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**THEMATIC REVIEW OF THE FIRST YEARS OF TERTIARY EDUCATION**

**COUNTRY NOTE: GERMANY**

This Country Note was prepared by a Secretariat-led review team as input to the first stage of the OECD Education Committee's Thematic Review of the First Years of Tertiary Education. The views expressed are those of the review team. They do not commit the OECD or the countries concerned.

A comparative report for the first stage of the thematic review will be published by the OECD in the last quarter of 1997. Inquiries may be directed to OECD Publications.

## Introduction

The Federal Republic is one of ten countries\* participating in this thematic review of the first years of tertiary education. At the invitation of the federal and Länder authorities, a review team visited Germany in June 1996 and had meetings with federal and Länder officials, and representatives of various public bodies and associations, visiting a variety of institutions in different parts of the country. Our report is informed by the experience of the visits and various documents and reports, notably the German background report prepared specially for the review, together with very helpful comments by the German authorities on an earlier draft and recent information on the current reform agenda.

The purpose of a thematic review is to enable Member countries of the OECD to examine and debate, on a comparative basis and in several countries, recent trends in a selected area or topic of educational policy and practice. It is intended that, in the overall comparative report of the review, key policy issues and lines for possible future development should emerge. This note, reporting on the German experience, serves both as a key contribution to the overall comparative study and a reflective appraisal for use by the German authorities and institutions.

The area of "tertiary education" is broad; its boundaries are not always clear or definite. For purposes of the present review, "tertiary" refers to a level or standard of study, beyond secondary and embracing what participating countries define as both higher education and such aspects of other sectors as seem to meet the definition. Although some ambiguities arise internationally in distinctions drawn between "post-secondary" and tertiary, the focus of the review is quite clear in the case of Germany: it is those institutions that comprise the university sector on the one hand and the Fachhochschulen on the other, hereafter referred to indifferently as higher education or tertiary education.

Since one of the major interests of the comparative study is the relationship of tertiary education to employment, attention is directed at the initial tertiary level qualification which typically or most frequently provides entry to the labour market, namely the diploma. Work of a lower level is of interest in the overall thematic review insofar as it relates closely to this qualification, for example through structures for articulation, progression, credit transfer and the like. But this has not been a significant consideration in the present report.

The term "first years" in the title of the review calls for comment. A striking feature across countries is the difference in the length and nature of studies leading to the initial qualification. There are important differences between Germany and a number of other countries in respect of length and nature of study. In the Australian, New Zealand, U.S. and U.K. country notes, for example, the focus has been the bachelor degree, normally a three or four year programme, whereas the diploma requires five years or more, and Germany does not make a distinction between undergraduate and graduate levels. Moreover, in all countries, many students, even those formally enrolled in full-time programmes, take considerably longer to complete studies than the minimum permitted time. This reflects the choice or need to combine study with some kind of paying job, or the wish or need to intersperse study with periods of leisure, travel, family responsibilities and so on. Thus "first years" is not a fixed quantity either within or among countries.

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\* The ten countries are, in order visited: Australia, New Zealand, Japan, Norway, Sweden, Belgium (Flemish Community), Denmark, Germany, United Kingdom, United States (Virginia).

Some countries, including the U.S. and Japan, have become quite accustomed to participation rates in excess of 40-50 per cent of a defined age cohort in some kind of tertiary education. In Germany, the great variety of schooling and training possibilities for adolescents and young adults after the years of compulsory schooling results in lower rates of participation within higher education but allows approximately 90 per cent youth to reach levels of qualification directly relevant to working life. As in most countries, the trend for participation in tertiary education is upward in Germany, reflecting a variety of factors which are discussed in the overall comparative report. They are not reducible to the demand of the economy for higher levels of knowledge and capability although that is certainly a major consideration.

Sheer growth of demand poses obvious problems of finance and provision in all countries. But there are many difficulties to address including a legacy of institutions and practices which were designed for much smaller and more highly selected numbers of students. The rapid adjustments increasingly called for are not always possible and there are significant cross-currents of opinion regarding the purposes and values of tertiary education which affect decision-making. Nevertheless there have been major changes as policy makers and institutions grapple with the expectations placed upon and address the various demands in a situation which is increasingly constrained everywhere by public finance policies of governments.

In each country visited in the course of the review issues arising from these demands and pressures have been addressed. Germany is no exception. Thus, the problems and issues that are discussed below are not unique to Germany, they are echoed to greater or lesser extent in many other countries. Nevertheless, this note has particular significance for the overall review in that it addresses development in the largest and most complex Continental European country taking part in the review, a country moreover with a very strong and rich tradition of both academic and technical education with quite distinctive structures and procedures.

The reviewers have greatly valued the opportunity to discuss with leading education and other authorities the recent and current state of play in tertiary education. We are very pleased to convey our thanks to Dr. Ingeborg Berggreen-Merkel of the Bavarian State Ministry of Education, Dr. Wolfgang Moenikes of the Federal Ministry of Education and Dr. Hubert Braun who, in addition to playing a leading part in preparing the background report, also accompanied us throughout the visit, and to all the officials, academics and others in different parts of the country who helped us to understand the situation. We also appreciate the generous hospitality which included varied samples of German musical life.

In a short visit it is impossible to take in more than a small part of a large and diverse system. Where individual institutions are mentioned, it is not to single them out for special mention -- deserved as that may be -- but to illustrate something of more general interest.

## **Context**

The Federal Republic of Germany (FRG) consists, since re-unification in 1990, of the former German Democratic Republic (GDR) with the FRG, of 16 Länder (states); of these eleven are in the former FRG and 5 are new Länder (neue Bundesländer). Among the 16 are three single city Länder. The German constitution, the Grundgesetz (Basic Law) regulates the joint functioning of the Bund (Federation) and the Länder in legislative, judicial and administrative matters. The Bundesrat (Federal Council) is the institution that links the Bund and the Länder. It is the second legislative body on the federal level -- the Bundestag being the first. Bills which have a special bearing on the interests of the Länder cannot become Law unless the Bundesrat gives its express approval.

As to the new Länder, the social, cultural and economic challenges of integrating a previously socialist society and economy into a western, liberal and market driven one are very large indeed. The old Länder have also taken up the challenges by investing heavily in the development of the new Länder. The challenges affect higher education. Indeed, higher education is an important contributor to assimilation and development as well as integration of the former east and west.

In 1989, the differences in tertiary education between the two parts of Germany were very large indeed. Since 1990, tertiary education in the new Länder has been restructured following recommendations of the Wissenschaftsrat (Science Council). Student numbers have significantly increased in universities and Fachhochschulen in the new Länder. In the old Länder, since 1989 fifteen higher education institutions have been founded (making a total of 315 in 1994). There was no restructuring, whereas in the new Länder a restructuring has been taking place. East and West had developed different education systems, and brief reference to these is necessary to understand present developments and issues.

### ***A Federal Structure***

In the unified FRG, as in the old FRG, Länder have cultural autonomy which includes education. However, the federation has the power to legislate a framework for higher education. The Hochschulrahmengesetz des Bundes or Federal Framework Law for Higher Education (HE) includes general principles regarding study, teaching, research, staffing, setting up, organisation and administration of higher education institutions (HEIs). First pronounced in 1976 it was last amended in 1993. The law is seen as guaranteeing relative homogeneity within German HE. A significant renewal of this law is expected in the near future. (See below).

Within the general framework, all Länder regulate details of higher education processes. These more detailed provisions exist in the Higher Education Acts of the Länder.

Within the federal system, social and ideological pluralism was encouraged. Co-ordination mechanisms rather than steering from the centre were seen as appropriate strategies to ensure that the education system could deliver equitably to all citizens across the country. This resulted in a highly complex, partially interrelated set of organisations. The oldest co-ordinating body of the Länder is the KMK (Standing Conference of Ministers for Education and Cultural Affairs). The HRK (Conference of Rectors and Presidents of Universities and other HEIs) represented West German and now all German HEIs and has been the interface between the various ministries and the HE system. The BLK (Bund-Länder Commission for Educational Planning and Research Promotion) works on planning issues for the whole higher education system and decides on the promotion of research. The Wissenschaftsrat (WR - Science Council) is a science policy advisory council, which provides advice on higher education and research policy, on investment in buildings and large pieces of equipment (for approval by the planning committee for the extension and construction of institutions of higher education) and conducts evaluations of research institutes and nowadays of higher education as well.

The WR recommendations are often discussed in the BLK. The federal and Länder governments, the BLK and other organisations are entitled to ask the WR for recommendations on specific issues, but the WR can also initiate projects and studies.

Recent recommendations by the WR have included: future development of higher education; internationalisation; shortening of study times; more vocationally oriented education; more differentiation

at the level of Fachhochschulen; increased capacity of Fachhochschulen; development of Fachhochschul-and enterprise-based education; stronger management of HEIs; development of part-time study; and changes in doctoral degree study.

The Bund-Länder system in Germany is very complex, and with 16 Länder there is a diversified higher education landscape. While it appeared to the reviewers that some of the commissions and organisations work well together, others seem not to. But on the whole, within Germany, there is an acknowledgement that the Bund-Länder tensions are a source of both positive and negative outcomes. The negative outcomes tend to be the long delays and compromises; the positive ones extensive consultation and eventual consensus. They constitute the fundamental framework for higher education policy and decision-making, bringing together a wide array of interests not only governmental.

### ***Enrolment Trends: Universities and Fachhochschulen***

The reconstruction of higher education in the FRG from 1949 was initially largely left to the eleven Länder. The concept of a (modernised) Humboldtian university with unity of teaching and research and a community of scholars was still accepted and informed internal university organisation.

