

**REPORT  
FROM THE  
INSPECTORATE**

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# **Post-16 Vocational Education and Training in Germany**

**International Report**

**November 1995**

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**THE  
FURTHER  
EDUCATION  
FUNDING  
COUNCIL**

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## **ACKNOWLEDGEMENTS**

The detailed arrangements for the visit were made by Mr Barry Smeaton and Ms Nicola Guthrie of the Department for Education and Employment. We are greatly indebted to the staff and students of all the institutions visited, officials of the chamber of industry and commerce at Kiel and the craft chamber at Stuttgart, the Education Ministry for Schleswig-Holstein and the Ministry of Education and Sports for Baden-Württemberg. The generosity with which they gave their time and hospitality and their frankness in discussion ensured our visit was both fruitful and enjoyable.

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## **PREFACE**

This is one of a series of publications planned by the Further Education Funding Council's inspectorate to build up knowledge of the post-16 vocational education and training systems of other countries in order to highlight those aspects which might inform thinking in England in particular and the United Kingdom in general.

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## COMMENTARY

1 This report is based on a visit to the two states (*Länder*) Schleswig-Holstein and Baden-Württemberg in the Federal Republic of Germany in February 1995 by a team of four inspectors, a member of the Quality Assessment Committee from the Further Education Funding Council (FEFC), and three officials from the Department for Education and Employment. The institutions and organisations visited are set out in appendix 1.

2 The purpose of the visit was to examine aspects of post-16 vocational education and training in Germany, paying particular attention to the dual system of apprenticeship training, which involves both on-the-job training and attendance at a vocational school, and the provision of full-time and part-time vocational courses for those over 16 years of age. It was not the team's intention to report on the quality of post-16 vocational education and training in Germany, nor would it have been right to do so on the basis of such a short visit. The intention was to build on the experience of previous visits by members of the team and others, to examine recent developments and to highlight those aspects which might inform thinking in England.

3 The major features of post-16 vocational education and training in Germany are:

- some form of education or training is compulsory for all up to the age 18
- most young people either prepare for higher education by studying full time at a *Gymnasium*, or enter the dual system of apprenticeship which prepares them for the world of work and further vocational courses
- the dual system, with its emphasis on 'learning by doing', combines employer-provided training with part-time education at a vocational school
- there are presently about 1.7 million trainees in 300 recognised training occupations which cater for about two-thirds of all young people
- there are about 2.5 million companies in Germany, of which about half a million are training providers; two-thirds of the companies that train employ fewer than 50 people
- half of all apprentices are in about 15 areas of work. For males, the most popular trades are motor vehicle mechanic, electrician, machinist/fitter, painter and decorator, and joiner; for females they are hairdresser, office clerk, saleswoman and assistants to doctors or dentists
- there are national training ordinances for each trade
- a substantial infrastructure of 385 authorised institutions manage and regulate vocational training; these are the chambers of industry and commerce, the craft chambers and chambers for medical practitioners and lawyers

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- companies are obliged to be members of the appropriate chamber, but are not required to train. Those that do train, do so at their own expense
  - the chambers accredit organisations for training, register training contracts, assess trainers and conduct intermediate and final examinations with the aid of a tripartite examination commission made up of employers, trade unions and teachers
  - there are 40,000 full-time professional trainers and about 700,000 part-time qualified trainers in the dual system which together account for 39 per cent of company training costs
  - apprentices are paid a trainee wage, negotiated between the employers and trade unions, which varies according to the occupational area; for example DM600 a month for a hairdresser, DM1,500 a month for a bricklayer. The trainee wage represents 49 per cent of company training costs
  - management, examinations, and teaching and learning materials, including workshops, make up the additional 12 per cent of company training costs
  - the average duration of training is three years, but for those with a good secondary education the period can be shorter
  - 15 per cent of all trainees commence their apprenticeship having already obtained the *Abitur*, the entrance qualification for higher education
  - in most *Länder*, weekly release from the company to attend the vocational school (*Berufsschule*) is fixed at 12 hours. Over three years, each with 40 teaching weeks, this represents 1,440 lessons each of 45 minutes, or 1,080 curriculum hours
  - the curriculum at the *Berufsschule* comprises 60 per cent technical tuition and 40 per cent general education. Together with the training provided in the firm, this ensures that apprentices are well prepared for the world of work
  - about 25 per cent of trainees withdraw from the dual system, but many of these start a new training contract in another occupational area
  - the pass rate for those completing the dual system is about 90 per cent
  - 10 to 15 per cent of those completing an apprenticeship go into higher education. To do this they require the necessary entrance qualification for a university or a *Fachhochschule*
  - the *Land* pays the salaries of teachers in the *Berufsschulen* and the local authorities provide and equip the colleges
  - the number of students on full-time courses has risen in recent years, sometimes in response to the lack of suitable training places or sometimes because apprenticeships require a higher standard of preparation than was previously the case.

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4 In 1993 there were 825,000 16 year olds in Germany of whom about 95 per cent were participating in some form of education or training. In the same year in England the 16 year old cohort was 536,000 and the participation rate in both full and part-time education was about 80 per cent, rising to about 89 per cent when those on government training schemes are included.

5 In Germany, employers and colleges work in tandem under the auspices of the chambers of industry and commerce or crafts to provide vocational education and training through the dual system for about two-thirds of all young people. All political parties and all the social partners involved with the German economy are committed to the dual system with its emphasis on the employer as the prime provider. Any move to change this would meet with strong resistance. The majority of the remainder of the age cohort are studying at *Gymnasien* preparing themselves for higher education or attending courses to prepare themselves for work.

6 In England, about 37 per cent of 16 year olds were taking General Certificate of Education advanced level (GCE A level) as their main course of study in 1993. Most were hoping to progress to higher education. They were spread across school sixth forms and sixth form colleges, tertiary colleges and general further education colleges in the FEFC sector. In 1993, there were 702,000 entries for GCE A level examinations; 59 per cent were from schools and 41 per cent from FEFC sector colleges. Many of those studying for vocational qualifications in schools and colleges, especially the recently-introduced advanced General National Vocational Qualifications (GNVQs), also aspire to enter higher education. Routes to higher education for those with vocational qualifications are well established and more widespread in England than in Germany, although the standard required in mathematics for those wishing to pursue technical subjects is as much a problem in England as it is in Germany.

7 The decline in traditional apprenticeship training in British industry, with its associated day release to colleges and the fall in employment opportunities for 16 year olds, has been accompanied by a rise in post-16 students studying full time on vocational courses in colleges and schools to prepare themselves for the world of work. Presently the staying-on rate in full-time education at schools and colleges post-16 is just over 70 per cent. This is in marked contrast to Germany where the majority of this age group enter apprenticeships and become part of the world of work, although in Germany also there has been a rise in those attending colleges on full-time courses, either because of the economic situation or to prepare themselves for apprenticeships.

8 In England, work placements or simulated work environments are valuable features of many vocational courses, but they are often only second best to working for, and being trained on the job by, employers. The introduction of the modern apprenticeship for 16 to 19 year olds may go some way to rectify this situation. By April 1995 every training and enterprise council (TEC) in England had introduced Youth Credits for



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access to youth training and modern apprenticeship frameworks covering over 150 occupations with National Vocational Qualifications (NVQs) at level 3. Modern and accelerated modern apprenticeships will start throughout England in the autumn of 1995. When fully operational, the government's vision is that there will be around 150,000 young people in modern apprenticeship training at any one time.

9 There are also other changes in the pipeline. Measures specifically relevant to post-16 vocational education and training are contained in *Competitiveness: Forging Ahead*, published in May 1995, which sets out the issues facing the United Kingdom that affect how it will compete internationally. At first degree level, the United Kingdom is a European Union leader in graduate output. However, in comparison with Germany, we have some way to go in creating a vocationally well qualified workforce.

10 In Germany, initial vocational qualifications obtained through the dual system are approximately equivalent to the NVQs at level 3 on offer in the United Kingdom. About 80 per cent of the German workforce hold vocational or professional qualifications. By the year 2010 it is expected to be 90 per cent. The national learning targets for the United Kingdom envisage that 60 per cent of the workforce will be qualified to NVQ level 3 or equivalent by the year 2000. In 1994 the figure was about 40 per cent. In the United Kingdom, we are aiming to have 60 per cent of young people by the age of 21 achieving NVQ level 3 or equivalent by the year 2000. In Germany, this has already been achieved.

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## ECONOMY AND GOVERNMENT

11 East and West Germany were unified to form the Federal Republic of Germany in October 1990. The unified country has a population of over 81 million, including 6.5 million foreigners, mainly guest workers and their families. It is one of the most densely populated countries in Europe.

12 Since 1990 the Federal Republic consists of 16 states (*Länder*). The *Länder* have constitutions which are consistent with the republican, democratic and social principles embodied in the Basic Law of the Federal Republic (*Grundgesetz*), but in other respects they are autonomous, endowed with considerable powers of their own. State administrations have a threefold responsibility: they handle matters which fall exclusively within their jurisdiction such as schools, the police, and town and country planning; they implement federal law on matters such as trade and industry and environmental protection; and they apply federal law on behalf of the federal government in other areas including national highways and the promotion of vocational training.

13 The Basic Law also allows for self government by the town (*Stadt*) and the district local authority (*Kreis*), and gives them the right to regulate local affairs. The building and maintenance of schools and the responsibility for adult education and youth welfare fall to local government. Many such measures are beyond the means of smaller communities and are therefore taken over by the next highest level of local government, the *Kreis*.

