517	5,565	478,745	70,815
Retired Farmers	253	11	548	18	294	17	226,638	5,433
*Mining and Oil	43	1	287	1	36		19,894	50
*Mfg. and Mech.	17,949	2,616	8,663	847	6,118	623	78,973	5,755
*Transportation	5,972	512	2,942	341	2,250	179	41,838	3,199
*Trade	4,338	951	5,563	832	2,812	604	44,611	7,643
Public Service	879	14	494	11	412	17	9,749	
Professional	1,026	855	1,145	1,133	970	862	13,942	18,755
Domestic & Personal Service	1,464	2,189	1,336	1,988	768	1,390	12,340	19,562
Clerical	2,833	2,073	1,884	1,837	1,857	1,873	10,860	9,652

*Potential vocational groups.

Attention is also directed to the fact that workers listed under "Public Service," "Professional," "Domestic and Personal Service," and "Clerical" are largely eliminated from consideration in a program of Vocational Education.

Trades Represented in Three Cities

As a further step in the analysis of our job and the isolation of our groups for Vocational Education we submit Table III covering the trades represented in the three cities under consideration.

Table III. - Trades in Kansas City, Topeka and Wichita
1920 Census

	Kansas City	Topeka	Wichita
Apprentices in Hand Trades	121	133	31
Blacksmiths	211	176	134
Boiler Makers	329	216	117
Brick and Stone Masons	142	72	129
Carpenters	1553	823	1043
Compositors	124	177	166
Coopers	167	3	12
Electricians	294	126	184
Stationary Engineers	301	135	191
Machinists and Mill Wrights	1141	709	463
Millers	35	67	56
Molders	119	37	39

	Kansas City	Topeka	Wichita
Paper Hangers	56	25	45
Painters	359	258	342
Pattern Makers	27	14	8
Plasterers and Cement Finishers.	79	47	113
Plumbers	354	131	181
Shoe Repairmen	99	50	64
Sheet Metal Workers	153	74	46
Upholsterers	31	19	19

Census Figures not Entirely Dependable

It is pertinent to this discussion that these figures should be discounted somewhat. It has been the experience of Vocational Educators who have endeavored to locate the number of workers reported by the Census Bureau that not nearly all of them can be found. This is accounted for by the fact that census figures are almost always given by the wives and mothers of workers. They are ambitious for their husbands and sons and many times report them as being journeymen when in reality they are only helpers or common laborers in the trades.

Manufacturing in Kansas

As an indication of the possibilities of organizing Trade and Industrial Education for the workers in the

factories of Kansas, we submit Table IV which gives the 1920 Census figures for workers employed in factories in towns of all sizes.

Table IV. - Figures on Manufacturing in Kansas
1920 Census

	Workers Employed
Slaughtering and Packing	17,805
Car and RR. Shop Men	11,196
Flour and Grist Mill	3,493
Newspapers and Periodicals	2,414
Petroleum and Refining	2,221
Machinists	1,520
Bread and Baking	1,307
Brick, Clay Products and Tile	1,136
Cement	1,084
Salt	1,072
Auto Repair	870
Salaried Employees	12,398
Ice Manufacturing	822
Smelting and Refining Zinc	717
Butter	740
Foundry Workers	663
Printing - Job and Book	624
Candy and Ice Cream	584
Glass	584
Structural Steel Fabrication	536

	Workers Employed
Furniture	503
Men's Clothing	487
Lumber and Planing Mill Products	436
All Others	10,245

Further light on this table is reflected from the fact that there are 3,474 manufacturing establishments in Kansas employing these 61,049 workers. This gives an average of 17.5 workers per establishment. It is evident that the training problem for any given industry or community is made difficult by the small average size of the groups.

Building Trades Most Fertile Field

Our experience thus far has convinced us that our most fertile field for the organization of Trade and Industrial classes, particularly in the evening school, is in the building trades.

Table V will be of particular interest as it gives the figures on building trade workers in Kansas.

Table V. - Building Trades Workers in Kansas
1920 Census

Carpenters Journeymen	14,065	
Carpenters Apprentices	59	14,124
Brick and Stone Masons Journeymen	1,524	
Brick and Stone Masons Apprentices	16	1,540
Electricians Journeymen	2,103	
Electricians Apprentices	63	2,166
Painters Journeymen	3,810	
Paper Hangers Journeymen	320	
Paper Hangers Apprentices	27	4,157
Plasterers and Cement Workers Journeymen .	999	
Plasterers and Cement Workers Apprentices.	5	1,004
Plumbers and Steam Fitters Journeymen	2,208	
Plumbers and Steam Fitters Apprentices ...	55	2,263
Sheet Metal Journeymen	858	
Sheet Metal Apprentices	42	900
Building Trades Laborers		13,123
Total		39,277

Mobility of Workers Increases Difficulties

Even in the Building Trades it is not a particularly easy matter to organize and conduct evening classes. In a town of 10,000 in Kansas, we found that there were about

one hundred carpenters. At least there were that number who called themselves carpenters. Of this number only thirty could be interested in Vocational evening instruction, and of the thirty only about twenty continued for any length of time. This was in part due to the custom of moving from town to town where construction work was in progress.

In the case just cited many of the men who called themselves carpenters were only part-time carpenters and therefore were not interested in improving themselves at the Trade as they should have been. The instruction that was offered was well worth while because those who did avail themselves of it made splendid progress and were thoroughly interested in the instruction. The ratio of men in Trades to the population of the community seems to vary considerably according to the amount of construction work being done. In a town of 13,000 it was found that there were not enough plumbers or electrical workers to organize classes of a dozen men in each trade.

As a further indication that the problem of organizing instruction for the Trades and Industries in Kansas is a particularly difficult one we submit Table VI which is a comparison of the numbers of workers per hundred population in Kansas with the number of workers per hundred population in the United States.

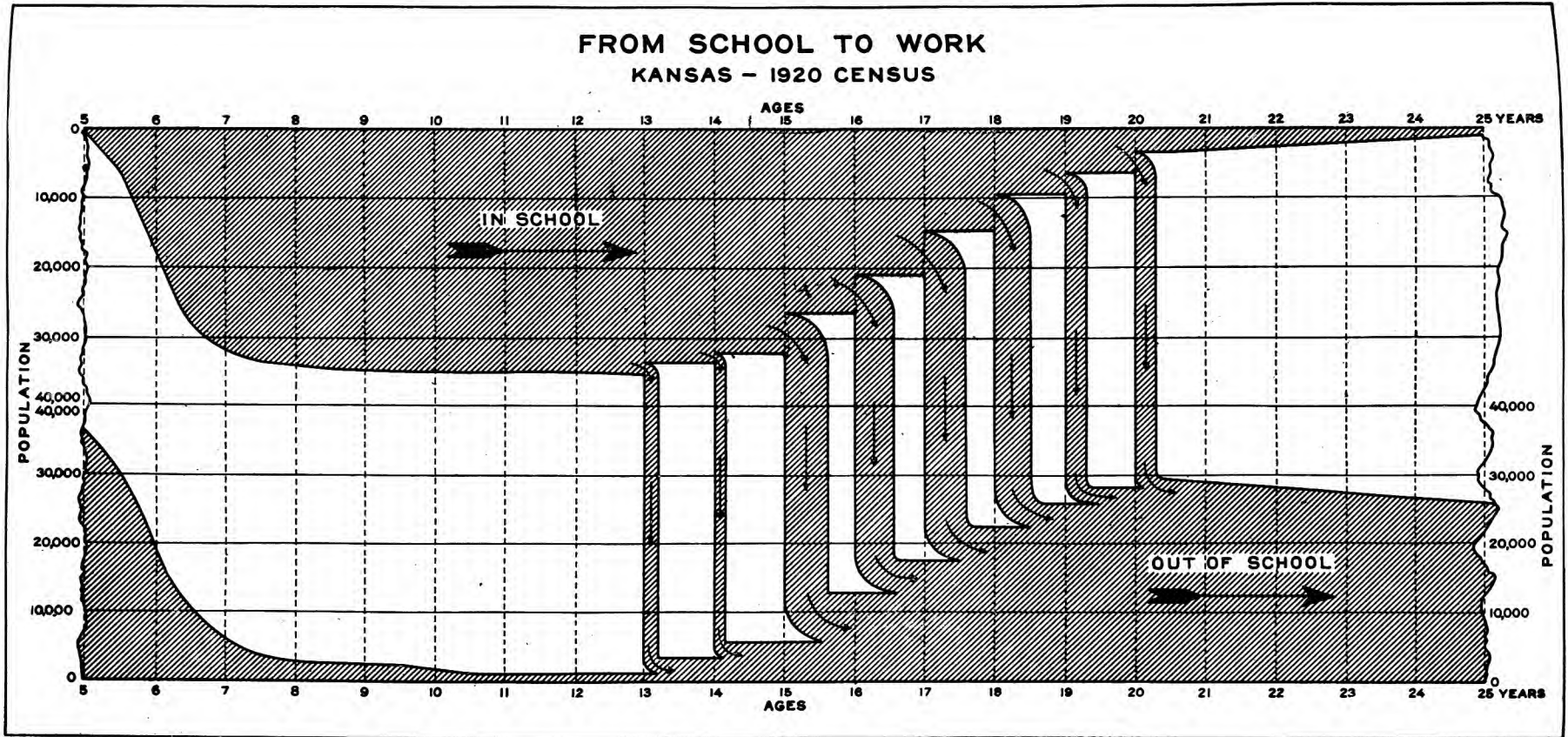
Table VI.- Occupational Comparison. Kansas vs. United States
On Basis of Each 100 Population

	United States	Kansas
All occupations	37	29
Agriculture	10	13
Mining	1	1
Manufacturing & Trades	11	6
Transportation	3	3
Building Trades	4	3
Professional	2	1
Domestic and Personal Service	3	1
Clerical	3	1
Unclassified	26	42

Comparison of Kansas and Industrial States

A comparison between the workers in industry in Kansas with the number of workers in industry in some of the strictly industrial states would reveal an even greater contrast than this. For instance, it is entirely conceivable that in some of the industrial states a single city might have more people in a single industry than all the people employed in all the industries of Kansas. Such a situation naturally would simplify the problem of organizing and offering instruction to such large groups from industry.