Student access to higher education is a constitutional right for all those who are qualified. There are two mainstream qualifications: the Abitur and the Fachhochschulreife. The Abitur is recognised across all Länder and is complemented by subject-specific qualifications which enable students to enrol in particular disciplines. This guarantee of a study place has made planned prediction of student enrolments problematic.

An initial upsurge in enrolment occurred in the mid 1950s; in 1950 only about 4 per cent of the relevant age group were enrolled in HEIs. But 1960's it was 8 per cent. During the 1960's public awareness and debate about the role of higher education in a civic society and the contribution to economic development led to a number of policy initiatives. From the mid-60s on the system of higher education was seen increasingly as less able to handle the multiple demands from society and the economy. (See following section).

Student numbers rose from 291,000 in 1960 to 510,500 in 1970, increasing year by year to 1,044,200 in 1980 and continuing to grow annually. In 1990 there were more than 1.5 million students in HEIs in the FRG representing 22 % of the age group. By 1994 this had increased to 28.8 % of the population aged 19 to under 26. Expenditure by Bund and Länder for higher education increased from 17.8 billion Deutschmark in 1980 to 30.3 billion in 1990.

Most of the expansion originally had occurred in the university sector with new institutions being created to provide additional study places. Enrolment in universities nearly doubled from 1960 to 1970 and more than doubled in the following decade. In 1994 there were one and a quarter million university students of 1 676 000 higher education students in total.

Increase in staff numbers did not keep pace and the staff:student ratio deteriorated. By 1989 the ratio of academic staff to students was 1:17, of students to professors 1:47; in 1970 it had been 1:9.

It had become clear that in a variety of areas new forms of education and training, more closely allied to the professions, were needed. A new type of institution, Fachhochschule, was created and agreement reached on its characteristics. For nearly thirty years now, these new institutions have educated an increasing number of students in engineering, commerce, applied arts (design) and various social

professions. From about 90,000 students in 1970 student numbers rose over the following two decades to 373 000, an increase of 414 per cent. At the same time student numbers in universities have risen too. Fachhochschulen, while playing an important role in higher education, have not increased their share of higher education enrolment significantly. In the 90s, however, Fachhochschulen have been established thus increasing the number of student places.

**Table 1**  
**Students by Type of Institution of Higher Education (for the 1993-94 winter semester)**

	Total (in thousands)	As percentage of the total 19-25 year-old population	Universities (1)	Art/music colleges	Fachhochschulen (2)
Western Germany	1 711.9	27.6	1 280.4	25.0	453.8
Eastern Germany	163.3	12.6	121.9	4.8	42.0
Federal Republic of Germany	1 875.2	25.0	1 402.3	29.9	495.8

*Source:* Grund-und Strukturdaten 1994/95

Notes:

(1) Including equivalent institutions of higher education

(2) Including Verwaltungsfachhochschulen - i.e. Fachhochschulen for public administration

In contrast to the federative principle of cultural autonomy in the FRG, in the GDR a unified centralist concept determined the development of higher education. HEIs had to achieve socialist objectives including access to higher education for children of workers in industry and agriculture. Student numbers rose rapidly and the proportion of the age group enrolled in higher education was higher in the GDR than in the FRG until the mid-60s. In addition to traditional institution-bound higher education, distance and evening study opportunities were offered and by 1970 nearly 40,000 students were enrolled in these courses. Very specialised institutions of higher education (but not Fachhochschulen) were established to accommodate the increasing student numbers.

From about 1970, student numbers in the GDR stagnated and even decreased to fit into the centralised manpower planning. Thus the GDR was an exception to the movement towards mass higher education that had emerged in industrialised nations. In the 80's it reduced its participation rate from 18 per cent to 13 per cent. In 1990 there were only 132 500 higher education students in a population of 16 million representing an 8.5 per cent participation rate.

This decline was not accompanied by a decline in staff positions. In contrast to the FRG staff:student ratios had become more and more favourable, reaching 1:3 in 1989.

Participation rates in both parts of the country are increasing. This expansion has occurred within a comprehensive evaluation and restructuring exercise in the new Länder. Not only were institutions amalgamated and redefined to fit the traditional multi-disciplinary university model and Fachhochschulen created, academic staff were evaluated and staffing structures had to be brought into

line with new state higher education plans. The increase in student numbers and the attractiveness of higher education in the new Länder is a significant achievement for the FRG.

Higher education in the FRG now consists of three categories of HEIs:

- 1) Universities, technical universities, comprehensive universities, single-discipline HEIs, and teachers training colleges;
- 2) Colleges of art and music; and
- 3) Fachhochschulen and colleges for public administration.

Not part of higher education but of tertiary education are Berufsakademien. First established in the land of Baden-Württemberg in 1974 these three year institutions combine institution-bound study with regular employment in an enterprise. Students have the Abitur and a work contract and gain in three years both practical and academic qualifications. The Science Council (WR) evaluation puts Berufsakademien on an equal footing with Fachhochschulen and graduates are regarded by employers as equivalent to graduates from Fachhochschulen, though their studies are less theoretical or in-depth. There is also a great range of post-secondary training institutions, e.g. for health care professionals; these are not considered part of tertiary education.

The unification highlighted the different goals for higher education on which a country might decide; the different ways of granting access; the different ways that teaching and research may be organised; the tensions between individual aspirations and actions, and public interests. Governance and steering of higher education, length and structure of study courses, diversity of institution types and funding of higher education exercised the minds of policy makers and co-ordinating bodies with a new urgency.

### ***Reform Proposals and Policy Directions***

In 1993 an "Eckwertepapier", Key Issues Paper, was prepared by a joint working party of Bund and Länder. This was a paper in preparation for a top level discussion on policies and funding of higher education. While this top level discussion did not produce an outcome in the form of a policy decision, the paper itself became an important document. It summarised many of the concerns within Germany about the developments in German HE. In particular it affirmed that university studies had to be reformed and shortened to four or five years. It stated that expansion in the system was needed to accommodate demand by students and demand for graduates. Much of this expansion was to take place in Fachhochschulen. The dual system was seen as successful; but it needed to articulate with universities and be developed as a viable and attractive alternative to university study. The paper placed priority on the development of education and research in the new states. And it affirmed the standing of research and the importance of increased European collaboration, and collaboration between HEIs, other research organisations and industry.

The paper addressed reform measures within the HE system. Among these were:

- I. Study reforms
  1. Prompt realisation of the study structure reforms in universities,
  2. Measures to improve teaching,
  3. Improvements to the framework in which study takes place.

- II. Expansion of Fachhochschulen in old and new Länder
1. Creation of new study places,
  2. Creation of new fields of training,
  3. Improvements to the framework in which study takes place.

Study reforms were aimed at decreasing the average completion time of seven and more years to a normal four to five years, as provided in the study rule. Efforts were to be directed at making the study courses more transparent, more coherent, more structured so as to enable students to progress with knowledge of where they were going and how they were performing. In particular this meant a reform of the assessment and examination system, and creation of incentives to take the final exams after the regular number of semesters.

Other sections of the key issues paper addressed measures to increase the efficiency and effectiveness of HEIs, including more competition through comparisons based on performance indicators, through more flexible use of funds and greater autonomy.

For vocational education more co-operation with tertiary education providers was promoted together with development of more pathways to various forms of vocational and higher education.

This paper is still one of the key documents in the continuing development and reform of German higher education, presenting both an analysis of current problems and solutions to them. Several Länder have started implementing proposed reforms. It seemed to us to be highly relevant to the present situation.

***We endorse the Key Issues paper and recommend adoption and implementation of it by all Länder ministries and the relevant federal ministries.***

### ***Report on the Reform of the Structure of HE***

A recent KMK report on the implementation of the structural reform of universities (Bericht der Hochschulstrukturreform. Beschluss der Kultusministerkonferenz vom 01.03.1996) mapped progress as follows:

A broad consensus on the aims of the structural reforms was noted. Also noted was that different Länder had chosen, each within the framework of its own higher education system, different paths to achieving the aims. The degree to which aims have been realised varies significantly from Land to Land. In some Länder the pace of reform is swift, while others are still in a phase of conceptualising solutions.

The improvement of study structures remains the main area of reform:

- All Länder have created a framework to ensure that study courses in universities are designed in such a way that they can be studied in the regular time; the report also notes that actual decreases in average completion times have not yet been achieved; the frameworks were created through ordinances/regulations, through co-operation with HEIs or co-operation between HEIs;

- All Länder have improved the examination regulations; in particular a further attempt at the final exams without penalty if unsuccessful, first introduced in Law, has proven effective as an incentive to take the final examination after the regular period of study;
- All Länder have introduced measures to improve teaching; some address the responsibilities of the professoriate, in particular the responsibility to advise students, to mentor students, and to be present at certain times.
- All Länder have introduced a bundle of measures to improve student orientation.

There are some issues on which there is no consensus:

- Some Länder advocate greater influence by HEIs on admission of students, while others see dangers for, inter alia, the value of the Abitur and the equal status of university awards across the nation;
- No Land is considering introducing fees, though not everyone is excluding the possibility of introducing fees in the long term; an administrative fee has recently been introduced in Berlin and in Baden-Württemberg;
- Most of the Länder do not consider formalising part-time studies, though in some the needs of individual students will lead to part-time study arrangements and mixed mode teaching.

