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## On Vocational-Technical Education

by I. W. Arthur

THE NEED and opportunities for technically trained and qualified personnel is growing on both the national and international levels. And vocational-technical education is receiving increased attention in a number of states in the nation. There are several reasons. The main one is the current speed of technical change.

To meet the growing opportunities and needs for technically trained personnel, considerable attention is focusing on vocational-technical training of less than college grade.

First, what is this vocational-technical training we're talking about? It's necessary to make a distinction, here, between training in a craft or trade and the training of a technician. A technician needs to know "why" as well as "how." Technicians are called upon to use basic knowledge in science, mathematics and theory in addition to any necessary mechanical and manual skills. Much of the training in many crafts and trades, for example, is spent in gaining mechanical and manual skills. An electronics technician, on the other hand, spends most of his training period studying electrical theory, mathematics, science and circuits.

The purpose of this article—a situation report—is to present a broad outline and some examples of what's happening in vocational-technical education in different states.

Several types of programs are common in most of the states but aren't necessarily carried on at state expense.

*The apprenticeship and training system* supervised by the United States Department of Labor is available in all states. Not all states, however, are equally prepared or equipped to provide training in the "related subjects" that are considered an essential part of the program.

*Technical high schools* are located in most of the big cities of the United States. These aren't, however, a part of the general educational systems of the states. They're set up to serve only a portion of the students in a particular city's school district. Iowa, for instance, has only one technical high school, located in Des Moines.

*Vocational training programs* are offered in some of the high schools in all of the states. These include, among others, programs in agriculture, home economics, trade, industry and practical nursing. Some state and federal aid is available to a part of the high schools in each state for this training. Secretarial and office-procedure training is offered in most of the larger high schools. Industrial arts courses are also offered in secondary schools, but as general instruction rather than vocational.

*Informal on-the-job training*, of course, goes forward independently of public education. There are private trade schools and correspondence institutions available, too. Some of these private organizations do excellent jobs; some do not. But, in this article, we're reporting mainly on schools operated within or by the general educational systems of the various states.

Let's turn now to some of our immediately neighboring states to see what they're doing—in addition to the kinds of programs already mentioned—to provide trade and industrial training within their educational systems.

*Nebraska* operates the state-financed Nebraska Vocational Technical School at Milford. Young men are admitted from all over the state and a few from out

of the state. Eleven trades are taught by 32 instructors; there were 142 graduates in 1960. The courses generally last 2 years.

*South Dakota* has a division of its Southern Teachers College at Springfield which teaches eight trades.

*Minnesota* passed legislation in 1945 to permit and assist cooperating local school districts in developing area vocational schools serving more than one district. Eight cities and towns have since established such schools. These are Mankato (1947), Winona and St. Cloud (1948), Thief River Falls (1949), Duluth (1950), Austin (1951), St. Paul (1952) and Minneapolis (1955). State and federal funds and regulations are provided to assist these area schools with partial reimbursements for staff salaries.

All Minnesota residents between 16 and 21 years of age are eligible for training with no tuition charge. Nonresidents and persons over 21 must pay tuition. Area schools are established only after study of the need for them and local ability to provide buildings and equipment, and approval of the state board of education is required. Thirty-six trades and occupations are taught, including several for women. Evening classes are available for adults who want to upgrade themselves. Each area school has a supervisor who is responsible to the superintendent of schools in the district in which it's located.

*Wisconsin* was one of the early states to become active in vocational-technical training in local schools. A state board of industrial education was established in 1911 which required all cities of 5,000 or more to levy a ½-mill tax to support vocational training in high schools. Modifications were made in 1913 and again in 1917 to gain advantage of the Smith-Hughes Act. Requirements were that a local board be established to foster and maintain vocational schools for instruction in trade and industry, commerce, agriculture and household arts in part-time and full-time day and evening classes.

Of the 44 vocational schools operating day programs, 26 are

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presently offering post-high-school training in one or more fields. Some of these schools are relatively weak and poorly equipped, attended and financed, while others are very good. The Milwaukee vocational school, for example, reports an attendance of more than 700 and a comprehensive vocational-technical program carried on in 58 shops.

