VOCATIONAL AND TECHNICAL EDUCATION IN VIRGINIA

PRESENT AND FUTURE NEEDS

REPORT OF THE

COMMISSION ON VOCATIONAL EDUCATION

to

THE GOVERNOR

and

THE GENERAL ASSEMBLY OF VIRGINIA

COMMONWEALTH OF VIRGINIA
Department of Purchases and Supply
RICHMOND
1963

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THE COMMISSION ON VOCATIONAL EDUCATION

TO

THE GOVERNOR AND THE GENERAL ASSEMBLY OF VIRGINIA

Richmond, Virginia, November 7, 1963

To:

HONORABLE A. S. HARRISON, JR., *Governor of Virginia*

and

THE GENERAL ASSEMBLY OF VIRGINIA

An immediate re-evaluation of vocational and technical education in Virginia has become urgent because of our changing economy, the rapid growth of technological knowledge and the increasing urbanization of our population.

The "explosion of knowledge" in the field of science and technology has had a tremendous impact on vocational and technical education. Automation and other advances have eliminated many jobs, changed many that remain, and created many new jobs.

The nature of jobs now available in Virginia business and industry demands a higher level of skills from more people than is now afforded by the available vocational and technical training.

In addition, if Virginia is to continue to attract new industry, the need for workers with new and advanced skills becomes even greater.

Conversely, more and more Virginians must have the necessary training to obtain employment and be able to advance in their chosen occupations. This will mean better paying jobs and rising standards of living for many Virginians.

These conditions—advanced skills, more knowledge and increased pay—are creating greater respect for the status and dignity of vocationally trained workers. There is a growing awareness that the new jobs created by technological development can lead to rewarding lifetime careers.

Accordingly, the General Assembly of Virginia, at its 1962 Regular Session, adopted House Joint Resolution No. 81, creating the Commission on Vocational Education, to make a study and offer recommendations for improving vocational and technical education in the publicly supported schools and at the post-high school level. The text of this resolution is as follows:

HOUSE JOINT RESOLUTION NO. 81

Creating a commission on vocational education in public high schools and terminal vocational education at the post-high school level.

Whereas, the quality and scope of vocational education has significant implications for business and industrial development in Virginia; and

Whereas, the need for skilled and semiskilled workers and the highly skilled technical workers is increasing; and

Whereas, the majority of high school graduates and those who drop out of high school before graduation seek employment immediately or pursue some type of post-high school technical training; and

Whereas, the report of the Commission on Public Education which was made to the Governor and General Assembly, emphasized the need for: vocational education to be placed within the reach of more people; new programs to be established and existing ones to be expanded in order to better prepare students now in school as well as to upgrade adults already in the labor force; now, therefore, be it

Resolved by the House of Delegates, the Senate concurring, That a Commission is hereby created to be known as the Commission on Vocational Education, to make a thorough study and offer recommendations for improving the program of vocational and technical education in the publicly supported schools of Virginia and at the post-high school level.

The Commission shall be composed of eleven members, of whom two shall be appointed by the President of the Senate from the membership of the Senate, three shall be appointed by the Speaker of the House of Delegates from the membership thereof, and six shall be appointed by the Governor including the following: (1) chairman or director of the State Council of Higher Education, (2) State Superintendent of Public Instruction, and (3) State Director of Vocational Education. The Governor shall appoint the Chairman of the Commission. All agencies of the State shall assist the Commission in furnishing information when requested so to do.

Because of the need for this review and evaluation, the Commission shall conclude its study and make its report to the Governor and General Assembly not later than July one, nineteen hundred sixty-three. The members of the Commission shall receive no compensation for their services but shall be paid their necessary expenses, for which, and for such secretarial and other assistance as the Commission may require, there is hereby appropriated from the contingent fund of the General Assembly the sum of twenty-five hundred dollars.

The following were appointed as members of the Commission: by the President of the Senate: Curry Carter, of Staunton, and Harold H. Purcell, of Louisa; by the Speaker of the House of Delegates: Howard P. Anderson, of Halifax; D. French Slaughter, Jr., of Culpeper; and W. Roy Smith, of Petersburg; and by the Governor: Lawrence A. Hill, Director, Danville Technical Institute, Danville; Mrs. Carolyn Moses Lusardi, Housewife and School Teacher, Brookneal; Dr. William H. McFarlane, Director, State Council of Higher Education, Richmond; George L. Sandvig, Director, Division of Vocational Education, State Department of Education, Richmond; Henry W. Tulloch, Manager of Employee and Community Relations, General Electric Company, Waynesboro; and Woodrow W. Wilkerson, Superintendent of Public Instruction, Richmond. (Prior to the conclusion of the study, Mr. Hill resigned from his position with Danville Technical

Institute, and entered into the employment of the Division of Vocational Education, State Department of Education.)

The Governor appointed W. Roy Smith as Chairman of the Commission. During the course of the study, Mr. Smith, on account of the press of business and the demand upon his time by other activities, requested the Governor to relieve him from his duties as Chairman of the Commission. The Governor then appointed D. French Slaughter, Jr., to succeed Mr. Smith as Chairman.

The Commission elected Mrs. Lusardi as Vice-Chairman. The Chairman, Mr. Smith, appointed John B. Boatwright, Jr., as Secretary, and Wildman S. Kincheloe, Jr., as Recording Secretary.

In order to ascertain the extent of offerings in vocational and technical education in the public schools of the State, as well as the number of students enrolled in the various courses offered, the Commission sent a questionnaire to all division superintendents of schools. Likewise, questionnaires were sent to the directors and principals of technical institutes, area vocational-technical schools, and technical schools operated by several of the State supported institutions of higher learning, to ascertain the vocational and technical courses offered, fees, dormitory and dining hall accommodations, scholarships, enrollment, enrollment capacity, and capital outlay. Compilations were made from the information given in the answers to these questionnaires.

The Commission, in order to gain first hand information about vocational and technical education offered in the State, made inspection tours of Danville Technical Institute, the Danville Branch of Virginia Polytechnic Institute, Roanoke Technical Institute, the Washington County Technical School at Abingdon, the Wise County Technical School at Wise, Clinch Valley College at Wise, and the Vocational-Technical Program at the E. C. Glass High School at Lynchburg. Several members of the Commission toured the Burlington Industrial Education Center at Burlington, North Carolina, this being one of the regional industrial education centers operated by the State of North Carolina.

In addition, three members of the Commission visited a State Industrial Training Program in Orangeburg, South Carolina, a new technical education center in Greenville, in that State, and heard explanations of South Carolina's occupational training program by members of the professional staff of South Carolina's Committee for Technical Education.

A public hearing was held in Richmond, and on this occasion many interested individuals, local and State officials, and representatives of local chambers of commerce and other groups appeared and gave the Commission the benefit of their suggestions and pertinent information possessed by them.

Conferences were held with Joseph G. Hamrick, Director, Division of Industrial Development and Planning of the State of Virginia, Richard C. Holmquist, Executive Director, Virginia Industrialization Group, Charles H. Taylor, Executive Vice-President, Virginia Manufacturers Association, and J. Eldred Hill, Jr., Commissioner, William B. Purser, Assistant Commissioner, and Randolph Bruce, Chief of Research, Statistics and Information, of the Virginia Employment Commission.

Also, Lucian Lombardi, Chief of the Bureau of Technical Institutes, Department of Education of the State of Connecticut, and Dr. Gerald B. James, Director of Vocational Education, Department of Public Instruction of the State of North Carolina, met with the Commission by invitation,

and explained in detail the vocational and technical education programs in their respective states.

The Commission was fortunate in securing the services, as Consultant, of Dr. Lynn A. Emerson, a recognized authority in the field of vocational and technical education.

The Commission held many meetings, and considered at length the information and data acquired through the activities detailed above, and the information and suggestions presented to it. As a result, the Commission presents its findings, recommendations and conclusions.

II. EMPLOYMENT OUTLOOK IN VIRGINIA

During the sixties, Virginia population will increase from 3,967,000 to 4,741,000, an increase of 19% over the decade. This compares with a predicted national increase of 15%.*

But while total population is increasing some 19%, the labor force of people seeking employment will increase 26%. This will be the greatest increase in the work force for any ten year period in Virginia's history.

Why will the work force grow so much faster than the overall population? Largely because of the phenomenal increase in young people who will reach working age and the rapid increase in the number of women workers.

Regarding youth, the number of young people reaching 18 each year, ready to enter the labor force or continue their education, will increase from 64,000 in 1960 to 81,000 in 1970, a rise of nearly 27%. Stated differently, there will be 150,000 more young workers entering the market for jobs during the sixties than entered the work force during the fifties, an increase of nearly 35%.

Regarding women workers, by 1970 there will be about 645,000 or 214,000 more than in 1960. Women employed in manufacturing will increase 47% as compared with a 38% increase in the number of men employed. About one of every three females over 14 will be in the work force, and nearly half of the women in the 35-64 age bracket are expected to be participants.