A further area of reform is an improvement in the efficiency of HEIs; evaluation, particularly performance indicators as a basis for Teaching Reports, has been made mandatory in a number of Länder. A more effective use of available funds is being piloted in a number of Länder in particular through provision of one-line budgets (Globalhaushalte) which increase the flexibility of the institution. Some Länder, and within Länder some universities, also have started allocating some resources on the basis of performance indicators. As part of the efficiency drive, improvement in institutional management is being promoted.

A third area of reform is a change in the structure of the higher education system. The Eckwertepapier of 1993 proposed that 35-40 % of commencing students enrol by 2000 in Fachhochschulen. This has been achieved in some of the newer Länder, and in the old Länder new Fachhochschulen have recently been or will be established. While it is a question whether sufficient funds will be available to meet all requirements, measures have been taken to make FHS more attractive with a greater selection of study programmes, greater emphasis on theory-practice links, and increased internationalisation. Further opportunities for applied research and technology transfer are also being created, and the opportunity for well qualified FHS graduates to enrol in a PhD program in a university. Berufsakademien have been established in some of the Länder, but the majority of Länder prefer extending FHS. Some amendment of the Framework Law is needed to achieve the reforms that are sought.

The report notes the following areas for further structural changes:

- A new system of financing higher education with more emphasis on output and outcome-based funding;
- A revision of leadership and governance structures to enable more professional management;

- Increase in the autonomy of HEIs and of competition between them through greater influence of HEIs on admission;
- More flexibility in staffing;
- Extension of FHS by transfer of study programs, personnel and physical resources from universities;
- Establishment of structures for continuing education.

It is clear that there is knowledge and political will to address the problems Germany faces, and indeed there is knowledge of workable solutions. During the very recent period and particularly in the latter part of 1996 and into 1997 several major steps have been taken to initiate reforms, at both the Federal level and in individual Länder. The federal minister of education and the Länder ministers have recently agreed to reform the federal framework law on higher education (Hochschulrahmengesetz des Bundes) as soon as possible. A draft is to be presented in summer 1997. A number of Länder have already announced projects to change their Länder laws on higher education.

The federal minister and the Länder have basically agreed on slimming down the federal framework law thus giving the Länder more freedom to find their own ways of regulating higher education and to undertake more experimental projects. The intentions are to enhance the autonomy and freedom of the institutions of higher education, to promote flexibility and diversity and to strengthen the incentives for better and more effective performance in teaching and research.

The federal minister proposes, inter alia, to:

- Strengthen the Fachhochschulen by broadening the realm of subjects being offered there and by intensifying the dual conception of studies (studies within the institution and training periods in private enterprise);
- Restructure the study programmes to achieve shorter completion times with mandatory proofs of study progress and intermediate examinations after the second year of studies;
- Enable institutions to offer additional study programmes leading to the degree of bachelor or master according to the tradition in English-speaking countries;
- Introduce elements of the modular and credit point system;
- Involve the higher education institutions in selecting students in subjects where the demand exceeds the availability of study places by giving the institutions the right to choose a quota of students by their own criteria;
- Enhance flexibility in funding of institutions of higher education according to their academic performance -- leading to funding by a one-line budget;
- Promote efficiency of management by strengthening the governing levels of higher institutions, by restraining state and ministerial influence, by stimulating self evaluation and by opening the option for installing special managing boards of qualified persons from outside the institution itself;

- Grant the institutions of higher education more autonomy in staffing except for the tenured teachers (professors) and the chancellor of the institution);
- Promote research at the institutions of higher education.

Wide ranging reforms are under way or proposed in the Länder. At the beginning of 1997 the Bavarian minister of education in a message to the Bavarian Parliament stated his plans for the reform of Bavarian higher education. The Bavarian draft laid out what the federal minister later included in his proposals: improving the management by strengthening the role of the rector or president and by adding a management board thus shifting the decision-making power away from the many decision making groups existing at present; increasing the autonomy and responsibility of the institutions of higher education themselves through more flexibility in budgeting -- even though a complete one-line budget is not yet envisaged; promoting diversity and competition by allowing institutions to set priorities in the fields of research and studies and by creating centres of excellence; granting more autonomy to the institutions for staffing and for selecting a number of students by their own criteria; promoting internationalisation and the use of multimedia; and, finally, appointing a number of professors for a limited time only.

Also early in 1997, the government of Hesse presented a draft for a new statute law on higher education to the Hessian parliament. This draft promotes teaching by providing better advice, orientation and tutorials for the students and by strengthening the responsibility of the teaching staff for their students. Evaluation of teaching, increased rights for the students in all questions of teaching, and increases in part-time studies are among the proposed innovations. Hesse, too, is proposing the bachelors' and the masters' degrees as well as restructuring programmes on a credit point and modular system. More autonomy and more efficient management of the university, more flexibility and closer co-operation between Fachhochschulen and universities are being proposed.

Saxony has likewise presented the draft of a new federal framework law (Hochschulrahmengesetz des Bundes). Through its introduction into the second, federal legislative chamber, the Bundesrat, (which has the right to initiate federal laws) this initiative would accelerate the reforms on federal and Länder levels. The draft follows in many aspects the paper of the federal minister. According to this draft the federal law should really be a frame and confine itself to a minimum of regulations. Saxony wishes to ensure that half of the students seeking access to institutions of higher education are selected by the institution itself. It is also intended to open a way for offering bachelors' and masters' degrees, through renaming German diplomas, instead of having differently structured student programmes. Saxony also calls for evidence of efficiency after the second year of studies as does the federal minister.

The German Länder with the largest populations, North Rhine-Westphalia and Baden-Württemberg, have both outlined ideas for reforming the higher education system.

The above proposals are of a far-reaching nature; they are a mixture of the widely agreed and the controversial.

One of the issues on which the federal minister and at least part of the Länderministers disagree is the question of student fees. Whereas some of the Länder, for instance Baden-Württemberg, favour student fees, as does the federal minister, the majority of the Länder including Bavaria are opposed. There are also disagreements on the question of how many students should be selected by the university or the institution itself -- if any. Differences exist over the way of introducing bachelors' or masters' degrees into the German study system. Very strong management of the institution, especially if supported by a management board of people outside the institution, is controversial. However, a working group of some

Länder and the federal level has been established to work on the drafting of a framework law that might be acceptable by both the federal minister and the Länder, thus paving the way to quite substantial and rapid reforms.

*These are very important initiatives. The views and recommendations of the reviewers, interspersed throughout this report are very much in line with the directions being taken by the reform measures. We strongly commend them in the belief that in very practical ways they will address many of the problems to which our attention was drawn in the course of the review visit and in the background documentation prepared for it.*

In the following pages, we focus on the major challenges and issues as they affect teaching and learning in the first years of tertiary education in Germany, recognising that many of them are now in the form of firm proposals or legislative initiatives and, in several cases, the subject of intense debate.

## **Major Challenges and Issues**

### ***Meeting the Volume of Demand***

Under the Basic Law, any person has the fundamental right to choose a profession and to undertake appropriate training; it is for the state to decide on the capacity in a special field of studies. The right to sue for a study place exists but a law suit can only be based on questioning the exact capacity available at a certain institution.

Questions arising for the German federal and Länder governments from these legal circumstances and the increasing demand for access are how to honour students' right to access with manageable increases in funds; how to maintain good study conditions for the projected increasing number of students; how to assure quality; and how to steer or influence student flows to meet the needs of society and enhance employment prospects for graduates.

For some years there has been concern about study conditions and there have been student demonstrations. However, it is a complex matter to anticipate and steer the flow of demand. It seems that Germany has to prepare for an expanding system. While there are declining birthrates from 1990 on, most strongly in the East, (this will impact on secondary schools within the next few years and on HEIs from 2008 on), enrolment is expected to remain on a very high level. The prognoses from various bodies do not forecast an increase but a decrease in student numbers in the old Länder, but they do forecast an increase in the new Länder. Yet we have noted the unpredictability of enrolment when access is guaranteed; moreover, individual and societal expectations are variable. Also to be kept in mind is an increase in students finishing high school and thus gaining entrance qualifications to higher education and a parallel decline in apprenticeships. Of those choosing apprenticeships significant numbers after finishing their vocational training proceed to Fachhochschule or university (see also below Addressing New Cohorts of Students).

The free access and the lack of control institutions have over their admission means that some universities in favoured places have vastly more students enrolled than study places provided, while other institutions are very small indeed, in particular some of the Fachhochschulen which don't manage to fill all their study places. The city states of Hamburg and Berlin, for example, have always attracted students from far beyond their boundaries; Berlin is now planning to considerably decrease the number of student places in the universities.

In view of the conditions governing and influencing access, more funds are needed notwithstanding such developments as the one just mentioned and possible scope for further efficiency gains. But, as noted above, there is disagreement on who is to provide the funds. The response to an impasse in the Bund-Länder negotiations about resourcing of higher education has varied from Land to Land, depending both on the financial situation of a Land and the priority attached to the maintenance and enhancement of tertiary education.

The Land Nordrhein-Westfalen, for example, has increased its higher education budget by 20 % since 1990, whereas the Bund has been decreasing its expenditure on higher education. Indeed the imbalance, or the shift of responsibility, is demonstrated by the fact that in the past 20 years the Bund has increased higher education funding by 50 %, whereas the Länder increased their contribution by 400 %.

The Land Berlin is in a difficult position which exemplifies the problems in the Bund-Länder constellation. As East and West Berlin had both been show cases for their respective countries, there was an oversupply of universities and study places. In addition, more than half of the science academies were also located in East Berlin. Students from all of Germany apply for study places in Berlin. But the Berlin solution was one solely influenced by the constrained financial situation of Berlin - a rationalisation of courses between the universities; a cut in staff numbers and a decrease in student numbers. Postponement of the planned expansion is also foreshadowed for the Fachhochschulen.