14 Germany is one of the world's major industrial countries. It is third largest in terms of overall economic performance and second in terms of world trade. The German economy has recovered from the recent recession led by chemicals, cars and machinery and fuelled by economic recovery in other parts of Europe. Industrial output rose by 3 per cent in 1994 and exports by 9 per cent. The economy remains strong as the comparative statistics for Germany and other nations shown in table 1 indicate.

**Table 1. Comparative economic statistics for Germany and other industrialised countries**

	<b>GDP (\$ billion)</b>	<b>Population (million)</b>	<b>GDP per capita \$</b>
USA	7,200	264	27,400
Japan	4,700	125	37,600
Germany	2,100	81	26,000
France	1,400	58	23,600
UK	1,100	59	19,000
Italy	1,050	57	18,400

Source: *The world in 1995. The Economist Intelligence Unit (1995)*

Note: £1 = \$1.54 = DM2.27 (August 1995)

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15 Germany's main trading partners are the member states of the European Union. Its main suppliers in 1992 were France (DM76.4 billion), the Netherlands (DM61.2 billion), Italy (DM58.5 billion) and Belgium/Luxembourg (DM44.8 billion). The main countries taking exports were France (DM87 billion), Italy (DM62.4 billion), the Netherlands (DM55.8 billion) and the United Kingdom (DM52 billion).

16 Industry is the mainstay of the German economy. Of the total labour force of almost 37 million in 1992, the 52,000 industrial enterprises employed more than 7.5 million people, more than any other sector of the economy. Table 2 shows the German workforce by sector of the economy. Manufacturing still accounts for a higher proportion of the workforce than the average for industrialised countries as a whole. Nevertheless, industry's importance has declined. Its share of the gross domestic product (GDP) fell from 52 per cent in 1970 to 37 per cent in 1992.

**Table 2. Percentage of German workforce by sector in 1992  
(36.9 million people)**

<b>Sector</b>	<b>Workforce (%)</b>
Agriculture, forestry and fishing	3.7
Utilities, mining, manufacturing and construction	39.7
Trade, transport and communications	18.0
Banking, insurance services and professions	26.7
Health and care	9.6
Other	2.2

*Source: Statistisches Bundesamt, Wiesbaden*

17 Germany is one of the world's biggest suppliers of industrial equipment. The main exports are motor vehicles, machinery, chemical and electrical engineering products which together account for 45 per cent of German exports. As a country with a highly skilled workforce which commands high wages, Germany has concentrated on the production of high technology products. Only about 2.5 per cent of the 52,000 industrial enterprises are large companies with more than 1,000 employees. About 66 per cent are small firms with less than 100 on the payroll.

18 About 13 per cent of the total workforce are employed in approximately 600,000 enterprises in the commercial sector (wholesale and retail). Most companies are still in the small or medium size category. About half of them employ only one or two employees.

19 In 1992, about 14 per cent of the workforce were employed in craft and trade firms which had an annual turnover of DM700 billion. In 1993, there were some 650,000 craft and trade firms, each employing an average of eight people.

20 In 1995, the German economy faces a number of challenges. The country has a strong currency that has increased by 8 per cent in trade weighted terms in the past year. This has consequences for export growth.

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Unit labour costs are set to move upwards as a result of the rise in wage costs arising from recent settlements of industrial disputes following the first strikes in over a decade in the engineering industry. In western Germany, workers' pay rose by 4.2 per cent in the year to June 1995, which implied a real rise of 1.8 per cent. As a result of the west's restructuring and the east's industrial collapse, unemployment has risen. Although unemployment is below the average of other industrial countries, at 9.3 per cent, it is nevertheless significant and, since most new investment is designed to be labour saving, an increasing number may have to face long-term unemployment.

21 Under the Basic Law of Germany the state plays a mainly regulatory role in the market economy. It creates the general conditions for market processes and forgoes any direct intervention in price and wage fixing. In the labour market, the free play of forces applies and there is collective bargaining between labour and management. The unions in Germany are 'unitary unions' representing all workers in an entire branch of industry. They have no political party or religious ties. The central organisations of the trade unions and the employers' associations are often referred to as 'social partners' and they play an important role in all aspects of the economy including the provision of a trained workforce through vocational training.

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## EDUCATION AND TRAINING

22 Legislation for, and administration of, education are mainly the responsibility of the *Länder*. Each *Land* has a different educational system, but there is a common basic structure based on an inter-state agreement, which covers such matters as compulsory schooling, and the organisation and recognition of qualifications. The Standing Conference of Ministers of Education and Cultural Affairs of the *Länder* (KMK) ensures that there are uniform standards, for example in the qualifications necessary for entry to university.

### PRE-SCHOOL EDUCATION

23 Pre-school education for children aged three to six years is voluntary, but it has a long tradition in Germany. The *Kindergärten* are the traditional form of pre-school education. *Kindergärten* are not part of the state school system and parents usually have to contribute to the costs. Most are maintained by welfare associations, companies, charities or the communes. About 80 per cent of all three to six year olds attend *Kindergärten*. In four of the *Länder* children have a statutory right to a place. In 1992, there were about 2.1 million places in over 38,000 institutions across Germany.

### COMPULSORY SCHOOLING

24 Attendance at school is compulsory in Germany from the age of six to 18. Full-time attendance is required for nine years, and in some states 10 years, followed by part-time attendance at a *Berufsschule* or additional full-time schooling. Educational establishments outside the university sector are generally referred to as schools (*Schulen*). The basic structure of the educational system in Germany is set out in appendix 2.

### Primary Education

25 At the age of six, children enter the *Grundschule*. Generally, this phase of education lasts for four years (grades 1 to 4). In most *Länder* there are about 20 periods of study each week in the first year, rising to 27 in the fourth (final) year of primary education. Each period lasts 45 minutes, a standard feature throughout the school system. Apart from an introduction to reading and writing skills in the mother tongue, the pupil's programme also includes a major component referred to as *Sachunterricht* which aims to lay the basis for the social sciences, history, geography, biology, physics and chemistry that children will encounter as separate subjects later in their school life. Mathematics, religious instruction, music, physical education, art, craft and needlework are taught as separate subjects. All subjects are compulsory, though, in some *Länder*, art, craft and needlework may be combined. Some *Grundschulen* in some *Länder* also offer a foreign language for two or three optional periods a week, usually beginning in the third grade. The language is often English, but French is also available in some *Länder*. In the first two grades, lessons

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are with the class teacher. From grade three onwards, the children increasingly encounter subject teachers. At the end of the second grade, there is a comparative assessment of the pupils' performance. There is a growing trend towards assessment and reporting in grades three and four. Education in the *Grundschule* does not lead to any qualification, but is intended to prepare pupils for entry to the secondary schools. In 1992, 3,419,600 pupils were enrolled at *Grundschulen*. The average pupil to teacher ratio was 20:1.

### **Secondary Education**

26 The term lower secondary education is used to refer to grades 5 to 10 (or, in some *Länder*, grades 7 to 10). All courses which build directly on the lower secondary phase are described as upper secondary education. The lower secondary level covers the age group up to 16, the upper level from 16 to 19 years. School attendance is compulsory for both age groups, on a full-time basis in the case of lower secondary where the education is mainly of a general nature, while the upper secondary group are required to undergo either part-time schooling linked to vocational training, or full-time schooling of an academic or vocational nature.

27 Basically, there are three types of school in Germany in what in the United Kingdom is called the secondary sector; these are:

- the *Hauptschule*
- the *Realschule*
- the *Gymnasium*.

These three types of school each cater for around 1.5 million pupils. In addition, there is an increasing number of comprehensive schools (*Gesamtschulen*), combining the functions and purposes of the *Hauptschule*, the *Realschule* and the *Gymnasium*, which cater for about 400,000 pupils. There are also special schools with about 250,000 pupils.

28 The *Hauptschule* is described by the Sekretariat der Ständigen Konferenz der Kultursminister der Länder (KMK) as a 'General education secondary school ...'. It is regarded as the 'lower level' of secondary education and offers the least academic of the secondary curricula. It ends at grade 9 or 10. Pupils may leave full-time schooling when they are 15 years of age. In some *Länder*, pupils stay on in the *Hauptschule* until they are 16.

29 The *Realschule* is described by the KMK as a 'General education secondary school ... going beyond the level of the *Hauptschule*'. The *Realschule* curriculum provides a combination of both practical and academic subjects and compared with the *Hauptschule*, places a greater emphasis on science, mathematics and language. The *Realschule* ends at grade 10 when pupils are usually 16.

30 Germans often translate *Gymnasium* colloquially as 'grammar school'. The KMK describes a *Gymnasium* as a 'General education secondary school (grades 5-13) providing general university entrance

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qualifications ...'. The curriculum of the *Gymnasium* is predominantly academic and theoretical rather than practical. In addition to English (usually offered in the *Hauptschule* and *Realschule*) pupils at a *Gymnasium* study a second or even a third language. Pupils who complete their schooling at a *Gymnasium* are usually 18 when they leave.

31 In general, a pupil is admitted to a particular category of secondary school as the result of consensus between teachers, parents and the pupils themselves. Teachers in the *Grundschulen* monitor and assess a pupil's abilities and advise parents on which type of secondary schooling would best suit their child's aptitudes. It is rare for admission to secondary school to be based on the outcome of an entrance test although the *Land* of Bavaria operates a selective process for secondary admission. In some instances, parents may wish their child to attend a particular secondary school against the advice of his or her teachers. For example, parents may prefer their child to go to a *Gymnasium* even though his or her reports indicate that a *Realschule* (or *Hauptschule*) would suit his or her aptitudes better. The parents' wish is normally allowed to prevail, but a child entering a *Gymnasium* will have to obtain satisfactory grades in end-of-year examinations in order to remain. The great majority of parents concur with the choice of secondary school recommended for their child.