Figure I



12-3234

Prepared by Mr. J. C. Wright, Director, Federal Board for Vocational Education.

The Out of School Group

The question as to whether vocational classes should be organized in connection with the schools, in connection with industry or cooperatively between the schools and industry is one which is ever present in the mind of the Vocational Educator. An examination of Figure I will show the ages at which Kansas young people drop out of school and enter employment. At the age of 13, for instance, a considerable number drop out. Another group drops out at the age of 14 and at the ages of 15, 16, 17 and 18 they drop out in great numbers. It is not to be overlooked, of course, that at the age of 18 a great many of those who have dropped out have graduated from high school but failed to go on to college.

Letting each square in Figure I represent 10,000 population, we estimate that approximately 40,000 young people either drop out or finish high school between the ages of 15 and 18 and never pursue their education further. If the school is actually to serve the need of these young people, it would seem to be a reasonable obligation upon the high schools to give them in their last years in high school something which would prepare specifically for advantageous entrance into life's activities.

Following in Figure I the 40,000 people to the out of

school group, indicated in lower portion of Figure I, it would seem reasonable to suppose that many should be interested in evening or part-time instruction which would in part prepare them for their respective places in industry. Doubtless many of them have entered industry without any specific preparation for the job they are attempting to fill.

Besides the 40,000 young people who either finish or drop out of high school between the ages of 15 and 18, the most important field for Vocational Education is with the 300,000 persons between the ages of 14 and 25 who are out of school.

When They Leave School in Kansas

According to the Twenty-Fifth Biennial Report of the State Superintendent of Public Instruction (1926) for Kansas reporting on high schools of the first and second class cities in the first grade and compiled in Table VII, there were 9,347 boys; and 8,607 girls. In the eighth grade there were 5,534 boys; and 6,019 girls. This represents a shrinkage or loss in numbers of approximately 40% of the boys and 25% of the girls. In the twelfth grade of the same schools, the report shows 3,113 boys; and 4,062 girls. This represents a shrinkage or loss in numbers between the first and the twelfth grade of 66 2/3% of the boys and 53% of the girls.

Table VII. - Attendance in School - First Class
Based on 100 in First Grade. (1926)

City	:1st:	:6th:	Complete Grades	: :	Complete Jr. High	: :	Complete Sr. High
Atchison	:100:	82:	63	: :	54	: :	29
Coffeyville	:100:	48:	30	: :	32	: :	19
Fort Scott	:100:	77:	No Return	: :	34	: :	41
Hutchinson	:100:	118:	57	: :	72	: :	47
Kansas City	:100:	83:	No Return	: :	34	: :	17
Leavenworth	:100:	52:	43	: :	23	: :	22
Parsons	:100:	59:	46	: :	61	: :	32
Pittsburg	:100:	83:	58	: :	68	: :	41
Salina	:100:	84:	74	: :	52	: :	43
Topeka	:100:	74:	49	: :	27	: :	25
Wichita	:100:	77:	61	: :	43	: :	21
Average	:100:	78:	36	: :	41	: :	25

Why This Shrinkage?

This situation naturally prompts the question in any-one's mind as to why this tremendous shrinkage. Is it that this large proportion of Kansas youth is unable to profit by the traditional high school course or are these boys and girls unable to see any practical advantage of completing a high school course? Could a high school

course be made so practical and attractive as to hold greater numbers of them? Is it desirable that greater numbers remain in school and pursue the traditionalized courses? We believe that Vocational Education is the answer. Dr. Lewis Gustafson, in an address at Ames, Iowa, (1926), gave expression to this broad general principle of education. "When it becomes impractical for a man because of expense or lack of opportunity to receive his training for a life's work through any other agency, it then becomes the duty of public education to assume the obligation of providing this training."

Conclusions

Based upon this broad general educational principle, we subscribe to this general policy in the administration of Vocational Education in Kansas:

First, that even though the groups are small and widely separated the members of those groups are entitled to the benefits to be derived from organized vocational instruction just as surely as if they were enrolled in a city trade school.

Second, that insofar as it is humanly and economically possible, these small groups must be reached and training service provided for them.

Third, that insofar as we are able to avoid it, no

person shall be penalized with respect to trade training because of the accident of finding himself in a community where the organization of trade training is difficult.

Fourth, that while we urge that no less financial emphasis be placed upon scholarship in educational institutions of higher learning, we do urge that enough financial emphasis be placed upon the program of Vocational Education to assure the carrying out of the first part of this general policy.

Fifth, that whenever a training job becomes so specialized that it is of value to the employee only with his present employer, it ceases to be a matter of public concern and becomes a matter of company responsibility.

NEED FOR MORE EMPHASIS ON VOCATIONAL EDUCATION

In order to be convinced of the actual need for more and better Vocational Education in this country one needs only to turn his thought seriously to certain facts developed in a report of a special committee of the National Association of State Directors of Vocational Education (1928). "In the past thirty-five years all American productive enterprises have found themselves confronted with new economic and social situations brought about by steadily decreasing natural resources, steadily increasing wages, largely increased human wants, steadily progressive

specialization, changed and restricted immigration, a shift from emphasis on manipulative skills to emphasis on technical knowledge and a shortening of the working day."

Essential Factors in Wealth Production

"The essential factors involved in wealth production are; first, the existence of natural resources; second, skill; third, labor; fourth, time spent in work; and fifth, intelligence as applied to inventions and other problems which tend to reduce production costs. In these five factors only two afford an off-set to the decrease in natural resources and decrease in time; that is, increased skill and increased intelligence. This has been the universal experience of every country which has been faced with conditions similar to those which now face the United States. Since the job of Vocational Education is to promote in the most efficient way the development of skill and ingenuity, a program of Vocational Education is absolutely necessary in this country if it is to maintain its present position with regard to the production of wealth and hold its own in world competition."

Apprenticeship Methods Inadequate

"In early times young workers acquired the skills and knowledge of a given vocation by watching, imitating and

copying fathers, mothers and other elders; that is, they were trained by methods of followership. For complicated and secret vocations followership methods were in time superseded by regularized apprenticeship methods. When certain vocations became still more exacting as in medicine, war leadership, painting and engineering, apprenticeship methods gave way to vocational training schools which at first usually supplemented apprenticeship but in time took over both training in skills and instruction in technical knowledge.

"Apprenticeship methods have become either entirely or partly inadequate to meet the demands of today in certain industries. One of the purposes of the modern movement for Vocational Education in schools is to supplement or to replace in whole or in part the antiquated apprenticeship training."

Complex Society Demands Organized Training

No student of sociology can escape the fact that society is becoming increasingly complex. This has been impressed upon us by Lapp and Mote (1915) in the following statement: "All phases of life have become more complex and education must lay new foundations and adopt new methods to accomplish its ends.

"The apprenticeship system has broken down in industry;

home training no longer suffices for the majority who are to be home makers in this day. Workers can no longer successfully engage in agriculture or industry if armed with crude unorganized experience. The lawyer, doctor, teacher and preacher; in fact all artisans, workers or professional people cannot fully realize the idea unless more broadly educated than by the earlier but now obsolete methods of apprenticeship, office boy, helper or assistant. Outside agencies must engage in placing broad foundations of knowledge under the experience gained in shop or home, farm or profession."

BREAKDOWN OF APPRENTICESHIP SYSTEM

Referring to Table V the fact is very clearly developed that the apprenticeship system in the Building Trades of Kansas is non-operative and supports the report of the committee of the National Association of State Directors of Vocational Education (1928).