With this rapid increase in the work force will come the critical need for jobs. At currently projected rates of growth in Virginia's economy, employment is expected to increase only 16.6%. The result will be a rate of unemployment about three times worse than the current situation. In short, nearly one worker in ten, or about 200,000, will be unemployed in 1970, unless more jobs are created through two main steps: expansion of our industrial economy and training of workers to fit the new jobs that will become available.

As Virginia grows, significant changes are taking place in its economic makeup, bringing changes in the kinds of jobs for which workers are needed. And the biggest increases will occur in occupations requiring the most education and training.**

These anticipated changes in employment in various occupations in Virginia result from such factors as the continuing shift from an agricul-

* See Table 1, page 20, Appendix, for figures on population and employment growth and available labor force, which are referred to in this Chapter.

** See Table 2, page 21, Appendix.

tural economy to an industrial and service economy, the rapid increase in research and development activities, and the widespread growth of record keeping and paperwork processing. All of these types of work will require greater occupational training than has been customary for a predominantly agricultural economy.

In addition, the rapid increase in the number of young people entering the work force, coupled with the increasing complexity of the world of work, means that young men and women will have to compete more keenly for jobs. Employers will require at least high school diplomas for more and more jobs, and will lean toward hiring those who possess not only a sound basic education, but who also possess some vocational or technical skills acquired at the high school or post-high school level.

In short, Virginia's manpower needs more education and greater vocational skills than ever before.

III. OCCUPATIONAL TRAINING IN VIRGINIA

Some jobs require only a short period of training. Other jobs require long periods of organized instruction. Usually school training is followed by some on-the-job training before the worker is fully competent.

Modern technology demands far more specialized knowledge and advanced skills than in the past. To qualify for employment in the future larger numbers of prospective workers will have to spend more time in organized instruction.

Typical patterns by which workers get their training are outlined below.* It should be kept in mind that significant and increasingly large numbers of women are being employed in most of the following classifications.

A. *Semiskilled Workers in Industry*

This category includes most of the production workers in manufacturing. The skills and technical knowledge required are not extensive and these jobs require only a relatively short training period.

While most semiskilled workers get their training through on-the-job experience, some are trained by the employer in the industrial plant or in programs jointly operated by the employer and the State. This is most likely to occur when new employers are moving into the State and require large numbers of trained employees in a short period of time.

In Virginia, approximately 240,899 semiskilled (operatives and kindred) workers were employed in 1960, and approximately 67,209 workers in this category will have to be trained by 1970, which means an annual training rate of 6,720 semiskilled workers.

Of the 6,720 semiskilled workers needed to be trained each year, selective surveys and general training patterns show that approximately 5,500 will be trained by industry or other private programs.

Thus, approximately 1,220 semiskilled workers will have to be trained in schools. This figure is the number which will have to complete their training each year. Most of the 1,220 will be trained in specially organized programs for new industry.

* Estimates of the number of semiskilled, skilled, and technical workers needed and the methods by which they are trained are shown in Tables 3 through 8, pages 22 through 26, Appendix.

High schools and area vocational and technical schools do not propose to train semiskilled workers except in special organized classes when a specific need arises. Many who attend high schools or vocational and technical schools that for any reason do not secure training to prepare them for skilled or technical occupations do accept employment in semiskilled jobs. The pre-employment training they have received may help them to qualify for the job, but they will receive additional training on the job.

B. *Skilled Workers in Trades and Industry*

Traditionally, skilled craftsmen obtained their training through serving an apprenticeship working under a master craftsman.

Today, technological advancements require classroom instruction in related technical subjects in addition to the work experience. Also, the rapidity and complexity of technological growth has greatly increased the cost of training skilled workers on the job, thereby forcing employers to rely more and more on vocational and technical schools as a source of skilled workers.

In Virginia, approximately 177,549 skilled (craftsmen, foremen and kindred) workers were employed in 1960, and approximately 65,000 workers in this category will have to be trained by 1970, which means an annual training rate of 6,500 skilled workers.

Of the 6,500 skilled workers needed to be trained each year, selective surveys and general training patterns show that approximately 2,000 will be trained by industry or other private programs. This includes the approximate 225 apprentices that are trained cooperatively by industry and the trade extension programs in the public schools.

Thus, approximately 4,500 skilled workers will have to be trained in schools. This figure is the number which will have to complete their training each year.

At the present time, approximately 2,450 skilled workers are completing their training annually. Of this number, approximately 1,850 are being trained in vocational programs in 111 public high schools throughout the State, and 600 are being trained at publicly supported area vocational and technical schools, such as Washington County Vocational School, Danville Technical Institute and New River Vocational-Technical School.

Therefore, the needs for school training, in addition to the present programs, are for 2,050 skilled workers each year.

The Commission recommends the expansion of 6 area vocational and technical schools which can produce 200 additional skilled workers per year, and the establishment of 5 new area vocational and technical schools which can produce 400 additional skilled workers per year and the expansion of vocational training in high schools which can train an additional 400 per year.

The total of 1,000 additional skilled workers which can be trained in schools each year by 1968 will not meet the need for 4,500 school trained skilled workers, but the Commission believes that the proposed program will be indispensable as a substantial beginning to meet the State's needs.

C. *Technicians*

Broadly speaking, technicians are workers requiring more "know-why" for their jobs, in contrast to the "know-how" of the skilled craftsman.

Their responsibilities lie between those of professional persons, such as the engineer, and those of skilled craftsmen, such as the machinist.

Technicians may be employed as aides to professional persons, such as engineers, doctors and dentists; or they may be employed by industry as supervisors of production and specialists in quality control, installation and maintenance.

Due to the technician's need for specialized knowledge, consisting largely of applied science and mathematics, most of them are trained in post-high school programs of one to three years duration, limited generally to high school graduates who meet certain requirements in science and mathematics.

Many technicians receive their training in the military services and through on-the-job experience, supplemented by evening classes and correspondence courses.

In Virginia, approximately 9,188 technicians were employed in 1960, and approximately 23,550 workers in this category will have to be trained by 1970, which means an annual training rate of 2,350.

Of the 2,350 technicians needed to be trained each year, selective surveys and general training patterns show that approximately 350 will be trained by industry or other private programs.

Thus, approximately 2,000 technicians will have to be trained in schools. This figure is the number which will have to complete their training each year.

At the present time, 300 technicians are completing their training this year in schools in Virginia. Approximately 30 are being trained in vocational programs in 2 public high schools throughout the State, and 270 are being trained at publicly supported area vocational and technical schools, such as Richmond Professional Institute, Danville Technical Institute and New River Vocational-Technical School.

Therefore, the needs for school training in addition to the present programs are 1,700 technicians each year.

The Commission recommends the expansion of 8 area vocational and technical programs to produce 270 additional technicians per year, and the establishment of 5 new area vocational and technical schools to produce 350 additional technicians per year.

The total of 620 additional technicians to be trained in schools each year by 1968 will not meet the need for 2,000 school trained technical workers, but the Commission believes that its proposals are essential first steps toward meeting the State's needs.

D. *Personal Service Workers*

Workers in this category provide various types of personal services, in health and other fields. This group includes such occupations as cosmetologists, barbers, practical nurses, nursing aides, medical and dental assistants, and medical laboratory technicians. The jobs vary greatly in the type of training required, some being similar to skilled crafts occupations, and others similar to technician jobs. These workers are trained in a variety of schools and institutions such as high schools, community colleges, technical institutes, vocational and technical schools, hospitals or medical colleges; some receive their training on the job.

E. *Office Workers*

This group includes a wide range of workers who are employed in clerical, secretarial, accounting, and other office jobs, from the level of the typist to that of the accountant. The jobs require knowledge of business practice, some mathematics, and various manipulative skills such as typing and the operation of business machines. Some of these jobs cut across other fields, such as that of the technical secretary who needs technology as well as business knowledge and skills.

Training for the simpler office jobs such as typing, office machine operation, stenographic and elementary accounting jobs is often provided in high school through electives in general high school programs or in vocational business curriculums. Training programs for advanced business occupations such as accounting, and business data processing, are usually provided in post-high school institutions.

Many office workers enter their jobs with a minimum of training, and rise to higher positions through on-the-job training and experience.

F. *Distribution Workers*

The field of distribution includes sales, purchasing, advertising, retail and wholesale merchandising, and warehousing and shipping. Some of these jobs cut across other fields, such as sale of technical products and agri-business occupations.

Many workers in the field of distribution receive their training on the job, sometimes supplemented by company sales training programs. Organized programs in distributive education, in the form of extension courses and cooperative work-study programs, are provided in high schools and in post-high school institutions.

G. *Agricultural Workers*

This group includes all workers on the farm, whether self employed or employees. Also included is the growing number of persons employed in farm related occupations in the field of agri-business such as farm supplies, equipment sales and service, and processors of farm products.