32 The proportion of pupils attending the various types of schools (not including special schools – *Sonderschulen*) has changed over the last decade. In the older *Länder* there was a rise from 1985 onwards in the proportion of pupils attending *Gymnasien*, and *Gesamtschulen* where they exist, while the proportion attending *Realschulen* remained constant and that of *Hauptschulen* declined. Generally, a growing number of pupils is seeking to obtain more highly-rated qualifications and the number of successful school-leavers is on the increase. In the old *Länder*, the proportion of school-leavers between the ages of 18 and 20 with entrance qualifications entitling them to proceed to higher education (for example holding the *Allgemeine Hochschulreife* or the *Fachhochschulreife*) rose from 25.3 per cent in 1981 to 32.5 per cent in 1991. This in turn was reflected in the number of students entering higher education. In the old *Länder*, the annual first-year student population rose from 214,500 in 1981 to 271,200 in 1991.

## **POST-16 VOCATIONAL EDUCATION**

### **THE DUAL SYSTEM**

33 Vocational education and training in Germany has a long tradition dating back to the medieval guild training in craft and merchant trades. As industrialisation increased in the nineteenth century, this form of training was adopted by the new trades and, since the beginning of the twentieth century, has spread to all occupational areas. The Trade and Craft Code was established in 1869 to regulate apprenticeship training. The Trade Statute Book of 1897 led to the creation of the crafts chambers and the chambers of industry and commerce and their role in co-ordinating training.

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34 The off-the-job part of the training has its historic roots in the religious and Sunday schools for artisans established in the sixteenth and seventeenth centuries. During the latter part of the nineteenth century these schools evolved into general education and commercial schools. By the twentieth century, many of these commercial schools concentrated on providing training for a particular occupation and the term *Berufsschule* was given to them in 1920. In 1938, the legal basis for apprenticeship training was established and attendance at a *Berufsschule* became compulsory. In 1969, the Vocational Training Act gave force of law to what had, hitherto, been the statutes of the chambers. The Federal Institute for Vocational Training (*Bundesinstitut für Berufsbildung*), established in 1970 carries out research, development and consultancy on matters relating to initial vocational training on behalf of the Federal Government. It is the authority from which the national training ordinances for each trade emerge.

35 The vocational education and training system in the Federal Republic of Germany is known as the dual system. Most young people who are not preparing to enter higher education directly upon completion of their full-time compulsory education, elect to enter a contract of apprenticeship with a company to follow one of 370 state-recognised occupations. The provision is referred to as a dual system because training is provided in the firm with which the contract is made and, by law, concurrently for one or two days a week in a vocational school (*Berufsschule*) where appropriate vocational and general education are provided. The training lasts for between two and three-and-a-half years depending on the trade being followed and the entry qualification of the new apprentice.

#### **On-the-job Training in the Dual System**

36 By law, all businesses must register with the local chamber (*Kammer*) and pay the appropriate fee. Most firms register with the local chamber of industry and commerce (*Industrie-und Handelskammer*), but firms carrying out craft activities will register with the chamber of crafts (*Handwerkskammer*). There are also chambers for agriculture and certain professions such as medical practitioners and lawyers.

37 No firm is obliged to provide vocational training, but there is a widespread conviction, unchallenged until recently, that taking part in training is good for the youth of the country, good for the companies concerned and good for the nation as a whole. In the case of small or medium size firms, which alone may not be able to provide the breadth of training required under the training directive, inter-company trade training centres have been set up under the auspices of the chambers to ensure that all trainees cover an appropriate range of skills relating to their chosen occupation. In 1992, there were in total 2.5 million companies, of whom about 500,000 were accredited training companies training just under 1,700,000 apprentices. About half of the trainees were in industry and commerce and one third in small or medium size enterprises, mainly in crafts. Other contributing categories were doctors',



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dentists' and solicitors' assistants 155,000, the public services 71,000, and agriculture 33,000. Two-thirds of all trainees are in firms with fewer than 50 employees.

38 The training contract between the employer and the trainee is registered with and supervised by the chamber with which the employer is registered. The training is to a curriculum, and the testing to standards, established in the training regulations (*Ausbildungsordnungen*) issued by the Federal Ministry for Economic Affairs. The chambers, through their vocational training committees, issue examination regulations, establish boards of examiners and administer the final examinations. The vocational training committees consist of equal numbers of employers' representatives, employees' representatives (trades unions) and vocational school teachers. Teachers may speak but not vote at meetings. There are about 385 such bodies. The boards of examiners are also composed of equal numbers of representatives of employers, employees and vocational school teachers. Those apprentices successful in the examinations receive a certificate to indicate they are a skilled worker (*Facharbeiterbrief*). If the apprenticeship was with a master craftsman the certificate gained is the certificate of apprenticeship (*Gesellenbrief*).

39 Firms provide vocational training at their own expense. Often they are motivated by a sense of social responsibility. There are no financial inducements to provide training and apprentices have to be paid an appropriate training wage. Traditionally, on-the-job training is seen as giving firms the opportunity to prepare the trained young people they themselves need to meet their own personnel requirements within the framework of the Vocational Training Acts of 1969 and 1993 (*Berufsbildungsgesetz*). In the past, many firms trained more young people than they required, but with the recession of recent years there have been reductions in training as firms have looked to cut costs. According to a study conducted by the BIBB in 1993, it is less expensive for a firm to train its own staff than to recruit the personnel required on the open market. Nevertheless, there is growing concern in industry and commerce about the cost of training. The sums spent by firms amount to 2.5 per cent of the payroll, or about 1.1 per cent of gross national product. The costs to be borne by the firms include the training allowances paid to trainees, the wages and salaries of instructors and the cost of supplying training aids, including workshops. In 1991, the BIBB estimated that the average net cost of on-the-job training was just under DM18,000 for each trainee, each year. The costs of part-time instruction at *Berufsschulen* in the dual system are borne by the *Länder* and local authorities (*Kreis*). In 1992, the net cost of vocational training in the dual system was DM22.8 billion to the firms and DM3.2 billion to the *Länder* and local authorities.

#### **Off-the-job Element in the Dual System**

40 The *Berufsschule* is a place of learning for part-time vocational students which works on an equal footing with the companies participating in vocational training. It provides general and vocational education to

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deepen and supplement that which is learned during company training. The instruction given at schools focuses on vocational tuition, which makes up about 60 per cent of the course, while general education accounts for the other 40 per cent. In most *Länder*, the vocational schools are organised into five groups of vocational fields namely; industry, commerce, home economics, agriculture and mixed occupations. Classes are organised according to individual occupations or groups of occupations. Instruction may take place once a week for up to nine periods on one day, or twice a week for about eight periods on the first and four on the second day, or there is block tuition given as full-time tuition for set weeks throughout the year.

41 It is possible to receive vocational training either through a dual system arrangement or in a separate first stage combining a full-time year at school. The full-time year is called the *Berufsgrundbildungsjahr*. Its purpose is to provide general knowledge and the basic skills required in all occupations together with theoretical and practical education in one particular career area which is intended to lay the groundwork for subsequent vocational training. Students choose from 13 career areas and successful completion is counted as the first year of training in the specific recognised occupational area chosen. This approach to training appears to have fallen into disuse for most companies participating in the dual system. However, the post office still makes use of it for the first year of training of their potential employees. In 1992, 31,000 pupils were taking this type of course full time and 49,000 part time.

42 Currently, there are about 2,430 *Berufsschulen* providing for about 1,700,000 trainees.

#### **ADDITIONAL TO THE DUAL SYSTEM**

43 Provision in the *Berufsschulen* is the backbone of the German vocational education system. However, in addition to provision for the dual system there are schools offering full-time courses of one, two or three years duration. The full-time provision is important, especially in times of recession or rising numbers when not all secondary school-leavers may be able to find a suitable training contract. The schools are usually smaller and more specialised than colleges of further education in the United Kingdom and often deal with what in the United Kingdom would be regarded as a course or group of cognate courses. Often, different types of vocational school are located on the same site and may share the same teachers and occupy the same buildings.

44 *Berufsfachschulen* are full-time, vocational schools which provide young people with an orientation to the world of work and prepare them for apprenticeship. They offer a very wide range of courses. There are *Berufsfachschulen* that prepare pupils for occupations in crafts, business, home economics, social work, health and the arts and employers may recognise the training as part of the apprenticeship in the dual system. To enter, pupils require a *Hauptschule* or *Realschule* leaving certificate or a

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comparable *Mittlerer Schulabschluß*. Those with only a *Hauptschule* leaving qualification may study for at least two years and have the opportunity to obtain a *Mittlerer Schulabschluß* which is equivalent to the leaving certificate from the *Realschule*. The duration of the training varies depending on the intended career and normally leads up to a final examination. Those who enter with a *Realschule* leaving certificate may follow a two-year course leading to the *Fachhochschulreife*, to a qualification as a state-certified technical assistant (*Staatlich geprüfter technischer Assistent*) in areas such as biochemistry, information technology or mechanical engineering, or to a qualification as a state-certified business assistant (*Staatlich geprüfter kaufmännischer Assistent*) specialising in data processing, foreign languages and secretarial skills. The weekly timetable on these courses usually consists of 32 teaching periods. In 1992, there were about 253,000 pupils studying full time at *Berufsfachschulen*.

