AREA III

VOTATIONAL EDUCATION IN FEDERAL REPUBLIC OF GERMANY

- A nation which does not today prepare itself intellectually for tomorrow is throwing away its future !
 - Dr.Paul Mikat

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CHAPTER I

A SHORT HISTORY OF DEVELOPMENT OF VOCATIONAL EDUCATION IN GERMANY

Vocational Education is as Old as Man

Vocational education is considered as old as man himself. When the early man hunted birds and animals in the jungles, or caught fish in a stream or dug the ground for roots, he did nothing but practised a vocation, because a vocation is what a person does to gain a living. He not only practised a vocation himself, but also taught all these things to his sons and daughters. These were the tasks necessary to provide food, clothing and shelter. Hence their learning was indispensable. According to Mr.Roberts ' the history of vocational education is the history of man's efforts to learn to work.'

Appearance of Guilds

Centuries later, the craftsmen of the ancient nations,

Roberts, Roy W. 'Vocational and Practical Arts Education,' Harper and Row Publishers, New York, 1965, p.31.

such as Greece and Rome, and the men of the middle ages and of the Rennaissance, produced some of the civilization's most cherished treasures, and in so doing passed these skills from father to son and from mother to daughter. We find that early Jewish Law made the fathers responsible for providing trade instructions to his son. In 1061, the Candlemakers' Guild was founded in Paris. Many other organisations of craftmen also appeared during these years. These guilds had corporation rights alongwith their own rules and regulations which were strictly followed by their members. The Guild had developed traditions in their respective trades. On the one hand, they strived for their own advancement and on the other hand, they took care to see that the newcomers were systematically educated for the new vocation. Thus, one of their purposes was to provide some form of vocational training to their members.

Early Apprenticeship

But during all these times production was carried on mostly in the home. Generally the craftsman's shop was a part of his home and his apprentice lived as well as worked with his family. In these early days of apprenticeship, the boy who wanted to learn a trade moved into the home of the master and learnt not only the skill and the technical side

of the trade but also the moral and spiritual aspects of his family life. Thus, the roots of vocational training extend back beyond the dawn of recorded history.

Until comparatively recent times man's need for vocational education was largely satisfied by apprenticeship in one form or the other. There was the need for this education in the society and its modern roots appeared in the educational reforms of Rousseau, Pestalozzi and Fellenberg. But as time went by, the industrial and technical development and the resulting critical need for vocational instruction gradually became problems of nation's concern and action.

Beginning of Compulsory Education in Germany

The idea of compulsory education is very significant so far as German education is concerned. In Germany compulsory attendance laws began to be decreed during the first decade in the seventeenth century. It is worth mentioning that legislation obliging the parents to provide for a minimum basic education for their children were first enacted in the early 1600s. In the beginning school attendance was compulsory for four to six years. In the years that followed, the minimum requirement was extended step by step. By the late 1800S the attendance required was from six to fourteen. Thus compulsory full time attendance

for at least eight years in an elementary school (Volksschule) became a general rule. Even when the minimum age for leaving school was set at fourteen, it was felt by many that the education and training of children had to be prolonged for several more years. The results of this awareness was the development of continuation schools (Fortbildungsschulen) special classes on Sunday and Holidays for providing additional training beyond elementary school. Thus, the continuation schools were the first provision for the education of workers on the completion of elementary school. It may also be noted here in this connection that the thought of the compulsory school attendance beyond the elementary schools was expressed by Ernst the Pious in Gotha as early as 1642, but the first State to introduce it is reported to be Wurttenberg in the year 1695. This was followed by Baden in 1756, and Bavaria in 1771 and again in 1803 and so on. These continuation schools were intended primarily to preserve the fundamental skills in reading, writing and arithmetic and also to provide religious instruction, but later on they paved the way for compulsory attendance laws for apprentices.

Change in Social and Economic Life and Its Impact

When the elementary schools were developing on one side, there was a gradual but increasing rapid growth in

business and industry with a corresponding need for specialisation of labour. This inevitable development of business, commerce and industry affected significant changes in the social and economic life of Germany.