In this context the question of funding across Länder borders needs to be raised, taking into consideration the general transfer of funds from the more affluent Länder to the less well-off ones. Berlin has significantly more students enrolled than funded study places and is suffering severe financial problems. Brandenburg could take more students and is equally suffering from financial problems. Without stronger educational co-ordination by Bund and Länder, without greater control over admission by governments and institutions, the uneven distribution of students will remain a problem. ***Compensation across Länder for the students from other Länder and to ensure equity in provision for students needs to be addressed. Attention to the conditions of teaching and learning within institutions, as detailed in the Key Issues paper and now again under discussion is recommended as a means of alleviating problems of larger than planned student numbers.***

It is debatable whether the whole system in its present form is able to meet the required physical and human resource capacity needed for the present and future student numbers. What is clear is that some universities especially are finding great difficulty in providing a meaningful education for all of their students due to a lack of capacity. Of course, Germany is not alone in facing the problem of finding ways to adapt and adjust provision so as to provide a high quality of relevant education for all students.

***The further development of the system could more efficiently and effectively ensure that demands of individuals, the needs of employers, and institutional resources and facilities are matched. Structural issues such as salary differentiates in the public sector between Fachhochschulen and university graduates would be among the considerations to be addressed in policies designed to encourage the streams of students towards Fachhochschulen and other vocationally oriented alternatives. As long as the allocation to the university sector cannot be seen and treated together with allocations to Fachhochschulen, the expansion of Fachhochschulen may be in jeopardy.***

### *Selection of Students*

There is pressure to give institutions greater freedom in the selection of students. Arguments for increased institutional involvement stress the value of greater management capacity and closer match between institutional offerings and student needs and talents or expectations. But some ministries at least believe that state-wide rules safeguard student rights and are a guarantee for justice.

However, there is no evidence from other countries that increased institutional responsibility for student selection coupled with transparent and explicit rules and methods for selection are a threat to justice. Appeals procedures could be developed within institutions or states which might substantially reduce the external appeals procedures guaranteed under the Basic Law.

### *Shift in Student Demand and the Labour Market*

There has been a shift in student demand for courses since 1990, with decreased demand in computer science, mechanical and electrical engineering and increased demand in architecture and civil engineering. Many universities are concerned about the decline also in science enrolments. Some institutions both in the university and FHS sectors actively encourage school students in their region to enrol in particular courses. Some Fachhochschulen create courses for niche markets to ensure a regular student supply.

The Federal Association of German Employer Organisations (BDA) sees the balance between graduates and workers as unfavourable. It believes that there are already too many graduates.

Unemployment of graduates has increased recently, with about 150 000 graduates in all age groups unemployed in 1996, including a third who are aged less than 35. While it used to be the social science and humanities graduates who remained unemployed longest, the largest single group are now engineers. With technical and scientific knowledge dating quickly, employers are reluctant to employ unemployed engineers. The crisis in engineering employment is not specifically German but due to global changes in production structures including re-location of industries, and a general trend towards lean management and cost cutting.

At present, the unemployment rate of FHS graduates is lower than that of university graduates, partly due to gender (more males are enrolled) and fields of study which skew the rate in favour of FHS. Moreover, graduates of FHS more often than university graduates work in appropriate employment (even though many study engineering).

Forecasting by staff in the Institute for Research into the Labour Market and the Professions (IAB) demonstrates an anticipated mismatch between the annual number of new graduates entering the labour market between 1991-2010 and the annual demand for new graduates. According to some calculations a third of graduates might not find jobs commensurate with their qualifications.

However, there will be an under-supply of people with vocational training, hence a further incentive to transfer study places from universities to vocational training. Those students who have a combination of vocational training and higher education have worse prospects than graduates from higher education alone, although the chances increase if the apprenticeship is related to the higher education study.

There are fundamental changes in the labour market. Professions have not yet adjusted to the impact of mass higher education on the status and level of work within industry. There are changes in work organisation, including lean management, which lead to a greater polarisation in positions. In some firms master craftsmen or tradesmen are being substituted by people with less qualifications (at apprentice level) or higher qualifications (FHS graduate).

But more changes are needed, particularly in the recognition of different awards and as they translate into salaries. There is a very clear relationship between level of qualification and income. University graduates have the highest income on average - this holds true in the old and the new Länder, for men and for women. Male graduates from vocational schools and FHS, however, have higher average incomes than female university graduates. While industry does not seem to discriminate between graduates from universities and FHS, the public service does.

A broader question arises however, and that is the expectations in the society regarding the links between graduate status and certain kinds of jobs. In several of the countries participating in the thematic review significant changes have occurred or are under way. It is a question whether these might occur in Germany given the very strong link between degree structures and professions. There is a growing disfunctionality between job openings and the increasing pool of graduates. We think that expectations will need to moderate - on the part of graduates and the labour market alike.

### *Addressing New Cohorts of Students*

Students in the 90's are different from their predecessors. About 40 % of commencing students in HEIs have finished vocational training. This means that they are older than previously, but have more life and work experience and opportunity to link theoretical concepts to work experience. They expect that they can integrate their experience into study and to be treated as adults.

In the course of our visit we heard from some of our interlocutors that German universities had not sufficiently realised that and how student expectations had changed. With many students having vocational experience, and a large proportion of students working part-time, the organisation of teaching and learning has had to change. But often only small steps seem to have been taken in that direction.

We found little concern about new cohorts of students among university leaders or ministerial staff. The vast majority of students have Abitur, and the Abitur is still seen as preparing students adequately for tertiary studies, as also is the Fachhochschulreife.

Traditionally the German universities have taken little or no responsibility for the personal development of students. Students are regarded as autonomous, adult individuals who have acquired in their secondary schooling personal, social and academic maturity. Indeed, the Abitur is also called Reifeprüfung, or an examination of maturity. However, most universities have for decades made some provision for personal and academic counselling. Certainly most students would be in no way prepared for the anonymity of a very large university, the lack of social contact, the lack of housing, the lack of structure in their study programme and also for the general lack of guidance, even of interest, many students experience from the teaching staff.

But such generalisations require to be qualified. A few examples from universities we visited illustrates the range of provision already existing. At the University of Dortmund there are both central and faculty/department-based study advisers; advisers for students with disabilities; and for international students. There is an orientation week prior to the beginning of semester; there are tutorials in the

introductory phase and first few semesters to assist students in group work and academic and social orientation; and there are tutorials when students move from the preliminary to the advanced stage of their studies. Assistance to students comes also in other forms, e.g. an interactive program for information on courses. The Land funds many such initiatives, in addition to their normal allocations.

The University of Dortmund also provides labour market/careers advice, maintaining extensive school liaison and an Open Day to familiarise students with opportunities at the university and economically important study courses. The University conducts bridging courses in mathematics; other universities do so in physics and chemistry - an acknowledgement that not all Abiturienten have the required knowledge.

The Technical University of Dresden, too, provides bridging courses in mathematics and physics in an effort to attract students to certain courses. It also offers courses on transition to tertiary studies and many other student assistance schemes.

The Fachhochschule curricula are highly structured, and it is this very structure and the individual contact with other students and the teaching staff which attract some students from large universities to transfer to a Fachhochschulen. Students work in small groups and much of the work is more practical and is generally highly relevant to specific occupations. Some Fachhochschulen have no counselling staff, believing them unnecessary. However, students have been found to need various types of help, the most important being assistance with mathematics and science. Clearly, bridging programmes, extra tutorials and summer programmes are needed, and tutoring in general study skills.

In the new Länder the problems are different. Those universities are coping with the transition from structured courses in the GDR times, where students were selected and accompanied through their studies, to an enlarged higher education system with overcrowding and budget cuts, which impact on staffing levels. A lot of student support needed in the new system as well as much of the quality assurance is not yet developed or where developed not working.

***HEIs in the old and new Länder need to review the conditions under which students learn; this means knowing the students and their expectations; providing assistance in social and academic orientation and integration, and organising the study courses and teaching in such a way that students are likely to make good progress and to succeed.***

### ***Diversification/Differentiation at System, Institution and Programme Levels***

The Humboldtian idea of a university in practice valued research above teaching. It was a university type ideal for an elite higher education system. The university system has accommodated the need for a higher vocational training system based on science and technology. The Humboldtian ideas and modern needs were met in technical universities. But in a mass higher education system, different forms of teaching and learning and different forms of institutions are needed to satisfy a much greater demand for a variety of graduates. It is a question as to how much the system and institutions may vary from Land to Land where, under the Basic Law, similar living conditions are required to be created within the Federal Republic of Germany. This does not, however, prevent the Länder from offering different ways of achieving more student focused teaching.

***The reviewers are of the opinion that the university system needs diversity and competition and opportunity to develop policies on admissions, fees etc. which would benefit particular universities***

**and their students.** That at any rate is the course taken in a number of other countries participating in this review, most clearly in the USA.

The Abitur and indeed the university system were not created for the majority of young people. Universities continue to provide scientific higher professional training and prepare the next generation of scientists, researchers and academics. At present, as illustrated in Table 1 above, most German students still enrol in universities, even though not all find employment at a level they might have expected and many experience difficulties in their studies.

Alternatives are necessary to meet economic and social demands and indeed to provide for the different talents and aspirations of young people and of adults returning to study.