45 *Berufsaufbauschulen* are vocational extension schools for those who already have a vocational training or several years employment behind them. They can also be attended on a part-time basis by pupils still in vocational training. They aim to provide a broad general and vocational education for those who do not have the equivalent of a *Realschule* leaving certificate which is a requirement for entry to many courses at a *Berufsfachschule*, *Fachoberschule* or a *Fachgymnasium*. In its full-time form this type of education takes at least one year and leads to the *Mittlerer Schulabschluß*. In 1992, just under 6,000 people were attending such schools full time and about 800 part time.

46 *Fachoberschulen* are technical secondary schools that cover grades 11 and 12. They require students to have a *Realschule* leaving certificate or the recognised equivalent on entry. Students from a *Hauptschule* who are successful in obtaining a *Mittlere Reife* at a *Berufsfachschule* have right of access to the *Fachoberschule*. In the first year there is considerable emphasis on practical training in a trade. The training occupies four days a week, and there are at least eight periods of general education on the fifth. Those who have already completed vocational training can proceed directly to the twelfth grade where there is a heavy emphasis on general and specialist education leading to the *Fachhochschulreife* which is the necessary qualification to enter a *Fachhochschule*, the major form of higher education outside the universities. There are *Fachoberschulen* for technology, business and administration, nutrition and domestic science, agriculture, social work and other specialisms. In 1992, about 54,000 people attended a *Fachoberschule* full time and 22,000 part time.

47 The *Berufliches Gymnasium* or *Fachgymnasium* are the upper levels of a *Gymnasium* which have a technical bias. Starting on the basis of a *Realschule* leaving certificate, a three-year full-time course of study leads to the general entrance qualification for higher education (*Allgemeine Hochschulreife*). As well as the subjects normally offered at a *Gymnasium*, these schools will offer career-oriented subjects like business or engineering which are examined in the *Abitur*. In some *Länder* they also

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offer pupils the possibility of a double qualification, usually comprising the entitlement to proceed to higher education (*Allgemeine Hochschulreife* or *Fachhochschulreife*) and a vocational qualification in a number of occupations. A vocational education of this kind may also be obtained at institutions combining a *Gymnasium* and a *Berufsfachschule*. These double qualification courses take four years to complete and end with two separate examinations (the *Abitur* and the vocational examination). In 1992, 79,000 students attended these *Fachgymnasien*.

48 *Fachschulen* are technical schools providing advanced vocational training for specialist middle level personnel capable of managing an operation in their specialist field. The students will already have completed an apprenticeship in the dual system and will have been in employment. Courses may be for one, two or three years full time or for longer periods part time in about 90 different specialisations including branches of engineering, construction and business. They lead to examinations appropriate to the trade, such as those for *Techniker* (technician) or *Sozialpädagogik* (educational social work). In 1992 there were 117,000 full-time and 45,000 part-time students following such courses. Most of them were over the age of 22.

#### **TEACHERS IN VOCATIONAL EDUCATION**

49 There are two categories of teachers in vocational schools: one is responsible for theoretical or general education work and the other for practical work. Those in the first category, which is by far the larger, are employed as civil servants and must hold a university degree related to the discipline they are teaching plus training in pedagogy which has lasted at least four years. They require practical training before or after their course of study of about one or two years, and training in effective teaching methods for classroom instruction at vocational schools, usually taking between 18 months and two years. After 30 years of service they qualify for a state pension of 75 per cent of final salary. Teachers in the second category teach workplace practice in laboratories or workshops. They must have followed an 18-month theoretical and practical training course. To be admitted to this type of post, candidates must hold an intermediate school-leaving certificate or its equivalent and skilled worker status, a master craftsman certificate or a leaving certificate from an advanced technical school (after at least three semesters), and have at least two years of practical experience.

#### **HIGHER EDUCATION**

50 The institutions of higher education in Germany are self-governing bodies, incorporated under public law and maintained by the *Länder*. There are also some institutions maintained by the churches and a few which are privately owned. The federal government lays down the general principles of the higher education system, and it is responsible for student support and international exchange programmes. It also helps finance buildings and research.

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51 Student numbers in higher education have expanded rapidly in the last decade. In 1979 there were 980,000 students. By 1992 there were 1,823,000, 40 per cent of them women. The total number represents 23 per cent of the population aged 19 to 26. Of these, 1,374,000 attended the 122 universities, a term which also embraces the colleges of education and colleges of theology; 29,000 attended the 43 colleges of art and music; 372,000 the 125 *Fachhochschulen*; and 48,000 the 28 colleges of public administration.

52 Anyone with the appropriate higher education entrance qualification is entitled to embark on a course of higher education. All applicants who meet the entrance requirements enrol on the course of study of their choice without any additional admission procedure. However, the enormous growth in the number of students has led to restrictions on admissions (*Numerus Clausus*) for an increasing number of subjects. Where restrictions apply, entry is determined on the basis of average marks in final school examinations and the length of time applicants have been waiting. This applies particularly to medicine, dentistry, veterinary science, architecture and business studies.

53 Courses culminate in a master's degree (*Magister*), a diploma (*Diplom*) or a public service degree (*Staatsexamen*). After this, further study can lead to a second degree or a doctorate. Most university courses are designed to take between eight and ten semesters (four to five years). At the *Fachhochschulen* courses are designed for six semesters if there are no practical semesters (*Praxis*) and eight if there are.

54 Students have extensive freedom in shaping their courses of study. Although for many courses there is a recommended curriculum and interim examinations are obligatory, in many others students have the freedom to choose between subjects and lectures and they can also determine the pace at which they complete their course.

55 In practice, students spend an average of seven years completing their course at university. At the *Fachhochschulen* it is five years. Many students will have already completed an apprenticeship, and men will have done their compulsory military or civilian service, before proceeding to higher education. Male university graduates are usually about 29 years of age when they finish their studies, females about 28. The fact that they begin earning their living quite late in life is a significant disadvantage to them, especially in view of the mobility of labour inherent in the European Union. Discussions have been under way for some time to find ways of reducing the length of courses. The matter is presently unresolved.

#### **GRANTS AND LOANS FOR PUPILS AND STUDENTS**

56 There are no tuition fees for secondary education nor entrance fees for examinations. Pupils in upper secondary education may obtain financial assistance to help them pursue their training. Financial assistance for maintenance and training is available for pupils in *Berufsfachschulen*, *Fachschulen*, *Fachoberschulen* and

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*Berufsaufbauschulen*, according to particular regulations in each case. The pupil's own income and savings and those of his/her parents and spouse if any, are taken into account. Depending on circumstances, students can receive between DM330 and DM755 monthly. Under certain circumstances, some *Länder* also make provision for those who do not qualify under the federal scheme.

57 There are no fees in higher education either, but the availability of financial support for maintenance is strictly limited. There is a legal obligation for parents in Germany to support their children's education to the age of 27. Only those whose parents' income is low are successful in obtaining assistance. In 1992, about 33 per cent of students in the old *Länder* and some 90 per cent in the new *Länder* were in receipt of assistance (commonly referred to by the acronym BAFöG). The full amount of assistance available to those not living with their parents in 1992 could be up to DM940 per month. Half the amount is a grant, the other half an interest free loan which usually has to be repaid within five years.

### **ADULT EDUCATION**

58 Every year 10 million people in Germany take advantage of the many opportunities for continuing their education. In addition to the two major areas of provision discussed below, there is also provision made by church institutions, the trades unions, employers' associations and political parties.

#### **Continuing General Education**

59 Adult education centres (*Volkshochschulen*) were introduced towards the end of the nineteenth century. There are now some 1,500 such centres, generally funded by the *Land*, run by local authorities and offering a wide range of practical and leisure-time activities. In 1992, over 467,000 courses were attended by 6.2 million people. Courses are mainly in the evening; languages, health education and craft courses are the most popular. Many participants make up for opportunities lost at school by obtaining formal qualifications, including qualifications leading to university entrance.

#### **Continuing Vocational Education**

60 In 1991, 21 per cent of the population between 19 and 64 took part in some form of continuing vocational education. The vocational education of employees is traditionally the responsibility of commerce and industry. More than DM10 billion every year is spent by industry and commerce on further training for the labour force.

61 The government became involved in continuing vocational education through the Employment Promotion Act which was initiated in 1969 during a period of economic growth when there was a shortage of skilled manpower. Its purpose was to improve the vocational adaptability and mobility of employed people and to enhance opportunities for promotion.

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Employees show a willingness to retrain for a different occupation, especially in areas such as computing. Courses generally last two years in which full-time tuition alternates with practical training. During the courses, trainees may receive grants or loans and the cost of tuition and training materials may be wholly or partly borne by the state.

62 With the downturn in economic activity in recent years, funding legislation and practice are being directed at reducing unemployment and bringing the unemployed back into working life. Consequently, finance for in-service training to support those seeking promotion has been reduced. In 1992, a total of 1.5 million people took part in continuing vocational education under the Employment Promotion Act at a cost to the state of DM5.5 billion. The majority of these were in the new federal *Länder*.