While there was some little commerce and trade between Rome and German tribes already during the pre-christian era, it was the crusades of the 12th and 13th centuries that opened new channels and new opportunities for trade among many nations. Germany too was somewhat affected by them. But the following were some of the few events that led the road from almost purely agrarian economy to the highly technological and scientific one. 1

- The formation of Hanseatic League (Thirteen to Seventeenth century) ;
- The French Revolution;
- The Napoleonic Wars (Of the eighteenth) century);
- The German Customs Union. (Established in 1843); and
- The Franco-Prussian War (of 1870-71).

The French Revolution destroyed the absolute states and the citizens began to replace the nobility in political power.

lemil O. Toews, 'Principles, Problems and Trends in Vocational Education in Germany.' (Unpublished, U.S. Specialised Report)
Office of the U.S. High Commissioner for Germany. Office of the Public Affairs, Education and Cultural Relations Division Education Branch - August, 1951).

The Middle class grew in power and prestige and consequently the attention was directed towards limited and specialised educational programme for the masses. Slowly the middle class and the common masses became a force that could not be ignored.

The defeat of Prussia by Napolean in 1806 also played an influential role in reconsidering the educational programme of the masses. It is strange to note that the development of elementary, and consequently of vocational education in Prussia began in the period of her military eclipse, Frederick William III declared:

We have indeed lost territory, and it is true that the State has declined in outward splendour and power, and therefore, it is my solemn desire that the greatest attention be paid to the education of the people. 1

The establishment of the German Custom Union (Deutscher Zollverein) in 1834 greatly promoted the flow of economic goods between German States and foreign countries. This resulted into the expansion of trade and commerce and encouragement to more production.

The U.S. Specialist Emil O.Toews remarks, ' it has been said that the Franco-Prussian War was won by Germany's Vocational

¹Samuel R.H. and Thomas, R.H., 'Education and Society in Modern Germany, 'Routledge and Kegan Paul Ltd., London, E.C. 4, 1949, p. 36.

Schools.' This simply suggests that these schools helped Germany to become an efficient and economically productive nation in Europe and possibly in the World.

But this was not enough. Already inspired by previous fairs, Bismarch sent a representative to the World's Fair in Philadelphia in 1875 who reported that Germany's products were 'Cheap but shoddy.' This necessiated for more vigorous training for German workers which provided worldwide reputation for German goods and German craftsmen.

Thus, these were some of the most important events which changed the entire structure of German economy and consequently of the society in Germany. The development of trades and crafts set the pattern for learning specialised skills and knowledge for apprenticeship, Journeyman, master - but they themselves could not meet all the new demands of business and industry. Science and technology had created new opportunities and challenges for the German youths and this challenge was accepted by them because the Germans were conscious about the importance of vocational training and education.

Beginning of Part-Time Vocational Schools

As previously mentioned, the continuation schools on Sundays and Holidays was the first step in the direction of providing training beyond the elementary school in Germany. During the latter part of the 18th and during the 19th century these schools became quite common and laid the foundations for compulsory attendance laws for apprentices. By 1850, compulsory attendance upto the age of sixteen in these schools was made obligatory. Following the foundation of the German Reich in 1871, the Federal Legislation authorised the municipal authorities to enforce attendance at continuation schools of all male journeymen and apprentices under eighteen years of age and also to compel the employers to grant them time necessary at these schools. Thus, slowly these continuation schools emerged as part-time day schools. However, it should not be forgotten that the compulsory attendance laws and their enforcement worked satisfactorily only in big towns and cities but the position was not quite satisfactory in the rural areas.

In due course of time, instruction in the German continuation schools reached beyond the bounds of general education to include the subjects that were directly useful to young workers. Slowly this led to the creation of separate industrial and commercial continuation schools. In 1906, the State of Wurttenberg wanted all its localities to establish industrial or commercial continuation schools if there were atleast 40 boys below the age of 18 who were employed in the industrial or commercial enterprises.