The breakdown of the apprenticeship system and the reason for its failure is very clearly stated by Eaton (1926) when he says "Consider for example the case of the master draper and his apprentices. As a teacher he is successful in turning back to his trade young men of understanding and skill in the artisanship of designing, cutting and fitting cloaks, gowns and suits. As a draper he is

successful in producing the most valuable possible surplus of well designed and manufactured cloaks, gowns and suits but both as a teacher and as draper, he must recognize the fact that his apprentice employees, being human, vary in their aptitude. To achieve his purpose as teacher, he must provide for each boy's practice at every one of the several processes of the trade for a time sufficient at least to attainment of the standard proficiency of the journeyman. But one boy learns to design, or to cut or to fit promptly and with few mistakes. Another learns slowly and with much waste of costly goods. So perhaps a challenge to the teacher the slow or stupid apprentice was a source of loss to the draper. In the economic view, however, the draper must keep down the cost and maintain or improve the quality of his product. To that end the common prudence urges the necessity of assigning to every apprentice those processes in which his aptitude dispose him to a quickly acquired proficiency and to keep him there. One apprentice might spend all or most of his time cutting; another at sewing; another at fitting, and so on. The master was in a dilemma. If he did his full duty as a teacher, he penalized himself and society as draper. If he did his best work as draper, he exploited his pupils and failed in his duty as teacher.

"It is no wonder that even in relatively unchanging

vocations the discovery was made that good productive organization is not likely to be good teaching organization. That masters should give up the dual role to become either producers or teachers of producers was inevitable."

Changing Conditions in Industry

Still further light is shown on the problem of the decline of the apprenticeship by Prosser and Allen (1925) when they write, "In the face of the constantly changing demands of the so-called trades, apprenticeship can be said with faith to have fallen into neglect and disuse because it gave slow instead of rapid training when the latter was demanded to meet rapidly shifting requirements. Apprenticeship relied upon old time standing skill rather than upon training in new skills and new knowledge as needed. The logical organization for training purposes used the pick-up method when some form of training was recognized. As the trade shifted from a manual to a technical occupation, no means was provided for securing the technical knowledge. Finally whatever instruction was given, if such it might be called, was always given by older tradesmen; many of whom at least were unable to convert their knowledge or adapt it to new needs. . . . It may be fairly said that in the professional fields the pick-up method has been practically abolished while it still

remains the vocational training device for the mass of workers."

Owing to the fact that present training methods are wholly inadequate and that more and better Vocational Education is needed in making proper adjustment to these changes, we offer the following chart from Prosser and Allen (1925). The chart indicates changing conditions and problems in Vocational Education as well as contributions made to industry by academic education.

Item	In the Past	Now
1. Fundamental basis of skill and knowledge.	Tradition and custom.	The development of science and invention.
2. Kind of occupation.	General and standardized.	Special and diversified.
3. Number of occupations.	Few	Many
4. Kind of tools and appliances.	Simple and uniform.	Complicated and diversified.
5. Changes in tools and appliances.	Few and slow.	Many and frequent.
6. Use of old skills.	Retained and perpetuated.	Discarded and replaced by new.
7. Use of old technical knowledge.	Preserved and revered.	Abandoned and supplanted by results of new discoveries and inventions.
8. Use of new skills.	Seldom called for.	Constantly required.

Item	In the Past	Now
9. Use of new technical knowledge.	Infrequently or slowly discovered and applied.	Constantly and rapidly developed and applied.
10. Kind of skills and technical knowledge.	Simple and static.	Complex and rapidly changing.
11. Changes in skill and knowledge.	Few and slow.	Many and rapid.
12. All amount of skill and knowledge used.	Little in variety and degree.	Extensive in both.
13. Changes in occupations.	Negligible	Many and frequent.
14. Need for rapid transmitting of skill and knowledge.	None	Continuous and often urgent.
15. Methods of transmitting skill and knowledge.	Man to man.	Many. School only one.
16. Need of adapting worker to job.	Yes, but only one.	Yes, many times during his productive life.
17. Need for readapting worker to job.	Little or none	Yes, many times.
18. Total number of workers.	Small	Millions
19. Number of occupational groups.	Few	Many
20. Diversity of groups.	Little	Wide
21. Geographical distribution of workers.	Over small area.	Over vast area.

Item	In the Past	Now
22. Rapid means of communication.	None	Many and efficient.
23. Wide diffusion of skill and knowledge.	No need or possibility.	Greatest need and possibility.
24. Old apprenticeship an effective device.	Yes, where used.	No, except in a few lines.
25. Reducing time required to train new workers.	Opposed as unnecessary - inadvisable.	Constant effort to do this.
26. Use of pick-up method of learning.	Fairly successful in primitive society only.	Failure under modern conditions.
27. Manner of training.	Leisurely	Quick
28. Need for organized training.	Yes, but not realized except in old apprentice shop.	Yes, with increasing recognition.
29. General trade training.	Yes, for the old trades.	No, for most occupations.
30. Specialization of worker.	None	Much
31. Training of workers once for all in youth.	Sufficient	No, for most occupations.
32. Training of workers by small increments during life.	No	Yes, for most occupations.
33. Kind of apprenticeship required.	Old apprenticeship.	A new apprenticeship needed.
34. Shifting of workers	Little	Much

Item	In the Past	Now
from one occupation to another.		
35. Trade or industrial analysis necessary.	Not for simple standardized trades.	Much needed to determine training needs.
36. Occupational analysis necessary.	No. Occupations in general standard trades.	Many occupations - all requiring knowledge of training needs and job demands.
37. Training of youth necessary.	Yes, as adaptation for fixed trades.	Yes, as adaptation to constantly changing occupations.
38. Training of adults necessary.	No, because readaptation rarely unnecessary.	Yes, both for adaptation and re-adaptation.
39. Training needed before employment.	None	Some, but no solution of mass problems.
40. Use of the school for training.	None	Increasing
41. Part-time extension classes for youth.	Not needed and unknown.	Greatly needed and slowly coming.
42. Evening School for readaptation of adults.	Not needed and unknown.	Greatly needed but sadly inadequate.
43. Training given by occupation, or trade.	Entirely	Very inadequately.
44. Function of the school.	None	To supplement the occupation as a training agency.
45. What training best given by the school:	None	Related technical knowledge and intelligence in its application.

Apprenticeship and Pick-Up Wasteful

No careful student of the situation with respect to training escapes the conclusion from the material submitted above that traditional apprenticeship and pick-up methods are no longer adequate to meet the training of men for modern industry. It is too slow and cumbersome. In the meantime the work of the world must be done. Even now there are millions of workers who can after a fashion do the work of the world but who are inadequately and wastefully trained. At the same time the Twenty-Fifth Annual Report of the State Superintendent of Public Instruction of Kansas (1926) indicates that 66 $\frac{2}{3}$ % of the boys who enter the first grade of our schools fail to graduate from the high school and that 53% of the girls who enter the first grade of the public schools fail to graduate from high school. Inasmuch as this represents more than half of the boys who enter the first grade of our public schools it seems safe to assume that they will get their training from this same inadequate pick-up and so-called apprenticeship method. Each year there will be a repetition of this same situation until such time as a systematic organized purposeful program of Vocational Education is provided for them.

A Solution

The case is cited of Detroit, a city which boasts a wonderful technical high school which is claimed by the school authorities to be a vocational high school. In spite of these claims the following quotation will support contention that out and out trade schools in which major emphasis is placed on trade training are absolutely necessary to meet the training demand for those who wish to enter upon employment in industry.

"Henry Ford feels that even young boys should produce things of value as a part of their education. To demonstrate this belief and to help under-privileged boys, he founded the Henry Ford Trade School in October, 1916. From a beginning of six boys and one instructor, they have grown in ten years to an enrollment of one thousand eight hundred boys and one hundred and twenty-five instructors. True to the purpose of its origin, needy boys are given the preference. Orphan boys constitute approximately ten per cent and widows' sons forty-five per cent of the enrollment. Fully eighty per cent of the boys in attendance must help support themselves. So strongly has the school appealed to boys that there is a constant waiting list of more than four thousand local boys. For this reason

applications are not accepted from other cities in the United States. The Board of Education for the state and city approves the work of the school. Many boys long to produce, do something in their estimation worthwhile and this institution offers them that opportunity without stopping their education." Monograph "Henry Ford Trade School," (March 28, 1927).

The writer was privileged to visit this school personally along with a number of other workers in Vocational Education. To witness those fine demonstrations of the value of real Vocational Education was indeed an inspiration. It is significant and a challenge to public education that a country which boasts of its progress in education has left for private individuals to develop some of its most effective educational devices.

Conclusions

To briefly summarize the conditions in our country described above which call for greater emphasis on Vocational Education:

First, in the past thirty-five years all factors in our productive system have been shifting.

Second, with three of the five factors involved in wealth production decreasing only an increase of the other two factors, skill and intelligence, may be depended upon

to offset them.

Third, apprenticeship must either be discarded or greatly supplemented in order to be effective.

Fourth, a complex society such as we have today requires a carefully organized educational system built on new foundations and according to new methods.

Fifth, teaching and production have conflicting aims. It is difficult, sometimes almost impossible, for a teacher of apprentices in industry to reconcile these conflicting aims in a manner that is fair and just to apprentice and employer.

Sixth, our rapid change in methods of doing the world's work is in contrast with slow methods of apprentice training. Industry cannot wait.

Seventh, with apprentice training inadequate industry has turned to the pick-up method which has become almost universal. This is a wasteful method.

Eighth, the out and out trade school based on the needs of the learner is the solution of the problem as summarized above.