### **PARTICIPATION**

63 About two-thirds of the age cohort take part in the dual system, of whom 58 per cent are young men and 42 per cent are young women. Some 60 per cent of the apprentices are trained in small companies. Companies are cutting back on their training places. We were told in Schleswig-Holstein that there has been a 25 per cent reduction in five years. The reduction is particularly acute in the large companies. In 1993-94 there was a 12 per cent drop in training places within companies in the dual system. In Kiel we were told that there are now 9,000 trainees in 2,000 companies, compared with 15,000 in 2,800 companies eight years ago. The reduction in training places is coinciding with a rise in the number of 16 year olds and in order to accommodate these, the number of full-time students in vocational schools is growing. As this is paid for solely by the *Land*, the government is concerned about the rising costs of education.

64 It was said that large companies are sometimes inclined to recruit young people who have been trained by other small or medium size companies, especially those companies that may have run down their own training centres as an economy measure. Competition for training places is severe in some of the commercial occupations, for example banking. Increasing numbers of trainees in these occupations have the secondary leaving certificate (*Mittlere Reife*) at 16 years of age, or even the *Abitur* at 18 years of age. At one *Berufsschule* visited some 70 per cent of commercial apprentices had the *Abitur*. Students who have obtained the *Abitur* before starting their training do only a two-year rather than a three-year apprenticeship.

65 While the typical craft-level trainee in the 1960s came from a *Hauptschule* (more than 80 per cent), such trainees are in a minority today (40 per cent). There are more vacancies than applications for apprenticeships in the craft firms. However, the number of apprentices in craft occupations has grown because of the decline in the number of industrial apprenticeships available. There is pride in the fact that youth unemployment is only 60 per cent of the overall unemployment rate. With

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the size of the 16-year-old cohort set to rise over the next five years, there is concern that without more training places youth unemployment will rise to unacceptable levels.

## **FINANCE**

66 Trainees receive a training allowance from their employer. In the retail/wholesale sector trainees were being paid a monthly allowance of DM900 in the first year, DM1,050 in the second year, and DM1,200 in their third year. The dual system was said to motivate students. A major problem now, however, is the cost to employers. It has been estimated that the dual system adds DM2 an hour to production costs. The cost to one company involved in high technology was said to be DM120,000 for each trainee over a four-year period. However, because the recruitment and training of all new employees is costly the dual system way of recruiting results in a net cost of only about DM7,400. In the craft companies, on the other hand, there was said to be zero cost or even a net gain to employers because trainees earned more for the company than they cost, especially after the first year of training.

67 Employers receive no financial subsidy or tax incentives to take on apprentices; there is no levy system. The exception to this is in the construction sector in which all the predominantly small companies pay a training levy. In Schleswig-Holstein this had helped to finance a training centre which offered central facilities for training in craft skills. Most firms in this sector would not be able to replicate this scale and quality of training provision.

68 In an attempt to guarantee a minimum standard of financing throughout the *Land* of Baden-Württemberg for the college element of the dual system, a financing formula ensures that the *Land* pays 85 per cent of the cost of each student with the *Kreis* finding the additional 15 per cent. But this does not iron out all discrepancies, because the wealthy areas can still pay more to their own schools should they so wish.

## **LINKS WITH INDUSTRY AND COMMERCE**

69 Students who fail to obtain a training contract will usually take a one-year, full-time course. If the student subsequently obtains a training contract, the full-time year sometimes, but not always, counts as the first year of the dual system training. The dual system rests on collaboration between the social partners: employers, trade unions and the government at federal, *Land* and local level. It is the employers who give the trainees the training contract. The trainees are obliged by law to spend some time in college in off-the-job education and training. The colleges simply accept the students who are sent to them. Colleges are not involved in marketing their courses or recruiting students and there is little competition between colleges.

70 Many companies which are training are no longer taking on more trainees than they need themselves and are attempting to employ all the



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trainees once they have qualified, sometimes on short-term contracts. This contrasts sharply with the situation in previous years when companies trained more apprentices than they needed in order to have the pick of the bunch. Some 75 per cent to 80 per cent of the large industrial companies train, but only about a quarter of craft firms have apprentices.

### **GOVERNANCE AND MANAGEMENT**

71 Each college has a 'conference', chaired by the principal, with representation from teachers, parents, students and industry. However, German vocational colleges are not independent corporations. They do not have governing bodies. There are advisory committees organised at the local level by the chambers which have representatives from the teachers of the vocational schools in the area, employers and the trades unions. These committees meet about four times each year to discuss the employment situation, the needs of local industry and the response required. This same structure is repeated at the levels of both the *Land* and federal government.

72 Academic staffing costs are paid by the *Land*. The college must make a case to the *Land* if it wishes to take on a new teacher and new appointments are strictly rationed. Equipment, building and other staffing costs are paid by the *Kreis* or the *Stadt*. College managers handle very little money, all bills are settled centrally by the *Land* or the *Kreis*. On the other hand, colleges have some capacity to earn their own income by offering courses outside their normal programme for those willing to pay.

73 Academic staff teach at least sixteen, 45-minute periods a week. Senior managers also teach. There is little financial incentive to seek promotion. Pay scales are short. Academics start at level 13 of civil service pay scales and college principals are on level 15.

### **CURRICULA**

74 The government and colleges are seeking to increase the time trainees spend in college in off-the-job education and training to make room, among other things, for core skills. The intention is to raise attendance in colleges from 32 to 36 weeks (block attendance) or from one to two days a week (part-time attendance). Large industrial employers are supporting this move. Craft and small employers, on the other hand, are resisting an increasing college attendance which is seen as non-productive time.

75 The principal of a business college in Schleswig-Holstein defined core skills as:

- *Fachkompetenzen* (technical skills): mathematics, information technology, foreign languages
- *Handlungskompetenz* (cognitive skills): learning by doing
- methodological skills: problem-solving, independent working
- social skills: communications, team work.

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76 Within engineering, training lasts three-and-a-half years. Engineering trainees and those within the craft areas often receive a common first year of training. This has the advantage of allowing students to sample a variety of related occupations before committing themselves to one specific course of study. It also gives them an insight and a degree of expertise in a wider range of skills.

77 Within the *Berufsschulen* the subjects taught as part of the general education component are not integrated with the vocational education. Some colleges are intending to integrate the general and vocational education more and a start has been made through integrated projects. The methodological implications are only now being addressed in teacher training and, at the moment, it is usual for each component to be separately taught and separately assessed at the end of apprenticeship training. A typical curriculum for a future industrial clerk is shown in appendix 3.

78 The general education component is clearly seen as important for those students coming from the *Hauptschule* who have not achieved a particularly high level of attainment in mathematics or German. It was said that there is also added value in the general education element for those students coming from the *Realschule*, because the curriculum is different in the dual system from that experienced in school.

79 All apprentices in a particular occupational area are taught together in their year group, despite their different ages and academic background. This can present a problem for the teachers who find differentiation difficult. Some attempts are being made to introduce more independent working on the part of students. One reason often quoted for the lack of change in teaching methods was that the curriculum is specified and has to be covered in a prescribed number of hours.

80 Where classes comprise only those who have achieved the *Abitur*, the general education component can be adapted to meet their needs or even reduced to make room for additional vocational education. The level and the content of the general education component clearly vary according to the backgrounds and qualifications of the trainees.

81 Some small companies are not able to offer all the skills and training which an apprentice needs. In such cases, students are able to do one year full time in college as part of their apprenticeship training.

82 Changing the curricula of the dual system was likened to manoeuvring a large ship. The basic framework and curriculum requirements are prescribed in legislation and it takes a long time to get the regulations changed to meet the changing needs of industry. Flexibility exists only at the margins in what teachers teach and how they teach.

83 The number of registered occupations is being reduced over time. Some years ago they numbered 600, today they total about 370. It takes time for new or redefined occupations to be officially recognised and provided within the dual system, sometimes as long as 10 years. Each year, the training regulations of 15-20 occupations are revised. Of the 370 occupations covered by training ordinances, about 100 are hardly used.

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## ASSESSMENT AND EXAMINATIONS

84 Trainees in the dual system are informally assessed through their course, but the only assessment which counts is at the very end of the apprenticeship. There is much emphasis on the final assessment. Practical tests are carried out in a company other than the students' training company and the chamber conducts and supervises the assessment.

85 The final vocational assessment comprises written and practical tests which are set by the chamber. The practical tests could be, for example, a sales negotiation for trainees within the retail or wholesale sector. For commercial apprentices, the test is usually an oral one. Examiners comprise representatives of employers, trade unions and the colleges. The chamber recruits the examiners. The written examinations in Schleswig-Holstein are marked within the college by the students' own teachers who are paid for the task by the chamber. Some areas use multiple-choice tests, others use tests requiring continuous prose. Multiple-choice questions are designed for the whole of Germany by a central organisation which uses representatives of the chambers and teachers. These tests are all marked centrally by the same organisation. The curricula and assessment of general education elements are common to the whole *Land*, as the *Länder* have 'cultural autonomy' for general education.

## RESOURCES

86 Most of the practical classes seen during the visit had provision for a maximum of 24 students, often working in pairs at a piece of equipment, supervised by one academic teacher and one specialist instructor.

87 The larger cohort of 16 to 18 year olds, the proposed increase in off-the-job training, and the greater number of students in full-time education are placing demands on the *Länder* to supply additional teachers.

88 There is no formal requirement on staff to undertake staff-development activities, although the *Land* makes provision for those who wish to avail themselves of it. Teachers are entitled to two weeks of training each year in Schleswig-Holstein. There is an obligation to remain up to date and fully aware of on-the-job training requirements. Most colleges were satisfied that their staff were keeping up to date.

89 Colleges have minimal numbers of support staff. There are few secretaries and few technicians. In a commercial college in Baden Württemberg, for example, one teacher was given one hour a week remission to look after the equipment in his section.