As industry developed, and vocational training became increasingly important, more and more schools became training centres for industrial, agricultural, mining, and other vocational pursuits, instead of general education institutions. Accordingly, the comtinuation schools were renamed as Part time vocational schools (Berufs-Schube). Thus, from the beginning of the 18th Century, a number of vocational and trade schools were established in order to train the youths for trades and occupations that needed special assistance or promotion. These part-time vocational schools accepted the students after the completion of eighth grade, and after completion of the training in these schools, they were able to enter their respective trades. Thus, the Berufsschulen or Vocational Schools became a very important element in the German educational system and became the cornerstone of vocational education and training in Germany. At one time, for themajority of the Germans, the tradeor occupation became the focal point of their education and an opportunity to gain prestige and distinction. To the Germans, a man's work was more than a means of earning a livelihood, it was his inner calling - his BERUF - through which he was able to demonstrate to society his moral virtues, his creative skills and his technical knowledge. 1 Thoroughness, honesty, loyalty, dependability, efficiency, orderliness, frugality, industry

¹Emil O. Toews, Principles, Problems and Trends in Vocational Education in Germany. Office of the U.S. High Commissioner in Germany, 1951, p.6.

and obedience to constitutional authority - these were the qualities recognised and extolled by the society with enthusiasm.

Attempts in the Past to Encourage Practical Arts, Trades
Commerce etc.

As already pointed out, the German Vocational Schools-Berufsschulen - grew out of the continuation schools as a separate and distinct schools for the masses - the middle and working class of the population - and provided the foundation for efficient vocational educational system in Germany. However, it is worthwhile to mention here some of the attempts which have encouraged the development of vocational training or promotion for fine arts and other professions at various times and stages in Germany. As it has happened in the case of many nations, the nobles and the great barons encouraged and supported many crafts and arts in Germany also. Because of the growing mercantilism, many barons brought architects, artists and highly skilled artisans to Berlin. A 'Royal Academy of Fine Arts (Königliche Akademic der Künste)' was already established in Berlin as back as in 1696 for the promotion of Fine Arts.

In 1771, Pastor Hecker established first Realschule in Berlin which was intended 'for such young people who are not really qualified for more academic pursuits but who, nevertheless, are suitable for the pen-trades, commerce, rent, agriculture,

fine arts and manufacturing. 1

The first school for agriculture of a practical and scientific nature was organised by Thaer in Moglin, Brandenburg in the year 1807. It was accredited as an 'Academy' in 1824, and became a sort of model for many other new schools which were established between 1807 and 1832.

Greater Changes to Suit the Industrial Demands of the Society

Here, it is also interesting to know that about eighty percent or fourth-fifth of the population of Germany was engaged in agriculture and forestry at the beginning of the nineteenth century. But as a result of the growth of industries, this number began to decrease. By 1850, it was less than half, in 1907 it was reduced to one-fourth. This rate continued to decrease. In 1925, it was less than 23 percent of the whole population and since then this tendency to decrease the percentage continues to this day. Thus, the German Society changed rapidly from agricultural to industrial one and naturally its system of vocational education and training demanded greater changes to suit these new demands of the society.

The legislation of 1810 had permitted an individual to pursue any trade or occupation he might choose (Gewerbefrei-Leitsgesetz, 1810). The Trade Regulations of 1869 (Gewerbeordnung)

1 Ibid., p.6.

preserved the rights of Trade Guilds to determine apprenticeship standards. But as their system of training at that time mainly depended on learning by imitating the skills which had developed by the use of hand-tools, it became out of date.

Consequently, in 1881, the regulation of apprenticeship system and the responsibility for the 'trade, technical and social' training of apprentices was transferred to the Chambers of Trades (Handwerkskammern) and the training of apprentices for business and commerce was regulated by the Commercial Law (Handelsgesetz) of January, 1900.

However, the increased demands for semi-skilled and skilled workers during the following years proved all these provisions inadequate. Hence the continuation schools gradually added other subjects to their training list to meet the new demands and their number also increased considerably. In Prussia alone, the number of these schools increased from 664 in 1884 to 2400 schools in 1913 with the total enrolment increasing from 58,400 to 5,05,000. It is interesting to note that these schools did not ignore general education of the youths. The Law of that time stated that 'All subjects of the elementary school, with the exception of Religion, shall be continued during the first year (Unterstufe) and not until the second year (Oberstufe) shall special attention be given to the needs of industry, especially drafting. The State furnished

¹ Ibid., p.9.

funds for the salaries of the teachers provided prescribed standards were met. The trade Laws in 1869 (Gewerbeordnung) of the North German Federation made the attendance at continuation schools compulsory and in 1891, penalties for non-attendance were introduced in Prussia. Thus the principle of utilising the continuation school as a means of supplementing apprenticeship training was already established by the end of the 19th century. Thus, the Berufschule (Part-Time Vocational Schools) as a supplement to 'on - the - job' training actually existed before it was specially provided for by legilation. Magdeburg is said to be the first large city in Germany to establish compulsory Berufsschule and soon after that they were introduced in Munich between the period of 1902 to 1924, where they became compulsory for boys in 1912 and for girls in 1914. It is also interesting to note that the term 'Berufsschule' did not come into general use until after World War I. This word was first used officially in the Law of June 10, 1921.