JUSTIFICATION OF EXPENDITURES FOR VOCATIONAL EDUCATION

"A usable education for all the children of all the people will cost more but is worth whatever it may cost. It is the only way by which democracy can have all of its

needs adequately ministered to. In the long run it is the only way by which we can retain democracy. Are we honest in our aim and claims for our form of government? If so, let's be honest with ourselves and set ourselves squarely at the task of accomplishing our aim. At the present we are dangerously far away from it." Small in Voc. Ed. Mag. (II, p.613).

Place of Education as Economic Asset

Prosser and Allen (1925) have this to say regarding the place of education as an economic asset to society, "Education . . . must be relied upon to secure ability and progress in a democracy. All education contributes to this conservation. Education must be adapted and differentiated to meet a wide diversity of human needs and human problems, each contributing in a special way to the general objectives. It remains to consider Vocational Education as a special form of education and its relation to the development of the material and human assets of the people and its relation to the well-being of a democracy. Vocational Education functions in any forward looking program of democracy in at least two ways: First, it conserves natural resources; and second, it conserves human resources. It conserves material resources by promoting, disseminating and transmitting skill, knowledge and the results of

invention and by conserving human efforts. It conserves human resources not only by conserving human efforts but by promoting morale and intelligence."

Economic Value of Vocational Education

In support of the economic value of Vocational Education we turn to hearings before Congress on the original Smith-Hughes Vocational Education Act. In Industrial Education Magazine, (XXIX, p.7), former Secretary of Commerce Redfield is quoted as having said at those hearings, "We have a great public school system which we are proud to call universal education and to which we look to train our youth in which we have great pride and with justice at which we spend I presume as much as on any other single subject; at least we are glad that is so, but we have just come within a few years to the knowledge of a great gap, to the knowledge of a great want. . . . Shall we turn our children out today in the busy world untaught? It seems to me as if the social and industrial millennium would come all at once if we could take the population of any town and say 'Every boy and girl in this town knows how to do some simple kind of work well, fairly well'. . . . There are two classes of boys as I understand it that will want this Vocational Education. One is the boy who is not entered on the field of trade. That boy has

selected his calling and he wishes to enter the school for the purpose of equipping himself with a chosen occupation. The other boy is the boy who has worked in the shop and he has seen his deficiencies and, therefore, he desires to perfect them. . . . I think you ought to put a boy of twenty years where he can earn as much on the average as he can now earn at thirty."

Trained Intelligence Conserves Resources

The Honorable Mr. Hughes, co-author of the Smith-Hughes Vocational Education Act, is quoted in Industrial Education Magazine (XXIX, p.9), as having said in the House of Representatives on July 29, 1916: "Despite the fact that the average intelligence is very high here, in this country perhaps higher than elsewhere in the world, we have begun to lower it, because our present system of universal education takes insufficient heed of the youth who goes to work. Only trained intelligence can conserve our mines, our forests, and our water powers. Only trained intelligence can restore to our depleted land its old fertility. Only trained intelligence can make it possible for us to maintain our higher standard of living for workers, and yet successfully compete with the workshops in lands where lower standards prevail. The greatest resource of any nation is the undeveloped skill and vocational possibilities

of its population. Vocational training is especially needed to prevent waste of human labor which is the most destructive form of extravagance of which a nation can be guilty. Vocational education is a wise business investment. It is recognized that boys and girls cannot be valued in terms of dollars and cents save as these represent returns in social well-being both to themselves and to society."

Building Citizens

Also, Honorable S.D. Fess is quoted in Industrial Education Magazine (XXIX, p.9), as having said in the House of Representatives on December 11, 1916: "There came to my desk last week a pamphlet entitled, "Rebuilding Men." It was claimed by the writer to be one of the greatest movements that the present day knows. While I concede that to reclaim men is important, it seems to me that the building of men is of vaster importance than the rebuilding and, therefore, any legislation that would take up the view of the building up of our youth into the future citizen of the nation is as important a piece of work as can be done by this or any other body. One of the most startling statements that the Commission on Vocational Education, appointed by the Sixty-Third Congress, made was that eighty-five per cent of all the children that enter the public

schools of the country leave the schools before they reach the age of sixteen; that not over eight per cent of those who enter the high school ever get through and take the diploma; that not over three per cent of those who graduate in the high school ever enter the college or the university. As you go through the country you notice the finest buildings in a city are those devoted to education, and yet so small a proportion of our school population ever goes through them. There is a growing conviction that is well defined in the public mind that we ought to do something beyond what we have done for the ninety-three per cent who leave the schools before they reach the college grade."

Skill Plus Raw Material Equals Wealth

We quote Theodore Roosevelt's educational creed from Prosser and Allen (1925). "I believe in the free public training of both the hands and the mind of every child born of woman. I believe that by the right training of men we add to the wealth of the world. All wealth is the creation of man and he creates it only in proportion to the trained uses of the community; and the more men we train the more wealth everyone may create."

Again we quote from Prosser and Allen (1925).

"Against the theory of training for leisure only, the greatest of our presidents, Lincoln, struck a blow in his

attack on what he called the 'mudsill theory of education'- the theory which 'assumed that labor and education are incompatible and any practicable combination of them impossible.' Lincoln's educational philosophy summarized from an address made two years before his inauguration is the philosophy underlying the whole movement for vocational education today: 'Educated people must labor. Otherwise, education itself would become a positive and intolerable evil. No country can sustain in idleness more than a small percentage of its numbers. The great majority must labor at something productive. From these premises the problem springs: How can labor and education be the most satisfactorily combined?'"

CORRESPONDENCE SCHOOLS

The fact that so many millions of dollars are spent each year by wage earners for enrollment in correspondence schools would seem to indicate that there is a real justification for the expenditure of public funds for the training of workers in Trade and Industrial pursuits.

According to Wright, Voc. Ed. Mag. (I, p.172), "Approximately one-fifth of our total population is going to school all the time, the number being well in excess of 21,000,000 for the ages of 5 to 20 years and in addition some 350,000 adults 21 years of age and over are attending

school. Very largely, however, this enrollment is one of boys and girls in the ages of 5 to 18 years who are in attendance upon elementary and secondary schools and is of course very largely an enrollment of our free public schools. . . .

"It may be well to note further that at any given time there are some 1,500,000 pupils in attendance upon private elementary schools; 150,000 in attendance upon elementary schools; 150,000 in attendance upon private high schools and academies; and an additional 300,000 in attendance upon private commercial and business schools. . . .

"What they want may not be in every case what would be best for them to have, and it does not at all follow that, in every case, the public school should provide the sort of education that is put on sale by the private schools and is being bought and paid for - \$100,000,000 worth of it every year - by the parents of some 2,000,000 boys and girls of all ages. Nevertheless the fact that there is something in the way of elementary and secondary education, considered to be worth \$100,000,000 a year, and preferred in that amount to the free education of our public schools is significant, and it certainly may not be safely assumed that these parents are being buncoed to the tune of a hundred million a year, or that they have entirely false notions of education which the public schools may safely ignore.

"In general present conditions as regards elementary and secondary education throughout the country appear to be that over 2,000,000 boys and girls in the ages 6 to 13 are not attending any sort of school whatever, and an additional 2,000,000 of different ages, who are attending school are buying the education which they want and paying \$100,000,000 a year for it because that sort of education is not provided for them in the public schools to the support of which they contribute their due share along with other citizens. . . ."

Correspondence School the Refuge for Workers

The correspondence school has been the refuge, the beacon light toward which groping workers have turned for help in improving themselves in their trade. It is the intention of this study to point the need for Vocational Education and to justify the expenditure of public funds for its support and not to attack the correspondence school which has been the only help within the reach of workers. We quote again, however, from Prosser and Allen (1925) concerning the correspondence school. "We are strongly of the opinion that, for the most people at least, the instruction by mail can never take the place as effectively as the teacher and the classroom. Nevertheless, unable to get the help they need for their work in their ambition,

millions of American workmen have turned to the correspondence school for assistance. The figures are startling. For a period of the first thirty years of its existence which closed only recently, one correspondence school alone reports a total business of \$175,000,000, virtually all of which represents tuition fees from individual students in Vocational Education instruction, most of it for the occupations and pursuits in which they were already engaged. This huge sum would maintain a typical American University for about forty years, two of them for at least one generation and twenty of them for at least one legislative biennium, yet all this money was paid out of the pockets of ambitious struggling wage earners; the class least able to meet the burden for training due them by public system of education that boasts of being democratic.

"In the year 1923 alone three correspondence schools collected a total of more than \$25,000,000 in tuition fees. Assuming an average payment of forty dollars by each student enrolled, which is a liberal estimate because of the great mortality in this kind of education, these three schools enrolled in the one year alone more than 600,000 students; a group almost as large as the total number of students registered that year in all our higher institutions of learning."

The Two Roads - Professions, Trades

Based upon their experience and observation of conditions throughout the United States with respect to the amount of money spent for educational institutions of higher learning and the relatively small amount of public funds spent for Vocational Education, Lapp and Mote (1915) have made the following observation: "It is wrong to pave the road to professions and leave the right of way to other useful occupations unsurveyed. To do so sets a false standard. The stamp of approval is put on professional work and the other is negatively disapproved as an object of worthy ambition.