90 Rooms are generally well proportioned. Corridors are spacious. Accommodation is well maintained. The quality of building is high and the materials used are first class. Students appear to take care of their environment; in only one college was there graffiti on desks.

91 Colleges make claims to the *Stadt*, *Kreis* or *Land* for special equipment or large purchases. They also rely on donations or loans of equipment by local companies. The level of equipment appears to vary; but it never

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seems to be less than satisfactory. In some cases, equipment is of a high quality and to the latest specifications. It is a requirement of off-the-job training that equipment must be up to the standard provided in the work place. Colleges do not provide students with open access to equipment. Many have no, or very small, libraries.

### **QUALITY ASSURANCE**

92 There is no system of inspection as in the United Kingdom, and little external quality control save through aspects of assessment which are carried out externally to the college. The education ministries in the *Länder* have inspectors, but their function is more a liaison activity between the ministry and the college. However, there is great confidence that there is commonality of standards across the country and few doubts are expressed that the system delivers good-quality vocational education and training. Regulation is largely through the regular contact which takes place between the chambers of commerce and trade and the training companies on the one hand, and the training companies and vocational colleges on the other. Students' complaints are discussed at these meetings, as are criticisms relating to the quality of teaching, the quality of equipment, and the up-to-dateness and relevance of the college's vocational provision.

### **PROGRESSION**

93 The key phrase is '*Kein Abschluss ohne Anschluss*', which means that there must be opportunities for the students to progress; no qualification should be a dead end.

94 Some 66 per cent of all young people pass through the dual system. Currently about 10 per cent of those completing do not achieve their final qualifications at the first attempt. Some 25 per cent drop out of their first-choice apprenticeship training, but about 70 per cent of these will start a new contract. Having signed a contract with the company, apprentices are reluctant to break that contract and find another training company. A change of direction is therefore usually only possible if that same company is offering a variety of apprenticeships.

95 In recent times, the lowest levels of unemployment are among those who have a university qualification and have been through the dual system. The preferred route is an apprenticeship and then a university education, but many graduates find they are unable to get a job and proceed to the dual system after graduation. Some trainees use the dual system as preparation for university. For example, it was suggested that a number of female trainees seen taking apprenticeships in wood-based occupations and who had entered their training with the *Abitur* were using this experience as a preparation for a degree course in architecture.

96 Once young people have qualified as skilled workers through the dual system, the normal progression route would be to *Meister* training after a few years of employment. However, some young people are increasingly reluctant to give up a job at a time of high levels of unemployment in order to attend *Meister* training which they have to pay for themselves.

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## PARITY OF ESTEEM

97 Major companies are having difficulty recruiting bright students into apprenticeships in areas of high technology because, increasingly, young people prefer to go to the *Gymnasium* and then, with the *Abitur*, progress to university. The dual system is seen by some as second best because participants are unable to progress to the highest levels of management. The highest level obtainable has traditionally been the *Meister* in the craft sector and the *Techniker* in other areas. The top executives in industry are graduates.

98 Parity of esteem between vocational and general educational qualifications is an issue in Germany. Traditionally, universities have been rigid in their entrance requirements, which have relied on students having the *Abitur*. The government is attempting to improve the attractiveness of vocational education by providing progression into universities for qualified apprentices. A major obstacle is their perceived lack of the necessary higher level skills in languages or mathematics.

99 A further factor in the government's desire to raise the status of vocational education is the high number of students being admitted to universities and the high drop-out rates. The government is therefore keen to promote the dual system for those with the *Abitur* to ensure that they have something to fall back on should they be unsuccessful at university.

100 There is a clear pecking order in the occupational areas. Students taking traineeships in retailing mostly have the leaving certificate of the *Hauptschule*. Those students being admitted to apprenticeships in wholesale are better qualified, having the *Mittlere Reife*. For retailing there are two to three applicants for each place. For wholesale there are between 20 and 30 applicants because of its better image and because the jobs are more closely related to commerce. There is keen competition for apprenticeships within the commercial occupational areas and many successful applicants have the *Abitur*. Some employers, such as banks, are having to rethink their training policy in the light of the number of trainees who subsequently move into higher education having successfully completed their training.

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## APPENDIX 1

### INSTITUTIONS AND ORGANISATIONS VISITED

#### ENGINEERING

##### **Berufliche Schulen Technik, Kiel**

The institution visited is one of four vocational schools located adjacent to each other in Kiel. It provides training for the occupational areas of metal engineering, motor vehicle engineering, and communications engineering. It contains provision for part-time dual system education, full-time vocational training, and a full-time technical *Gymnasium*. It is staffed by 85 teachers and two secretaries.

In the part-time school there are 1,200 part-time students in 63 vocational classes. Trainees on the dual system programmes attend for twelve periods a week over three-and-a-half years. There are usually eight periods in one day with a further half-day of four periods. All three occupational areas have a common first year. Mathematics is integrated with technology. In the full-time vocational school there are 45 students in two classes on a metal engineering programme which will gain them exemption from the first year of dual system training if they obtain an apprenticeship. There are also 41 students in two classes of a *Fachoberschule* studying for the *Fachhochschulreife*. In the technical *Gymnasium (Fachgymnasium Technik)* there are 253 students on a technical *Abitur* programme specialising in civil engineering, building construction, mechanical or electrical engineering. Students, having passed their *Abitur* and obtained their *Allgemeine Hochschulreife* at the *Fachgymnasium Technik*, may study any subject of their choice in higher education. Most of them choose to study a technical subject at a university or a *Fachhochschule*.

The school has 23 laboratories and workshops. Most are equipped to support 12 'work stations' and students normally work in pairs, but in some practical areas, for example the gas-welding shop, students work individually and are usually in groups of twelve. When students are undertaking practical work they are normally supervised by both a teacher and a *Meister*.

##### **Ferdinand-von-Steinbeis Schule, Reutlingen**

The Ferdinand-von-Steinbeis engineering school is located in Reutlingen, 30 kilometres south of Stuttgart. It offers courses in mechanical, motor vehicle, electrical and electronic engineering. It is subdivided into schools offering technician training for skilled workers who have completed an apprenticeship, technical *Abitur*, full-time training for data technicians, full-time training for those unable to obtain an apprenticeship, and part-time dual system training by day release or block release. Some of the dual system training, for example, for motor vehicle mechanics, is full time for one year and covers off-the-job training as well as vocational

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education. This is because many of the small garages training these apprentices are not able to provide the initial breadth of training required. In total there are 1,721 students, of whom 1,046 are on dual system training, and 675 are on full-time programmes. There are 103 teachers of whom 70 are university graduates and 33 instructors. There are 3.5 full-time equivalent secretaries and no technicians.

**Company visit: Krupp-MAK Factory, Kiel**

The Krupp-MAK factory is situated to the north of Kiel. The company has occupied the site for over a hundred years and has, during this time, manufactured a range of products. Currently, diesel engines and diesel locomotives are manufactured. The largest diesel engines are typically used for powering auxiliary machinery on ships. The diesel locomotives are manufactured for the German railways in conjunction with Siemens who share parts of the site. Many of the major components are manufactured on the site. The manufacturing facilities include a foundry, extensive machine shops, large assembly areas, and a locomotive chassis fabricating area. There are over 3,000 employees with 50 apprentices on dual system training. The number of employees has reduced considerably over the last few years and the number of trainees has reduced correspondingly from 300 six years ago, to the current 50. A few are in business, but the majority are engineering apprentices in three main occupational areas: foundry mechanic, pattern-maker, and mechanical machining.

The emphasis in the apprentice training centre is on mechanical skills. Siemens has a training centre to develop electrical skills. The centre is spacious. There are machining, fitting, fabrication, hydraulic/pneumatic, and CNC/CAD areas. The machinery and fitting areas are well equipped. The hydraulics and pneumatics areas have modern equipment for teaching the design, assembly and testing of circuits. The CNC area has simulation software to test machining programs and a CAD package, AUTOCAD 12, has just been ordered.

**BUSINESS STUDIES**

**Ludwig Erhard Schule (Kaufmännische Schule), Kiel**

This commercial school provides part-time and block release training within the dual system in a broad range of commercial occupational areas, including banking, insurance, secretarial and clerical work, retailing and wholesaling. In addition, some full-time courses are offered, in particular, a vocationally-orientated programme leading to the award of the *Abitur* in the school's *Fachgymnasium*. With the decline in high-quality training places in the dual system, competition to enter the *Fachgymnasium* is high.

Of the school's 2,514 students, just over 90 per cent attend courses part-time or on block release. Over the past four years, the number of students enrolled on such courses has declined by approximately 18 per

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cent. Although some students enter the dual system at the age of 16, a few occupational areas, such as banking, attract a substantial number of 18 year olds who have completed their *Abitur*. There are 90 full-time teachers, most of whom teach at, or close to, 23 periods a week, the maximum load stipulated by their contracts over a teaching year of 40 weeks. For most purposes, students are taught in groups of 22. However, restrictions on the number of computer terminals in computer rooms lead to group sizes of 11 or 12 in some information technology lessons. There is approximately one computer terminal for every 22 full-time equivalent students.

In contrast to business studies education and training in English colleges, training at the school is largely theoretical. A training office has been established recently in order to reinforce the on-the-job training which the students receive in secretarial, clerical and administrative functions. In line with the principles of the dual system, a programme of general education is provided alongside the vocational elements. In most respects, there is no integration of the general and vocational elements of training.