Attempts by Georg Kerschensteiner to enrich Vocational Education in Germany

Prior to World War I, the Munich Vocational Schools, under the leadership and direction of Herr Georg Kerschensteiner (1854-1932) developed an exemplary programme of vocational

subjects and Civics. He was City Educational Officer of Munich and later on was appointed an honorary professor at Munich University. He considered the co-operative work in the school as the first step towards co-operative work in later vocational life. To him Vocational Education was the gateway to the formation of human personality. He believed that a working man was on the right path to ideal personality. The same viewpoint is expressed by Goethe in his book - Wilhelm Meister's Wandering Year-in which he writes 'Thinking and handling, handling and thinking, that is the essence of all wisdom, long recognised, long practised but not realized by everybody.'

Mr.Kerschensteiner also came in contact with John Dewey, who also held same views like him on education. He also remained in constant touch with Dr. Eduard Spranger, Professor of Philosophy and Pedagogy at the Berlin University. Dr. Spranger once remarkedm ' The man must be educated to be a good man. It matters not if the vocational education suffers a little if only to ensure that the highest human values are preserved and brought forth.' Mr.Kerschensteiner and Dr.Spanger were responsible for high intellectual and cultural standard of the German Vocational Schools. In 1925, the syllabus was changed to stress the importance of education for good citizenship. Obviously his experiments attracted World-Wide attention

Hirlekar Yamunabai, 'Vocational Education in Germany,' The Popular Book Depot, Bombay-7. 1962, p.73.

²Ibid., p.76.

It was Kerschensteiner particularly, who sought to transform these Vocational Schools (Beröfsschulen) into real educational institutions for not only vocational training but also for training of right type of citizenship and for more general education (Staatsburgerliche Erziehung) for the masses in Germany. It was through his initiative that the weekly eight hours' instruction in vocational schools during apprenticeship period was introduced.

The fundamental principle which Kerschensteiner tried to develop in the Berufsschule wask a better and enriched general education for citizenship through a trade or occupation. Schools were equipped with modern shops and laboratories. Some of the teachers employed in these schools were outstanding craftsmen who imparted trade and technical instructions efficiently. Some of the most successful teachers from elementary schools with interest in their profession were selected to impart general education. He tried to develop an educational programme to meet the needs of the great majority of the young people who intended to enter into employment after completing the volksschule (eight-year elementary school of that time). He was in such demand as a consultant and advisor on problems of vocational education that he earned the name of 'Travelling School Superintendent' - (Der reisende Schulrat). Even those who opposed his educational views praised him and heard him with interest. It is said that he was

understood by few and misunderstood by many both in and outside Germany. Unfortunately his efforts were interrupted by the First World War. On the whole, despite the undeniable progress of German part-time vocational schools, the success was always limited mainly because of insufficient time for instruction in general education.

The Weimer Constitution and Part-Time Vocational Schools (Continuation Schools)

The Weimer Constitution of 1919 made the continuation school a part of the general school system for the entire Reich (State), by ruling that all children between the age: of 14 to 18 had to attend the continuation school compulsorily, if during that interval they were not getting other schooling. (Art. 145). But since no federal law was adopted to implement this article of the constitution, the German States continued to regulate the attendance and organization of these schools independently. The number of pupils in these continuation schools continued to increase and reached at more than 1.2 million, in 1931, one third of whom were girls.

Courses in these vocational schools were generally three years in length, except those leading to agricultural occupations, which were only two years. Apprentices in industry and crafts had to attend for the full term of their apprenticeship which was, in most cases, four years. Before World War I, instruction occupied about four hours a week,

and in the Republic it was extended to six and gradually increased to eight in many states.

Despite many minor differences among the states, the programmes and courses of the various branches of the vocational schools achieved a certain uniformity throughout the country. Subjects were classified as vocational, managerial, and civics. An average of three hours per week devoted to vocational subjects, two to three to managerial, and one to civics.