Germany has basically a binary system with a university sector and a vocational sector. The alternatives to traditional university education are located in the vocational higher education sector. Fachhochschulen draw increasingly on the same pool of people, namely Abiturienten, even Abiturienten with vocational training. But the functions of FHS are clearly more directly vocational, serving the needs of industry and other sectors. The lower enrolment in FHS is not only a function of social status of the institution type, but also of planned capacity. Some of the FHS are indeed as over-enrolled or more so than universities.

The intention of policy is to increase the proportion of students in the Fachhochschulen. These institutions have many characteristics which make an increase in their capacity desirable: They are vocationally oriented. The average completion time is 4.2 years in comparison to the average 7 years in universities. Clearly a different level of resources is needed. The graduation rate from Fachhochschulen is also better than that of universities. Commencing student numbers are declining, due to the decline in the birthrate, but greater public acknowledgement and resourcing could reverse the trend.

The Fachhochschulen also have a smaller drop-out rate (18-20 % in comparison to 29-31 % in universities). The former drop-out rate is seen as politically and socially acceptable, as a selectivity mechanism. Not acceptable is drop-out towards the end of a degree due to poor student advising and teaching. Early drop-outs have good employment chances, economics and law students, for example, in insurance.

Fachhochschulen on the whole have more structured courses and teach smaller student groups. The FHS Landshut, for example, which we visited, stresses small group work. In some courses there are opportunities to go abroad for the two compulsory practical terms. There are often close linkages to the regional firms. In Landshut, students (and staff) are integrated into the economic and social fabric of the region through project work, placements and research projects.

But additional models are needed. The dual system in Germany is considered a unique system of integrated and complementary vocational training in the workplace and in schools and is not part of tertiary education. Tertiary education in Germany is defined by institution type, by age of student (compulsory schooling ends at 18) and by admission criteria. However, the concept of a dual system has influenced many of the more recent developments in tertiary education.

Elements of the dual system could be transferred to the tertiary level to facilitate the development at that level of new vocationally oriented programmes where the resources of both universities and Fachhochschulen and other tertiary institutions and of enterprises and working life at large are used. ***Fachhochschulen should introduce new study courses which combine higher education and formalised study in firms in a dual system. It is also necessary to approach the general and the***

***vocational parts of the education system together from a general educational policy point of view and with respect to the need of establishing further training patterns for people active in working life.*** In the dual system and other systems of industry-institution co-operation difficulties arise because of the different loci of responsibility - enterprises employ prospective students and this involves the social partner. The Länder have responsibility for secondary education and Länder and Bund share responsibility for vocational and higher education. ***This calls for co-operation between Bund, Länder, employers and employees and for a reassessment of the actual distribution of responsibilities.***

While there seems to be general consensus that enrolment in vocational education should increase and more linkages to industry be created, it is often noted that there is a crisis in the dual system. There is a decrease in places in industry; in some industries training places have been halved. There is also a cost consciousness in firms who claim that training costs are too high. Abiturienten who do apprenticeships and then go on to higher education are lost to industry and are expensive; they also take training places from young people who more directly need them.

In Bavaria there is less concern about the blurring of boundaries between higher and vocational education as Bavaria has the lowest percentage of the age group acquiring the Abitur and Fachhochschulreife of the old Länder. Abiturienten here use vocational education as a stepping stone to university education less than elsewhere. In Saxony, consequent on demographic trends, there has been a dramatic increase in the demand for vocational training places, with a resultant shortage of available places. Young people seem to believe that vocational education will lead to employment, more so than higher education study.

Examples of new models with multiple paths into vocational training and higher education are:

- In Hamburg, the Craft Chamber (*Handwerkskammer*) has established a new concept in vocational training by giving *Abiturienten* the opportunity to undertake simultaneously an apprenticeship and formal study, leading to an award by the Chamber;
- In Saxony, very good apprentices in building are grouped and taught together and the apprenticeship period per se is reduced to two years; in the third year they can study for admission to a Fachhochschule so that after a further three years of study at a FHS they have two qualifications; there are similar developments in Bavaria, in close co-operation with major outside companies;
- The Berufsakademien are a successful albeit small-scale model of a tertiary-level dual system;
- Other such models exist in Nordrhein-Westfalen where co-operation between Berufsschule, enterprises and Fachoberschule enables students to gain a Fachhochschulreife in 3 ½ or 4 years.

The education union GEW also stresses that the collaboration between universities, Fachhochschulen and Berufsakademien and research organisations needs to be redefined. The system needs to be permeable. Curricula need to accommodate this; staff exchanges and co-operation in research would facilitate it. It should be noted, however, that there are possibilities to continue in the same field of study in the university after two years of study in the Fachhochschule or to study any subject at university on successful completion of studies at the Fachhochschule.

The GEW, like all other organisation, including Fachhochschulen, we visited, stresses the close link between teaching and research. But they do not maintain that all academic staff in all tertiary institutions should conduct basic research. But all should engage in scholarship.

### ***Achieving Quality in Curriculum, Teaching and Learning***

What type of graduate is wanted? The employers are looking for a graduate aged 25 (not 28 plus which is the current average age). They are looking for key competences and technical knowledge. As technical knowledge is renewed every few years, life-long learning skills and information skills become crucial. Other key competences include such familiar items as communication skills, ability to work in teams, cultural sensitivity so that students can work in international settings and understanding of industry.

Though German universities and Fachhochschulen claim to teach current material and subscribe to the notion that research and or practical experience in a profession underpin teaching, and that they develop students' critical skills, many students do not experience this. Students say *Mehr Ehre der Lehre* (More honour/value to teaching) because they see teaching undervalued and experience teachers who neglect their teaching duties. Even in Fachhochschulen where class sizes are quite small and much more interactive and where innovative teaching could take place, much of the teaching is didactic. This may be partly due to the large proportion of part-time teaching staff, coming from enterprises and the professions. Students in various institutions also commented that there were few opportunities to develop communication and interpersonal skills (soziale Kompetenz).

Initiative and entrepreneurship are seen by industry as essential for the changing German economy. There is no teaching of entrepreneurship as yet, although the Humboldt University is moving towards integrating subjects on entrepreneurship using simulation and entrepreneurs in courses. The BDA will also sponsor chairs. There is a view, of course, that several years of professional experience are needed before graduates become entrepreneurs.

On the whole, students are pressing for more links to professional and practical life, and more staff exchanges between HEIs and industry. But there are many initiatives now both within the university and Fachhochschule sector of links to industry. At the University of Dortmund, for example, in all courses there is a close relationship between theory and practice. And Fachhochschulen might have an advisory body that includes employers.

The necessity to have changes to teaching, learning conditions and assessment approved by the respective Land ministry, stifles innovation from within the university. This is well recognised in the federal ministry and in some Länder. Even in Nordrhein-Westfalen, a Land sympathetic to study reform, the checking of the new regulations undertaken by the ministry causes long delays in the implementation of restructured programs. Nevertheless, at the University of Dortmund all diploma programmes are being restructured. In the Land Berlin, a longer history of more university autonomy has led to many innovative curriculum designs and co-operative ventures. In Dresden we were told that the existing regulations on curricula and schedules overload the students, giving them little time for self-reflection, and preventing institutions from organising the studies on a project basis. Yet in Saxony, too, there are examples of innovative courses, mixed modes of teaching and learning, use of information technology, and international workshops.

While most courses are regulated by universities, others like those in the health sciences, medicine, law and teacher education are state regulated. It is acknowledged that reforms take longer in the

latter case. Similarly counter-innovative is the system of one year budgets without possibilities of long-term planning.

The Key Issues paper (Eckwertepapier) has influenced developments, even though it did not lead to increased funding. Several Länder and the Bund initiated projects to make teaching and learning more efficient and effective through use of media, self study, and different organisations of departments. Nordrhein-Westfalen established in 1995 an action program on Quality of Teaching: HEIs could bid for project funding. The University of Dortmund, for example, received funding for three projects: a pilot project to improve the study conditions of foreign students; a literacy enhancement project, and establishment of a learning centre.

### *Distance Education*

Distance education plays a minor part in present-day German higher education, even though it had been well developed in the GDR throughout the 60s and 70s. The Distance University Hagen with about 50,000 students is one of the main providers and meets the needs mainly of students who because of family and job obligations cannot attend a university. Personal contact with students is minimal. The University performs more of a continuing education function; few of the students get awards. There are now special funds for distance education initiatives in the East, where there is a tradition of distance education and the density of universities is smaller. The Fachhochschule Technik und Wirtschaft in Berlin, for example, is offering a fee paying part-time course to professionals, mainly by distance education.

There are other initiatives: the Fachhochschulen in Nordrhein-Westfalen are collaborating and offering courses in a combination of on and off campus study. This integration into "normal" education seems the more promising way in a country like Germany which is well covered by institutions.

However, universities could very usefully explore the opportunities distance education and information technology in general provide for both initial and continuing education for professional groups. Moreover, innovative pedagogy and curriculum designs have been a striking feature of distance education in several countries and conventional institutions might well study these developments for adaptation.

### *Quality Assurance and Evaluation*

Evaluation is an integral part of quality assurance and quality enhancement. There is as yet no culture of evaluation of teaching in Germany HEIs. Evaluation is still very much in its infancy, but several institutions have made university-wide attempts of student evaluation of teaching and faculty reviews. The HRK, conference of rectors, consists of 240 members who enrol 98 % of students in Germany HEIs. As part of an EU project on quality assessment they formulated a set of recommendations on evaluation in higher education and specifically in teaching. The EU-sponsored evaluations consisted of self evaluation and peer group visitations. According to follow-up surveys, those departments and universities which participated benefited from the evaluations.