"As a result, the professions become over crowded with mediocre men and the skilled trades and occupations with poorly trained men; and great armies of unskilled workers fill the ranks of the unemployed and unfortunately often unemployable. Under these conditions standards are lowered, industry and business languish, governments are corrupted, social unrest is everywhere found and a vicious form of education is the direct result.

"It is one of the anomalies of democracy that that which concerns 90% of the people should be sacrificed to that which concerns 10%. The greatest good to the greatest

number is not thus attained, yet colleges preceded primary schools in this country and received legislative sanction and liberal aid from the state long before free public schools were provided. Thomas Jefferson outlined a system of universal education including free common schools, secondary schools and colleges; but the only part of the plan which was adopted was the latter - the University of Virginia."

Where Kansas Places the Emphasis

We have always stoutly maintained that there should not be any less of public funds spent upon our state institutions of higher learning for we sincerely believe they should be liberally supported. We quote figures, however, to emphasize the difference between the way college education is supported and Vocational Education is supported in Kansas. These figures are taken from "Kansas Facts" (1928) and from the 1920 census:

For our state educational institutions for the fiscal year ending June 30, 1927, the expenditures were	\$6,145,794
The number of students on campus of all state schools was	10,254
The number of students served by corres- pondence from all state schools was	16,112
Appropriation for Vocational Education for the same period from both State and Federal funds was	\$236,824

Number of people in Kansas, ages 16 to
24 inclusive (estimated) 284,353

Considering only those students who are on the campus of our state educational institutions, we are spending upon them for maintenance of the institutions slightly less than \$600 per student per year. The total number of people between the ages 16 and 24 who are not reached by our state educational institutions through either campus or correspondence service is slightly more than a quarter of a million, 257,987. (Estimated from college attendance and census figures).

If every member of the group between the ages of 16 and 24 not served by the institution of higher learning were to participate in the benefits of the Vocational Education appropriation, it would not be possible to expend upon them in excess of ninety-two cents per person. This ninety-two cents contrasted with \$600 expended by state educational institutions is a Kansas comment on the proposition of paving the road to professions and leaving the road to industry unsurveyed.

It is safe to assume that a large per cent of those 257,987 persons between the ages of 16 and 24 are making their contributions to the wealth of Kansas and thereby supporting all education, including the institutions of higher learning.

Conclusions

First, correspondence schools are at present the workers only source of technical training. Second, this training is paid for by those who are perhaps least able to pay for it while at the same time they create wealth which makes all education possible.

We are indebted to Cushman (Conference Report 1926)* for a further summary to the foregoing discussion:

1. Education at public expense is possible only if there is a surplus of wealth.
2. Any surplus of wealth is due to the application of knowledge and skill to the natural resources of the country.
3. Any surplus of wealth is due to the amount of knowledge and skill that goes to do work.
4. The training to do this work is Vocational Education whether it is organized or unorganized, recognized or unrecognized, systematic or blundering.
5. It is only through Vocational Education that we get enough people to do the work of the world, to provide the surplus of wealth, and to support public education.
6. The main objective of organized Vocational Education is to increase the efficiency in equipping people to do the work of the world.

*Conference held at Kansas State Teachers College, Pittsburg, July, 1926.

ORGANIZED VS. UNORGANIZED VOCATIONAL EDUCATION

To quote again from Prosser and Allen (1925), "It may be said that in the professional field the pick-up method has been practically abolished while it still remains the Vocational Education training device for the great mass of workers."

The pick-up method is termed by some vocational educators as followership. That is to quote again from the report of the National Association of State Directors of Vocational Education (1928). "In early times young workers acquired the skills and knowledge of a given vocation by watching, imitating and copying fathers, mothers and other elders; that is, they were trained by methods of followership. For complicated and secret vocations followership methods were in time superseded by the regularized apprenticeship method. When certain vocations became still more exacting as in medicine, war leadership, painting and engineering, apprenticeship methods gave way to vocational training schools which at first usually supplemented apprenticeship but in time took over both training in skills and in technical knowledge. . . ."

Ninety Per Cent Present Day Workers Trained
by Pick-up Method

Snedden (1920) makes the following observation regarding the relative efficiency of organized versus unorganized Vocational Education: "It should be made clear that probably some five or six per cent of America's present day adult workers receive significant parts of their vocational preparation in specific vocational schools and that probably some six per cent have arrived through an efficient system of apprenticeship. It follows that nearly ninety per cent have come to be what they are, good workers or bad, proud of their achievements or ashamed of them, through pick-up method - the most wasteful of all schools, if that good word can be applied to a method so educationally purposeless."

Eaton (1926) has analyzed the relative merits of organized versus unorganized Vocational Education and has used the terms "informal education" which he characterizes as "incidental learning," and "formal education" as directed learning. We use the following illustration to clarify the issue: "The important product of a millinery shop is hats. The by-products of employment in that shop for girls may be an attitude favorable to making hats, a knowledge of standard of taste and construction in hats, skill

in finishing hats, and so on. In a millinery school the most important product is girls who can make hats and enjoy making them. The hats are mere by-products. The first is an economic institution and most of the learning that is acquired is incidental, the second is an educational institution and most of the learning acquired in it is educational. But in process education is more economical than incidental learning. It insures that he shall learn in less time and in more compact manner than he is likely to do by incidental and accidental experience through months or years and scatteringly. It should insure that his mode of learning will be direct and not wasteful. In short, education is more economical than incidental learning because it is elective as to what shall be learned, when it shall be learned, where it shall be learned and how it shall be learned. It has been well said that education is a short cut to valuable products of life's experience."

Organized Instruction Adds to Man's Productive Life

Quoting again from Redfield, Ind. Ed. Mag. (XXIX, p.8), "Out of that process if it is applied with care, I think you ought to add ten years to the earning life of a mechanic. I think you ought to put a boy of 20 years where he can earn as much on the average as he can now earn at 30; I think that is one of the great things that has an enormous

social effect. Consider its effect socially. Suppose we do put a young fellow of 21 to earning with reasonable certitude a man's wage. When that fellow is 25 or 26 he is in position to marry and get his own home with all that implies for the community and the development of home. . ."

Conclusion

When a group of workers are assembled for educational purposes, their objective is "education" and not "production". It has been repeatedly demonstrated that much of the technical information can be taught much more quickly by a skillful instructor to a group than workers can learn the same material individually from unskilled teacher, foreman or fellow workers.

It is this saving of time and expansion of the productive period of a man's life which makes organized Vocational Education of much greater economic value than unorganized Vocational Education.

NO CONFLICT BETWEEN VOCATIONAL EDUCATION AND ACADEMIC EDUCATION

It is our purpose in this study to develop the idea that there is no conflict between Vocational Education and Academic Education. Unfortunately there seems to be a lack of agreement among educators regarding terms applied

to what we choose to call Academic Education. Some speak of it as "general education;" some as "liberal education" and some as "cultural education." For clearness of thinking in this discussion, we shall use the terms Vocational Education and Academic Education. Snedden in discussing the relationship between Vocational Education and Academic Education said, "We shall learn that good schools for the respective species of Vocational Education are not the rival of good schools for liberal education (academic education) but they are very desirable and necessary complements. . . . that together they contribute to the rounded education but that alone they give only one side of education."

Following the same line of thought, Lapp and Mote (1915) discuss the situation in this way, "It is difficult to draw the line sharply between a school for general education and a school for vocational education because what might be general education for one person might be vocational preparation for another. Thus, the ordinary college course is usually counted as general education while to many it is vocational preparation for teaching, public service work, and many unclassified callings.

"Likewise a high school education while general to nearly all the students is vocational to a small majority. Both in college and high school the same training may be to

one person preparation to enter a professional school while to another it may be the preparation for actual work."

Leavitt (1912) gives voice to the same thought in this language, "The movement for Vocational Industrial Education frankly recognizes that all cannot have and do not need the same education. It takes cognizance of the enormous increase in the sum total of human knowledge and art which the last century has brought and the ever increasing gap which separates the sum total from the capacity of the most receptive and most assiduous students."

The primitive man was able in a short time to assimilate all the human knowledge available to him. Gradually the situation has changed until at present the sum total of human knowledge is so tremendous that not even the greatest minds can make a fairly respectable start toward acquiring all of the information there is in the complex society in which we live, and prepare for the corresponding demand for service in widely differing fields. It is necessary that educational content be broken up into specialized units for the use of individuals who wish to enter widely differing fields of activity.

Returning to Lapp and Mote (1915) for further discussion of the relationship between Vocational Education and Academic Education we read: "Universal education seeks to make progress possible for all people through articulation

of knowledge with the vocational work in which they engage. The knowledge imparted will be simple or complex - to meet the needs of the unskilled workers, the skilled artisan, a trained business or professional man; to realize the ideal of analysis of the occupations of men without prejudice to the humblest job in which the crudest intellects and most unskilled hands labor."