These workers may receive their training through agricultural programs in rural high schools, adult education courses, and post-high school agricultural institutes and colleges. Large numbers of farmers are farm reared and have been trained by their parents or other farm workers.

The categories of workers enumerated above are the subject of this study and include most of the wage earning occupations in Virginia that require vocational and technical education.*

IV. VOCATIONAL EDUCATION IN THE HIGH SCHOOL

The present program of vocational education in Virginia high schools is large and far reaching, comprising some vocational courses in all school divisions. These programs are organized into the following services: vocational agriculture, business education, distributive education, home eco-

* The breakdown in numbers of the demand for office workers, personal service workers, distribution workers and agricultural workers and the methods by which they get their training is not as complete as the available statistics for the semiskilled, skilled and technicians, but Tables 9, 10, and 11, found on pages 27 through 29, Appendix, show 1960 employment and projected 1970 employment in several of the categories mentioned. Tables 12 and 13, pages 30 through 31, Appendix, show the changes expected between 1960 and 1970 in manufacturing and construction employment.

nomics education, and industrial education (includes industrial arts and trades courses). High school facilities and staffs are also used for adult education in these fields.*

A. *Extent of Vocational Education in the High Schools*

Vocational training in the high schools is feasible for many occupations, such as auto mechanic, electrician, draftsman, cosmetologist, practical nurse, stenographer, bookkeeper and sales clerk. Training for other skills, such as machinists, can be provided in the high schools, but is not usually done there because of the large investment in shop equipment that is required and the lack of a sufficient number of students. In some localities the facilities of private business or industry may be utilized through the cooperative training courses in which the student spends a half day in school and a half day on the job. This is an economical arrangement suitable to many of the smaller high schools. In the vocational field there are still other categories of skilled occupations, such as data processing, and tool and die making, requiring higher levels of skill, knowledge and maturity that necessitate post-high school training.

The economy and effectiveness of high school vocational training leads this Commission to recommend strongly that renewed efforts be made by the State Board of Education and the local school divisions to strengthen and expand vocational offerings wherever feasible. These offerings must be based not only on the needs and aptitudes of the students, but also upon the requirements of business and industry and the availability of job opportunities.

Nevertheless, there are limiting factors on vocational education at the high school level. One is the fact that many high school students do not determine their vocational goals in time to complete the necessary training in high school. Other factors, mentioned above, are the narrow range of offerings which can be economically provided in small and medium sized high schools, especially in the rural areas, and the large investment needed for some types of training. All of these factors are additional reasons for the establishment of area vocational and technical schools at the post-high school level.

Where these limiting factors are not present, the Commission believes that vocational training should be offered in the high schools because of the financial savings to both the student and the State.

B. *Expansion of Vocational Education in the High Schools*

There are a number of localities in Virginia, perhaps as many as thirty, which have high schools with shops, facilities and staff that could provide a substantially expanded training program for specific skills and occupations to serve their surrounding communities if they were given some additional financial assistance by the State. This training should be provided for high school students in day classes and for out of school youths and adults at times when the school is not being used by the day students. This training is now being provided in a number of communities, but additional programs are needed, particularly in the business, distributive and industrial fields.

The Commission recommends that the State pay one half of the cost of equipment and two thirds of the instructional salaries of these programs as determined by the State Board of Education. This division of costs follows the present pattern of State-local financing of similar programs.

* For detailed breakdown of the extent of these programs for adult and high school students, see Table 14, page 32, Appendix.

We have stated the factors which limit most high schools in the number of vocational courses that they can offer, and, as a result, much of the vocational training has to be done at the post-high school level. However, many high school students could benefit from basic training which would develop the understanding and elementary skills that are common to a cluster of related occupations, such as the metal working trades and the building trades. For example, training for the metal trades might include elementary machine tool operation, hand tool operation, welding, mechanical blueprint reading and the assembly and disassembly of machines. After taking this training in high school, the student would be well prepared for skilled craft training in industry or in post-high school institutions.

The Commission recommends that the State provide funds for the research and development of basic training programs for clusters of closely related occupations.

In addition, in view of the heavy future demand for technicians, a high school curriculum could be developed in larger schools that would provide a "technical" program for the future. The current emphasis on the "college preparatory" program might well be supplemented with courses that include physical sciences and mathematics taught with industrial applications, explorations in drafting and shop, and an understanding of materials and processes of industry. This specialized program featuring practical studies would help develop those technically-minded high school students who can later move into technical institute programs with a solid background. It would also provide a way for average students, as well as others, to prepare for a post-high school education. It is such students who are apt to drift, while the gifted and the retarded are singled out for special programs.

The possibilities discussed here point up the need for a continuing appraisal and development of the course content in the vocational curriculum in the high schools.

If the above programs for expansion of vocational training in the high schools and for experimental courses in this field are successfully developed in the next biennium, 1964-66, then these expanded and new programs would become a part of the normal operation and budget of vocational education at the high school level. Therefore, the Commission does not recommend any specific appropriations for these purposes after 1964-66.

C. *The Dropout Problem*

The plaguing problem of dropouts can be alleviated by a sufficiently broad range of offerings to meet the varied needs and aptitudes of all the students. Experimentation is needed to identify these needs and to devise training courses of value for students who do not show interest in the usual academic or vocational subject matter. This group includes both students who have the ability, but lack motivation, as well as students of limited ability for completing the standard academic or vocational work.

Although these students pose a persistent problem, they will become citizens in our society, and they are entitled to an appropriate education within our public school system as much as any other group. Programs for these students should lead to gainful employment, even if of an unskilled nature, by the development of proper work habits. In some instances these programs can lead to bringing the student back into the normal curriculum. In either case there will be substantial benefits for both society and the student in reducing the likelihood of unemployment and delinquency.

The Commission recommends that in selected schools the State provide funds for development of training courses of value for students who do not show interest in or aptitude for the standard academic or vocational curriculum.

D. *Vocational Agriculture*

Agriculture is a critically important segment of Virginia's economy. The health of Virginia's economy is heavily dependent on agriculture in all its various phases of production, processing and sale of farm commodities, sales and service of equipment used in these activities and the sale and distribution of farm supplies.

Nearly all rural high schools have had a program in vocational agriculture for many years. This program has been highly effective in meeting the needs of many students who have gone into farming, and has also served many adult farmers through evening classes.

Agriculture is changing as fast and as radically as any other industry in America. On-the-farm employment has declined substantially in Virginia for the last two decades, and this trend is continuing due to the increasing mechanization on the farms and the rapidly increasing productivity of the modern farm operation. Today vocational training for on-the-farm jobs is still vitally important but the decreasing job opportunities in this field require that rural youth be trained for other occupations related to agriculture in the field of "agri-business" (processing of farm products, sales and service of farm equipment, and sales and distribution of farm supplies) or in other business and industrial occupations where job opportunities are available.

It is gratifying to note that in Virginia the State Board of Education, school administrators, and teachers of vocational agriculture have made many changes to keep abreast of new developments in the total field of agriculture. Training in mechanical skills is being stressed. Students who are not likely to go into farming, but into related occupations, are being encouraged to undertake practice projects related to the mechanical and building trades rather than on-the-farm projects such as raising crops and livestock.

In some localities vocational agriculture teachers teach general mechanics courses for students who may enter farm related or industrial occupations.

There is a great reservoir of talent in the vocational agriculture teachers in Virginia and a substantial investment in many excellent shop facilities that are being utilized for other aspects of vocational training of value to rural youth today, such as instruction in general mechanics. Also, it is important to continue the trend toward farm mechanics in vocational agriculture because of the necessity of farmers today to operate and service expensive and complicated equipment.

The Commission recommends that the State Board of Education and the local school divisions continue their redirection and reorientation of vocational agriculture to meet the needs of today's rural youth to prepare them for the changing conditions of farm employment and to help prepare them for other business and trade occupations in which jobs may be available to rural youth.

E. *Home Economics*

The Commission recognizes the great value of home economics education in preparing young women for homemaking careers.

Home Economics education is offered in almost every Virginia high school. In Virginia, as in the nation as a whole, enrollments in home economics classes preparing for the career of homemaking greatly exceed those in home economics classes leading to wage-earning employment.

The Commission, however, is limiting its consideration of vocational education to wage-earning occupations, and the training of girls and women is included under the various classifications of wage-earning occupations discussed above.

F. *General Education*

The Commission has emphasized the necessity for strengthening and expanding vocational education in the high schools. These efforts, however, must not be permitted to detract from the emphasis on and the value of general education for high school students.

All students need a good general education to help them take their places as citizens and voters in our democratic society. The Commission does not advocate a reduction in the general education requirements, but rather a broadening in the variety of offerings in vocational education. The five year high school, beginning in the eighth grade, gives ample time and opportunity for a strong program in general education as well as the type of vocational training we envision.*

The Commission finds that high school education for those taking vocational courses would be strengthened by concentrating general education in the early high school years and offering vocational training the last two or three years.