Students are tested regularly in each course subject. The school prepares regular reports, for employers and parents, on the progress being made by the students. The reports contain clear concise information concerning test grades and assessments of the student's overall performance in each subject.

#### **Company Visit: Citti Markt, Kiel**

Citti Markt is a wholesaler and retailer of a broad variety of products ranging from watches to foodstuffs. It has a prominent presence in Schleswig-Holstein, employing approximately 3,000 people. Some 5 per cent of the company's workforce are trainees within the dual system. The 50 trainees based at the Kiel site receive their off-the-job training in retailing and wholesaling at the Ludwig Erhard Schule. It is a policy of the company that the number of training places it provides should match the number of qualified employees which the company anticipates it will need. Most trainees remain with the company after they complete their apprenticeship.

The company has a full-time training officer who is herself a product of the dual system and has achieved the commercial world's equivalent of *Meister* status. The training officer has a very close relationship with staff at the school. She receives regular reports on the progress of trainees and this enables her to respond quickly to any issues or difficulties. She also expects to be able to comment on the appropriateness of the school's courses to the trainees' and the company's needs and to suggest changes.

The company values the general education courses provided by the school. The English component is regarded as particularly valuable in view of the company's significant number of Danish customers for whom English is their second language. The school and the company collaborate closely in organising and grading the practical component of the final examination for the vocational certificate.



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### **Wirtschaftsgymnasium, Stuttgart**

The school is situated in a residential area approximately three miles north of the city centre. Unlike the Ludwig Erhard Schule, which is the only commercial school in Kiel, the Wirtschaftsgymnasium in Stuttgart is one of six such schools, each of which provides part-time and block release courses in particular commercial occupational areas within the dual system. In the case of the *Wirtschaftsgymnasium*, these include advertising, publishing, bookselling and pharmacy retailing. In addition to dual system courses, the school offers a full-time pre-vocational course and a two-year course leading to the *Mittlere Reife*, for students who were previously at *Hauptschulen*, and also a full-time programme leading to the *Abitur* mainly for those from *Realschulen*. Of the 1,100 students currently enrolled at the school, approximately 50 per cent were on full-time programmes.

A notable feature is that approximately 80 per cent of the students following dual system training programmes at the school already have the *Abitur*. This has led to some debate about the most appropriate focus for general education within the dual system programmes offered by the school. In particular, there is a feeling that the German component should focus more heavily on business aspects and on developing written and oral communication skills.

Through a planned programme of replacement and enhancement, the school has approximately one networked computer terminal for every 11 full-time equivalent students. The equipment is, generally, of good quality and there is a broad range of industry standard software, including desktop publishing facilities. A limitation of the computing provision is that unlike the situation in most English colleges, the students do not have access to the computing facilities outside timetabled lessons. The provision for secretarial studies at the school benefits from state of the art, computerised audio typewriting facilities. Although there is no library currently, one is planned.

### **CONSTRUCTION**

#### **Ausbildungszentrum, Kiel**

The construction employers' training centre, on the outskirts of Kiel, established under the dual system of vocational training, is independently managed under the guidance of a management committee involving employer and trade union representatives. It is the main construction training facility for bricklayers, carpenters, steelfixers and shutterers, wall and floor tilers, and roadworkers. The centre, which has a maximum capacity of 100 trainees a day, mainly supports small to medium sized enterprises that are unable to provide the necessary breadth of practical skill development. Large contractors are more likely to undertake their own training.

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The centre has close links with the local vocational schools. It delivers the practical vocational training on behalf of employers, and the vocational schools deliver the general education and job knowledge elements of the programme. The centre has recently introduced training in basic painting and decorating skills for unemployed adults and school vocational preparation courses, funded by the employment department.

Like other construction training facilities across Germany, the centre was established with funding from the federal government and from employers. Operational costs are funded by the construction industry employers' national training levy at DM70 for each trainee day, a grant from the federal government and local authority that covers 40 per cent of the fixed costs and income from the employment department to fund the courses for unemployed adult training and school vocational preparation.

The dual system training programme takes three years to complete. In the first year, the curriculum is broad based, multi-skilled and common to all trades. Apprentices spend 20 one-week blocks at the centre; 20 one-week blocks at the *Berufsschule*, with the remainder at the firm or on holiday. In the second year there are 13 weeks spent at the centre in two to five week blocks and, in the third year, four weeks at the centre. In each of these years, one day each week is spent at the *Berufsschule* and the remainder of the time is spent working with the firm or on annual holidays.

#### **Construction Vocational School, Kiel**

The school has approximately 1,800 students, of whom about 1,750 are following the dual system. They are grouped into three departments; construction with 587 students, graphics and display with 400 students, and hotel and catering with 800 students. Fifty full-time design students are undertaking a broad-based graphics and display syllabus to improve their preparation for progression to a *Fachhochschule* and eventual graduation as a design engineer.

The school has 45 teachers of whom five are technical instructors. There were no technicians to support learning. The school is a main centre in the *Land* for construction surveying. It offers boarding facilities for outlying students. Facilities for construction were similar to those found in an FEFC sector college in England.

The principal expected a 10 per cent growth in enrolments in 1995-96. During 1994-95 there were increased enrolments in construction, but fewer in hotel and catering. Contrary to the situation in the United Kingdom, there is a surplus of employer training places in construction owing to the buoyancy of the industry.

Relationships between the school and the employers' training centre were open and there was mutual respect for their respective contributions to training. It was acknowledged that there was some duplication between the work of both centres. It was difficult to ensure that curriculum and skill development operated in parallel, because of the complicated

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attendance patterns, especially in the second and third years. Staff are involved in local examination committees in partnership with employers and trade union representatives. All committees are co-ordinated through the local chambers of industry, commerce, or crafts.

### **Berufliches Schulzentrum, Leonburg (near Stuttgart)**

The campus (*Schulzentrum*) included a vocational school plus three employer training centres closely linked through the dual system of training. The campus specialises in business studies, engineering and small crafts. This is the main *Land* centre for dual system apprentice plasterers, electricians and opticians. Residential accommodation is provided for up to 300 students from across Baden-Württemberg. The visit concentrated on specialist plastering facilities in the school and the employers' training centre, both of which were closely linked.

Three thousand four hundred students attended the school; 1,000 full time and 2,000 part time under the dual system. Six hundred of the part-time students were plasterers.

There were 160 teachers, most of whom had university degrees. *Meister* with a teaching qualification taught the practical subjects. The administrative and assessment load on teachers and senior staff is much lower than in England. They are expected to concentrate on teaching. However, teachers maintain all equipment and prepare all materials.

Attendance patterns for plastering trainees depended on whether they were first year, or lived locally (within the travel-to-work area), or were from more distant areas. Day-release students attended one to one-and-a-half days a week, the rest of their time being with their employer or at the training centre under a training contract. Block release attendance was provided for students living further afield.

Plastering facilities in both the school and training centre were excellent. The workshop facilities were spacious and clean. The basic broadly-based first year incorporated bricklaying and wall and floor tiling; the subjects studied and the vocational knowledge imparted covered a range of construction trades.

The employers' training centre is run entirely by *Meister*. There was a noticeably higher level of practical activity. The workshops were modern, spacious and clean. As well as training for the dual system, the centre also provided more advanced education, training and examination facilities for foremen (*Polierkurs*) and *Meister*. The *Meister* preparation course included elements of management, extended job knowledge, supervision of trainees and law. An excellent example of advanced *Meister* skills was observed in the central atrium adjoining the workshops. Highly decorative fibrous plasterwork set in a modern context adorned the walls and skylight area. The work had been built up over a period of time by *Meister* being tested for advanced plastering skills. Assessment and testing of their work is undertaken by peers linked to the local chamber.

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## **GENERAL VISITS**

### **Chamber of Industry and Commerce, Kiel**

By German standards the chamber is of medium size. It has 45,000 member firms, 2,000 of which are training a total of 9,000 apprentices. Eight years ago there were 2,800 training companies employing 15,000 apprentices.