In discussing relationships between Vocational and Academic Education, Prosser and Allen (1925) have this to say, "Education is a result of experiences whereby we become more or less able to adjust ourselves to the demands of the particular form of society in which we live and work. . . . Man has learned something of how to organize himself in a social group so that cooperative effort may accomplish what the isolated individual cannot do along. And he has learned how to work! All this mass of past human experiences must be in some way transmitted from generation to generation, and this transmitting process by whatever agencies it may be conducted is the educational process that has gone on since the dawn of history. . . . Vocational Education becomes that part of the experiences of any individual whereby he learns successfully to carry on any gainful occupation."

We return once more to Lapp and Mote (1915) for a discussion of the need for closer cooperation between the

forces that would educate for use and those that would educate only for education's sake. "There has been too wide a separation between education and practice. Men have gone on accumulating knowledge, scientists and thinkers have been producing new knowledge and yet the workers on the other side have done their work without the application of knowledge which would have meant so much to them. Knowledge and work have each been kept in sealed packages to the hurt of the latter and the uselessness of the former. So learn that you may do and so do that you may learn should be the ideal of universal education in the process of adjusting man to his environment. Universal education recognizes that education is as much for men who are doing things as for those who are thinking about things."

Academic education is quite as necessary as vocational education. In fact there can be no separation. It is academic education that has worked out the great wealth of scientific principles applicable to industry; but it is vocational education which will put the scientific principles into the hands of the men who are actually doing the work of the world.

Lapp and Mote (1915) continue: "Enough knowledge is already stored up to revolutionize the practical world if it would only be brought into action. Enough scientific knowledge of agriculture is in printed form to make two

blades of grass grow where only one grows now if it were effectively put to work. Enough of industrial science has been accumulated to bring a new area of efficiency if a channel could be opened to conduct it to the right workers in the office and shop. Enough science and art stand ready to improve the millions of homes in the land if the home makers were given the opportunity to get and were taught to practice that part which is useful to them.

Conclusion

To summarize the foregoing discussion, we take the position that academic education alone is not education, nor is vocational education alone education; but that it is to the interest of society to see to it that proper combination of these two is provided for the use of our state and nation.

VOCATIONAL EDUCATION PROGRAM SHOULD CONSIDER ALL MAJOR OCCUPATIONS

If we attempt to provide training for the workers in all major occupations in the state, it will be necessary first to determine what the major occupations are and the number of men employed in them.

The following table indicates the major occupations with the numbers:

Table VIII. - Figures on Manufacturing in Kansas

Slaughtering and Packing	17,805
Car and Railroad Shop Men	11,196
Flour and Grist Mills	3,493
Newspapers and Periodicals	3,414
Petroleum and Refining	2,221
Machinists	1,520
Bread and Baking	1,307
Brick, Clay Products and Tile	1,136
Cement	1,084
Salt	1,072
Auto Repair	870
Ice Manufacturing	822
Smelting and Refining Zinc	717
Butter	740
Foundry Workers	663
Printing, Job and Book	624
Candy and Ice Cream	584
Structural Steel Fabrication	536
Furniture	503
Men's Clothing	487
Lumber and Planing Mill Products	436
Carpenters	13,124
Brick and Stone Masons	1,540

Electricians	2,166
Painters and Paper Hangers	4,157
Plasterers and Cement Workers	1,004
Plumbers and Steam Fitters	2,263
Sheet Metal Workers	900

The figures for the above table were compiled from the 1920 Census Report and there would, of course, be some discrepancy between these figures and figures compiled to-day. This is particularly true in the case of automobile repairmen. There are probably three times as many men employed in automobile repair as there were in 1920.

Table VIII gives the number of men and women actually employed in the occupation indicated. This represents the field for evening trade classes, the nature of which is to improve these people in their present job.

In addition to providing advanced training for these people who are already employed, it is also the business of education to provide for suitable training for the boys and girls who are coming through our public school system and will in a short time take the places of these men and women who are now in industry.

Referring again to Table I it is evident how widely scattered the people are who are listed in Table VIII. Almost anyone who examines the situation carefully will be convinced of the fact that offering vocational training to

young people interested in the trades should become a matter of state concern and the unit of administration of such schools should be enlarged.

A few paragraphs from Snedden, Voc. Ed. Mag. (I, p.81) will illustrate this point forcibly. ". . . sound public policy now requires that the interests and needs of all the people in vocational education and not merely those of a few progressive cities, should be considered. Not many years ago, public high schools were provided only by rich and ambitious cities. But now, in nearly all states, all areas belong somewhere in the scheme of high school administration and support. Though there have been state normal schools since the first venture initiated by Horace Mann, most of the larger cities for decades supported municipal normal schools for local service only. Now most of these have become state institutions. Ultimately the same condition must prevail with reference to vocational education of each well-defined kind.

"The opportunities of schools of printing, or stenography, or shoe salesmanship, or coal mining must be open to all properly eligible persons in the state, even though administratively it prove feasible to maintain only one such school in the state, as it now proves feasible usually to maintain only one college of agriculture or state liberal arts college.

"Outside the large cities we may well find it utterly impracticable to employ local areas for the administration of the less common forms of vocational education. Each town or "rurban" (rural and urban) region can, of course, have its own school of home making. Any valley of 500 to 1,000 farm families can profitably maintain a small day agricultural school. Every commercial city or county seat of 10,000 population can probably afford a school of stenography.

"But what of schools of barbering, printing, shoe repair, automobile repair, cooking, green grocery salesmanship, multigraph operation, and bricklaying? Will not these have to be distributed on much the same basis as are now schools of pharmacy, dentistry, tractor driving, public speaking, horology, and undertaking? All such schools, to be of optimum size, must draw from large areas - sometimes, possibly, from several states. . . ."

Snedden (1920) has this to say in connection with this point, "We hear school superintendents asking what kind of vocational school should be provided in the small towns. The youth seeking the vocational school will have to go to the mountains. In such trades as plumbing, electrical work, pattern making, printing, house carpentry, poultry raising, optometry, and automobile repair it is probable that in no state can there be provided more than a few

centrally located school. . . . Youths from rural areas or in cities where these industries are not found will simply have to leave home to get their desired vocational education in them."

Conclusion

The Census Reports list more than three thousand recognized occupations in the industrial field alone. Even the most optimistic will not venture to say how soon public education will assume the responsibility for training in all these occupations; for some of them are of course highly specialized. The best that anyone can hope for in the reasonably near future is that training may be provided for those occupations in which the greatest numbers of our young people will engage.

VOCATIONAL EDUCATION PROGRAM SHOULD INCLUDE TRAINING
IN NOT ONLY MANUAL SKILLS BUT RELATED, SOCIAL
AND AVOCATIONAL SUBJECTS AS WELL

The National Association of State Directors of Vocational Education through its committee on Principles and Policies for Advancing Vocational Education in the United States (1928) takes the following position as to what a course in Vocational Education should include:

"The program of Vocational Education should provide a training for complete adjustment to occupational demands

including in addition to manual skills, training in related and technical subjects such as will develop occupational judgment and morale. Both social and Vocational Education subjects should be included in the vocational education program for secondary school age pupils."

The relationship that should exist between manual skills and technical and other knowledge in any given situation is well expressed in what is commonly known in Vocational Education literature as "Richard's Formula." Prosser and Allen (1920) refer to it as follows: ". . . $E=M+T+I+J$. This is simply the shorthand expression for the statement that efficiency on the job varies or depends upon the possession of the necessary manipulative skill, the possession of the necessary functioning technical knowledge and the possession of the intelligence which enables the individual to apply that technical knowledge to the problems of the job. . . . "J" indicates job judgment. . . ."

These factors are analyzed and well expressed in Table IX.

Table IX. - Essential Assets of a Vocational Program*

M = Manipulative Skill

Factor	Objective	General Procedure	Organization of instruction	Success factors	Utility of job sheets, etc.
		1. Exercises alone.	Formal course. Standard instruction. Product of no value.	Not recommended or indorsed by the group.	Standardized sheets regardless of special name - 100%.
		2. Practice jobs.	Formal course. Standardized instruction. Product might be used but is not.	Interest of the learner. Practical working conditions secured. Adaptation to age and experience of learner.	Job sheets would have to be specially prepared for each job to be used.
M	Manipulative skill on the job.	3. Practical production work.	No formal course. Instruction adapted to jobs as they come along. Product is used.	Degree to which instructor is able to manage his shop so that learners get progressive experience and instruction.	Job sheets would have to be written to fit jobs as they came up.
		4. Exercises and practice jobs.	Formal course modified to secure more interest than could be expected by exercises alone.	Same as No. 2 above with occasional exercise to save time.	
		5. Exercises and production.	Minimum use of exercises to save time and materials in special situations. Production work whenever possible.	Ability of instructor to use an exercise only where such use is the obvious and common procedure.	