The Commission recommends that general and pre-vocational education be emphasized in the early years of high school for vocational students, and that the more specialized vocational courses be scheduled in the last two or three years of high school. This would parallel the college preparatory curriculum in which students prepare specifically for various kinds of college careers in the upper years of high school.

G. *Industrial Arts*

Industrial Arts is ordinarily considered as a part of general education. Courses may begin in the eighth grade and give elementary training in certain basic skills, such as woodworking, metalworking and drafting.

Two important purposes of Industrial Arts are to encourage creativeness and to help the student decide whether he wishes to pursue training in one of the vocational fields. The guidance value of Industrial Arts is important.

However, the Commission recommends that training in Industrial Arts be modified to place greater emphasis on pre-vocational training, i.e., training that leads to further training in skilled crafts and technician-level occupations. This modification has been accomplished in some localities, using Industrial Arts instructors and facilities.

H. *Counseling*

Vocational Education, like education for the professions, is preparation for the world of work. Technicians and skilled craftsmen are as essen-

* For graduation requirements in a typical high school program encompassing both general education and vocational education, see page 33, Appendix. The industrial education program is used as an example.

tial to a balanced economy as are the professions. Modern technology has created jobs demanding skills as advanced as those possessed by engineers, dentists, and similar professionally trained persons.

The advance of technology has produced the ironic situation in which there are as many unfilled jobs as there are persons unemployed. This is due to the unemployed lacking the skill and knowledge needed in the available jobs.

The increasing economic rewards available to those trained for skilled occupations have not been generally recognized. Many technicians and skilled craftsmen receive starting pay in excess of $5,000 annually.

One major difficulty in providing vocational training for the high school student is the necessity of an early selection of his vocational objective and the planning of his courses.

All of these emphasize the need for effective vocational counseling. Students with aptitudes for vocational training must be identified at an early stage. The counselor must not only know the vocational courses that are offered but must be competent to advise the student in terms of generating the student's interest and acquainting him with the variety of job opportunities and prospective economic benefits.

The Commission recommends that the State Board of Education provide funds for summer or evening courses for high school counselors to enable them to become better qualified in the field of vocational guidance.

V. VOCATIONAL AND TECHNICAL EDUCATION ON THE POST-HIGH SCHOOL LEVEL

The most formidable task in vocational and technical education is to develop occupational training programs to keep pace with the complexity and rapidity of technological growth and economic changes. While the academic curriculum is relatively stable, the vocational and technical curriculum must undergo constant revision to meet changing skill requirements caused by technological advances. Also, the need for technical knowl d and ad anced kills is becoming greater almost day by day in

Occupational training programs supported by public funds have a dual obligation: to meet the needs of employers for trained personnel and to meet the needs of citizens of the State who require training and retraining for occupational competency. In an economy that is changing as rapidly as the present one—in which every worker faces the possibility of changing to a new type of job two or three times during his lifetime—the overall potential number of persons who may need training at one time or another approximates the total population of working age.

This situation calls for a flexible but highly coordinated effort to meet the occupational training needs of employers for technicians and skilled craftsmen and to meet the needs of Virginia's citizens to qualify for employment and raise their standards of living.

The needs for the various types of training will differ in almost every cummunity in the State. The curriculum will have to fit the job opportunities in the area served by any particular school, and the curriculum must change from time to time to adapt to changing demands for various occupations. In some instances one training course in a particular field will be sufficient for all of Virginia, e.g., dental technology. In other fields, such as electronics, a wider distribution of training opportunities will be needed.

In many sections of Virginia, area vocational and technical schools are necessary to provide the range of offerings suitable to the needs and aptitudes of the students and the job requirements in the community. Even in larger urban centers the area schools on the post-high school level are highly desirable because the maturity of the student is an important factor in an intelligent choice of his occupation and his success in that field.

In view of these complex problems, the Commission believes that the greatest need for expansion of vocational and technical training is at the post-high school level.

A. *A State Administered Program*

With the varying requirements in different localities and the need to avoid duplication of facilities, the Commission recommends that the State administer all vocational and technical education offered in post-high school institutions with the exception of that offered in institutions which are operated by the four year colleges and universities.

The Commission recommends that the State pay the entire cost of equipment for the new area vocational and technical schools, and equipment to be purchased in the future for the present area vocational and technical schools. The Commission also recommends that the State pay the major share of instructional costs and supplies in both the new and present schools.*

The localities in which the new area vocational and technical schools will be located, in accordance with the determination of the State agency administering the program, will reap substantial benefits in the provision of training opportunities for their citizens and the promotion of their economic development.

Therefore, the Commission recommends that the political subdivisions to be served provide the land and buildings for the new area vocational and technical schools, and such operating and maintenance costs as utilities, fuel, insurance, and upkeep of buildings and grounds.

We realize that this recommendation may not be suitable for every contingency, but in any event, the State should fix definite requirements for participation by the localities in the establishment and new area vocational and technical schools. The suggested division of costs would be consistent with the present pattern of financing area vocational and technical schools.

The Commission also recommends that tuition fees be charged students in the area vocational and technical schools in an amount to be fixed by the State agency administering the program. The amount of this fee should be carefully determined so as not to discourage attendance by qualified and deserving students. The revenue from these fees should be applied to the instructional costs of the schools.

The Commission again emphasizes that the size and scope of the program, in addition to the fast changing requirements in vocational and technical education, will place heavy demands upon those charged with the policy direction and administration of this segment of our public education. The State Board of Education already has the great responsibility and the enormous task of overseeing the administration and development of all the elementary and secondary schools in Virginia. To add the additional re-

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* In the summary of recommendations, specific sums for appropriations are requested to carry out the recommendations contained in this Chapter.

sponsibility of developing and directing the area vocational and technical schools would not allow this Board sufficient time and opportunity for the efficient discharge of all of these duties.

B. *A State Board of Technical Education*

The Commission recommends that a separate and independent agency be created under the direction of a State Board of Technical Education, with the necessary administrative staff, to be charged with the development and administration of the new area vocational and technical schools.

It would be desirable if the existing area vocational and technical schools became a part of the same program and were operated in the same manner as the proposed new schools. However, the existing schools have been supported principally by the local school divisions up until this time.

For this reason, the Commission recommends that the local school divisions involved in maintaining and operating the existing area vocational and technical schools shall have the option of continuing the present arrangements or becoming a part of the proposed State system for the new schools.

C. *Technician Training*

The Commission recognizes that many of the programs producing skilled technicians can be offered in the two year branch colleges. Moreover, their parent institutions have expressed to the Commission their willingness to assist in meeting these needs. In addition, some technician programs can be suitably developed in area vocational and technical schools, although we contemplate that most of these programs will be provided in the branch colleges.

D. *Composition of the State Board of Technical Education*

As vocational and technical education is expanded and will be provided in the high schools, area vocational and technical schools and branch colleges, it will be most important that these programs be coordinated for maximum effectiveness. Liaison among the colleges, State Board of Education and State Board of Technical Education must be close and continuing. Therefore, the Commission recommends that the State Board of Technical Education include one member appointed by the Council of Higher Education and one member appointed by the State Board of Education from their memberships or staffs.

The industrial development needs of Virginia are also an important consideration in vocational and technical education. The demand for skilled craftsmen and technicians is a critical factor in industrial growth. Our neighboring states, which compete with Virginia for new industry, are expanding their vocational and technical training facilities.

The Commission recommends that one member of the State Board of Technical Education be appointed by the Governor from the membership of the Advisory Board on Industrial Development or from the staff of the Division of Industrial Development and Planning.

E. *Comprehensive Community Colleges*

In the long run, the State should consider meeting all of these post-high school educational needs through a system of comprehensive community colleges under the proposed State Board of Technical Education, perhaps with a more appropriate title. Consequently, the Commission recommends

that the parent institutions (Virginia Polytechnic Institute, University of Virginia, and The College of William and Mary), the Council of Higher Education and the State Board of Technical Education make a joint study of the feasibility of such a system, with particular emphasis upon such problems as accreditation, transfer of credits and financial savings.

We believe that the above recommendations constitute the most effective manner of coping with future needs. However, the State Board of Education, the University of Virginia, the Virginia Polytechnic Institute and The College of William and Mary, through their capable leadership, have done the essential groundwork necessary for future progress.

VI. SUMMARY OF RECOMMENDATIONS

A. *To the General Assembly*

That the sum of $210,000 be appropriated for the Biennium 1964-66, and the sum of $75,000 for the Biennium 1966-68, for the expansion and upgrading of existing technical institute programs.

2. That the sum of $785,000 be appropriated for the Biennium 1964-66, and the sum of $327,500 for the Biennium 1966-68, for the expansion and upgrading of existing area vocational and technical schools.