The National Socialists made very few changes in the vocational schools. Instruction time was slightly increased and apprentices were required to spend from six to ten hours a week in school, depending on trade.

The Role of Other Vocational Institutions

Over and above the part-time Vocational Schools
(Berufsschule) therewere some other institutions which also
played important role in vocational education in Germany. The
Industrial Vocational School (Gewerbliche Berufsschule)
constituted one of the main divisions of this branch of
education. In large cities almost every major trade had at
least one school of this type. There were also private vocational
schools called 'Workschulen', conducted, for the most part, by
large plants but, like the municipal schools, operated under
the supervision of state educational or economic authorities.

The German Technical Institutions (Fachschulen) have played a very important role in providing a highly developed system of school training. These institutions were designed to enable experienced and gifted workers to acquire additional technical education. This type of schooling, which these workers availed themselves after an apprenticeship and a year or two of journeymen's work, was necessary, since the majority of the workers had only eight years of formal education which provided no adequate preparation for highly technical work. These technical institutions were first established in the 1805 when it was recognised that industry could not be effectively promoted without more elaborate technical training their and since then \mathcal{L} number and importance have continued to grow steadily.

A great number of technical institutions in the metal and building industries were created as state institutions. Others were set up for textiles, crafts, and commerce by municipalities, but were, for the most part, subsidized by the State and conducted according to the same directions. Mining schools were established by the associations of entrepreneurs in the field of coal mining, but since Prussia was the largest owner and entrepreneur of coal mines, it exercised a notable influence on the development of these schools too. In other States, similar developments took place. Accordingly, the

influence of public officials on these schools was substantial, specially in the fields of agriculture, industry and crafts.

The main branches of technical institutions in industry and commerce were :

- Machine and metal institutes (Metalfrachschulen);
- Schools for building trades (Bangewerbeschulen);
- Textile institutes (Textilfachschulen);
- Mining institutes. (Bergschulen);
- The institutes for crafts and applied arts (Kunstgewerbe and Handwerkerschulen), which offered a great variety of courses; and
- Commercial schools (Handelschulen), etc.

This by no means exhausts the list. There were also a great many other institutions or Sonder-Fachschulen, specially in the fields as wood working, chemical work, paper making, ceramics, leather works; and shoe making.

Other specialised institutions were created to serve local industries or enterprises. For example, an institute for opticians at Jena served the Zeiss Company; Saxony. Württemberg, and Baden had institutes for watchmakers. All these special institutes were smaller in number but not negligible. Their real importance lay not in their numbers but in the services they rendered to local industries or crafts, which were something essential to the economy of the region or even the nation.

Unlike the continuation or part-time vocational schools (Berufsschulen), the technical institutes (Fachschulen) offered

full-time training. Whereas graduates of the technical universities were educated mainly for research and experimental work, the graduates of technical institutions were usually entrusted with the planning and supervision of production and they comprised the great body of technicians, draftsmen, designers, supervisors, and foremen. Since the number of persons who attend the technical universities is small, the German system of drawing on the rank and file of skilled labour for the practical positions furnishes a possible solution of the problem of production.

Other Agencies also Play Their Roles

The history of vocational education in Germany obviously demands the mentioning of some of the institutions or factors that have led to the systematic development of Berlifsschulen. Incidentally, they also reflect some of the problems created by the 'industrial age' and its impact on social institutions.

The Chamber of Trades (Handwerks-Kammer)

The consolidation of guilds and craft unions which grew in power and prestige since the Middle Ages have their modern counterpart in the Chamber of Trades. Laws, principally of 1881 and 1897, delegate to them the Standardization of apprenticeship training, the development of instructional materials, and administration of journeyman examinations, and such similar matters related specially to the training of apprentices, journeymen

and masters. Only a licensed 'master' is permitted to employ and train apprentices.

Chamber of Industry and Commerce

All trades and occupations that do not come under jurisdiction of the Chamber of Trades come, in a similar way, under the jurisdiction of the Chamber of Industry and Commerce. They came into existence in about 1900, at which time was established DATSCH (Deutscher Ausschuss für das Techhische Schulwesen) under whose leadership big industries specially machine industries, undertook to establish in-plant industrial training programmes. Railroad Repair Shops had already started such shop training programmes in the 18905.