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T = Technical Knowledge

Factor	Objective	General Procedure	Essential Characteristics
		1. Handled on the job intentionally	Shop instructor takes necessary time to put over related "T" on the job.
T	Practical working command of trade technical content which is necessary to do a job intelligently.	2. Handled on the job informally.	Shop instructor does not fully appreciate the fact that he does actually put over "T" on the job.
		3. Handled in classroom by shop instructor.	Shop instructor has "T" material organized. "T" is closely tied up with the shop work.
	Mathematics, Science, Drawing, Art (if any).	4. Handled in classroom by related subjects instructor.	Text book or mimeographed notes used. Close tie-up with shop unlikely.
	Related information.	5. Pseudo handling in regular high school class.	Pupil gets high school algebra, physics, etc. No tie-up with shop. General education only.

I = Excess Technical Knowledge

J = Job Judgment

Factor	Objective	Content	Factor	Objective
		Principles of mathematics, physics, chemistry, mechanics, etc.		1. Initiative in job planning.
I	Excess technical knowledge. More than he needs to barely get along. Aids in generalization of "T".	Tricks of the trade.	J	2. Resourcefulness on the job under conditions which are not standard.
				3. Mechanical ingenuity. New combination of things already known.
	1. Occupational pride.			4. Inventiveness.
	2. Job pride.			
	3. Human relations in line of duty (getting along with people, superiors, associates and subordinates)			
	4. Social relations not in line of duty. Industrial groups and social groups.			

*From report of conference conducted by Mr. Frank Cushman at Kansas State Teachers College, Pittsburg, July, 1926.

An instance of where this formula, $E=M+T+I+J$, has been put into operation is the Henry Ford Trade School which enrolls 1,800 boys and which incidentally has a continuous waiting list of more than 4,000 boys. All factors of efficiency are given consideration. This trade school has the unqualified endorsement of practically all vocational educators who are familiar with it. It is perhaps the purest type of Vocational Trade Education to be found in any school in the country. Its program of work is set up on the basis of two weeks in the shop and one week in academic study. The school is set up on the eight hour day basis, the same as regular work days. During the academic week the boys attend class work only. The entire work includes English, mechanical drawing, civics, auto mechanics, commercial geography, arithmetic, algebra, geometry, trigonometry, physics, chemistry, qualitative analysis, quantitative analysis, metallurgy, metallography, shop theory; and boys who wish to attend college take history and foreign language in some other school.

Two Causes for Concern

There are two dangers that threaten the effectiveness of the program of Vocational Education. One of these is pointed out by Lapp and Mote (1915) in this paragraph, "Vocational schools are designed to prepare all around

workers and not specialized automatons. It is because industry has failed to do this that the necessity for vocational schools arises."

The second danger to which we would direct your attention is pointed out by Snedden (1920) in this paragraph, "Frequently vocational school teachers will say almost boastingly that it is not their province to train workers, engineers . . . theirs is the responsibility only of instructing in principles, science or the art of the vocation."

Conclusion

Our position and the position of most vocational educators on this point is that the factors involved in the Richard's formula given above should be included in training program in their proper proportion. Not only manual skills should be emphasized but it should be remembered that man must both live and earn a living. His training, therefore, must include such content as is necessary for him to live a full and complete life. In other words, vocational educators subscribe to the cardinal principles of education as developed by the National Education Association, Bulletin 35.

CONTENT OF COURSES AND STANDARDS OF TRAINING GOVERNED
BY BEST PRACTICES IN LOCAL INDUSTRIES AND NEVER
OF LOWER STANDARDS

No other factor influences a school of any kind to the same extent that its teacher does. It is, therefore, important that teachers for vocational schools be selected with reference to their vocational experience. Commenting upon this phase of vocational education, Snedden (1920) says, "Vocational schools must be taught by persons whose first qualification is to be found in their mastery of craft and who have somewhere added to this same mastery the art of directing learners and of imparting knowledge. . . . Teachers of printing must first have been printers; of plumbing, plumbers; farming, farmers; of jewelry design, jewelry workers; and so through the long list of vocations for which practical school training is now an admitted possibility."

Relationship Between School and Practice

Commenting upon the relationship which should exist between training courses in vocational schools and actual practices in the industries, Lapp and Mote say, "Education in its true sense, as well as training for skill, is the end and aim of vocational schools in professions, trades

and occupations.

"Vocational schools are designed to train men and women to do definite things. They must, therefore, be practical. By their results men expect to earn their daily bread. The knowledge and skill which they give are put at once to the acid test of actual work.

"To train workers to actual work the vocational school should have the equipment to enable its students to perform the work which they must do in their profession, trade or calling, and to perform it under as nearly trade conditions as possible. This requirement is the first essential of a vocational school.

"To the degree that it is not met, the school produces theorists instead of skilled workers. Many have professed to see in this requirement the fatal weakness of vocational schools because of the expense of equipment and the difficulty of putting the work on a commercial basis and the problem of disposal of the product. Doubtless in many vocations these difficulties are very great. In some perhaps insurmountable, except by cooperation with shops, offices and industries; but these difficulties must be studied and overcome in the best manner possible. If this difficulty is properly adjusted to his needs, the transition from the work of the school to the work of the world is easy. He is doing real work before leaving school and

it is becoming merely a matter of emphasis whether the school or the world predominates."

Conclusion

To give young people training in a play shop or in a school shop which is far inferior to actual industrial conditions is to do them an actual injustice; for when they enter industry from such so-called training, they are not only subject to ridicule themselves but bring their school in for ridicule and find it necessary to actually unlearn some of the things they have been taught in school before they can begin learning as industry demands of them. Such so-called training is an actual waste of the time students give to it. Unless the school is situated in such a way that it can set up conditions very closely approximating those in the industry, then a cooperative arrangement between the school and industry whereby industrial equipment may be used is perhaps the only solution. The difficulty of setting up actual trade conditions under which to give young people training in the trade could be to a large degree overcome by setting up day schools in some of the larger centers but with a larger administrative unit than is represented by most of our communities.

THE KINDS OF COURSES AND CLASSES AS WELL AS METHODS
SHOULD BE GOVERNED BY NEEDS OF WORKERS

We return to our accepted definition for Vocational Education in the beginning of this study, "Vocational Education is any form of education of less than college grade whether given in a school or cooperatively with industry, the purpose of which is to fit any individual to pursue effectively and happily a recognized profitable employment." We proceed directly into the thought that any program of Vocational Education should be set up on the service basis. We mean by this that Vocational Education courses should be set up and administered in such a way as to meet the educational needs of a given group in any and all situations.

Prosser and Allen (1925) have stated this principle well by saying, "Vocational Education will render efficient social service in proportion as it meets the specific training needs of any group at the time that they need it and in such a way that they can most effectively profit by the instruction. This means of course that very often it will be necessary to offer instruction to a small group and for a short period only and it practically precludes the possibility of offering vocational instruction at any time to large groups, for it is unthinkable that under any circumstance any considerable number of workers will be

concerned with exactly the same problem at the same time."

A Typical Job

Take for instance the job of teaching sign reading to a group of workers in the building trade. The aim in the case of each individual is eventually the same. They need the ability to interpret and work from a set of building plans. In this group may be carpenters, plumbers, electricians and sheet metal men. The carpenter is interested in this plan from the standpoint of taking off quantities of lumber and doing the wood construction for the building. The plumber is interested in this set of plans from the standpoint of locating soil stacks, sewer connection, gas connection, water connection and installing plumbing fixtures. The electrician is interested in this set of plans only from the standpoint of locating outlets and running electrical circuits. The sheet metal man is interested from the standpoint of installing gutters and down spouts, location and installation of hot air ducts, cold air intakes and location of furnace. It is, therefore, evident that no two of these men can profit by the same sort of instruction and it becomes obvious that if their needs are to be met they must either be in separate classes or receive individual instruction.

In discussing this same thought, Prosser and Allen

(1925) give the illustration of the experience through which the country has gone with respect to the teaching of mathematics; mathematics being one of the first subjects to be offered in the evening school. "Not so long ago men believed that mathematics was mathematics for everybody. Hence, the standard course in general arithmetic, general algebra and general geometry, analytics and calculus should be given to everybody and could be used by everybody. Consequently the first evening classes in mathematics offered exactly the same courses found in day school. Workers did not attend because they could not understand or use knowledge so abstract and remote from their real needs.

"Recognizing this failure these courses were succeeded by others which we call practical mathematics or applied mathematics, in which an attempt was made to cull out a few subjects obviously beyond the ordinary worker but give him the remainder in the same way as before. When this failed a third attempt took the form of teaching the mathematics lying back of certain figuring processes found when taken as a whole in the trade and teaching these in the old way to mixed groups from all these trades.

"When failure again resulted mathematics was offered separately to each trade group as mathematics for machinists, mathematics for electricians, mathematics for carpenters; but each was still taught as one general course in the

evening school. To profit by it the student from the trade or occupation concerned must enter and take the full course. In many places the work was still too general and not applied in any direct way to real shop needs. Too often it was taught by men not familiar with shop processes or ways of calculating used by tradesmen. When this failed, there came the breaking up of mathematics for each trade or occupation into short unit courses; each bearing directly on specific needs of workers in the performance of specific tasks or operations such as, for example, the case of machinists. By arranging these units in series and duplicating them at times, it becomes possible for workers to get instruction in any one of them when he needs it. This . . . reaches actual needs as shown by the marked increase in enrollment and in persistence of attendance where evening trade courses are so organized."