3. That the sum of $2,651,250 be appropriated for the Biennium 1964-66, and the sum of $2,696,000 for the Biennium 1966-68, for the establishment of new area vocational and technical schools.

4. That the sum of $400,000 be appropriated for the Biennium 1964-66, for the expansion and upgrading of vocational training programs in the high schools.

5. That the sum of $350,000 be appropriated for the Biennium 1964-66, for the development and operation of experimental vocational programs in the high schools.

6. That the sum of $30,000 be appropriated for the Biennium 1964-66, and the sum of $20,000 for the Biennium 1966-68, to the State Department of Education for summer and evening courses in vocational guidance for high school counselors.

7. That the sum of $300,000 be appropriated for the Biennium 1964-66, and the sum of $400,000 for the Biennium 1966-68, to the State Department of Technical Education for administrative services, teacher training, research, curriculum and instructional materials in vocational and technical education.

8. That a State Board of Technical Education be created, with the necessary administrative staff, to be charged with the development and administration of the new area vocational and technical schools.

9. That the State Board of Technical Education include among its membership one member appointed by the State Board of Education, and one member appointed by the Council of Higher Education, from their respective memberships or staffs, and one member appointed by the Governor from the Advisory Board on Industrial Development or the Division of Industrial Development and Planning.

B. *To the State Board of Technical Education*

1. Determine the most feasible locations for the new area vocational and technical schools.

8. That summer or evening courses be provided for high school counselors to enable them to become better qualified in the field of vocational guidance.

9. That the local school divisions involved in maintaining and operating the existing area vocational and technical schools shall have the option of continuing the present arrangements or becoming a part of the proposed State system for the new area vocational and technical schools.

VII. CONCLUSIONS

In a study of this complexity, conducted against a background of rapid growth and change, the Commission's major problem has been to chart a steady course towards the ultimate objective—to provide a better way of life for more and more Virginians through better and higher-paying jobs.

Virginia's existing programs for organized occupational training are generally underrated and little publicized. These include vocational programs in the high schools for training in basic trades and skills; area vocational and technical schools for training in basic and advanced skills; technical institutes and technician training programs; and community colleges. Like any educational effort in a rapidly changing world, however, there are needs for expansion, upgrading and improvement.

Existing vocational programs in the public high schools can be reoriented and revitalized to provide effective occupational training in the basic trades and skills required for today's world of work. In this effort, the teaching talents, equipment and facilities of vocational agriculture and industrial arts programs will play an especially crucial role.

Generally, the high school curriculum can be better organized to strengthen vocational education without affecting general education requirements. A concentration of general education in the early years of high school, and a wider variety of vocational offerings in the last two or three years is desirable.

To alleviate the problem of dropouts, the State and local school divisions need to promote educational programs of value adapted to the special interests and aptitudes of students who lack motivation or are otherwise unsuited to pursue the standard curriculum. Experimentation is needed to identify their needs and to develop courses to stimulate motivation and to develop proper work habits.

Through a strengthened counseling program much can be done to guide students into rewarding occupational careers, to stimulate greater respect for the dignity of manual skills and to create awareness of the economic rewards of occupations in these fields.

In many sections of Virginia, area vocational and technical schools are the only suitable means for providing the range and level of offerings required by job opportunities and the needs and aptitudes of the students. Technician training programs can be developed by existing community colleges as well as by area vocational and technical schools. A major effort is necessary to expand vocational-technical opportunities and to upgrade present programs.

In view of the need for flexibility, the varying training requirements in different loralities, and the general complexity of the problem, a State-administered program of vocational and technical training on the post-high school level is the most feasible approach to expansion and upgrading in this field.

To meet minimum needs for expansion and improvement in these areas, sums totaling $15,024,500 will be required during the 1964-66 and 1966-68 Biennia. Of this total, the State should provide $8,244,750 to finance developments in the several programs. This includes assistance to local high schools, development of new area vocational and technical schools and improvements in existing schools, expansion of technician training, and improvement of State-level supervisory and administrative services.

In the long run, the State should consider the feasibility of establishing all post-high school education of less-than-degree length under a system of comprehensive community colleges operated by a single State-wide board. The proposed State Board of Technical Education and the new schools founded under its sponsorship and administration should be the nucleus for this development.

The Commission has been impressed with the progress of occupational training in Virginia. From this base the need is to expand and improve vocational and technical education to a scale and level commensurate with the challenges of modern technology and our growing economy.

Respectfully submitted,

D. FRENCH SLAUGHTER, JR., Chairman

MRS. CAROLYN MOSES LUSARDI, Vice-Chairman

HOWARD P. ANDERSON

*CURRY CARTER

LAWRENCE A. HILL

WILLIAM H. McFARLANE

HAROLD H. PURCELL

GEORGE L. SANDVIG

W. ROY SMITH

HENRY W. TULLOCH

WOODROW W. WILKERSON

***Statement of Curry Carter**

I agree in the main with the Report, but feel that it would be more desirable to have all branches of public education under the State Board of Education with an appropriate division, than to establish a separate and independent agency. It is common knowledge that once an additional and separate agency is established in our State government it grows and grows with greater and greater cost to the taxpayer.

The State Board of Education seems inclined to prefer not to take on this additional work, but I believe there is where it belongs. If it needs more members and/or more personnel, they should be provided.

It is not clear to me that the Constitution of Virginia contemplates such a separate and independent agency and it is not beyond the realm of possibility that a clash of responsibilities, duties and jurisdiction may ultimately arise.

CURRY CARTER

2. Determine the standards for buildings and equipment in the new area vocational and technical schools.

3. Provide the staff and determine the curriculum and the offerings in the new area vocational and technical schools.

4. Determine the requirements for participation by the localities in the establishment and operation of new area vocational and technical schools.

5. Determine tuition fees to be charged students in the new area vocational and technical schools.

Make a study jointly with the Council of Higher Education, Virginia Polytechnic Institute, University of Virginia and The College of William and Mary on the feasibility of a system of comprehensive community colleges, with particular emphasis upon such problems as accreditation, transfer of credits and financial savings.

C. *To the Council of Higher Education, the Virginia Polytechnic Institute, the University of Virginia, and The College of William and Mary*

1. Make a study jointly with the State Board of Technical Education on the feasibility of a system of comprehensive community colleges, with particular emphasis upon such problems as accreditation, transfer of credits and financial savings.

D. *To the State Board of Education and/or the Local School Divisions**

1. That renewed efforts be made to strengthen and expand vocational offerings in the high schools to be based on the needs and aptitudes of the students and upon the requirements of business and industry and the availability of job opportunities.

2. That the State pay one half of the cost of equipment and two thirds of the instructional costs of expanded training programs for specific skills and occupations in selected high schools, with facilities and staff potential to serve their surrounding communities.

3. That in selected schools the State provide funds for development of training courses of value for students who do not show interest in or aptitude for the standard academic or vocational curriculum.

4. Undertake research for the development of basic training programs for groups of closely related operations.

5. Continue the redirection and reorientation of vocational agriculture to meet the needs of rural youth in training for the changing conditions of farming and related employment, and to help prepare them for other business and trade occupations in which jobs may be available.

6. That general and pre-vocational education be emphasized in the early years of high school for vocational students, and that the more specialized vocational courses be scheduled in the last two or three years of high school.

7. That training in Industrial Arts be modified to place greater emphasis on pre-vocational training, i.e., training leading to further training in skilled crafts and technician-level occupations.

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* Recommendations 2, 3 and 8 apply to the State Board of Education, recommendation 9 applies to the local school divisions, and recommendations 1, 4, 5, 6 and 7 apply to

APPENDIX

TABLE 1

OVERALL VIRGINIA POPULATION AND LABOR INFORMATION

	Number Employed in 1960 (a)	1970 Projection Rate	1970 Number Projected	New Workers Needed by 1970 For Expansion (c)	For Replacement (d)	Total
Population	3,966,949	19.5%[b]	4,740,507			
All Employed Workers	1,340,800	16.6%[b]	1,563,392	222,572	168,160	390,732
Available Labor Force	1,400,000	26 %[e]	1,764,000[e]	ESTIMATED 200,000 UNEMPLOYED BY 1970		

EXPLANATION OF ABOVE TABLE

a. Numbers as reported in U. S. Census of Population, 1960, Volume on Virginia, Detailed Characteristics.

b. Same per cent at which these groups increased in Virginia from 1950 to 1960 as reported by the U. S. Census of Population.

c. Difference between number employed in 1960 and number projected for 1970.

d. Based on the assumption that 2 per cent annually of the persons working in 1960 will withdraw from the labor force because of death, retirement, marriage, childbearing, etc. See page 104 of A Report on Manpower Requirements, Resources, Utilization, and Training, by U. S. Department of Labor, March, 1963.

e. Estimated by State Employment Service.