### **Handwerkskammer (Craft Chamber), Stuttgart**

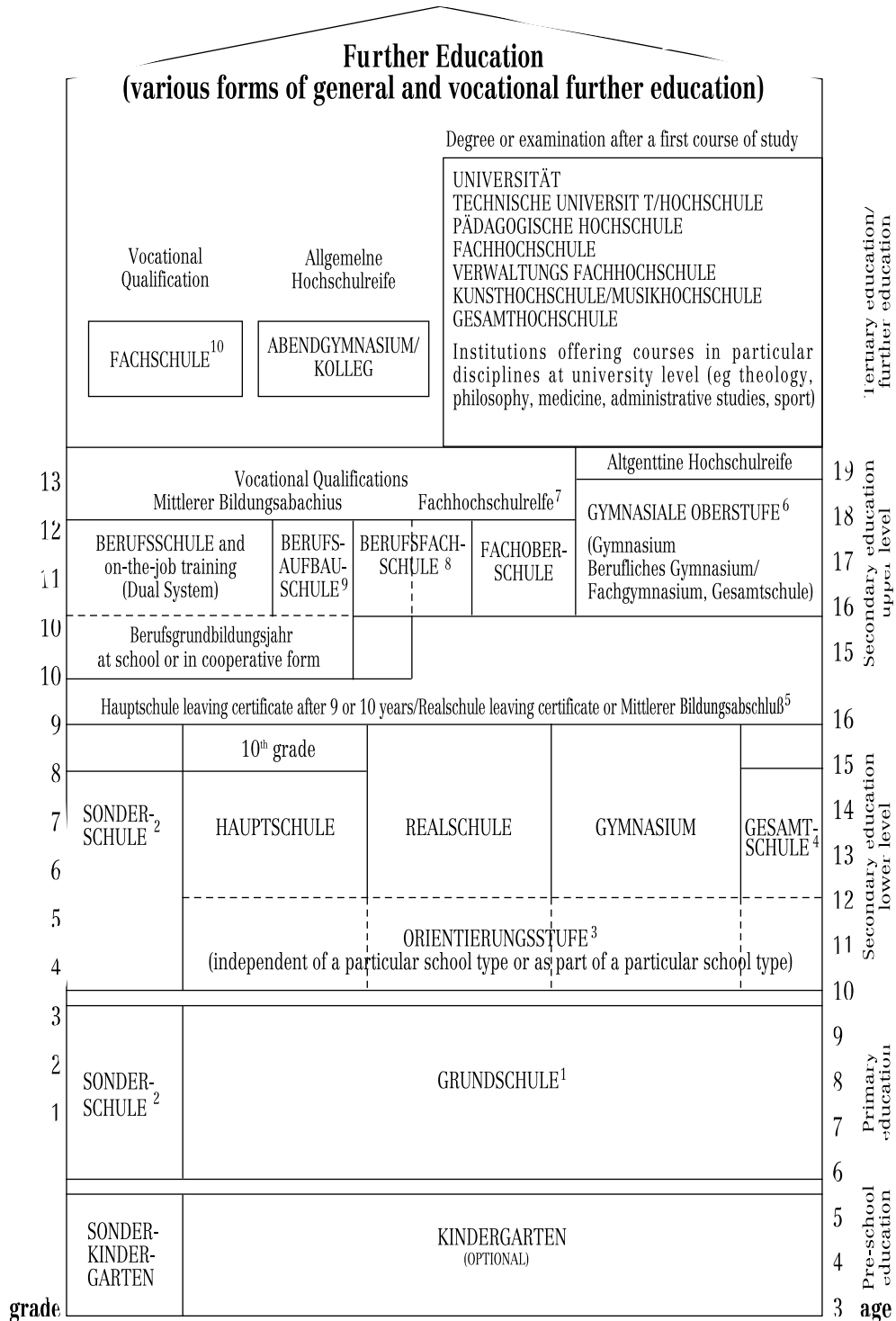
The chamber has 23,000 craft firms covering 95 trades. About 6,500 firms currently have apprentices.

### **Education Ministry for Schleswig-Holstein, Kiel**

### **Ministry for Education and Sports for Baden-Württemberg, Stuttgart**

## APPENDIX 2

# BASIC STRUCTURE OF THE EDUCATIONAL SYSTEM IN THE FRG



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## Annotations

Diagram of the basic structure of the 1989 educational system. There are differences between the individual *Länder* of the Federal Republic. Transfers from one school type to another are in general possible if the entrance requirements are fulfilled. Nine years (10 years in 3 *Länder*) of compulsory full-time schooling; three years of compulsory part-time schooling.

- 1 In some *Länder* special types of transition from pre-school to primary education exist (pre-school classes, school kindergarten). In Berlin the primary school comprises 6 grades; there is no separate orientation stage.
- 2 Different types of special schools for general education and vocational training depending on the disability in question.
- 3 The orientation stage exists in all *Länder* with the exception of Bavaria where it is tested in several pilot experiments and Berlin where grades 5 and 6 are part of the primary school.
- 4 In some *Länder* the comprehensive school is a regular type of school alongside *Hauptschule*, *Realschule* and *Gymnasium*, in the other *Länder* it is an optional or experimental type of school.
- 5 These certificates can also be obtained by adults in evening classes.
- 6 Admission to the *Gymnasium Oberstufe* requires a formal entrance qualification.
- 7 Alternative routes for acquiring the *Fachoberschulreife* outside the *Fachoberschule* are for example the *Berufsfachschule* and *Fachschule*.
- 8 Full-time vocational schools differing with regard to entrance requirements, duration of courses and leaving certificates. Certain two-year courses requiring a *Realschule* certificate for admission lead to a state-recognized examination as technical assistant (*staatlich geprüfter Assistent*).
- 9 Either part-time and simultaneous with attendance at *Berufsschule* or full-time and subsequent to *Berufsschule*.
- 10 Duration: 1-3 years; this category includes schools in the field of health care.

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## APPENDIX 3

### TYPICAL CURRICULUM IN THE DUAL SYSTEM

The table shows a typical curriculum for a part-time vocation school instruction in each year of training for a future industrial clerk.

	Block teaching: 6 or 12 weeks 30 hours a week	Part-time instruction two days a week
<b>GENERAL EDUCATION</b>		
Religious instruction	2 hours	1 hour
Civics	2 hours	1 hour
German	2 hours	1 hour
Physical training	2 hours	1 hour
<b>Total</b>	<b>8 hours</b>	<b>4 hours</b>
<b>MAJOR SUBJECT AREAS</b>		
Economics	3 hours	1 hour
Business administration	9 hours	3 hours
Mathematics	4 hours	1 hour
Accounting	4 hours	2 hour
Organizational theory	2 hours	1 hour
<b>Total</b>	<b>22 hours</b>	<b>8 hours</b>

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## GLOSSARY

### Glossary (including acronyms) of German terms used in text

**Abitur** leaving certificate from the *Gymnasium*; usually confers eligibility for entrance to higher education.

**Allgemeine Hochschulreife** qualification obtained as a rule by taking a final examination (*Abiturprüfung*) after 13 years of schooling, including upper secondary education, usually at a *Gymnasium*. The holder has, in general, the right to study any subject at any institution of higher education.

**Ausbildungsordnungen** training regulations.

**Berufsaufbauschule** vocational extension school giving access to the upper level technical types of education by providing a qualification equivalent to that of the *Realschule* learning certificate.

**Berufsbildungsgesetz** vocational training acts.

**Berufsfachschule** vocational school at the upper level of secondary education that prepares students for jobs or provides them with vocational training, promoting at the same time general education. Depending on the objective of training, the requirements for admission (*Hauptschule* or *Realschule* certificate) and the period of training (from one to three years) vary.

**Berufsgrundbildungsjahr** basic vocational training year as the first stage of vocational training; either in a full-time school or in the dual system.

**Berufsschule** part-time vocational school at the upper level of secondary education providing general and career oriented education for students in initial vocational training; special attention is paid to the requirements of training in the dual system.

**BIBB (Bundesinstitut für Berufsbildung)** Federal Institute for Vocational Training.

**BMBW (Bundesministerium für Bildung and Wissenschaft)** Federal Ministry of Education and Science.

**Diplom** diploma.

**Facharbeiterbrief** certificate of a skilled worker.

**Fachhochschule** institution of higher education offering academic training with a practical bias, particularly in engineering, economics, social affairs, agriculture and design.

**Fachhochschulreife** qualification obtained, as a rule, by taking a final examination after 12 years of schooling, the last two years at a *Fachoberschule*. It provides access to studies at *Fachhochschulen*.

**Fachoberschule** technical secondary school (grades 11 and 12) specialises in various areas and provides access to *Fachhochschulen*.

**Fachschule** technical school providing advanced vocational training.

**Fachkompetenzen** technical skills.



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**Gesellenbrief** certificate of completed apprenticeship.

**Gesamtschule** comprehensive school existing in two forms: the co-operative comprehensive school combines the schools of the traditional tripartite system under one roof and harmonises the curricula in order to facilitate student transfer between the different co-existing types; the integrated comprehensive school admits all pupils of a certain age without differentiating between the traditional school types.

**Grundgesetz** the basic law.

**Grundschule** primary school.

**Gymnasium** (plural **Gymnasien**): general education secondary school (grades 5-13) providing general university entrance qualification by the final examination. See also *Allgemeine Hochschulreife*.

**Handwerkskammer** chamber of crafts.

**Hauptschule** general education secondary school, lower level, providing full-time compulsory education.

**Industrie-und Handelskammer** chamber of industry and commerce.

**Kammer** chamber.

**Kindergärten** institutions that provide pre-school education from the age of three to six.

**Kreis** local authorities.

**KMK (Sekretariat der Ständigen Konferenz der Kultursminister der Länder)** Standing Conference of Ministers of Education and Cultural Affairs of the *Länder*.

**Land, Länder** state, states.

**Magister** master's degree.

**Meister** master craftsman/woman.

**Mittlere Reife** secondary leaving certificate.

**Mittlerer Schulabschluß** the equivalent to the *Realschule* leaving certificate.

**Numerus clausus** admission restrictions to control the numbers entering higher education.

**Praxis** semester of practical experience.

**Realschule** general education secondary school, lower level, normally grades 5 to 10, going beyond the level of the *Hauptschule* and giving access to upper secondary education where a higher education entrance qualification or a vocational qualification may be obtained.

**Sachunterricht** the basic education that lays the basis for future studies in social sciences history, geography and science.

**Schule, Schulen** school, schools.

**Sonderschule** special schools for pupils with learning difficulties, schools for the blind and visually impaired, schools for the deaf and hard of hearing,

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schools for pupils with speech difficulties, schools for pupils with physical disabilities, schools for pupils with severe learning difficulties, and schools for pupils with emotional and behavioural difficulties.

**Sozialpädagogik** educational social worker.

**Staatlich geprüfter kaufmännischer Assistent** state certified business assistant.

**Staatsexamen** public service degree.

**Stadt** town.

**Techniker** technician.

**Volkshochschulen** adult education centres.

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Published by the  
Further Education Funding Council  
November 1995