Several universities are in contact with the Netherlands where self and external evaluation of institutions has been operating for some time. Several Länder ministries also support and finance evaluation initiatives by HEIs, as part of a drive for more accountability following more autonomy. In several Länder, HEIs have to produce so-called Lehrberichte, reports on teaching. These are of different

quality, some are departmental reports bound together, others provide a more institution-wide perspective. At the University of Dortmund surveys of students have been conducted since 1992 and the results have been presented internally. Since 1995 all faculties (Fachbereiche) have produced their own Lehrberichte under the following headings: aims of education; programmes; statistics; organisation of course so that students can finish in time; assessment; international, national and regional contacts; internal quality assurance; resources; and inter faculty co-operation.

The Lehrberichte have a variety of functions, actual or potential. They promote self reflection and communication about teaching; communication with students is initiated or enhanced; occasions are created to produce a consensus about aims and objectives; and different value positions are formulated. They provide the central administration with important information and management can assist where problems and strategies are identified. They can, but do not as yet, serve to disseminate good practice, and they also increase the interest in quantitative performance indicators. At some institutions there is now a regular review process of departments and institutes with an internal and external evaluation phase. While the process is by no means as transparent and inclusive as, for example, students might wish, it is an important initiative in improving the quality of the teaching and learning environment.

These are relatively new initiatives and so far, we were informed, there has been little impact on quality of teaching and learning. The feedback loop back to the evaluated persons or organisational units may be missing, and there does not as yet seem to be open accountability for implementing recommendations.

Although statistical data on higher education exist, they do not provide meaningful information on individual rates of progress. There is no legal basis for getting information; on the contrary, it is anti-constitutional. Hence follow up of drop-outs, determination of real length of study, distinctions between effective part-time and full-time students are more speculative than factual. These circumstances hamper efforts to promote study progress and efficiency.

***The review team notes that the legal framework in which higher education operates is designed to ensure individual rights. Each of the legal elements has a strong social and moral basis. But together they can be counter-productive in respect of the issues raised here. The requirements of the Law and of accountability of HEIs are in some respects in contradiction; some features of the freedom becomes dysfunctional.***

#### *Staffing and Staff Development*

The level and quality of staffing in HEIs naturally condition the quality of teaching and learning. There are several areas of concern.

In the East there is a lack of continuity in higher education employment with many people on short term contracts and working part-time. In the new Länder an extraordinary favourable staff-student ratio had to be normalised and severe staffing cuts were made and are still being implemented. In addition, staff were evaluated and, if found wanting, released, and researchers from the research institutes and academies had to be integrated into universities. Courses were rationalised. Rationalisation of courses within a Land makes economic sense but causes other problems for staff and students.

The integration of parts of the research staff and potential from the academy of sciences in the universities has not been very successful. Less than 10 % of the 2000 research staff concerned are

integrated; this, of course, has occurred at a time when universities themselves have had to shed 10-20 % of their staff.

In the old Länder there are also large numbers of contract and casual staff, who perform much of the academic work.

The education union GEW (Gewerkschaft Erziehung und Wissenschaft) has been concerned about the staffing structures for some time, in particular about the continuation of a system of short term contracts for a large number of staff. Lack of career opportunities of this Mittelbau of assistants, lack of security, dependence on a professor and therefore lack of professional autonomy highlight the very distinctive, not to say privileged, position of the professoriate. That position derives from the Basic Law which guarantees the independence of professors, free from interference by state authorities. ***An extremely important principle in a modern democracy (and rarely stated so clearly in national legislation anywhere) this independence of the professoriate needs to be matched by responsiveness of the system as a whole to the needs of students in the perspectives of education and research alike.***

The GEW believes that the system needs to give greater emphasis to teaching and preparation for the teaching function. The union proposes a new type of position type placed between the professors and their research assistants (*wissenschaftliche Mitarbeiter*). These would be mainly teaching positions.

***Within a mass higher education system the teaching role of all academics needs to be re-evaluated. Teaching potential and performance need to be rewarded at all stages of the academic career. Indeed, clear career paths need to be developed which allow academic staff to progress within a job classification framework that allows varying emphasis on teaching and research.***

The HRK (Conference of Presidents and Rectors) has taken commendable initiatives in stimulating presidents and rectors to convince the academic community of the necessity of institutional changes and of arguing for the role of higher education in a socio-economic perspective.

The education trade union GEW has been offering 60-70 pedagogical-didactical training courses for higher education teachers over 2 ½ years, complementing the offerings of several university centres. And the state of Bavaria established a training centre for new FHS professors who are required to attend courses.

***The review panel recommends that the HRK continue to promote academic staff development and organisational change; that the GEW continue to offer didactic training; and that HEIs on a regional basis develop relevant courses and programmes for staff development.***

### ***Duration and Continuation of Studies; the Implications of Life-long Learning***

#### ***Duration and Continuation***

The average age of commencers at University was, in the winter semester 92/93, 21.2 years; at Fachhochschulen 23.0 years. Abiturienten have finished 13 years of formal education, starting at the age of 6. About a fourth of Abiturienten enter vocational training, and about half of these go on to higher education. Military service and a general trend to have a break between school and higher education have also contributed to a high commencing age.

Following 13 years of school education are another 7 years on average before a university student acquires a tertiary qualification, making the average university graduate in 1992 28.8 years old. About 30 % of commencers in Fachhochschulen have already completed vocational training in the dual system. Many Fachhochschule students have 13 years of schooling (instead of the required 12), followed by vocational training, and then about 4 years of tertiary study, making graduates very similar in age (27.5 years) to university graduates. Although there is now widespread concern that completion of formal education is unduly prolonged, there must be a significant contribution to general industrial, social and cultural development in the country from the depth of knowledge and the overall competence brought to bear by the mature adults.

German higher education, on the whole, has no concept of first and second degree, or undergraduate and graduate degree. A Bachelor degree is therefore in this respect not comparable to the German diploma or Staatsexamen. It consists of a preparatory phase (Vorstudium, Propädeutikum) followed by an examination, and the main disciplinary studies (Hauptstudium). Study rules approved by the ministry define the content, sequence and examination, as well as regular completion times.

Employers seem to be quite happy in general with university graduates' competence. At least we were not informed to the contrary. This is not, however, a reason for complacency. Industrial conditions are changing as a result of economic globalisation. There is, moreover, concern about the age of graduates and their lack of exposure to wage/salary labour as professionals, and as noted there is some unease over the perceived lack of skills needed in modern enterprises. Many students do of course work, during their study, in order to meet costs.

The standing of the German degree is often exemplified by the German Diplom-Ingenieur. After five or more years of study, and usually around 28 years of age, the graduate is an expert in a specific field and employable as such. In Germany there is a strong belief that the German Diplom-Ingenieur is internationally recognised. However, there is also a view that shorter study courses and continuing professional education might be more appropriate particularly in areas where knowledge dates quickly.

The length of university study and the age of graduates has long been of concern in Germany. University study in practice tends to be much longer than is allowed in the study rules. But there are variations between disciplines and between universities. The problem of long study times generally is the actual study time; notional or regular study times are compatible with much, but not all, other European practice. The actual study time exceeds the regular time by several years and is one of the contributing factors to the overcrowding and strained resources.

There are then two options, each requiring considerable change to current practice and, probably, structures:

***1. Preserve the traditional German nomenclature of awards, e.g. Diplom and Staatsexamen, but enable students to finish their studies in the regular time.***

***This option would demand a re-organisation of the curriculum. There would need to be closer contact between the individual student and the department/institute or faculty and a closer relationship between students and their teachers. For option 1 real conditions for arriving at the Diplom within the normal length of study time (Regelstudienzeit) need to be created - more structure, more guidance, more feedback to students. The curriculum might have to be organised in a more modular form, and assessment would need to be each semester and documented in such a way that easy follow up of individual students is possible and accepted. This means that the rules and regulations concerning examinations (Prüfungsordnungen) would need to be changed and that legal possibilities for closer***

*individual follow-up need to be established. A credit system might need to be introduced, although this is not part of the German tradition. At the same time, also, part-time studies combined with part-time work, should be legitimised and facilitated.*

*Option 1 is widely supported in the various commissions and has been the subject of numerous enquiries and reports.*

## **2. Introduce Bachelor level (3 years) programmes.**

*For option 2 a new balance between what is regarded as the introductory and what as the core disciplinary parts would need to be achieved to enable students to gain meaningful employment and for employers to gain capable employees. It would be possible to have an exit exam after two or three years which might be equivalent to a Bachelor degree.*

However, many would see this as a decline in the value of German education or indeed of standards. So far short-cycle programmes have not yet had general employer acceptability. But there are exceptions. Graduates from the three year programme of Bachelor of Economics seem to be acceptable in the labour market. The Universities of Bochum and Münster also offer a BA as part of Magister courses that enable students to exit after six semesters of a solid, professional course. Magister courses, which have notoriously low graduation rates, are particularly suitable for such development.

The question of structure is a vexed one in the German higher education system. Many university courses, as we have noted above, have little structure, and few feedback mechanisms to the student, contributing to the lengthy duration of study. On the other hand, students in *Berufsakademien* and in some *Fachhochschulen* have a school-like curricular structure. Students in universities seem to want more structure than provided, but less than in *Fachhochschulen*. Students in *Fachhochschulen* want fewer restrictions and less structure than experienced, but not as few or little as in universities. Seeing that students in all of these institutions are adults, but adults in a new learning environment, care needs to be taken to find a balance of guidance and freedom, of teaching for skills and knowledge acquisition and teaching for independent and life-long learning. Those concerned with university education tend to stress the danger of "school-like" conditions through too much structure. The Minister of Nordrhein-Westfalen wants to achieve transparency of study plans and exams, together with an unloading of the curriculum to create space for independent learning. The University of Bochum, in the same Land, has experimented in economics programmes with more transparency in course structure, assessment and sequencing and expects a reduction of study length of 2-3 semesters.