TABLE 2

PERCENT CHANGE IN EMPLOYMENT 1960-1970

IN SELECTED OCCUPATIONAL GROUPS

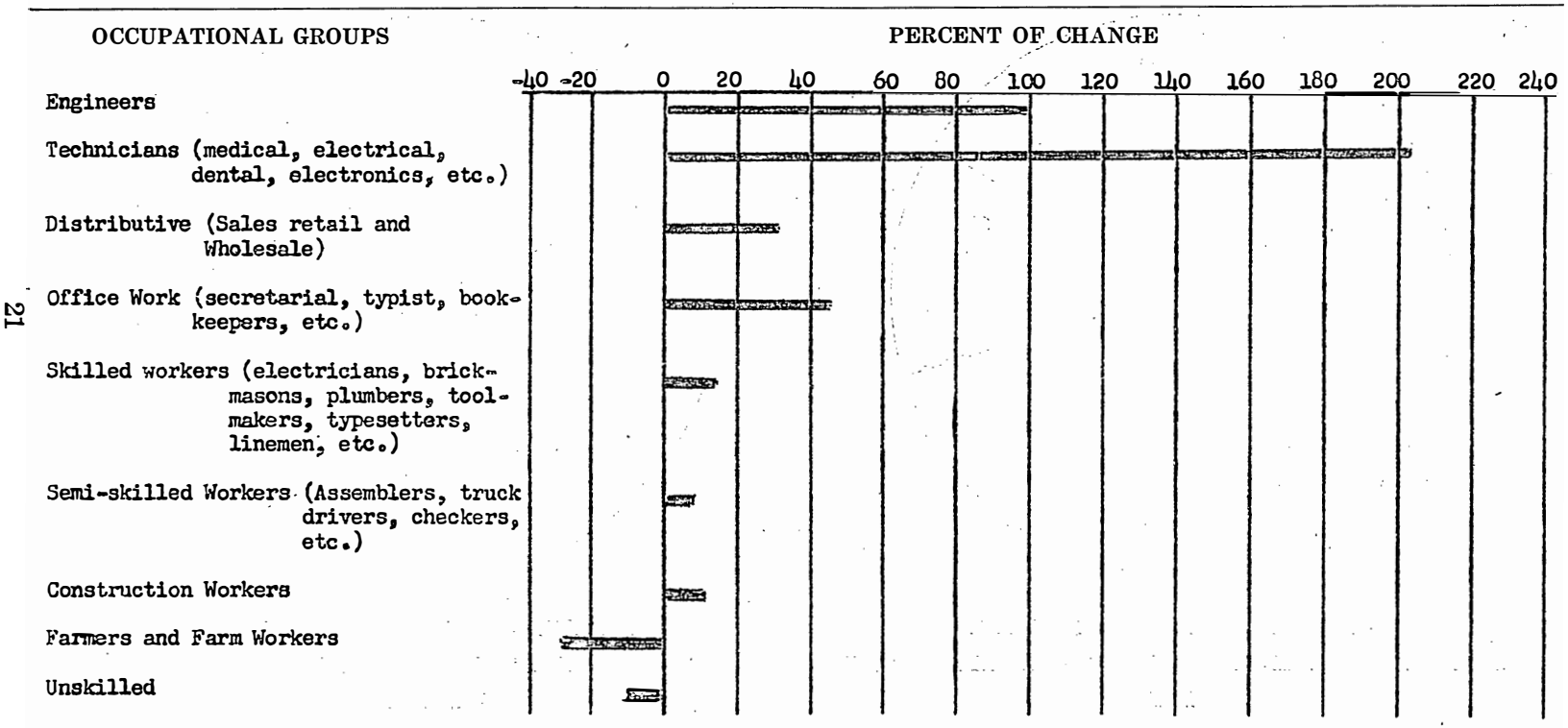
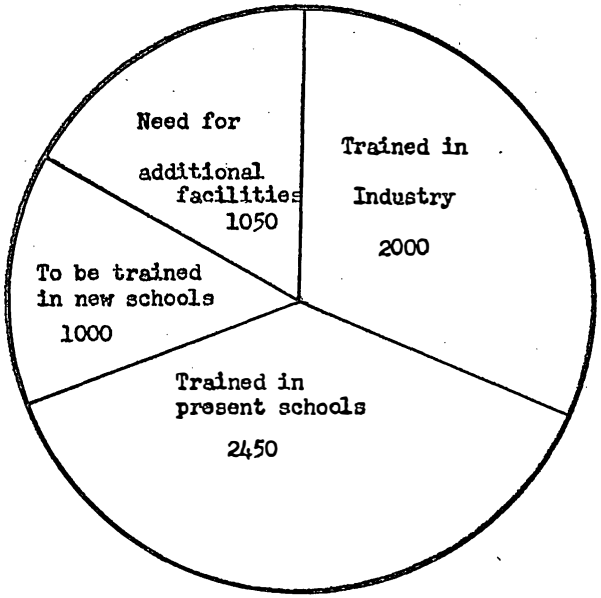


TABLE 4

SKILLED CRAFTSMEN

6,500 TO BE TRAINED ANNUALLY

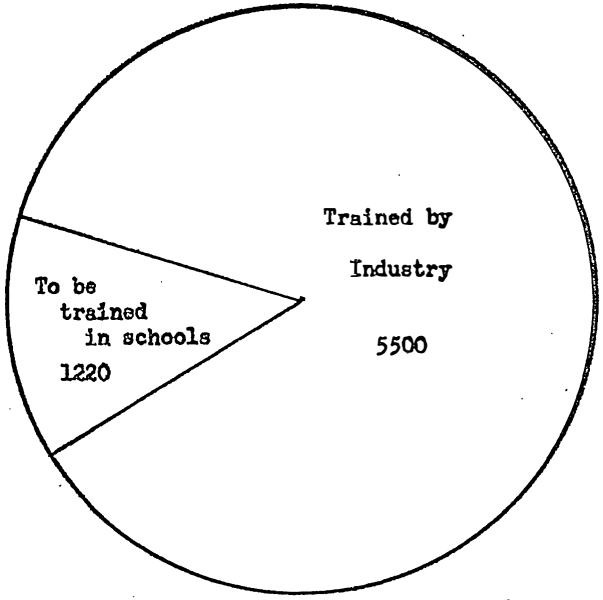


The chart shows how they may be trained and that more facilities will be needed.

TABLE 3

SEMI-SKILLED (OPERATIVES AND KINDRED WORKERS)

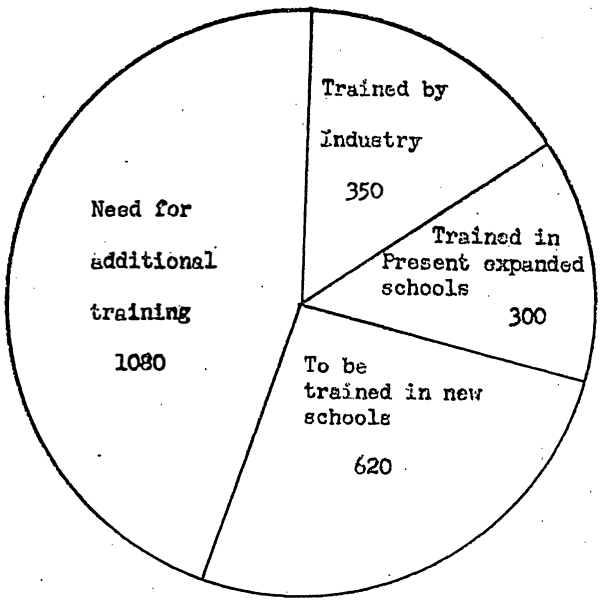
6,720 TO BE TRAINED ANNUALLY



The chart shows how they may be trained.

TABLE 5

TECHNICIANS AND KINDRED WORKERS
NEED 2,350 TRAINED ANNUALLY



The chart shows how they may be trained and that more facilities will be needed.

TABLE 6

SEMI-SKILLED (OPERATIVES AND KINDRED) WORKERS IN VIRGINIA

Selected Job Titles	Number Employed in 1960 (a)	1970 Projection Rate (b)	1970 Number Projected	New Workers Needed by 1970 For Expansion (c)	For Replacement (d)	Total	To Be Trained Each Year
Assemblers	3,696	183.7%	10,485	6,789	739	7,528	752
Bus Drivers	5,990	45.6%	8,721	2,731	1,189	3,929	392
Checkers, Examiners, and Inspectors—Manufacturing	7,100	69.1%	12,006	4,906	1,420	6,326	632
Photographic Process Workers	636	59 %	1,011	375	127	502	50
Truck and Tractor Drivers	32,744	14.9%	37,662	4,878	6,548	11,426	1,142
Manufacturing	75,690	8.8%	82,350	6,660	15,138	21,798	2,179
Not Classified Above	115,043		107,694	7,309	23,018	15,700	1,573
All Semi-Skilled Workers	240,899	7.9%	259,929	19,030	48,179	67,209	6,720

EXPLANATION OF ABOVE TABLE

a. Numbers as reported in U. S. Census of Population, 1960, Volume on Virginia, Detailed Characteristics.

b. Same per cent at which these groups increased in Virginia from 1950 to 1960 as reported by the U. S. Census of Population.

c. Difference between number employed in 1960 and number projected for 1970.

d. Based on the assumption that 2 per cent annually of the persons working in 1960 will withdraw from the labor force because of death, retirement, marriage, childbearing, etc. See page 104 of A Report on Manpower Requirements, Resources, Utilization, and Training, by U. S. Department of Labor, March, 1963.