Early promoters of vocational education in Wisconsin insisted on a separate board for vocational and adult education. There has been competition and friction involving this board and the boards for the state colleges and the university. Some consolidation has taken place in the latter two groups. Wisconsin also maintains the Wisconsin Institute of Technology at Platteville and Stout State College at Menominee in addition to the eight state colleges.

Legislation was passed in 1957 providing for area vocational schools in areas with a population of 20,000 or more and a property valuation of at least 60 million dollars. Following a favorable local vote, such schools can be established by counties or municipalities in cooperation with and subject to the approval of the state board for vocational and adult education.

*Illinois* maintains a Vocational-Technical Institute at Southern Illinois University, Carbondale. This is the only state owned and operated institution of this type in Illinois, though there's a state aeronautical school at the University of Illinois at Urbana. Many cities in the state, however, maintain vocational-technical schools, and there are many private trade schools in the state. The school at Carbondale has experienced rapid growth. It's located in a depressed area of surplus population and has an enrollment of about 700 in 14 programs.

*Missouri* has no state owned and operated vocational-technical schools of less than college level. The Lead Belt Technical School, Bon Terre, and the St. Louis County Vocational School each are operated as a part of one school district. But adjacent school districts contract with these schools to send tuition students

for trade and technical training.

*Iowa* hasn't had a separate, noncollegiate vocational-technical school. The State University of Iowa at Iowa City provides non-collegiate training for practical nurses, for medical and dental technicians, and for linotype operators and pressmen. Iowa State University at Ames has provided certain noncollegiate training in agriculture and engineering for a number of years. A 2-year Technical Institute was established at Iowa State in the fall of 1960 to provide training for technicians in the fields of civil, mechanical and electrical engineering. Initial enrollment was 72, though expansion is possible depending on the demand for such training and available funds.

Vocational-technical training, thus, is being provided in a variety of forms even when our view is confined to the states immediately surrounding Iowa. Looking around to other parts of the country, we find still different plans and programs by which other states are providing non-collegiate vocational-technical training.

*California* has 63 junior colleges receiving state support. Most offer the first 2 years of general college work. Formal education may stop here, or the credits earned may be transferred to another college or university. Many of the junior colleges also offer vocational-technical courses geared to needs of local business and industry. In southern California, for example, a number of these junior colleges place heavy emphasis on the techniques and skills needed in the aircraft industry. A 4-percent sales tax is used to support the public educational programs in the state.

*Texas* and *New York* make extensive use of junior and community colleges to provide vocational-technical training as well as general education.

In the industrial northeast: *Connecticut* has spent more than 40 million dollars since World War II to establish vocational-technical schools. *Massachusetts* has long provided such training.

*Pennsylvania* State University has 16 branch schools operated

by its state extension division. *Pennsylvania* also has a state law permitting several towns to combine their school boards and districts to set up appropriate schools, including a vocational school, to serve the whole group. *Indiana* has five branch schools operated by the Purdue University Extension Service that offer junior college and vocational-technical courses.

*Florida* and several other states have school districts organized on a county-wide basis. The county may then offer vocational work in the general high school or set up separate facilities. Essex County, N. J., for example, has a vocational-technical high school for women located in Newark.

*Oklahoma* has a technicians' school operated by Oklahoma State University, Stillwater, and a separate trade school operated in an old army camp at Okmulgee. Technicians are given math and science courses at Stillwater. The trade school is located in the eastern part of the state where there is the greatest surplus of manpower.

Labor surpluses and the demand for vocational-technical training have increased in the South as cotton acreage has declined. *Louisiana* established 26 trade schools throughout the state—perhaps too many to finance satisfactorily. *Kentucky* has 13 vocational schools; three are state owned and operated, and 10 are operated by cooperating school districts. *Alabama* has six state-operated trade schools. *Georgia* has four. *North Carolina* has had three for some years and, in 1958, passed legislation authorizing 25 million dollars to establish a system of 18 trade and technical schools to serve most of the state.

Industrial expansion in many parts of the South has been rapid in recent years. Widespread support for trade and industrial schools has followed.

Though the pattern is by no means uniform, there is progress in the area of vocational-technical training. In a later article, we'll outline more specifically the facilities available—and the gaps that exist—for vocational-technical education in Iowa.