We found a good example of balance at the Technical University of Dresden where 90 per cent of students finish in the regular time (5 years). The University attributes this to the continuation of a strong student advising tradition and a well structured curriculum. This commitment has been upheld and supported also by the many professors from the former West Germany who joined the university with a strong commitment to reform.

Another option to decrease the age of graduates is to have 12 instead of 13 years of secondary schooling. There is, within Germany, mutual recognition of the *Abitur* by the *Länder*. And every so often there is a discussion about the function of the *Abitur* and the organisation of study leading to it. In the former FRG there were 13 years of schooling; in the former GDR there were only 12; the school system was more specialised than that in the West. After lengthy discussions between the *Länder*, three of the new *Länder* opted for a more general education and 13 years of schooling, and two opted for 12 years with an increase in study periods to compensate.

There is by no means consensus within Germany, and various groups support a reduction to 12 years of schooling. A compromise has been proposed by KMK, that a certain number of study hours independent of the number of years be required.

*In the reform of study programmes, the GDR experiences and traditions in terms of structured studies should be taken into consideration. GDR university education was often characterised by personal relationships between students and teachers/institutions, by student advising, knowledge of students' progress, attention to career aspects and employment placements. A more student-focused teaching and learning environment are desirable characteristics for higher education in the unified Germany.*

### *Life-long Learning*

Adult education, in Germany, has a long history. Volkshochschulen (colleges for the people) have been well established since the 19th century and are derived from workers' education programs. With the general qualification level rising in the population there is more need for formal learning, and universities need to be involved. It is expected that professional associations will want their members to engage in continuing education.

The present hierarchy and length of awards leaves little room in universities for offering continuing professional education opportunities. A lot of continuing professional education is offered outside the university sector through firms and organisations, utilising the expertise of university staff. As staff get highly paid in those external courses, there is little incentive to work through the university.

All universities, in accordance with the Framework Law, have continuing education as part of their explicit role but with increasing student enrolment many lack the capacity to put greater effort into this important domain. But there are exceptions. At Dortmund, for example, there are study courses for seniors, women's studies courses, and a large number of short and medium-length courses, including in engineering and technical studies. Continuing education is open to anyone who can demonstrate the capacity to learn. The university has a Life-Long-Learning Office which consults with departments. Departments are responsible for contents and management of such programs. Small fees are charged.

If universities were to be enabled and encouraged to take a stronger role in fostering life-long learning opportunities, then clearly the overcrowding in some institutions and the general budget constraints would have to be addressed. Moreover, the existing regulations seem to obstruct the introduction of programmes and courses for employed people; the Bafög (student study assistance) rules, the numerus clausus rules and the various examination rules (Prüfungsordnungen) presuppose that all students are studying full-time.

There was no indication that a commitment to life-long learning might have an impact on the curriculum for the Diplom or other degrees. While the linkages to secondary education are well defined, higher education seemed to be bounded and insufficiently open for further education of its graduates. For many graduates further education would be provided outside HEIs, notably through the development programmes of large enterprises. But with industrial restructuring and the importance of SMEs, continuing professional development, retraining, upgrading, and further general education need to be placed more explicitly on institutional and ministry agendas

HEIs in partnership with enterprises and professional associations need to develop models of continuing professional education to meet the life-long learning needs of graduates, the society and the economy in the late 20th century and the early 21st century.

### ***Internationalisation***

While the German degrees, particular the technical ones, have international currency, there is serious concern about the decline in numbers of foreign students. Germany is an export nation and needs graduates who know other cultures and languages, and needs international students who study in Germany and become part of the nation's international network. The BDA finds German students somewhat parochial and advocates the internationalisation of curricula.

The difficulty of the German language, the length of German study courses, the very strict rules about finance, work and examinations, and - no doubt - the strength of the Deutschmark, have all contributed to a decline in the attraction of Germany as a place for higher education.

While many universities have a fair proportion of "foreign" students, closer analysis shows that often half of these are foreigners residing and working in Germany, the so-called Bildungsinländer. The USA, Britain, and Australia all have proportionally many more foreign students despite high study fees in addition to the living and travelling costs. There are variations, however, across Germany. Berlin institutions are still attracting large numbers of foreign students; there are many centres with an international and multidisciplinary focus. ***But study conditions and assistance to foreign students could be much improved.***

***If Germany is serious about increasing the number and proportion of foreign students completing a degree in Germany or studying a semester under a Study Abroad scheme, then a modular system within a shorter award course and other changes based on an approval of market requirements become a political necessity. The present endeavours within the European Union to develop a modular system for mutual recognition of exchange studies may have a positive effect on the general structuring of studies and a modular- or semester-based- system of assessment/examination. This would be but modest step whereas more fundamental strategies are called for.***

### ***Improving Governance, Decision Making and Management***

Governance and decision-making procedures are largely legislated and some have contributed to making efficient and effective management difficult. As we have seen, both Bund and Länder want reforms. They agree that better management of HEIs is needed by use of business expertise, financial autonomy, more freedom in staffing. This means that the position but also the expertise of rectors and deans need to be improved, that resource allocation will relate more to performance indicators and that merit in terms of leadership and development work would have to be considered in appointing professors and other teachers.

We have already drawn attention to the guarantees relating to individual freedom of teachers and students and the specific German traditions of civil servants (Beamte) and their relationship to the State. Quite complex issues of autonomy arise. The notion of the personal freedom of the individual teacher is seen as the backbone of the autonomy, or the freedom, of the institution and of higher education as a whole. Ministries, however, treat universities as public administration, regulating and filling positions and calculating, more or less in detail, line-items for different types of expenditure. There are interesting

alliances between, on the one side, professors who want to keep the status of being appointed by the minister, the general privileges of being civil servants, and the specific freedom of teaching and research given to them by legislation and, on the other side, civil servants who believe in and value their role of fund allocator, arbiter and guardian of standards. There are challenges here for ministers and presidents/rectors seeking to achieve changes, for example, in educational arrangements and practices. The transfer of personnel autonomy to HEIs with a possible release from the current civil servant status could alleviate this problem. ***A number of Länder at the Federal ministry of education have proposed a new form of limited duration professorial appointments. While recognising the valuable principles of freedom for the professoriate and the significance of the traditional state relationship, we support this proposal.***

If ministries grant greater autonomy, greater accountability will be demanded. That would be a small price for institutions to pay in return for flexibility and increased space in which to innovate.

The HRK (conference of rectors) supports both more autonomy and more accountability. It has demanded greater professionalisation in departmental leadership and administration, stronger institutional administration, and an improvement in internal instruments of control. The HRK has proposed a re-examination of the legal framework so that a new set of statutory laws and guidelines could be developed which allowed institutions greater self-determination. Indeed, the Constitutional Court in Karlsruhe has decided that deans can have management functions and that legislation can be amended accordingly.

The HRK has also called for systematic internal and external evaluations of the efficiency and effectiveness of institutions as well as of decision making processes and structures.

*The reviewers endorse the propositions by the HRK. We support the continuing move towards devolution and the concurrent need for structural change, a **more institutional approach to the tasks of individual teachers**, and new styles of management and accountability.*

### ***Meeting the Cost and Exploring New Ways of Financing***

Before commenting on new ways of financing, it is worth discussing some aspects of the present situation.

The funding of much of higher education is shared by Bund and Länder. For example, capital works and large equipment are funded 50:50 on the basis of a recommendation by the Science Council (WR). A Land would submit a proposal to the WR. If it is supported, the federal government would allocate 50 % of the funds. Over the past four years the WR has forwarded suggestions which the federal government was not able to fund. Some of the states attached such high priority to their proposals that they took over the Bund funding.

The notion of one-line budgets is now quite common in Germany, and indeed in several Länder universities have Globalhaushalte (one-line budget). The term is somewhat misleading, as the salary component, by far the largest item in a university budget, is not part of the Globalhaushalt. While university staff favoured Globalhaushalte as a principle, there was ambivalence: in one university there was strong support for the additional flexibility which a one-line budget gives, but staff wanted to preserve the privileges of their civil servant status. In another university in another Land, the idea of a Globalhaushalt was discredited because it was connected to budget cuts and seen as an abdication of financial responsibility by the ministry.

This illustrates the necessity of a political responsibility for setting objectives and providing a structural framework before decentralising decision-making. Unless this is done the idea of a Globalhaushalt may be discredited and the advantages from the point of view of the institution remain obscure.

***The development towards a real one-line budget (Globalhaushalt) for institutions should be continued, which implies such changes in the decision-making structure and such managerial improvements that a real leadership of the institution could be developed with participation from all groups concerned. Connected to this should be the development of outcomes-oriented methods for allocation of resources at both Länd and institutional level and, based on this, more systematic ways of evaluating the activities of the institution and assuring quality. It is crucial that this work is carried on in a way that makes the result acceptable to all partners concerned.***

In several Länder re-allocation of resources based on performance indicators is already occurring. And in some universities internal allocation of funds based on performance indicators has been introduced. In Nordrhein-Westfalen fund allocation has been changed away from student demand to a calculation based on: average length of study; research funds attracted; number of students sitting for the preliminary exam (Zwischenprüfung); number of doctorates; number of habilitations; and number of graduates. Each year the output related percentage of the budget (apart from salaries) has been increased. In 1997 7 % of the budget was distributed on performance indicators. The effectiveness of this is shortly to be evaluated. So far there are no benchmarks but there are some incentives to change.