Short Unit of Instruction

It is evident that to offer instruction in short unit courses as the need occurs for such instruction complicates the matter of administering vocational education classes. But the results obtained and the numbers reached compensate amply for the additional administrative work.

Anyone who is at all familiar with and active in the organization of the administration of vocational classes

will agree with Prosser and Allen (1925) when they say, "For every occupation there is a body of content which is peculiar to that occupation which practically has no functioning value in any other occupation." It is because of this fact that it becomes positively necessary to organize vocational teaching content in such units as find their immediate application in the work of the worker.

The term "short unit" may be confusing to some. The word "short" used in this connection is an elastic term and does not necessarily indicate the length of a unit of instruction. For the purpose of this study, a short unit of instruction is used to indicate the information and skill a person must have in order to accomplish a given piece of work.

Conclusion

Vocational Education for industrial workers must be provided when they need it, where they need it and by practical teachers capable of giving instruction which is immediately usable.

To illustrate: There are in operation now and will be throughout the summer two classes in Oxy-Acetylene Welding in the Kansas City Structural Steel Plant. Evening classes usually do not continue through the summer but owing to the fact that this company has an unusual contract

in building a bridge over the Grand Canyon in Arizona, they have need of trained welders throughout the summer. This is Vocational Education on the service basis. No deferred dividends; no hope of carry-over; no preparation for life; no theories; it is just helping workers learn to earn.

COOPERATION OF SCHOOL, HOME AND INDUSTRY NECESSARY
TO SUCCESS OF VOCATIONAL EDUCATION PROGRAM

Of the three commonly recognized training agencies; home, school and industry, the home has for several generations gradually been eliminated with the possible exception of agriculture and home making. Even in the case of these two, as the field of technical and scientific information grows, the home becomes less and less effective as a training agency. As the work of the world has left the home and gone into the factory, the boy has less and less opportunity of working beside his father at the bench and in this way learning his trade.

This shift of industry from the home to the shop has been occasioned by the improvement of machinery and the consequent specialization of industry. Father no longer owns his tools. The tool upon which he works may cost his employer more than the home in which father lives costs him. The home is almost entirely eliminated from the training situation, except that it still has an obligation

to encourage an attitude of work and stimulate the boy to a realization of his possibilities, and to instill in him a consciousness that every individual carries the responsibility of becoming an economic independent unit of society.

Another thing which renders it increasingly difficult for youth to gain any knowledge whatever of industry before entering upon it is the fact that industry has either voluntarily or involuntarily made it impossible for the boy to work along with his father in the factory.

The foregoing discussion is well illustrated and summed up for us by Eaton (1926) as follows: "In our cities are high school boys and girls who can tell no more about father's vocation than that he is a doctor or is in business, or works for Boom & Riley downtown. There are thousands who have never seen father at work and others who at best have had but a glimpse of him sitting in his overalls to receive the hot lunch they have brought him. On the factory gate is a sign 'No admittance except on business'. Industries do not open their doors so that any curious youth may observe and try his hand at the several processes. . . . The hives of industry are closed for the most part to him as observer and still more so as a participant. . . . He is kept out of the factory and the office, shooed away from the construction job, the railroad yard and most of the centers of productive activity. . . . What he learns

of the work of the world and of its workers is haphazard and exceedingly small. . . . In the rural village and the open country vocations are not so segregated as in the city but they are relatively few. Those that are most urban in type are the least accessible. Many vocations that might serve best for particular boys and girls are not represented at all."

Three Training Possibilities

Since the home is almost entirely eliminated from the training situation, there remain but three ways in which the job of training can be done. These three are mentioned by Prosser and Allen (1925) in the following statement:

"There are only three ways of getting vocational education; through the isolated school alone, through the job alone, and through some combination of school and job. Since we have touched upon the training on the job methods, let us consider it first. In practice, training on the job is of two kinds; namely, the pick-up method under the unorganized tutorship of the foreman; and the vestibule school type of training."

The vestibule school is rarely found among Kansas industries. An example of it is in the instruction school conducted by the Bell Telephone Company for training operators. Both types of training mentioned above are

expensive for the employer. The former type is wasteful of the time and effort of the learner; and the latter type is almost sure to be of a very highly specialized and narrow type of instruction. By its very nature it anticipates only the barest essentials.

At the other extreme of the situation is the self-contained school for Vocational Education. This school seeks no cooperation whatever with industry. The instructor may or may not be acceptable in the eyes of industry as far as experience is concerned. If practical work of any sort is done by the learner in the acquiring of the necessary skill, it is work for the school or the public school system. Where this type of school has been attempted, it has been found to be a very expensive type of education and limited to a small number of trades.

This plan unfortunately was started in the trade schools in the early days of the vocational movement and has persisted even to this day in some of the vocational courses given in our high schools.

Continuing from Prosser and Allen (1925), "Out of all these ventures the lineaments of a system of industrial education that is not but is to be are beginning to appear. When it comes it will be a cooperative, not an isolated plan, for in school and shop it will each find its definite field of service."

The Cooperative Plan

Under existing methods of rating vocational work, the cooperative part-time plan rates very high in efficiency. There are a number of variable factors which are difficult to rate, however, which in practice cut down or tend to cut down the efficiency of the plan. In every case local conditions will be the deciding factor as to just what extent of cooperation between industry and the school can be accomplished.

In considering a cooperative arrangement between school and industry there are all degrees of cooperation possible. In some cases a day trade school can secure the cooperation of industry in the selection of the instructor, in the furnishing of practical work from which skills may be developed and in securing of advice as to practical methods of instruction which will make the products of the school employable in industry and an attitude of giving a trade school trained youth a preference on employment.

A second and more complete type of cooperation is where industry sends her promising boys and young men into school for two or four hours each week to receive instruction in the technical and related information which industry is unable to teach effectively through their foremen.

This instruction by the way is often given in suitable school rooms at the plant or factory. This is not only an acknowledgment on the part of the industry that the school can do something for the youth that the industry is not equipped to do, but industry recognizes an obligation to the boys to see that they get this instruction. It also indicates that industry feels that it is entitled to educational service from the school in return for the large investment in education which it makes through taxation. Furthermore, industry is eager to avail itself of the service of expert educators in solving its training problems.

A third type of cooperation is where the industry is willing to loan or equip the shop in the school in order that the youth of the community may receive the necessary training in order that they may be employable in industry. This equipment of course is also available for evening classes of the workers from the industry.

A fourth type of cooperation is an arrangement whereby industry enables the public school to conduct day or evening or both types of training upon the equipment of industry in departments of the plant. This cooperation occasionally happens. Usually in such cases the foreman or some of his trusted men are employed by the school to act as the instructor. An example of this is the welding class conducted in the plant of the Kansas City Structural Steel

Company where equipment and instructors are furnished by the Company.

A still further type of cooperation is the cooperative or part-time instruction plan; sometimes known as the Cincinnati Plan. Under this plan, two platoons of learners alternate between class rooms and shop.

SUMMARY AND CONCLUSIONS

1. Because of the specialized nature of training necessary to meet the demands often made of a vocational program, instruction should be given to specially selected groups. Otherwise it becomes a matter of academic instruction rather than specific training.

2. Instructors must first be masters of their craft and in addition must be skilled in directing learners and imparting to others the information they have.

3. Administration of vocational program must be elastic enough to be adaptable to any training situation.

4. The content of training courses should be gathered from those who work in the trade and not from those who know and write about it.

5. Individual instruction should be provided and each individual should be permitted to progress as rapidly as possible.

6. All else being equal there is no other place where

training can be given equally as well as on the actual productive job; provided instruction and not production is the controlling purpose.

7. All instruction should be based on best prevailing industrial standards and never of lower standard.

8. Vocational training should be carried to the point where the trainee is able to capitalize his investment of time and society is able to realize on the investment made in him.

9. Vocational Education has no conflict with Academic Education. There is definite and well defined need for both.

10. Training should attempt to meet only the market demand for labor; whatever those demands may be.

11. Training should meet emergency needs of workers as well as furnish constant training for new workers.

12. For Kansas and similar states a larger unit of administration for trade schools, than local communities, should be provided. State trade schools will probably be the ultimate solution.

13. The skillful application of science to raw material produces wealth which supports all education. This skill is Vocational Education.

14. Even though the job of providing trade training in Kansas and similar states is a difficult one, no one should

be penalized because of the accident of his present condition.

15. Out of the whole attempt at building a program of Trade and Industrial Vocational Education in this country and Kansas, will come the development of a higher type of worker; a better understanding between worker and employer; a better understanding on the part of the worker, of his relationship to society; and a happier and more prosperous Kansas.

16. Even though the job of developing a program of Vocational Education in Trades and Industries in Kansas is expensive and difficult, it is worth the cost for the industries of the state constitute a considerable portion of her wealth which supports education.

17. Winning and holding the respect and support of industrial workers for our educational program is good business in that it gives them an opportunity to participate in it. Seldom does anyone severely or destructively criticize any institution in which he actively participates. To the extent that educators recognize and provide for meeting all the educational needs of their constituents it will be less difficult to secure funds with which to do the job.

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