DATSCH (German Committee for Technical Education)

DATSCH became chiefly responsible for preparing instructional materials for the training of semi-skilled, unskilled and those skilled craftmen which did not come within the orbit of the Chamber of Trades. Like the Chamber of Trades, the Chamber of Industry and Commerce regulated the training of apprentices, conducted the journeymen's examinations and developed training standards. The apprentice training programme for commerce and business became a part of this organisation by the Law of January 1, 1900.

Youth Assistance - (Jugendpflege)

This is the name of system of bureaus through which the

State, since 1911, provides aid for youth in need of financial and moral assistance. It began in 1846 as the Kolping Society was carried on by Church organisation until the State took over the responsibilities.

The Youth Welfare Law (Jugendwohlfahrtsgesetz)

This law of 1923 provides for every German child the right to an education for physical, intellectual and social competency. This automatically includes his right for proper and suitable vocational training for a decent living.

The Juvenile Bureau - (Jugendmt)

This is the agency through which a community, or a combination of communities, provide for the welfare of needy children, especially orphans and illegitimate children.

The Law for Protection of Youth (Jugendschutzgesetz)

This law of April 30, 1938, was designed to regulate the working hours of youth. They were not required to work more than eight hours per day; they were entitled to paid vacations; 21 working days for those between 16 and 18 years of age. Six hours attendance in a vocational school constituted a full day which they were to be paid by the employer. Child labour was abolished in 1903, a child being a person who had not completed attendance in the elementary school.

The Labour Court (Arbeitsgericht)

This Labour Court has existed since 1927 and is concerned with wage scales, disemployment and general information regarding

employment and employment conditions.

The Labour Office (Arbeitsamt)

This office is responsible for job and apprenticeship placement, for vocational counselling (through the Berufsberatungsstelle), for unemployment insurance, and for arbitrating in the labour disputes. It is interesting to note that vocational counselling (Berafsratung) grew out of Women's organisations. In 1958, the Federation of German Women's Club (Bind Deutscher Frauenvereine) established a 'Commission for the promotion of Gainful Employment and Economic Independence of Women', and a 'Federal Information Centre' which constituted the first independent Vocational Advisement Centre. The success of these 'Centres' was due largely to the untiring efforts of Mrs. Josefine Levy-Rathenau. In 1917, Bavaria issued a decree to make state provision for vocational counselling. It first became an agency of the Reich in July, 1922.

The first steps to train Vocational Counsellors were taken between 1925 and 1927. Special training courses were held in different five cities. Berlin, Dusseldorf, Hannover, Breslaw and Frankfurt/Main. The one in Frankfurt, for example, consisted of a total of 280 hours of intensive training, in technique of counselling (50 hours), vocational information (100 hours) adolescent psychology (50 hours) and related studies (80 hours).

Development of Vocational Education Continues After World War II:

After the end of Second World War (1945), and immediately after the formation of Federal Republic of Germany, some changes and reforms in vocational education were discussed widely by the leaders in this field. Here is a country where the people are always ready to change according to the changing needs of the times, but every change is made with utmost caution. The most outstanding change was the introduction of one more year (the 9th grade) in the elementary school, leading to vocational preparation. It was also decided that the period of related instruction in the part-time vocational schools should be extended to 8 to 10 hours per week. Today most of the vocational schools provide related instruction for 8 to 10 hours and in certain cases even for 12 hours per week.

Some institutions like the Central Institute for
Vocational Education, the Central Institute for Research in
Vocational Education and the Central Bureau for gathering and
distributing facts, figures and information about vocational
education and training are established. The establishment
of 'Upgrading Schools' (Berufsaufbauschulen) marks another
important forward step in the development of vocational
education in the Federal Republic, Foday it offers an excellent

thusy thousands opportunity to hundreds of pupils for further education and advancement according to their capacities.

The big organizations, Association of German Chambers of Industry and Commerce, Federation of German Industries and Confederation of German Employers' Association have co-operated and helped in setting up 'The Office for Vocational Training in Undertakings' (Arbeitsstelle für Betriebliche Berufsausbildung) at Bonn. The main function of this office is to formulate the regulations governing vocational education in undertakings by remaining in close contact with various industrial and commercial bodies and the trade unions. It also sets up, defines and lays down the aim, scope and content of vocational education in industry, commerce and transport. 1

Hirlekar Yamunabai. Vocational Education in Germany. The Popular Book Depot, Bombay-7, 1962, p.52.