TABLE 7

SKILLED WORKERS EMPLOYED IN VIRGINIA

	Number Employed in 1960 (a)	1970 Projection Rate (b)	1970 Number Projected	New Workers Needed by 1970 For Expansion (c)	New Workers Needed by 1970 For Replacement (d)	New Workers Needed by 1970 Total	To Be Trained Each Year
For Selected Skilled Occupations							
Brickmasons, Stonemasons, Etc.	5,408	35.0%	7,301	1,893	1,081	2,874	287
Electricians	8,450	14.2%	9,650	1,200	1,690	2,890	289
Excavating, Grading and Road Machinery	4,319	68.0%	7,256	2,937	863	3,800	380
Composition and Typesetters	2,783	16.2%	3,233	450	556	1,006	100
Linemen—Servicemen, Telegraph, Telephone and Power	5,958	39.9%	8,335	2,377	1,192	3,569	356
Mechanics and Repairmen—Ins. A.C., Airplane, Auto and others not Classified	44,375	35 %	69,906	15,531	8,875	24,406	2,440
Plumbers and Pipefitters	7,781	16.4%	9,057	1,276	1,556	2,832	283
Tool and Diemakers	401	54.8%	621	220	80	300	30
Not Classified under Selected Skilled Occupations	98,074		92,012	3,944	19,617	23,664	2,368
All Employed Skilled Workers in Virginia	177,549	16.8%	207,371	29,828	35,510	65,338	6,533
Skilled Workers in Manufacturing	56,800	41 %	79,804	23,004	11,400	34,404	3,440

EXPLANATION OF ABOVE TABLE

a. Numbers as reported in U. S. Census of Population, 1960, Volume on Virginia, Detailed Characteristics.

b. Same per cent at which these groups increased in Virginia from 1950 to 1960 as reported by the U. S. Census of Population.

c. Difference between number employed in 1960 and number projected for 1970.

d. Based on the assumption that 2 per cent annually of the persons working in 1960 will withdraw from the labor force because of death, retirement, marriage, childbearing, etc. See page 104 of A Report on Manpower Requirements, Resources, Utilization, and Training, by U. S. Department of Labor, March, 1963.

TABLE 8

TECHNICIANS EMPLOYED IN VIRGINIA

	Number Employed in 1960 (a)	1970 Projection Rate (b)	1970 Number Projected	New Workers Needed by 1970 For Expansion (c)	New Workers Needed by 1970 For Replacement (d)	New Workers Needed by 1970 Total	To Be Trained Each Year
Technicians							
Medical and Dental	2,399	97.3%	4,733	2,334	480	2,814	281
Electrical and Electronics	2,399	576.3%	10,241	8,730	303	9,033	903
Other Engineering & Physical Sci.	3,846	148.3%	9,540	5,703	769	6,472	647
Not Elsewhere Classified	1,428	346.3%	6,368	4,945	286	5,231	523
Total Technicians in Virginia	9,188	225.0%	30,882	21,712	1,838	23,550	2,354
Technicians in Manufacturing Only							
Medical and Dental	62	97 %	122	60	11	71	7
Electrical and Electronics	2,399	576 %	3,120	2,658	93	2,751	275
Engineering & Phy. Sci.—Others	2,790	183 %	7,900	5,110	555	5,665	566
Designers and Draftsmen	2,061	86 %	3,830	1,769	411	2,180	218
Total Technicians in Manufacturing	5,375	197.0%	14,972	9,597	1,070	10,667	1,066

EXPLANATION OF ABOVE TABLE

a. Numbers as reported in U. S. Census of Population, 1960, Volume on Virginia, Detailed Characteristics.

b. Same per cent at which these groups increased in Virginia from 1950 to 1960 as reported by the U. S. Census of Population.

c. Difference between number employed in 1960 and number projected for 1970.

d. Based on the assumption that 2 per cent annually of the persons working in 1960 will withdraw from the labor force because of death, retirement, marriage, childbearing, etc. See page 104 of A Report on Manpower Requirements, Resources, Utilization, and Training, by U. S. Department of Labor, March, 1963.

TABLE 9

CLERICAL AND KINDRED WORKERS EMPLOYED IN VIRGINIA

	Number Employed in 1960 (a)	1970 Projection Rate (b)	1970 Number Projected	New Workers Needed by 1970 For Expansion (c)	New Workers Needed by 1970 For Replacement (d)	New Workers Needed by 1970 Total	To Be Trained Each Year
For Selected Jobs							
Secretarial	34,467	99.5%	68,762	34,295	6,893	41,188	4,118
Bank Tellers	2,717	153.2%	6,879	4,162	543	4,705	470
Bookkeepers	16,038	27.3%	20,216	4,378	3,207	7,585	758
File Clerks	2,031	2.3%	2,077	46	406	452	45
Typists	13,476	75.9%	23,704	10,228	2,695	12,923	1,292
Not Classified under Selected Jobs	119,505		152,995	33,290	23,902	57,192	5,721
All Clerical and Kindred Workers	188,234	45.9%	274,633	86,399	37,646	124,045	12,404

EXPLANATION OF ABOVE TABLE

a. Numbers as reported in U. S. Census of Population, 1960, Volume on Virginia, Detailed Characteristics.

b. Same per cent at which these groups increased in Virginia from 1950 to 1960 as reported by the U. S. Census of Population.

c. Difference between number employed in 1960 and number projected for 1970.

d. Based on the assumption that 2 per cent annually of the persons working in 1960 will withdraw from the labor force because of death, retirement, marriage, childbearing, etc. See page 104 of A Report on Manpower Requirements, Resources, Utilization, and Training, by U. S. Department of Labor, March, 1963.

TABLE 10

RETAIL, WHOLESALE AND SERVICE WORKERS IN VIRGINIA

	Number Employed in 1960 (a)	1970 Projection Rate (b)	1970 Number Projected	New Workers Needed by 1970 For Expansion (c)	New Workers Needed by 1970 For Replacement (d)	New Workers Needed by 1970 Total	To Be Trained Each Year
Major Areas in Distribution							
Wholesale & Retail Trade	229,255	21.4%	278,315	49,060	45,851	94,911	9,491
Service Businesses	72,773	17.2%	85,289	12,516	14,554	27,070	2,707
Hotels & Lodging Places	8,579	17.8%	10,106	1,527	1,715	3,242	324
Finance, Insurance & Real Estate	22,579	43.5%	22,400	9,821	4,515	14,336	1,433
Communication	1,782	134.0%	4,169	2,387	356	2,743	274
Transportation	7,725	no change	7,725	none	1,545	1,545	154
Total Major Areas	342,693	19.1%	408,004	75,311	68,536	143,847	14,383
Selected Occupations							
Managers, Officials, Proprietors	63,163	8.8%	68,721	5,558	12,632	18,190	1,819
Sales Workers	93,967	30.5%	122,626	28,659	18,793	47,452	4,745
Service Workers	31,427	28.2%	37,259	5,832	6,285	12,117	1,211

EXPLANATION OF ABOVE TABLE

a. Numbers as reported in U. S. Census of Population, 1960, Volume on Virginia, Detailed Characteristics.

b. Same per cent at which these groups increased in Virginia from 1950 to 1960 as reported by the U. S. Census of Population.

c. Difference between number employed in 1960 and number projected for 1970.

d. Based on the assumption that 2 per cent annually of the persons working in 1960 will withdraw from the labor force because of death, retirement, marriage, childbearing, etc. See page 104 of A Report on Manpower Requirements, Resources, Utilization, and Training, by U. S. Department of Labor, March, 1963.

TABLE 11

PROJECTED 1970 DEMAND FOR AGRICULTURAL WORKERS IN VIRGINIA

		1970		New Workers Needed by 1970		
	Number Employed in 1960	Projection [b] Rate	Number Projected	For Expansion	For Replacement [e]	Total
Farm Operators	97,619 [a]	—30%	68,333		17,580	17,580
Regular Hired Farm Workers	20,546	—30%	14,382	.....	3,600	3,600
Farm Related Occupations	62,600 [c]		62,600		15,650	15,650
Total	180,765 [d]		145,315	....	36,830	36,830

EXPLANATION OF ABOVE TABLE

a. Numbers reported United States Census of Agriculture for Virginia. (1959)

b. Percentage adjusted to compensate for change in definition of a farm between 1954 and 1959 Census.

c. Based upon figures released by Agricultural Economics Department at VPI and the Virginia Commission on the Industry of Agriculture. It is estimated that approximately 20% of the total of 313,000 individuals employed in the off farm segments of the industry of agriculture require some degree of agricultural training.

d. The figures do not include seasonal farm workers or unpaid family labor.

e. Based upon a 2½% annual replacement factor.