Labour market developments are not included in the ministry's allocation or planning. However, there are discussions between HEIs and regional industries.

### *Financing the Future*

In 1994 44.5 billion Deutschmark were spent on higher education, an increase of 3.4 billion from 1992, and double the expenditure of 1985. Most of the expenditure for higher education was carried by the public.

In addition to the essential levels of state funding, what are the options for funding the future?

***The first option is to increase the efficiency of use of available resources. This is already being addressed through a number of initiatives, including giving more flexibility and more autonomy to HEIs. However, reforms could be speeded up.***

***A second option in addition to the first is to increase HEIs capacity to attract discretionary funding from other sources. There are barriers for institutions which want to become more entrepreneurial. As the Land owns buildings, land and staff, initiatives like setting up a new competitive MBA programme in custom-made buildings are not possible in a short time-frame.***

In Berlin, the law was changed to allow institutions to keep income; prior to the law change all income went back into the state coffers which provided little incentive for institutions to sell their services and, use of their facilities, or to out source services.

***A third option is to introduce fees.***

Most students support themselves or are supported by relatives. In 1994 27.7 % of students in the old Länder, and 43.1 % of students in the new Länder were funded under BaföG, the federal training assistance scheme. Students with no other means of maintenance and finance can apply under this scheme. Students are funded for specific periods, depending on the course of study. Half of the grant is non-repayable, the other half is an interest-free loan. After the normal study time has lapsed, the loan component of the grant increases from 50 % to 100 %. This loan must be repaid with interest. A completely new structure of maintenance support is now under consideration at Bund-Länder level.

One state education minister has assured her Land in a policy statement that no fees will be introduced. However, there is by no means unanimity on this issue. With 25 % more students and no increase in funds across the system, fees are one way of financing an expanding system. While fees are not acceptable to students and to some state governments, the public at large would need to be convinced why training a third of the generation is an investment in the future that should be funded by the public purse.

The arguments for education as a public and social good and benefit are strong and real; there is also a considerable private benefit that graduates receive. The Australian Higher Education Contribution Scheme (HECS) has aroused interest in Germany. Its main principle is income contingency. Graduates only pay once they earn a certain income, and only while they are in employment earning that income. The system does not disadvantage students from lower socio-economic background, nor women, in contrast to a loans system or up-front fees. The present 100 DM enrolment fee in Berlin is not seen as a solution, and an increase would be interpreted as a social selection device.

*In presenting options, we are not, however advocating the most extreme, namely fees. The role of the state will remain paramount, and full attention needs to be given to the first two options. Any discussion about fees or deferred charges has to be seen in the broader context of the legal/constitutional issue of "free education", public policy and overall government priorities.*

## **Policies for the Future**

The FRG has a history of support across the society for vocational training at secondary and postsecondary level and for higher education. It has taken up the challenges of unification and has invested in the restructuring of higher and vocational education in the new Länder. There are a number of areas which the review panel believes could be profitably addressed so that Germany can further position herself within a global economy and international higher education.

*A well informed public must be created and public relations need to aim for acceptance and valuing of the different goals of different sectors of tertiary education, and ways people may train for and develop careers.*

## **Legislative Framework**

*The review team notes the legal framework in which higher education operates is designed to ensure individual rights. Each of the legal elements has a strong social and moral basis. But together they are in some respects counter-productive and the requirements of the law and of accountability of HEIs are in contradiction; the freedom becomes dysfunctional.*

The legal framework also acknowledges the federative principle. There are a large number of organisations which span Bund and Länder and co-ordinate various policy initiatives. Strategically, the division between Bund and Länder does not always work well, as co-operation is voluntary. The BLK, the Kommission für Bildungsplanung und Forschungsförderung, is a government conference, involving all the ministries concerned with higher education. The Länder representatives attend as Land representatives, not representatives of the education ministry. The BLK only recommends policies to the governments, but it is the governments that make decisions. A 75 % majority is necessary for recommendations and these are only binding on those who supported them. Hence there are very few levers available to affect change. A second attempt at an educational master plan was a failure because no agreement could be reached mainly on financial issues, so another is needed.

*However, despite these formal and informal bodies which exist at the central level is there a need for one central body that could grasp all the problems and draw up the guidelines for a coherent educational policy; and that would provide a comprehensive view of public interest and national strategies with a view to developing new procedures? After considering this option, we concluded that the need is less for some super co-ordinating body than improved capacity for implementing decisions and strengthening co-ordination at the Bund-Länder level. In existing bodies there is already representation of Bund, Länder, social partners, economy and society at large and the tertiary education institutions. Their agreement on reform procedures as well as goals is particularly needed.*

*We recommend as a first step that the Bund-Länder relationship with regard to higher education be re-examined. We propose a two stage approach: (1) more systematic dialogue among the existing bodies; (2) working parties and task forces whose members are drawn from the existing bodies. Particular attention is needed to ways of implementing agreed directions.*

### **Funding**

The funding of an expanding system of higher education where reforms are implemented and standards maintained or enhanced requires careful attention to funding responsibilities. The federal government is investing in the economic development of the new Länder. In the long run it might need to fund more than buildings and equipment in higher education. More incentive funding than at present might well foster desired change.

*Increasing the efficiency of use of available resources including incentive funding is a first priority.*

*A second priority is to increase HEIs capacity to attract discretionary funding from other sources. There are legal and administrative barriers for institutions which want to become more entrepreneurial.*

*Educational co-ordination and steering of and within the system could more efficiently and effectively ensure that demands of individuals, the needs of employers, and institutional resources and facilities are matched. It should become easier to encourage the streams of students towards Fachhochschulen and other vocationally oriented alternatives. As long as the allocation to the university sector cannot be seen and treated together with allocation to Fachhochschulen, the planned expansion of Fachhochschulen may be in jeopardy.*

### **Mass Higher Education**

The present system is still largely organised and is driven by values which were appropriate when the system was a fraction of its present size. In view of the high participation rate, the diversity of student backgrounds and aspirations, the need for an educated and adaptable workforce and citizenry, ***higher education should prepare for the next century by not only changing structures and legal regulations, but by changing staffing arrangements, attitudes and values, and the organisation of teaching and learning.***

***HEIs in the old and new Länder need to examine the conditions under which their student bodies can best learn; this means knowing the students and their expectations; providing assistance in social and academic orientation and integration, and organising the study courses and teaching in such a way that students are likely to succeed.***

***Within a mass higher education system the teaching role needs to be re-evaluated. Teaching potential and performance need to be rewarded at all stages of the academic career. Indeed, clear career paths need to be developed which allow academic staff to progress within a job classification framework that allows varying emphasis on teaching and research.***

***Academic staff development and organisational change need to be promoted; didactic training offered; and HEIs should develop on a regional basis relevant courses and programmes for staff development.***

### ***Implementation of Policy Initiatives***

We endorse the following points relevant to this report from the Key Issues Paper and the 1996 Report on the Reform of the Structure of HE, and recommend their adoption and implementation of by all Länder ministries and the relevant federal ministries.:

***The quality assurance systems being developed now should be encouraged, implemented and evaluated. Evaluation of academic organisational units, of teaching and research, needs to be embedded in institutional planning and monitoring cycles. The outcome and output orientation already emphasised needs to be embraced in all Länder.***

***More autonomy and flexibility for HEIs is necessary in times of perceived financial stringency.***

***The development towards a real one-line budget (Globalhaushalt) for institutions should be continued, which implies such changes in the decision-making structure and such managerial improvements that a real leadership of the institution could be developed with participation from all groups concerned. Connected to this should be the development of outcomes oriented methods for allocation of resources at both Land and institutional level and, based on this, more systematic ways of evaluating the activities of and within the institution and assuring quality. It is crucial that this work is carried on in a way that makes the results acceptable to all partners concerned.***

***To make efficient and effective use of autonomy and flexibility in resources, institutional management needs to be strengthened. This is contrary to the long tradition of collegiality and privileges of the professoriate, and a new balance will need to be achieved between collegial and executive decision making.***

*The review panel endorses the propositions by the HRK. It supports the continuing move towards devolution and the concurrent need for structural change, a more corporate mentality, new styles of management and accountability.*

A restructuring of study programmes to achieve shorter completion times, and greater student focus.

*In the reform of study programmes, the GDR experiences and traditions in terms of structured studies should be taken into consideration. GDR university education was characterised by personal relationships between students and teachers/institutions, by student advising, knowledge of students' progress, attention to career aspects and employment placements. A more student-focused teaching and learning environment are desirable characteristics for higher education in the unified Germany.*

*HEIs in partnership with enterprises and professional associations need to develop models of continuing professional education to meet the life-long learning needs of graduates, the society and the economy in the late 20th century and the early 21st century.*

*To achieve this, better articulation and transfer is needed between the different institution types, and more alternative education paths need to be developed.*

Higher education in Germany has demonstrated a capacity to develop and change to meet new needs in society and the economy and of individual students. It is a very large, complex system or set of systems faced with an array of new challenges and expectations. Its acknowledged strengths and many qualities need to be brought to bear on these challenges and the problems they pose. Numerous potential solutions have been considered in studies and reports. The reviewers believe that the task, now, is to apply them through a renewed sense of purpose.

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