TABLE 12

MANUFACTURING EMPLOYED IN VIRGINIA

	Number Employed in 1960 (a)	1970 Projection Rate (b)	1970 Number Projected	New Workers Needed by 1970 For Expansion (c)	For Replacement (d)	Total
MALES						
Professional and Technical	14,693	127.5%	33,426	18,733	2,938	11,671
Managers, Officials and Proprietors	10,996	29.9%	14,283	3,287	2,199	5,486
Clerical and Kindred Workers	10,859	39.5%	15,148	4,289	2,171	6,460
Sales Workers	10,394	89.2%	19,665	9,271	2,078	12,349
Craftsmen, Foremen and Kindred Workers	54,406	41.6%	77,038	22,632	10,881	33,513
Operatives and Kindred Workers	84,448	13.2%	95,595	11,147	16,889	28,036
Service Workers	4,567	10.2%	5,033	466	913	1,379
Laborers	25,173	17.4%	21,793	None	4,352	4,352
Occupation not Reported	4,925	366.4%	22,970	18,045	985	19,030
Total Males	220,461		304,951	87,870	43,406	122,276
FEMALES						
Professional and Technical	1,992	74.9%	3,484	1,492	398	1,890
Managers, Officials and Proprietors	615	36.4%	838	223	123	346
Clerical and Kindred Workers	15,788	86.9%	29,507	13,719	3,157	16,876
Sales Workers	759	148.9%	1,889	1,130	151	1,281
Craftsmen, Foremen and Kindred Workers	2,394	19.3%	2,856	462	478	940
Operatives and Kindred Workers	54,082	24.2%	67,169	13,087	10,816	23,930
Service Workers	879	3.3%	908	29	175	204
Laborers	1,363	11.6%	1,205	None	241	241
Occupation not Reported	1,602	441.2%	8,670	7,068	320	7,388
Total Females	79,474		116,526	37,210	15,859	53,096
TOTAL IN MANUFACTURING	299,935		421,477	125,080	59,265	175,372

EXPLANATION OF ABOVE TABLE

a. Numbers as reported in U. S. Census of Population, 1960, Volume on Virginia, Detailed Characteristics.
b. Same per cent at which these groups increased in Virginia from 1950 to 1960 as reported by the U. S. Census of Population.
c. Difference between number employed in 1960 and number projected for 1970.
d. Based on the assumption that 2 per cent annually of the persons working in 1960 will withdraw from the labor force because of death, retirement, marriage, childbearing, etc. See page 104 of A Report on Manpower Requirements, Resources, Utilization, and Training, by U. S. Department of Labor, March, 1963.

TABLE 13

CONSTRUCTION WORKERS IN VIRGINIA

	Number Employed in 1960 (a)	1970 Projection Rate (b)	1970 Number Projected	New Workers Needed by 1970 For Expansion (c)	New Workers Needed by 1970 For Replacement (d)	New Workers Needed by 1970 Total	To Be Trained Each Year
Selected Occupations							
Craftsmen, Foremen and Kindred Workers	49,020	4.7%	51,323	2,303	9,804	12,107	1,210
Professional and Technical	3,938	51 %	5,946	2,008	787	2,795	279
Managers, Officials and Proprietors	7,880	38.7%	10,933	3,053	1,576	4,621	462
Workers Not Classified above—Including Clerical	20,296		32,300	2,022	6,059	8,089	808
All Construction Workers	91,134	10 %	100,502	9,386	18,226	27,612	2,761

EXPLANATION OF ABOVE TABLE

a. Numbers as reported in U. S. Census of Population, 1960, Volume on Virginia, Detailed Characteristics.

b. Same per cent at which these groups increased in Virginia from 1950 to 1960 as reported by the U. S. Census of Population.

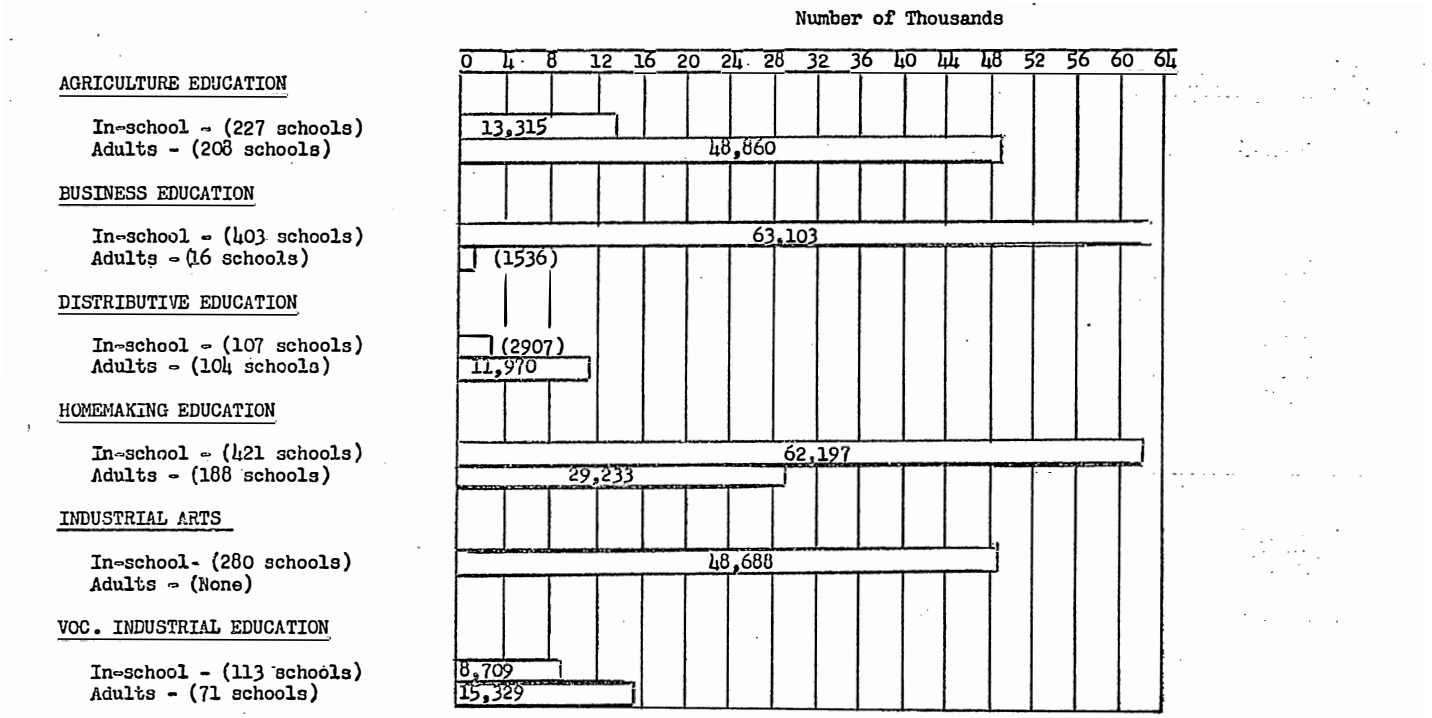
c. Difference between number employed in 1960 and number projected for 1970.

d. Based on the assumption that 2 per cent annually of the persons working in 1960 will withdraw from the labor force because of death, retirement, marriage, childbearing, etc. See page 104 of A Report on Manpower Requirements, Resources, Utilization, and Training, by U. S. Department of Labor, March, 1963.

TABLE 14

IN-SCHOOL AND ADULT ENROLLMENT BY VOCATIONAL SERVICES

1962-63 School Year



In-school includes all full time enrolees both high school and post high school.

Adult enrollment includes all persons enrolled on a part time basis.

No preparatory program in Distributive Education under present plan.

Pupils graduating from high school in the twelve-year system are required to complete twenty units of work for graduation, sixteen of which shall be in 9, 10, 11 and 12th grade subjects. A student pursuing an industrial education program would include the following required subjects during his five years in high school:

> English—5 units; Mathematics—2 units; Science—2 units; Virginia and United States History—1 unit; World History or World Geography—1 unit; Virginia and United States Government—1 unit; Total required units—12.

In addition, six units in industrial education may include two years of industrial arts (2 units) in the earlier years of high school and 2 years in a specialized trade subject (4 units) such as auto mechanics, preferably in the last two years.

To make a total of 20 units, an additional two units may be selected from general education courses.